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ENHANCING STRATEGIC INVESTMENT DECISION MAKING FROM UNDERSTANDING CALENDAR ANOMALIES ON ZIMBABWE STOCK EXCHANGE: 2011-2020.

BY

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DEDICATION

I dedicate this dissertation to my father, Mudhara Diva Murombo.

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ABSTRACT

The research was triggered by the fact the ability to predict the behaviour of stock returns is important for strategic investment decision making by investors. However, there is limited known research on the calendar anomalies aspect of market efficiency in Zimbabwe. The research therefore sought to create an understanding of calendar anomalies on Zimbabwe Stock Exchange to enhance strategic investment decision making by investors in Zimbabwe. The research objectives were to determine the presence of the day of the week effect on stock market returns by looking at the volatility of daily stock returns on ZSE; to ascertain if there exist month of the year effect on stock market returns by looking at the volatility of the monthly stock market returns on the ZSE, to determine the effect of volatility of the daily stock returns on daily trading volume at ZSE and to draw some strategic and policy recommendation to enhance the predictability of the ZSE. The research study adopted a descriptive explanatory research design with positivist research philosophy. The researcher acquired secondary data from ZSE for average daily stock returns for all listed companies for a period of 10 years (2011-2020). SPSS v. 23.0 was used for statistical analysis of stock returns data. Normality tests, parametric and non-parametric tests were performed. Descriptive statistics and correlation and regression analysis were done. The research found out that the average daily stock returns at the ZSE are uniform on all week days implying that there is no day of the week effect (DOW) at ZSE. The research also found out that the average monthly stock returns at ZSE are uniform on all months of the year. This means that there is no January effect (JE) at ZSE. The study also found out that there is a month of the year effect in terms of the volatility of the average returns on the stock at the ZSE. Therefore, there exists January in terms of monthly stock volatilities at ZSE. About the effect of trading volume on stock returns, the research established that there is a weak positive impact between the two variables. With this acquired knowledge, investors in Zimbabwe are recommended to ensure that they hold their funds and acquire financial assets in January. Guided by the Johnson and Scholes (1997) suitability-feasibility-acceptability (SFA) test, the researcher suggests the following recommendation to the investors based on the research conclusions: investors are recommended to carry out detailed fundamental and market analysis to identify factors that affect changes stock returns at the ZSE. The existence of monthly stock volatilities at the ZSE in January entails that investors should exercise caution when performing transactions. Securities Exchange Commission is recommended to assist ZSE in its operations to allow improved investor activity by providing the ZSE with infrastructure that allows listing of other securities than just equity, so as to allow more investor activities on the market. The study recommends that there is need to improve the communication infrastructure which can be in form of news portals dedicated to delivering price sensitive news to guide investors. Future researchers are recommended to budget funds to acquire data for extended periods in excess of 10 years and as well to gain proficiency in using STATA and EViews to run GARCH models on similar researches.

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LIST OF ABBREVIATIONS/ACRONYMS

DOWE – Day of the Week Effect

EMH – Efficient Market Hypothesis

GARCH – Generalized Autoregressive Conditional Heteroskedasticity

JE – January Effect

JSE – Johannesburg Stock Exchange

MOY– Month of the Year

NYSE – New York Stock Exchange

NYSE – New York Stock Exchange

OLS – ordinary least squares regression

SEC – Securities Exchange Commission

TFO – Tax and Finance Operate

TOM – Turn of the Year

ZSE – Zimbabwe Stock Exchange

CHAPTER I

INTRODUCTION AND BACKGROUND

1.1 Introduction

Investment decisions in financial markets are risky undertakings and should be made with astute managers that are full of business acumen. This makes it highly imperative that financial managers and investors get full information about the operations of the capital and money markets. According to Ali, Waheed and Namrah (2017) in a developed capital market, information is perfect but in less developed capital markets, there is imperfect information. In an efficient market, investors are able to make astute decisions according to the efficient market hypothesis. However, there are anomalies that happen in capital markets that often defeat the essence of an efficient capital market. An anomaly refers to the fluctuation in price or return on stock that opposes an efficient market hypothesis (Qureshi, Salman Ali and Ahmed, Imran and Hunjra, 2017).

In less developed capital markets such as Zimbabwe, financial decision making is a daunting task making an understanding of calendar anomalies indispensable for strategic investment decision making for investors. From the point of view of the researcher, an understanding of the behaviour of the stock market can enable investors to make strategic investment decisions. Strategic investment decisions are investment undertakings that are made timely at low levels of risk. To enhance strategic investment decision making, the researcher investigated efficiency of ZSE with respect to calendar anomalies particularly the day of the week effect and month of the year effect in the hope that empirical findings of this research enlighten investors of the appropriate times and assets to invest in. This chapter lays the background of the research, the research problem, research objectives, research questions, research hypotheses, significance of the research, delimitations of the research, structure of the dissertation before a chapter summary is given.

1.2 Background of the study

Efficient capital markets can attract more capital than inefficient ones (Rosini and Shenai, 2020). Capital markets in developing countries attract more attention as an investment option. Investors

are concerned with efficiency of the market when making investment decisions. The understanding of the behaviour of stock markets is generally important to all investors. According to Alves, Sigaki and Perc (2020) at any particular moment in time, investors seek stock prices that reflect the actual share price and to be able to make strategic investment decisions, they want the behaviour stock market to be predictable enough for them to make strategic investment decisions. The same applies for capital markets regulators who have interest in market efficiency to be able to determine areas that need to be improved to improve market efficiency and the predictability of the stock returns. Investors are not only concerned with stock market premium but with the risk associated with the returns as well (Rosini and Shenai, 2020). The volatility of stock returns is an indicator of risk embedded in stock returns. If stock returns follow some predictable pattern in their risk behaviour, this enables investors to strategically make investment decisions that are consistently profitable. This makes the understanding of stock market efficiency aspect of calendar anomalies crucial for investment decisions.

At global scale Alves, Sigaki and Perc (2020) indicate that Deustche Boerse and New York Stock Exchange (NYSE) stand out as highly efficient capital markets with undoubted integrity. Deutsche Börse is a large stock market in Germany characterized by high integrity and transparency that offers a trading space for capital investors and companies seeking capital (Byomakesh, Dash and Mahakud, 2017). At Deutsche Börse, investors buy and sell financial assets such as stocks and derivatives following stipulated rules and guidelines. Deutsche Börse with its infrastructure ensures its smooth functioning and affords a level playing ground for investors worldwide. NYSE is an American stock exchange in the New York City. Tax and Finance Operate (TFO) Survey (2020) indicate that NYSE is the largest stock exchange by market capitalization in the world. NYSE had listed companies worthy US$30.1 trillion (TFO Survey, 2020).

At Deustche Boerse and NYSE the Standard and Poor 500 Index stock returns for Fridays is higher than stock returns for Mondays (TFO Survey, 2020). The same situation is found with Monday returns of Dow Jones Index. The futures market, Treasury bill market and bond market at Deustche Boerse and NYSE behave the same pattern identical to that of the equity market with favourable returns for Fridays and Mondays. Evidence shows that at NYSE about 50% of the risk-adjusted premium of small corporates compared to large firms is caused by the January abnormal returns

and more than 50% of excess returns is attributed to calendar effects especially the effect of first week of January (Jaziri and Mouna, 2018).

Calendar effects are also observed in other stock markets around the world including Australia Stock Exchange, Toronto Stock Exchange in Canada and Tokyo Stock Exchange in Japan and the London Stock Exchange in the United Kingdom (Jaziri and Mouna, 2018). Differences in capital markets in developed countries are that unlike in the NYSE where stock returns are high beginning and end of week, Japanese Tokyo Stock Exchange and Australia Stock Exchange have low returns beginning and end of week (TFO Survey, 2020). The evidence here shows that despite the high level of market efficiency of developed countries capital markets, the nature of calendar anomalies varies from one market to another. This means that investment decisions should be made in context of the intended market as far as calendar anomalies are concerned (Byomakesh, Dash and Mahakud, 2017).

In the African continent, in countries such as Nigeria, Mauritius, Morocco and Tunisia, evidence shows that their stock markets have shown mixed positions with respect to calendar effects (Fusthane and Kapingura, 2017). Majority of African stock markets exhibit weak form of market efficiency. There are no straight forward positions with respect to calendar effects on stock returns in the African context. However, in the region, in South Africa, Johannesburg Stock Exchange (JSE) mimics efficiency of capital markets in developed countries. JSE market behaves like capital markets in developed countries. JSE shows some reasonable trends in terms of stock market efficiency and calendar anomalies making it easy for investors to make informed and better investment decisions (Fusthane and Kapingura, 2017).

Companies in Zimbabwe struggle to raise capital. An improved investment activity on the stock market (ZSE) would greatly enhance economic growth. In the new dispensation, along with the ‘Zimbabwe is open for business’ mantra, ZSE is targeted by local and international investors. There is abundance of mineral resources in the country and as such big companies have invested in these mining companies. This has made the ZSE an influential market eyed by many investors. Investors intend to acquire stake in such mining companies. Investing Africa (2020) shows that ZSE is an attractive stock market in Africa as Zimbabwe is a destiny for mining companies as it is

mineral resources endowed. The ZSE has existed for a long period, and by African standards, ZSE is supposed to have attained stronger market efficiency.

However, Zimbabwe has experienced experiments in its monetary and fiscal policies in the period between 2006 and 2019 which have further compromised the predictability of the behaviour of ZSE. According to Mahonye and Mandishara (2019) the value of stocks returns traded has witnessed mixed trends. The Figure that follows presents the values of stock traded and the market capitalization for ZSE over the period 2009 up to 2019.

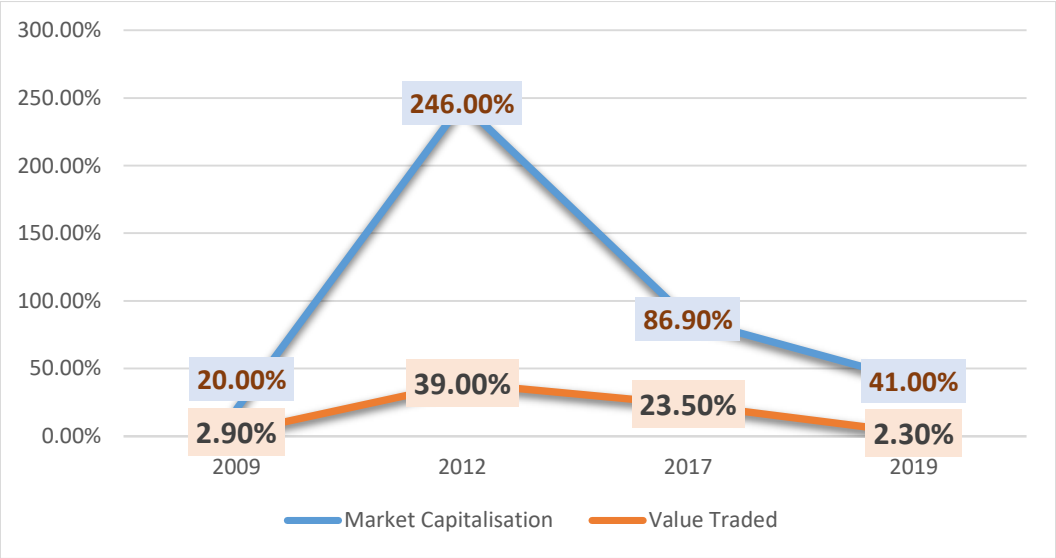

Figure 1. 1: ZSE value traded and market capitalization (2009 to 2019)

Source: ZSE Reports, 2020-2021

In 2009, market capitalization increased from US$1.4 billion in 2009 to US$483.56 billion, a 246% increase in 2012 and declined in 2017 to 86.9% (US$420.21 billion) and 41% (US$198.25 billion) in 2019. The value traded increased sharply from 2.9% (US$26.86 million) in 2010 to 39% (US$37.33 million) in 2012 but a decline was experienced in 2017 by 23.5% to US$28.63 million and declined further by 2.3% to US$27.97 million in 2019 (Mahonye and Mandishara, 2019). These changes in the behaviour of ZSE has made it difficult for investors to make informed decisions made worse by lack of understanding of the calendar anomalies in underdeveloped ZSE. This has affected investor sentiments on the attractiveness of ZSE.

In addition to the haze picture of the ZSE, related and past researches indicate that previous research on anomalies has concentrated exclusively on developed stock markets such as NYSE and Deustche Boerse. For example, Qureshi, Salman Ali and Ahmed, Imran and Hunjra (2017) looked at calendar anomalies in Pakistan. In efficient markets, investors' wealth is secured for they can make strategic investment decisions given the level of accuracy of information. Could the same be not done in Zimbabwean capital markets? What is that which is supposed to be known and understood which can help investors make strategic decisions and make ZSE an attractive stock market? Existing research closer to Zimbabwean by Fusthane and Kapingura (2017) covered capital markets in South Africa, Nigeria, Mauritius, Morocco and Tunisia excluded Zimbabwean stock market, the ZSE. There is no known published study on calendar anomalies in Zimbabwe's stock market. The behaviour of stock returns on ZSE is believed to follow capital markets in developed countries. This assumption makes it difficult for economic agents to make strategic investment decisions. This current study therefore unveiled the strength of the efficiency of ZSE particularly on the aspect of calendar anomalies so as to understand the behaviour of ZSE to enhance strategic investment decision making by investors in Zimbabwe.

1.3 Problem statement

The ability to predict the behaviour of stock returns is important for strategic investment decision making by investors. Efficient markets such as NYSE are quite predictable and their behaviour can be followed by investors with minimal chances of risking investments. The Zimbabwe Stock Market operates in a volatile economic environment from the hyper inflationary pressures, currency changes and declining economic performance. Against this, it is extremely difficult for investors to make strategic investments decisions that are key for deepening the market and propelling Zimbabwe's sustainable economic development.

There is limited known research on the calendar anomalies aspect of market efficiency in Zimbabwe. The outcome of the research is an investment decision making package for investors in Zimbabwe who are active at ZSE. The research is premised on the idea that if investors are able to identify a pattern in volatility of stock market returns, then it is easier to make strategic

investment decision. It is against this background that this research study has been undertaken to examine Calendar Anomalies at ZSE.

1.4 Research objectives

The primary aim of the research was to understand the behaviour of the ZSE with respect to calendar anomalies (day of the week effect and month of the year effect) to enable strategic investment decision making by investors. The secondary objectives are presented as below:

1.4.1 Secondary research objectives

1. To determine the presence of the day of the week (DOW) effect on stock market returns by looking at the volatility of daily stock returns on ZSE.
2. To ascertain if there exist month of the year (JE) effect on stock market returns by looking at the volatility of the monthly stock market returns on the ZSE.
3. To determine the effect of volatility of the daily stock returns on daily trading volumes at ZSE.
4. To draw some strategic and policy recommendations to enhance the predictability of the ZSE.

1.5 Research questions

The primary question of the research was: Is the behaviour of ZSE predictable enough to enable strategic investment decision making by investors? The research sought answers to the questions outlined below.

1.5.1 Secondary research questions

1. Does the day of the week (DOW) effect on daily stock returns exist on the ZSE?
2. Does the month of the year (JE) effect on the stock returns exist on the ZSE?
3. How does the volatility of the daily stock returns affect daily trading volumes at ZSE?
4. What strategic and policy recommendations can be used to enhance the predictability of the ZSE?

1.6 Research hypotheses

The specific alternative hypotheses that were tested are stated as below:

H_1: The mean daily returns are not uniform on all week days.
H_2: The daily volatility of stock returns is not uniform on all week days.
H_3: The mean monthly returns are not uniform on all months in a year.
H_4: The monthly volatility of stock returns is not uniform on all months in a year.
H_5: There is a statistically significant relationship between daily volatility of stock returns and daily trading volumes at ZSE.

1.7 Significance of the study

The research findings are believed to be useful to stakeholders. The significance of research findings is primarily practical and theoretical in nature as outlined hereunder.

1.7.1 Investors

As is reflected in the research title, this research directly benefits investors. It should not be soon forgotten that the research intended at enhancing strategic investment decision making from understanding calendar anomalies on Zimbabwe Stock Exchange. An understanding of the daily and monthly calendar anomalies is very important for investors trading on ZSE. If investors understand the trend behaviour on the ZSE, they are be able to strategically craft investment strategies that suit that behaviour. Understanding volatility patterns in stock returns also helps investors in their hedging strategies as well as accurately valuing financial assets. This in turn helps in allocating funds to the most deserving assets and helps optimal asset selections by investors.

1.7.2 Securities Exchange Commission and other regulators

Capital markets regulators in Zimbabwe have an interest in ensuring that the capital market of the country is attractive enough to lure investors and boost investor activity. For example, the Securities Exchange Commission as a regulator aims to complement government economic development policies, the commission benefits by understanding the efficiency attributes of the

market such as calendar anomalies. This is important in identifying need for relevant policies to enhance the performance of the capital market. An efficient capital market offers business a chance to raise much needed capital instead of opting for more expensive debt. This research sought an understanding the behaviour of the ZSE particularly on the presence of these anomalies on the ZSE by investigating the day of the week effect and the month of the year effect. While studies of this nature have been carried out before, few have been in Africa and the results have not been very consistent.

1.7.3 Researcher

The research benefits the researcher in the sense that it equips the researcher with statistical data analytical skills. The research equips the researcher with skills of analyzing longitudinal data since the research used time series data from ZSE. Besides, the research enabled the researcher to complete his MBA Finance degree he has longed to have with the University. With the background of Finance, and the topic that is more finance based, the study also fulfills the researcher's esteem needs. Its practical perspectives add value to the researcher and even other researchers. This brings happiness to the researcher to conduct a research that can be used as a point of reference by individual and institutional investors.

Necessity is the mother of invention. This research study required the ability to use statistical data analysis that the researcher was not familiar with such as SPSS. At undergraduate, the researcher had limitedly learnt and used SPSS and with this quantitative research, the researcher had to train in-depth SPSS fundamentals to gain kills that were necessary for the completion of the research. Probably, had it not been because of this research, the researcher would not have trained SPSS. This made the research study significant for the researcher as it improved the research skills and data analysis skills of the research which are also important in his career as a Digital Banking Analyst.

1.8 Delimitations

There are different calendar anomalies that are associated with stock markets that include the day of week anomaly, time of month anomaly, time of year anomaly, presidential cycle anomaly and

decade within century anomaly among other calendar anomalies. This research was delimited to two calendar anomalies which are the day of the week (DOW) anomaly and month of the year (JE) anomaly. The research used time series data obtained from ZSE covering the period from 2011 to 2020. The study focused on analyzing mean stock returns and volatility. Methodologically, the research was delimited to descriptive statistics and non-parametric test of Chi-Square hypothesis testing and regression and correlation analysis. It used secondary data from the ZSE. There were other possible sources such as Confederation Zimbabwe Industries, ZimStats and Zimbabwean Investors' Social Media Blogs where the researcher could have gotten data from other than the ZSE, but however the delimitation on the source of data was specifically the ZSE and none other suppliers to enhance the validity and authenticity of the research data.

1.9 Structure of the dissertation

Chapter 1: This chapter laid the introductory aspects of the study. It looked at the background of the study. The background formed the basis for the problem statement. The research objectives were outlined together with the research questions. The significance of the study to the various stakeholders was shown. Research delimitations, limitations and the structure of the dissertation was outlined.

Chapter 2: The chapter reviewed related literature and it helped relate the problem under study to the works of various other researchers and authors.

Chapter 3: This chapter gave the research methodology on how the researcher went about conducting the research. It specifically looked at the research philosophy, research approach, research design, study population, sampling and sample sizes, data collection procedures, research instruments, data validity and reliability, data and analysis and presentation and the observed research ethics.

Chapter 4: This chapter dwelt on data presentation and analysis, where the researcher showed the findings from the data collected. Analysis of data was done with particular reference to the research objectives. The researcher compared the findings of this research with the findings of other scholars to determine concurrences or conflicts of findings.

Chapter 5: This chapter summarized the findings, gave conclusions to the research objectives and questions, make recommendations and suggested areas for further research.

1.10 Chapter summary

The introduction and background indicated that investment decisions are risky and should be made with managers that are full of business acumen. In highly efficient and transparent markets such as Deustche Boerse and New York Stock, investors can predict the behaviour of financial markets and make strategic investment decisions. In other markets such as Toronto Stock Exchange in Canada, Tokyo Stock Exchange in Japan and the London Stock Exchange, there is existence of calendar effect on stock returns in capital markets. Unlike in NYSE where stock returns are high beginning and end of week, Japanese Tokyo Stock Exchange and Australia Stock have least returns beginning and end of week showing that capital markets are not alike. Owing to the fact that there has not been an empirical research on the behaviour of stock market in Zimbabwe, yet with the significance of the knowledge of behaviour of stock markets, the researcher investigated efficiency of ZSE with respect to calendar anomalies in the hope that these empirical findings of this research enlighten investors of optimal investments. The chapter presented the statement of research problem, research objectives, research questions, research hypotheses, significance of the research, delimitations of the research and the structure of the dissertation. The chapter that follows presents literature review.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

The previous chapter presents the background and the research problem. This chapter primarily looks at the theoretical and empirical literature of the study to get the understanding of the fundamental principles of the operations of stock markets and to gather evidence of how other markets behave so that the situation in Zimbabwe can be properly position. The main aspects reviewed are the January Effect (JE) and The Day of the Week Effect (DOW). It is from this literature reviewed that the study draws important insights that informed its various aspects including the methodology. The major sections of this chapter are the theoretical literature section, the section where the conceptual framework is articulated, the empirical literature section and the critique of existing empirical literature. The chapter concludes with a summary.

2.2 Theoretical literature review

The theories and models that explain the operation of stock markets presented here are mainly the Efficient Market Hypothesis (Fama, 1970), Random Walk Theory (Burton, 1973) and the Behavioural Finance Theory (Brooks, 2008). The theoretical framework also includes the Calendar Anomalies and the EMH.

2.2.1 Efficient market hypothesis theory

The extent to which available information in a stock market that can be effectively used to make accurate decision measures the efficiency of a stock market (Miljan, 2018). Stock market efficiency is measured by the extent to which stock prices and information available in the stock market are correlated. The Efficient Market Hypothesis (EMH) is a theory that gives guidelines of rating the nature of financial markets. It measures the availability of information in a stock market which is critical in determining the level of its efficiency. According to EMH, predicting the change in prices and turning them into profit are near impossible and highly unlikely (Bouattour

and Martinez, 2019). What drives these changes in price is new information. A particular market, under the theory, can be deemed as efficient if stock prices immediately react to new information (Bekaert and Hodrick, 2017). The information coming in must be unpredictable, by definition, because if future information can be predicted now, then this information would be reflected in today's prices and not in future prices. Adjustment of stock prices to its fair market value in reaction to the new information will cause them to either increase or decrease (Chiah and Zhong, 2019). It makes the stock price movements random and unpredictable. This is also referred to as a Random Walk Hypothesis.

2.2.1.1 Assumptions and principles of EMH

The assumptions and principles of efficient market hypothesis are that besides the utility maximizing agents, efficient market hypothesis requires that agents have rational expectations whenever new information appears (Bouattour and Martinez, 2019). The agents update their expectations properly. EMH states that some investors when faced with new information may over-react and some may under-react. EMH requires that investors' reactions should be random and follow a normal distribution pattern so that the net effect on market prices cannot be broken to make an abnormal profit when considering transaction costs (Miljan, 2018). Thus, investors can be wrong about the market but the market is always right.

2.2.1.2 Forms of efficiency

Fama (1965) identified different levels of efficiency which depend on the available information. Markets are either weak form efficient, semi-strong form efficient or strong form efficient.

2.2.1.2 (a) Weak form of market efficiency

In a weak form efficient market, all historical information of stock prices and trading volumes is publicly available and already incorporated in prevailing prices. It can therefore not be used to formulate trading strategies to beat the market (Miljan, 2018). Weak form of market efficiency involves past information and past prices. According to the weak form of efficiency under the EMH, current stock prices reflect all of the available past information. All other information such

as profit forecasts or announcements of mergers do not have any effect on current stock prices. This means that no one can analyze past prices of stocks and be able to beat the market.

Under the EMH, there is a reason that this form is named ‘weak’. The strength of the efficiency which is the degree of weakness, symbolizes the type of information available (Brown, 2020). Historical information plus information on stock prices can be classified as the most easily obtained and costless information. Therefore, it is classified as weak in the efficiency scale by Fama in the EMH. In the weak form of efficiency, investors cannot make a profit from using information that everyone knows.

2.2.1.2 (b) Semi-strong form of market efficiency

The semi-strong form efficiency is one in which all publicly available information, past, present or future is already factored into the price of the stock and is of no use in beating the market (Bekaert and Hodrick, 2017). Fundamental analysis cannot be used to make positive excess returns. In a strong form efficient market, no information, public or private can be used to beat the market as it is already incorporated into stock prices.

In the semi-strong form of efficiency, besides the past information, all the publicly known and available information are also reflected on the price of the financial assets/stocks (Peress and Schmidt, 2020). This can be the quality information, financial statements, patents as well as information provided by media, investment advisors, annual reports and other information that can be publicly accessible. An important point to note here is that public information does not have to be just financial information. To give an example, consider the cosmetics industry. When analyzing cosmetics companies, the relevant information can be the new, published research regarding cosmetics testing.

From the moment this public information that are mentioned above are published, prices of financial assets will immediately adjust itself to become higher or lower according to the nature of the information (Bekaert and Hodrick, 2017). Then, it can be deduced that if all investors have accessed these publicly information, then none of them have an advantage over the other. Therefore, they cannot make excess profit by using a fundamental analysis. In a strong form

efficient market, one cannot use even insider trading to beat the market as all private information is instantaneously absorbed into the markets and stock prices adjust.

Semi-strong and weak forms of market efficiency can be related to each other as the weak form includes past and the semi-strong form includes both past and the public information (Peress and Schmidt, 2020). It can be deduced that, if one market is found to be efficient in the semi-strong form, then it also must be efficient in the weak form.

2.2.1.2 (c) Strong form of market efficiency

This is the strictest version of market efficiency as it not contains the past and public information but also involves private information (Chen, Zhong and Jiang, 2020). Private information in studies can also be referred to as the inside or insider information. According to the EMH, the strong form of market efficiency can be defined as a market where the prices of financial assets reflect all of the available public and private information. Stock prices in this market reflect all information that exists.

If a market is efficient in the strong form, it leaves no room for investors or even insiders from generating profits using information that is not publicly known (Bekaert and Hodrick, 2017). For example, if a bank's research and development department come up with a breakthrough and the bank knows that this information will cause the bank's shares to increase by a large amount in the near future. By the time one of the members of this Research and Development team goes out and buys few of the bank's stocks, if strong form of efficiency holds, this information would have already been reflected on the stock price (Brown, 2020). Hence, that person with insider information would not be able to use this for his/her benefit.

It is debatable whether the strong form of market efficiency exists. According to Gharaibeh (2017) the strong form is inconsistent. Other authors such as Brown (2020) and Bekaert and Hodrick (2017) argue that it is impossible for an insider not to benefit from the private information they hold. Others such as Miljan (2018) argue that there is no possibility of keeping secrets. Most countries have regulations that prevent insider trading such as Securities and Exchange

Commissions as in the case of United States. This commission requires directors or corporate owners to report to them in order to limit their harmful activities (Giamouridis, 2017).

2.2.1.3 Inefficient markets

Some markets are inefficient and do not fall under any of the efficiency forms described above. The majority of these are observed as to be either developing, emerging or transition economies (Miljan, 2018). According to Peress and Schmidt (2020) it is impossible for markets to be perfectly efficient as there will be no reason left for investors to trade in these markets if there were no profits to be made. However, this is a serious situation as, in the long run, it leads to collapse of markets (Peress and Schmidt, 2020). Also, since trading stocks incur costs, it is important to consider if the gains made are sufficient to compensate for the costs.

2.2.1.4 Factors that perpetuate market inefficiency

Chen, Zhong and Jiang (2020) observe the factors that perpetuate market inefficiency. These factors include information costs and trading/transaction costs as explained below.

2.2.1.4 (a) Information costs and market inefficiency

Information cost is not only restricted to the purchasing of information, but also and more specifically it covers the cost of analyzing stock markets. Costs that come from due diligence. That is, information costs include everything an investor spends when investigating whether a particular investment or activity is profitable or not. In real world, information does not flow smoothly (Chen et al., 2020). Some people have access to information that others do not have access to. In capital markets, this means that investors do not always know as much as they would like to know about stock assets. Because of this, investors do not buy financial assets from everyone that sell them. That is, even though investors might have enough funds at their disposal, investors choose not to buy stock from sellers whom they do not know enough about, especially when it is expensive to get the information they require (Gharaibeh, 2017). This shows that information costs have a bearing on the efficiency of the capital markets.

2.2.1.4 (b) Trading costs and market inefficiency

Trading costs affect the performance of capital markets. Low trading transactions costs are always beneficial (Hailey, Page, Panariello, Tzitzouris and Giroux, 2019). Reductions in trading costs is linked to direct cost savings, indirect benefits through improvements in agency costs, monitoring or coordination within the markets, and the creation of market structures that are efficient. There are also negative effects of reduced trading costs, especially on intermediaries. For example, economic problems such as the 'lemons problem' can be exacerbated if lower transactions costs lead some participants to become more informed than others (Hailey et al., 2019).

Alternatively, reduced transactions costs introduce new, poorly informed participants into markets that they otherwise access through a professional intermediary who would screen or temper their information disadvantages (Chen et al., 2020). To the extent that market efficiency is affected by the introduction of less uninformed participants, a reduction in transactions costs can impede market efficiency and create real social costs. Transaction costs are important to investors because they are key determinants of net returns (Gharaibeh, 2017). Transaction costs diminish returns, and over time, high transaction costs can mean thousands of dollars lost from not just the costs themselves but also because the costs reduce the amount of capital available to invest.

Transaction costs are important determinants of informational efficiency, according to the principles of an efficient market. An efficient market fully reflects available information when there are no information and transaction costs and when investors hold homogeneous beliefs (Hailey et al., 2019). To the extent that market transactions are not frictionless, market informational efficiency may not hold. The reason is that high transaction costs discourage information trading and arbitrage trading, resulting in less information being revealed and impounded into stock prices. In a similar vein, the burgeoning Behavioural finance regard transaction costs as a main source of market inefficiency (Gharaibeh, 2017).

2.2.2 Random walk theory

Random Walk Theory states that current security prices are independent of previous security prices. This means that the price of a security today is independent of yesterday's price. Investors

cannot use past prices to predict future prices; hence, successive price changes are random. The random walk theorists such as Fama (1965) believe that major security exchanges approximate efficient markets. They contend that given the large number of rational profit maximizers who are actively competing, with each attempting to predict future prices, the actual price of a security will be a good estimate of its intrinsic value. Such a market that is leveraged on free flow of important information to all participants would witness an instantaneous adjustment of changes in prices on actual prices.

The idea of a 'random walk' is related to the EMH as it is a financial theory and focuses on investments and claims that present-day stock prices increase or decrease, and this happens randomly and has nothing to do with past stock prices. Thus, the idea is that prices immediately capture the information as was said by the EMH (Hailey et al., 2019). In this situation, even the inexperienced investor obtains a rate of return similar to that of experienced colleagues. Investors have no chance of achieving gains in these markets without taking on themselves many additional risks. The higher the gains, the higher the risk associated with the investment (Gharaibeh, 2017).

It can easily be said that studying past stock prices (technical analysis) or analyzing company's financial information (fundamental analysis) cannot benefit an investor. This is important in the case of investors as they look for securities that are undervalued, ones they predict to increase in value in the future (Hailey et. al., 2019). For them the higher the gains, the better it is. However, as mentioned, EMH shows that no profits can be made if the market is found efficient because the information about the price changes already would have been captured. This makes markets in emerging economies more attractive as these stock markets do not follow a random walk and are inefficient (Bekaert and Hodrick, 2017). The absence of a random walk means the inappropriate pricing of stocks away from the fair value and higher risk. This can lead investors to predict future stock prices and gain higher returns. It is expected that stock prices in these markets increase more than the others because capital allocation in the economy is distorted and the overall economic development of the market is affected (Gharaibeh, 2017).

2.2.3 Behavioural finance theory

Behavioural finance is the study of how psychology impacts financial decisions in households, markets and organizations. The behavioural finance paradigm claims that investment adoptions are not always made on the basis of full rationality but it is necessary to understand the investment market sensations. Behavioural finance theory is based on the alternative notion that investors, are subject to Behavioural biases that mean their financial decisions can be less than fully rational. It needs to be recognized that the Behavioural content of an investor has become a critical quotient in analyzing investor preferences. According to Gharaibeh (2017) sometimes investors behave like perfect economic beings but other times they behave like ordinary human beings. Investors make decisions on the basis that do not reflect real world facts. The attitude of an investor towards the risk associated with obtaining gains may be quite different from other investors' attitude towards risk associated with losses. The underpinning consideration in investors' decision is risk and return consideration. In this consideration, the assumptions of the efficient market hypothesis and random walk hypothesis are violated and the Behavioural Finance Theory covers this as it covers fundamental aspects of cognitive Behavioural psychology.

Behavioural finance theory explains how investors make financial decisions in real life and why their decisions might not appear to be rational every time and therefore, have unpredictable consequences (Calzadilla, Bordonado-Bermejo and González-Rodrigo, 2020). This is in contrast to many traditional theories which assume investors make rational decisions. In financial markets, there exists market paradox. This occurs because in order for markets to be efficient, investors have to believe that they are inefficient. This is because if investors believe markets are efficient, there would be no point in actively trading shares which would mean that markets would not react efficiently to new information. Herding refers to when investors buy or sell shares in a company because many other investors have already done so (Jain, 2017). Explanations for investors following a herd instinct include social conformity, the desire not to act differently from others. Following a herd instinct may also be due to individual investors lacking the confidence to make their own judgments, believing that a large group of other investors cannot be wrong. If investors follow a herd instinct to buy shares in a certain sector, this can result in significant price rises for shares in that sector and lead to a stock market bubble (Gharaibeh, 2017).

Evidence suggest that stock market professionals sometimes do not base their decisions on rational analysis. Studies have shown that there are traders in stock markets who do not base their decisions on fundamental analysis of company performance and prospects (Calzadilla et al., 2020). They are known as noise traders (Peress and Schmidt, 2020). Characteristics associated with noise traders include making poorly timed decisions and following trends. Some investors may have loss aversion, avoiding investments that have the risk of making losses, even though expected value analysis suggests that, in the long-term, they make significant capital gains (Bhuyan, 2018). Investors with loss aversion may also prefer to invest in companies that look likely to make stable, but low, profits, rather than companies that may make higher profits in some years but possibly losses in others.

There may be a momentum effect in stock markets. A period of rising share prices may result in a general feeling of optimism that prices will continue to rise and an increased willingness to invest in companies that show prospects for growth (Calzadilla et al., 2020). If a momentum effect exists, then it is likely to lengthen periods of stock market boom or bust. Behavioural finance shows that individuals may not necessarily make decisions on the basis of a rational analysis of all the information. This can lead to movements away from a fair price for an individual company's shares and the market as a whole to a period where share prices are collectively very high or low (Jain, 2017).

2.2.4 Calendar anomalies and the EMH

Stock markets show deviations from the known principles of EMH. These deviations can take place sometimes just once but sometimes can take place repeatedly and are usually referred to as 'anomalies' (Rita, Wahyudi and Muharam, 2018). An anomaly is an occurrence that is irregular or is not usual. It is used to explain scientific issues or technological matters. They reflect inefficient markets. Anomalies are categorized into calendar, fundamental and technical anomalies (Bekaert and Hodrick, 2017). As the name suggests, calendar anomalies focus on a certain time period. Calendar anomalies include anomalies such as day-of-the-week, turn-of-the-year and January effects. Fundamental anomalies include book-to-market ratio, value anomaly, high dividend yield and many more. Lastly, technical anomalies involve a technical analysis to predict

future prices. Examples can be moving averages and trading range break anomalies (Perez, 2018). In this research, the researcher focused only on calendar anomalies which are Day-of-the-Week Effect (DOW)/ Weekend Effect and January effect.

2.2.4.1 Day-of-the-week effect (DOW)/ weekend effect

The day of week effect indicates that the average daily return of the market is not the same for all the days of the week. Bekaert and Hodrick (2017) define day of the week effect as a phenomenon where the average daily returns and volatility of the markets are not equal for all days of the week. Chui and Wei (2015) notes that the day of the week indicates that the average daily return of the market is not the same for all the days of the week, as it is expected on the basis of the efficient market theory. It can also be referred to as the existence of a pattern on the part of stock returns, whereby these returns are linked to the particular day of the week.

Day-of-the-week anomaly, developed originally by French, states that stock returns are not always the same during the week, and different days generate different returns. The weekend effect describes the tendency of stock prices to decrease on Mondays (Bekaert and Hodrick, 2017). This means that closing prices on Monday are lower than closing prices on the previous Friday. From 1950 to 2010, returns on Mondays for the Standard and Poor 500 were always lower than other days of the week. Monday was the only day with a negative average rate of return whereas returns generated on Fridays are the highest. Using this knowledge, investors can buy stocks on a day when the prices are the lowest and sell it when the prices are at the highest point, hence, showing the inefficiency found in the stock market.

2.2.4.2 January effect

January effect anomaly states that returns generated vary according to the months within the year (Bouattour and Martinez, 2019). In January, the highest returns are expected when compared to the rest of the year. Stock prices are usually higher in the first 2 weeks of January than in the end of December. Therefore, January effect is classified under seasonality and like the day-of-the-week anomaly, has a big impact on the investor's decisions. If seasonality is found, then this means

that the EMH does not hold. Investors can then use available information to gain profits over others in the market (Peress and Schmidt, 2020).

However, there is a debate over whether this anomaly still exists or not. According to Peress and Schmidt (2020), January effect still exists, whereas Hendrawaty and Huzaimah (2020) says that it has lost its momentum and might even have become extinct. But, there is a third view, saying that it might have become extinct in countries like the USA, but it still holds for others, such as in the countries with emerging economies. Study by Bouattour and Martinez (2019) looked at whether January effect existed in international stock returns, by examining stock returns from 1997 to 2014. Results indicated that this anomaly did not exist in international markets.

Small-firm effect and the January effect are anomalies that go hand in hand with one another. Research shows that stock prices of smaller firms are observed to be affected by the January effect than larger firms. Hendrawaty and Huzaimah (2020) state that returns of smaller firms are much higher in January than other months of the year. This can be referred to as an 'anomaly within an anomaly'. Investors who live in countries with emerging economies experience more behavioural biases which make it more interesting to search for anomalies in the markets of these countries. For example, Chui and Wei (2015) examined the size effect in Hong Kong, Korea, Malaysia, Taiwan and Thailand using monthly data from 1977 to 1993. Their results showed that the small-firm effect (size effect) was present in all of the analyzed countries except for Taiwan.

2.2.5 Reasons behind calendar anomalies

Various reasons have been given to explain seasonal anomalies. These include settlement procedures, release of unfavorable information, social interaction, tax-loss-selling and investors' perceptions and emotions.

2.2.5.1 Settlement period and procedures in capital markets

Changes in settlement procedure cause significant changes in the behaviour of not only the returns but also trading activity in stock market (Obalade and Muzindutsi, 2018). After the settlement period is changed for example from one day to two-day, value traded in one day can increase

substantially to become the highest day of a week in two-day settlement period. This indicates that settlement procedure can explain an anomaly in stock prices and returns in a capital market.

2.2.5.2 Release of information in capital markets

Information release events create an adverse selection problem, where uninformed investors have a disadvantage in terms of information (Bouattour and Martinez, 2019). The release of unfavorable information results in a significant decrease in trading volume before a scheduled announcement. After the announcement and the corporate information is released the information asymmetry is resolved an increase in trading volume is realized (Obalade and Muzindutsi, 2018).

2.2.5.3 Tax-loss-selling in capital markets

Rational tax-loss selling is considered a short-term phenomenon where one sells the losing position realize the tax loss and then repurchases to reestablish a similar position (Bouattour and Martinez, 2019). Tax-loss selling is the driving force behind the January effect and there is no distinction between short and long-term holding periods (Peress and Schmidt, 2020).

2.2.5.4 Social interaction among investors in capital markets

People spread moods to one another through social interacting. This is of particular importance for example in Muslim countries during the period of Ramadan (Halari, Helliar, Power and Tantisantiwong, 2018). People receive information and opinions from personal contact and they also receive moods and emotions in the process of social interaction. Positive mood is accompanied by emotions such as optimism, happiness and hope (Halari et al., 2018). On the other hand, negative mood is associated with emotions such as fear, pessimism, and antagonism. These have a bearing on calendar anomalies in capital markets.

2.2.5.5 Investors' perceptions and emotions in capital markets

Investment decisions can be affected by unrelated investors' perceptions and emotions (Peress and Schmidt, 2020). A religious holiday, or good news about a friend, can engender a good feeling and the good feeling can affect investment decisions which ultimately reflects in an anomaly in stock

prices (Halari et al., 2018). The effect of emotions increases with the complexity and uncertainty surrounding the decision. Decisions about complex and uncertain matters are influenced by emotions.

2.2.5.6 Other reasons

According to Peress and Schmidt (2020) many other anomalies are explained by other factors such as window-dressing, information processing, inventory adjustments, risk, and standardization in payment systems, regularities in dividend payments and earnings announcements, market closures, transaction costs and measurement errors.

2.2.6 Importance of the knowledge of calendar anomalies in capital markets

Arbitragers and investors in general are expected to take advantage of mispricing and exploit the opportunities for profit making. Such opportunities are expected to disappear as more players exploit the mispricing. The persistence of most anomalies despite wide knowledge of their existence has puzzled investors and scholars. Perez (2018) outlines a number of reasons that may explain the persistence of some mispricing anomalies over time.

Even though there may be sufficient evidence for the existence of an anomaly, investors may not be too keen to exploit it without an in-depth understanding of its causes for fear that it may unexpectedly disappear. The availability of long-term evidence in support of the existence of any anomalies is not a guarantee that such an anomaly will continue into the future (Perez, 2018). When a market is efficient, anomalies are expected to disappear over time. However, they may remain in place due to various reasons that make arbitraging very difficult. These reasons include the high cost of information, insufficient profit, strict controls that inhibit trading and some biases in behaviour that may exist (Chiah and Zhong, 2019).

According to Gharaibeh (2017) the knowledge in calendar anomalies in capital markets is important in the sense that it informs investors to accordingly formulate their investment strategies based on the predictability of the stock market returns and prices.

2.3 Empirical literature review

This section presents findings of other scholars who conducted similar researches. The main researchers who constitute the empirical findings include Mehran and Hojat (2021), Lucrezia and Vijay (2020); Rosi (2018); Obalade and Muzindutsi (2019); Gharaibeh (2017); Kinateder, Weber and Wagner (2019); Shikta and Chandrabhanu (2020); Gayaker, Yalcin and Berument (2020) ; Emenike and Opara (2014); Wen-Cheng and Fang-Jun (2010) and Ananzeh, Jdaitawi and Al-Jayousi (2013) who studied on calendar anomalies and their relationship with trading volume in capital markets.

2.3.1 The January effect

In a study by Mehran and Hojat (2021), the researchers analyzed market anomalies and their agents on returns in the Iranian indexes between 2017 and 2020. Principled patterns in financial market are incompatible to the efficient market hypothesis, as stock market returns can be done applying systematic models. Real investors might not be able to achieve the return and profitability due to the scarcity of financial resources. Well timed actions of investors prices of stocks adapt to the new information and give thought to the available information. No investor can chastise the market by generating abnormal returns (Mehran and Hojat, 2021). The model period was 2017 to 2020 to represent the continuity of the monthly result. This research was premised on the advantages of sampling procedure, also known as the judgmental sampling technique, of weekly returns from Iranian indexes and major world indexes. The demodulations offer an abnormal month of the year outcome stand in some Iranian indexes during the research duration (Mehran and Hojat, 2021). The vehemence of month of the year anomalies lessens with time. The investigation illustrated that month of the year factors are more unremitting between indexes with smaller market capitalization.

Lucrezia and Vijay (2020) analyzed the behaviour of stock returns and calendar anomalies over a ten-year period 2007 to 2016 on the London Stock Exchange, through two indices, the FTSE100 and FTSE250. The efficiency of indices and the presence of calendar anomalies were investigated with parametric and non-parametric tests. The two main indices of the UK stock market changed from states of dependency of returns to independence of returns and vice versa, but their behaviour

was not concomitant (Lucrezia and Vijay, 2020). This study found out that financial markets in UK can changed from the state of inefficiency moving to efficiency and vice versa in support of the Adaptive Market Hypothesis. This study captured the inconstant and time varying behaviour of calendar anomalies and their occurrence. This supported the Adaptive Market Hypothesis. Overall, it enables investors to get a better understanding of the behaviour of stock returns and to devise profitable investment strategies according to market conditions (Lucrezia and Vijay, 2020).

In another study, Rosi (2018) examined calendar anomalies on the exchanges of four European countries, France, Germany, Italy and Spain in the period 2011 to 2017. The study sought to analyze the pattern of returns and their relationship by using the GARCH model and the OLS regression. The research found no significant case in support of calendar effects in the four countries studied. In a research by Caporale and Zakirova (2017), the researchers investigated whether or not calendar anomalies (the January, day-of-the-week and turn-of-the-month effects) characterize the Russian stock market, which could be interpreted as evidence against market efficiency. Ordinary least squares, generalized autoregressive conditional heteroskedasticity models, exponential generalized autoregressive conditional heteroskedasticity models and threshold generalized autoregressive conditional heteroskedasticity models were estimated using daily data for the MICEX market index over the period September 1997 and April 2016. The results show the importance of considering transactions costs (Caporale and Zakirova, 2017). Once these results are incorporated into the analysis, calendar anomalies disappear and there is no evidence of exploitable profit opportunities based on them that would be inconsistent with market efficiency.

In another study, Obalade and Muzindutsi (2019) examined the changing behaviour of two calendar anomalies in African stock returns; the month-of-the-year and the intra-month effects and their implications for the adaptive market hypothesis (AMH). The researchers applied two-stage Markov switching models (MSMs) instead of the conventional single state regression model. The sample period included the daily index return of Nigerian, South African, Mauritian, Moroccan, and Tunisian stock exchanges from January 1998 to February 2018. The research found out that all the markets except for the Johannesburg Stock Exchange (JSE) have a higher tendency to be in bearish state than bullish state. Secondly, the research established that month-of-the-year and intra-

month effects appear in one regime and disappear in another regime. Thirdly, the research established that the behaviour of calendar anomalies is affected by market conditions and conforms to AMH rather than the efficient market hypothesis (EMH).

The implications of the research are that calendar anomaly is a characteristic that changes under different regimes or market conditions in African stock markets. The findings of the research also imply that active investment management can yield profits for market participants, depending on the market conditions and the anomaly in question (Obalade and Muzindutsi, 2019). The right approach would be for investors to consider each market with its own peculiarity even when they are in the same continent. The sensitivity of the month-of-the-year and intra-month effects to market conditions are not documented in African stock markets, particularly using the regime-switching models (Obalade and Muzindutsi, 2019).

Gharaibeh (2017) examined the existence of January effect in 4 Arabic market indices for the period February 1988 to May 2014. These market indices include Jordan, Egypt, Lebanon and Morocco. Using the ordinary least squares and generalized autoregressive conditional heteroskedasticity models, the results of this paper indicate that January returns provide positive profits and statistically significant in Jordanian and Moroccan market indices. For the Egyptian and Lebanese market indices, the study documented a large economic profit in January. The results of the research are useful in informing investors to accordingly formulate their investment strategies. This study by Gharaibeh (2017) was the first to conduct a comprehensive January effect analysis of 4 Arabic market indices. The results of this paper supported literature that indicates the presence of the January effect in market indices returns and it provide a challenge to the efficient market hypothesis.

2.3.2 The day of the week effect

In a study by Kinateder, Weber and Wagner (2019), the researchers used a GARCH-dummy approach to analyze the influence of calendar anomalies on conditional daily returns and risk for BRICS countries' stock markets for the period 1996 to 2018. The research investigated month-of-the-year (MOY), turn-of-the-month (TOM), day-of-the-week (DOW), and holiday effects. The research established that DOW effect is given for Tuesdays. The research findings validated the

TOM effect and found no evidence of January effect. A general holiday effect is not documented, but the Indian market shows a significant pre and a post-holiday effect (Kinateder et. al, 2019). The research also established that the Chinese market is anomalous before public holidays and the South African market is affected after holidays only.

Shikta and Chandrabhanu (2020) inspected calendar effects in service sector indices in the Indian securities market. The study used the banking sector and the Information technology sector in the Indian economy. BSE Information Technology Index and BSE Bankex were used as a proxy for the Information Technology and Banking sector. Period of study was chosen from the year 2010 to 2019 to examine the impact of calendar anomalies post-recession. Daily index returns were considered in the study. Generalized autoregressive conditional heteroskedasticity models and ordinary least squares regression tools were utilized for the study. The research study established the presence of January effect and turn of the month effect on the index returns and volatility. The study indicates that there is a weak form of efficiency in the IT sector. Significant volatility persistence was observed in both indices. The study benefited regulators through enabling them to understand the price movements of the service sector after the global recession and craft their policies accordingly. Research findings enabled the investors for effective portfolio management (Shikta and Chandrabhanu, 2020).

A study by Gayaker, Yalcin and Berument (2020) investigated the day of the week effect in financial markets in Turkey. This study provided empirical evidence that as the return in alternative markets (overnight interest rates) decreases, the day of the week effect decreases. The research established a positive relationship between the expected relative returns on Friday to Monday and overnight interest rates. This study successfully indicated that the day of the week effect is not entirely a market anomaly. If the intention is to decrease this ‘anomaly’, then it is necessary to consider decreasing the settlement date from two to one or zero (Gayaker et. al., 2020).

Marrett and Worthington (2018) examine the day-of-the-week effect in Australian daily stock returns at the market and industry levels. A regression-based approach was employed. The results indicate that while the Australian market overall provides no evidence of daily seasonality, there is evidence of a small cap day-of-the-week effect with systematically higher returns on Thursdays

and Fridays. The analysis of the sub-market returns is also supportive of day-of-the-week effects in the banking, diversified financial, energy, healthcare, insurance, materials and retail industries. However, these rarely coincide with the lower Monday or lower Tuesday returns typified in earlier work. A regression-based approach could not give actual result because it has two drawbacks. First, errors in the model are auto correlated resulting in misleading inferences. The second drawback is that error variances are not constant over time.

Osazee and Idolor (2017) conducted a study on the existence of day of the week effect in Nigerian stock market returns. The data analysis was performed using the Multiple Ordinary Least Square Regression (OLS) analysis technique. The findings reveal that Monday, Thursday, and Friday are associated with negative market returns, while Tuesday and Wednesday are associated with positive market returns. The methodological limitation of this study is that the homoscedasticity assumption of the Ordinary Least Square is likely to be violated as evidenced from the literature. In line with this, Brook (2018) suggests that innovations in returns are probably heteroscedastic, and a failure to recognize this feature of the data could have serious implications for the results and any inferences that might be drawn.

In a study conducted by Idolor, Ogieva, and Osamwonyi (2018) on the test for the existence of calendar effect in Nigerian stock market returns. The data analysis was performed using the multiple ordinary least square regression (OLS) techniques in testing for the day of the week and month of the year effect. The study found that Monday Thursday and Friday are associated with negative market returns while Tuesday and Wednesday are associated with positive market returns. Also, monthly calendar test results showed that February, March, April, May and December were consistently associated with negative market returns while January, August, September, October and November were associated with positive market returns. In the case of June and July there was mixed signs (findings). However, from the study there is no evidence for heteroskedastic and serial correlation test.

Rutto (2019) conducted a research to establish the existence of the Monday effect on stock returns at the NSE. Regression analysis was used to test the Monday effect on the stock prices at the NSE. Findings show that daily stock returns fall after Friday with negative returns recorded on Mondays.

However, this methodological approach is possible only if we hold a prior belief that an effect exists on one specific day, such as Monday. However, this specification is not appropriate if we have no previous expectation on which of the Day-of-the-Week Effect might exist.

Nyumbu (2020) examines the effect of the day of the week effect on stock returns at the NSE. Test of normality and Kruskal Wallis test was conducted. The finding of the study is that the day of the week effect is present at the Nairobi Securities Exchange. The study recommends formulation and implementation of trading strategies by investors that are in line with the changing patterns of returns in the market which can result in earning abnormal returns. The methodological limitation of this study is that, the distribution of the stock returns was tested using the Shapiro-Wilk statistic without it justifying it superiority as test for normal distribution over other tests.

Muhammed and Zahid (2018) carried out a study on calendar anomalies in Karachi Stock exchange by using KSE 100 index during the period of 2012 to 2017. The results provided an evidence for the existence of calendar anomalies at KSE 100 index. The results show that there is significant difference among the returns of days of the week, and Friday has the highest mean average return which makes it confirm that weekend effect exists at KSE. Finally, monthly anomaly in stock returns is also present because there is highest positive return in the month of March. However, the tool of data analysis used in this study is mean and standard deviation and these are regarded as descriptive statistics in which generalization on their output is not valid.

Muhammed and Jewel (2018) conducted a study to investigate the significant day of the week effect in the emerging stock market of Bangladesh. The findings show that the day effect is present in both volatility and return equations while the highest and lowest returns are observed on Thursday and Monday respectively, the highest and the lowest volatility are observed on Monday and Wednesday respectively. Further investigation of sub-periods reinforces the findings that the volatility pattern across the days of the week is statistically different. However, the study used descriptive statistics to make generalization which is statistically weak because generation can only be made with the use of inferential statistics.

In a study conducted by Ahmad and Abdullahi (2020) on examining the presence of the day-of-the-week effect anomaly in the Kuwait Stock Exchange (KSE) using Ordinary Least Square

Method (OLS). The findings show that KSE exhibits positive returns on the first and the last day of the week with significant negative returns on the Second day of the Trading week. However, conclusions based on regression dummy models should be treated with caution, as numerous recent findings have proven that the distribution of asset returns is leptokurtic and that the variance is time-varying.

Nassar, (2021) examines the presence of the day of the week effect anomaly in five of Arab stock exchanges which are (Qatar, Amman, Palestine, Egypt, and Bahrain stock exchanges). The study employs one-way analysis of variance (ANOVA) analysis and Post Hoc Tests, the study indicates that there is no existence of the day of the week effect in each of (Qatar, Amman, Egypt, and Bahrain stock exchange) while it is present in Palestine stock exchange where the lowest return is in Sunday (the first trading day of the week) and the highest return is in Tuesday. However, the results of a post hoc analysis should be viewed with skepticism and in advance of confirmation by other appropriately designed in order to avoid misleading result when interpreting it.

2.3.3 Stock returns volatility and trading volume

Emenike and Opara (2014) analyzed the nature of the relationship between stock returns volatility and trading volume using the daily returns and daily trading volume of the Nigerian Stock Exchange for the period January 2000 to June 2011. The results of the ordinary least squares regression show that trading volume can explain movements in stock returns. Trading volume was included as a proxy for information arrival to the market and to examine if trading volume reduces the volatility persistence. The results of the regression model show a positive statistically significant relationship between trading volume and stock returns movements. This suggests that stock returns variability increases with the number of information events.

Wen-Cheng and Fang-Jun (2010) examined the dynamic relationship of volatility and trading volume using a bivariate vector autoregressive methodology. This study found bidirectional causal relations between trading volume and volatility, which is in accordance with sequential information arrival hypothesis that suggests lagged values of trading volume provide the predictability component of current volatility. Findings revealed that trading volume shocks

significantly contribute to the variability of volatility and then volatility shocks partly account for the variability of trading volume.

Ananzeh, Jdaitawi and Al-Jayousi (2013) investigated the relationship between trading volume and return volatility for 27 individual stocks in Amman Stock Exchange by testing the validity of Mixed Distribution Hypothesis (MDH), when volume is taken as the proxy for the rate of daily information arrivals. The results indicated that market expectations of future return volatility play a role in finance. The researchers investigated the empirical relationship between return volatility and trading volume using data from the Amman Stock Exchange (ASE) for 27 individual stocks, using daily data for the period 2002-2012. The results indicate that trading volume significantly contributes to the return volatility process of stocks in Amman stock Exchange. On the other hand, the results also signify that trading volume has no significant effect on the reduction of the volatility persistence for majority of stocks in the sample, challenging the existence of "Mixed Distribution Hypothesis" in Amman stock Exchange. The empirical results verify that there is significant interaction between trading volume and return volatility when volume is entered into variance equation of GARCH-M model (Ananzeh et. al., 2013). Thus, these findings provide strong evidence against the validity of MDH in Amman stock Exchange.

2.4 Chapter summary

This chapter discussed the extant theoretical and empirical literature on behaviour of stock markets and stock prices. The chapter covers calendar anomalies, namely the month of the year effect and the day of the week effect. While some researches have agreed with the view that equity markets are efficient, there has also been overwhelming evidence to the contrary. There has also been evidence of markets evolving from being inefficient through the different stages of efficiency of time. The continued existence of the predictable anomalies and their evolution over time is the subject of this research. The chapter that follows presents the research methodology that is adopted in this research study.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter presented literature reviewed by the researcher. Literature reviewed informed the research methodology presented in this chapter. Empirical literature shows that majority of past researchers used the ordinary least squares (OLS) and generalized autoregressive conditional heteroskedasticity models (GARCH). A few researchers used such as Lucrezia and Vijay (2020) used parametric and non-parametric tests to establish calendar anomalies and their effect on trading volume. This led the researcher to resort to using parametric and non-parametric tests as shall be detailed in this methodology chapter. The main areas covered by this chapter are the research philosophy, research approach, research design, study population, types of data used, data collection procedures, data analysis methods, types of tests done and the research ethics followed. The chapter ends with a chapter summary.

3.2 Research design

According to Leavy (2019) a research design is a plan that provides a framework for collecting research data when conducting a research study. A good research design yields credible results. There are three mostly used research designs which are explanatory, exploratory and descriptive research designs. In some instances, researcher might want to describe and explain events as they happen (Bhatta, 2018). In such situations, descriptive research design is combined with explanatory research design to form a descriptive explanatory research design.

In this research, some objectives required a descriptive aspect, for example; to ascertain if there exists month of the year effect on stock market returns by looking at the volatility of the monthly stock market returns on the ZSE; and the other ones required an explanatory aspect; for example, to establish the effect of volatility of the monthly stock market returns on trading volume at ZSE. In light of this scenario, the researcher adopted a descriptive explanatory research design whereby quantitative statistical hypothesis testing methods were used to ascertain the presence of calendar

anomalies in the ZSE. Regression and correlational analysis were used to explain the cause and effect relationship between volatility of returns and trading volume.

3.3 Research philosophy

According to Hakim (2017) a research philosophy is a collection of assumptions and beliefs that guide the manner in which a researcher perceives a research problem and seeks to resolve it. With researchers that have a mathematics and statistics background, they believe in facts and figures in resolving research problems. These form the positivist philosophy-based researchers' category. There are also other researchers with arts and social studies background who believe in a narrative way of answering research problem questions (Bhatta, 2018). These form the interpretivist philosophy-based researchers' category. Another category is the category that blends the two continuums described, the pragmatist-based category of researchers.

For the purposes of this research, the researcher chose the positivist philosophy with the intention of yielding facts uninfluenced by human bias. Positivism was chosen to empirically establish the presence of volatility of daily stock returns on ZSE and be able to explain their impact on trading volume. Apparently, the study required quantitative data collection and analysis. The researcher's background is Finance and past researchers reviewed in Chapter 2 in this field such as Lucrezia and Vijay (2020), Mehran and Hojat (2021) and Rosi (2018) used positivist researches to resolve similar research problems. This contributed greatly to the researcher's choice of the positivist research philosophy.

3.4 Research approach

Research approach consists of the steps of data collection, analysis and interpretation (Kivunja, 2017). The three research approaches available are inductive, deductive and abductive (Brierley, 2017). This study adopted the deductive approach in line with the positivist research philosophy the research adopted. The deductive approach which was of interest to this study helped to clear the cache on the theory of calendar anomalies. Mehran and Hojat (2021) and Rosi (2018) established that calendar anomalies exist in other capital markets and therefore this study sought to deduce the same in the context of Zimbabwean Stock Exchange. The research therefore adopted

a deductive research approach with the intention of unveiling volatility of stock returns at ZSE and to determine its impact on trading volume. This approach was aimed at testing the hypothesis that states that calendar anomalies exist. The study hypothesized that: the mean daily returns are not uniform on all days of the week; the daily volatility of stock returns is not uniform on all days of the week and with this in mind, a deductive approach was relevant and necessary.

3.5 Research strategy

A research strategy according to Khaldi (2017) is a plan that guides where and how research data are collected when conducting a research study. The research strategies at the disposal of researchers are surveys, case studies and experiments. In this research, the researcher used a survey strategy in the sense that the data used relates to all companies listed at the ZSE. The researcher used daily average stock returns and trading volumes by investors at ZSE for the period 2011-2020. This then enabled the researcher to cover all listed companies and to collect large amounts of data. In addition, the survey strategy was appropriate because of its ability to collect quantitative data in line with the adopted positivist research philosophy. A survey of stock returns for all listed companies was appropriate since the behaviour of stock returns for one company for example could not warranty behaviour of all stocks listed at ZSE.

3.6 Population of the study

According to Saunders et al. (2015) target population is the whole list of items the study intends to generalize findings on. The population of this study was the stock returns of all listed companies at ZSE. The results of the research are generalized on all the securities traded at the ZSE.

3.7 Types of data used

This research used secondary data only. The data was collected from the ZSE on the stock returns on daily basis as from the beginning of January 2011 to the end of September 2020. Secondary data was considered more suitable for this study as the study needed quantitative and objective data in order to test the existence of calendar anomalies on the ZSE; hence the research resorted to time series data.

Secondary data had several advantages. The first advantage was that the data was easy to collect as the researcher just had to visit the ZSE and ask for the readily recorded data. Secondary data is usually cheaper than primary data because secondary data is readily available, the researcher gotten the data readily available from ZSE. Also, secondary data in this study was collected much quickly as the data was already recorded on Ms Excel Spreadsheet by the ZSE. The researcher needed daily records of stock returns and trading volume on the ZSE market, from January 2011 up to September 2020, and the data was collected as the researcher had intended to do.

3.8 Data collection procedures

The researcher first of all obtained confirmation letter from the university department to seek audience and permission from the ZSE to be allowed access to the data. After that the researcher physically visited the ZSE offices in Harare. The researcher had to produce the letter from University of Zimbabwe Business and School Identification Card which authenticated the research study. The researcher then had to ask for the data from the period January 2011 to September 2020.

3.9 Data analysis procedure

SPSS package v 23.0 was used for statistical data analysis. SPSS components of non-parametric tests of Chi-square and regression and correlation were used for data analysis. These informed whether the hypothesis framed are accepted or rejected. Having collected data from ZSE, the first stage was data sorting as described below. Having done that, the researcher fed the data into SPSS for statistical analysis.

3.9.1 Data sorting

The researcher was provided data in CSV format to preserve its features since the data was voluminous. Using data import function on Microsoft Excel, the researcher imported the data into Excel Spreadsheet for easy manipulation. The data was average daily stock returns and trading volumes for all listed companies on ZSE. The first column had dates, the second column had daily average stock returns and the third column had daily average trading volume.

The researcher extracted daily average stock returns and daily average trading volumes for Mondays, Tuesdays, Wednesdays, Thursdays and Fridays. With this data, the research calculated the average for each day over the 10 years period using the Average/Mean formula on Excel Spreadsheet. For the months, the researcher did the same. He extracted monthly average stock returns and monthly average trading volumes for January to December for the 10 years period used. With this data, the research calculated the average for each month over the 10 years period using the Mean formula on Excel Spreadsheet.

Having done this, the research put labels on the Variable view panel of the SPSS to separate daily average stock returns and daily average trading volumes from monthly average stock returns and monthly average trading volumes. The averages (for stock returns and trading volumes) calculated on Excel Spreadsheet were imported to the Data View panel on SPSS for statistical analysis. The Data view and the variable view.

Having fed the data into SPSS, the researcher performed parametric or non-parametric tests to accomplish the stated research objectives.

3.10 Types of tests performed

In order to test the hypotheses listed in the preceding section, the following statistical tests were performed in this study.

3.10.1 Normality test

The secondary data fed into SPSS was first tested based on statistical tests in order to assure validity of research outcomes before giving recommendations and to avoid false interpretations of the revealed outcomes. The major advantage of the test for normality is that it is derived from mathematical observations and therefore, entirely distribution-free and less sensitive to outliers, (Leavy, 2019). The data has to follow a normal distribution with parameters mean and variance for parametric tests to be performed and if the data do not follow normal distribution, parametric tests would be appropriate (Martin, 2020).

3.10.2 Parametric tests – ordinary least square regression (OLS)

Parametric tests are used in cases where data does exhibit normal distribution patterns. Thus, the null hypothesis would state that all returns for each day (month) are all statistically similar and whilst a rejection of the null hypothesis leads to accepting the alternative, that that one of the days (month) has statistically significant positive or negative returns compared to other days (months) of the week (year). Standard t-tests are used to test for the statistical significance of the null hypothesis that mean returns for each day (month) are not statistically different. When at least one of the daily (monthly) mean returns is not equal to other days (months) then the null hypothesis is rejected, (Zhang et. al., 2017). The use of ordinary least squares models to study calendar anomalies was used by, among others, Obalade and Muzindutsi (2019); Gharaibeh (2017); Kinateder, Weber and Wagner (2019).

3.10.3 Non-parametric tests

These would be employed only if the normality tests would have shown that the data is not normally distributed. Thus, the research would then employ the chi-square tests. The means and variances on each day and month would be used to perform the chi-square tests at the 5% level of significance. Lucrezia and Vijay (2020) employed Chi-square non-parametric tests to determine the day of the week and the month of the year effect of stock returns on the stock exchanges. The null hypothesis would be accepted if the chi-square test statistics fall below the critical values. Acceptance of the null hypothesis would imply that the mean or volatility of the stock returns for each day or month are not different, whilst its rejection implies difference.

3.10.4 Regression and correlation tests

Correlation and regression tests were used to establish the effect of stock returns on trading volumes at ZSE. The correlation analysis test was meant to establish the direction of the relationships and its strengths between trading volume and stock returns. Pearson correlation coefficient was used and the conventional confidence levels of 90%, 95% and 99% were used. The regression model was intended at showing the extent of impact of trading volume on changes in stock returns.

3.10.4.1 Regression model

According to Gujarati (2009), regression analysis is a set of statistical methods used for the estimation of relationships between a dependent variable and one or more independent variables. It can be utilized to assess the strength of the relationship between variables and for modeling the future relationship between them. The regression model for this study is depicted as follows:

Equation 1: $\boldsymbol{ST = \beta 0 \ + \beta 1 TVit + \mu t}$

Where **ST** = Stock Returns, **TV** = Trading Volume, β_0: the intercept/constant, β_1 = the parameter and μ = the residual/error term.

The model was borrowed from the study done by Emenike and Opara (2014) who analyzed the nature of the relationship between stock returns movement and trading volume using the daily returns and daily trading volume at the Nigerian Stock Exchange for the period January 2000 to June 2011. Trading volume was included as a proxy for information arrival to the market and to examine if trading volume reduces the volatility persistence.

3.10.4.2 Explanation of variables

(a) Stock returns

Stock returns refer to the difference between the prices at which a share is bought and sold. Stock returns reflect the changes in stock prices over time. When a share is bought at a lower price, the stockholder holds it for a time in anticipation that the stock price will go up so that the stockholder sells it at a profit. Stock returns fluctuate over time due to different market factors. Among them, and of interest to this research is trading volume (a proxy for the arrival of new information). Stock price is the dependent variable in this research which can be predicted if trading volume changes. This has been borrowed from the studies of Emenike and Opara (2014) who analyzed the nature of the relationship between stock returns volatility and trading volume using the daily returns and daily trading volume of the Nigerian Stock Exchange for the period January 2000 to June 2011. In another study, Ananzeh, Jdaitawi and Al-Jayousi (2013) investigated the relationship between trading volume and return volatility for 27 individual stocks in Amman Stock Exchange by testing

the validity of Mixed Distribution Hypothesis (MDH), when volume is taken as the proxy for the rate of daily information arrivals.

(b) Trading volume

Trading volume represents the value of stocks traded in a particular period which can be a day or a week, a month, a year etc. It represents the dollar worth of shares traded in a market. In researches, other researchers have used trading volume as a representative of the reaction to arrival of information in the market. Trading volume has been used as a proxy for new information arrival to the ZSE. The expectation of the researcher is that changes in trading volume explain the changes in stock returns. This variable was borrowed from the study by Wen-Cheng and Fang-Jun (2010) who examined the dynamic relationship of volatility and trading volume using a bivariate vector autoregressive methodology.

3.11 Research ethics observed

The researcher observed research ethics throughout the research. Despite the high cost of ZSE formal data, the researcher had to buy the data from the ZSE despite the availability of cheaper third-party sources. Also, the researcher did not use the data gathered from the ZSE for any other purpose than the purpose it was collected for. The data was collected for analysis for the purposes of providing answers to the research questions only in this study. The data was not and will not be divulged to any third party, at least without the express consent by the ZSE.

3.12 Chapter summary

The chapter gave an account of the methods used to carry out the research. A positivism philosophy was adopted. The study adopted a deductive research approach. A descriptive research design was adopted, with quantitative methods being employed. The study took the ZSE as the population of the study to which the results of this study are generalised. Only secondary data was used in this study. The chapter presented the data collection procedures used in the study. The study has also presented that SPSS package was used for data analysis. The chapter prescribes that normality tests would be performed to determine the distribution of the data, of which parametric tests of t-

tests would be conducted if the data was normally distributed and nonparametric chi-square tests would be conducted suppose the data did not have a normal distribution. The ethical considerations made in this study have been presented. The next chapter focused on data analysis, presentation and discussion.

CHAPTER IV

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter focuses on the analysis, presentation and discussion of the collected data. Balnaves (2020) points out that data are raw and unprocessed facts and figures that are meaningless in decision making. It is only after the data are processed for them to be meaningful. In light of that, the secondary data that the research got from ZSE was analyzed using SPSS version 23.0. The data analysis outcomes are presented in this Chapter. The Chapter presents descriptive statistics for the daily stock returns (for the period from January 2011 to September 2020), followed by the test of normality to determine the distribution of the data and the consequent tests (either parametric or nonparametric) suitable for data analysis. From these tests, research hypotheses are then either accepted or rejected. The last part of the chapter presents the correlation and regression analysis of trading volume and the volatility of stock returns. The chapter ends with a chapter summary.

4.2 Descriptive statistics of the daily stock returns on the ZSE

According to Khaldi (2017) descriptive statistics is a term given to the analysis of data that describes and summarizes data in a meaningful way such that, for example, patterns can emerge from the data. Table 4.1 below presents the descriptive statistics for the daily returns at the ZSE.

Table 4. 1: Daily stock returns

	N	Minimum	Maximum	Mean	Std. dev.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Monday	498	93.96	774.55	2.19	134.26	1.88	.109	2.89	.21
Tuesday	498	95.08	783.93	2.16	132.70	1.91	.109	3.02	.21
Wednesday	498	93.66	809.67	2.15	135.01	1.90	.109	2.89	.21
Thursday	498	93.66	775.64	2.17	136.45	1.85	.109	2.61	.21
Friday	498	93.39	743.00	2.16	132.89	1.85	.109	2.58	.21

Source: Secondary data (ZSE 2011-2020)

Results in Table 4.1 show that the minimum value for stock returns for Mondays was 93.96 cents. Of the five working days of the week, the day that has recorded the least value of daily stock returns is Friday. The minimum value of the stock returns was 93.39. The highest of the maximum values of stock returns was recorded on Wednesday which was 809.67 cents. The maximum value for Mondays recorded for the period was 774.45 cents. Fridays recorded the least value of the maximum values of 743.00 cents.

About the mean daily stock returns, Table 4.1 shows that Monday recorded the highest average daily stock return of 219.87 cents. For the period, the highest average daily stock return of 219.87 cents had a standard deviation of 134.26 cents. This second highest average daily stock return for the five days was recorded for Thursdays that had a mean daily stock return of 217.54 cents, with a standard deviation of 136.46 cents. This was followed by Fridays that had an average stock return of 216.93, with a standard deviation of 132.89. The minimum of the average daily stock returns was for Wednesdays with 215.68 cents, with a standard deviation of 135.01 cents.

The skewness of the stock returns for the five days was positive, ranging between +1.85 to +1.91. Positive skewness show that the data values of the stock returns were concentrated more to the lower values than to the higher values. This means that more stock returns values were lower than the mean for the whole data set for average daily stock returns. The modal and median values were lower than the mean for all the returns on each day. The Kurtosis of the returns on Tuesday was above 3.0, implying that the distribution of data on Tuesday was more peaked than on all the other days indicating that the mean values data was leptokurtic. The kurtosis values for the other days were below 3, showing that the mean values data were less peaked. The data were platykurtic (flat).

Normality tests were performed to determine the shapes of the distributions for the daily stock returns data. Table 4.2 presents the research results.

Table 4. 2: Normality tests

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Monday	.218	498	.000	.937	498	.000
Tuesday	.168	498	.000	.932	498	.000
Wednesday	.239	498	.000	.887	498	.000
Thursday	.169	498	.000	.679	498	.000
Friday	.187	498	.000	.921	498	.000

a. Lilliefors Significance Correction

Source: Secondary data (ZSE 2011-2020)

Table 4.2 results show that the Shapiro Wilk significance values for the five days were less than 0.05. According to Harkiolakis (2020) if the Shapiro Wilk significance values exceed the level of significance used, the data is normally distributed. This study used 5% as the level of significance for hypothesis testing. Therefore, the results mean that the data for the daily stock returns were not normally distributed. This led the researcher to perform non-parametric tests on the average daily stock returns data.

4.3 Existence of the day of the week effect on stock returns on the ZSE

The researcher intended at unveiling if there exists a day of the week (DOW) effect at the Zimbabwe Stock Exchange. Mean returns and volatility of returns were tested for significance in their differences at the 5% level.

4.3.1 Mean daily returns

In order to determine that, the average daily returns were used to determine if there are any significant differences in the mean daily returns on the stocks on the ZSE. The following hypothesis were developed and tested with regards to mean daily returns on the stock.

H_0: The mean daily stock returns are uniform on all week days (μMon = μTues = μWed = μThurs = μFri)

H_1: The mean daily stock returns are not uniform on all week days (μMon ≠ μTues ≠ μWed ≠ μThurs ≠ μFri).

In order to perform the tests, a Chi-square tests for uniformity was performed using average daily stock returns for the five days. Table 4.3 presents the results of the Chi-square tests performed.

Table 4. 3: Chi-square test on uniformity of means of daily returns

	Observed N	Expected N	Residual
Monday	215.68	217.22	.011
Tuesday	216.09	217.22	.006
Wednesday	216.93	217.22	.000
Thursday	217.54	217.22	.000
Friday	219.87	217.22	.032

Source: Secondary data (ZSE 2011-2020)

Table 4.3 shows that observed frequencies (means) and the expected frequencies (which frequencies are uniform) and the residual values (chi-square test values). The tests statistics are presented in Table 4.4 below.

Table 4. 4: Test statistics

	Mean
Chi-Square	.05[a]
df	4
Asymp. Sig.	.050
Asymp. val.	9.48

Source: Secondary data (ZSE 2011-2020)

The above tabulation (Table 4.4) shows that the critical values of the chi-square at the 5% level of significance with four degrees of freedom is 9.48. The chi-square test statistics was 0.05, which fell below the critical value. Since the calculated chi-square value of 0.05 was less than 9.48, the null hypothesis was accepted. The results showed that the mean daily returns on each day are uniform. There is no day of the week calendar anomaly at ZSE as all the days have uniform stock

returns. This is in line with the findings by Rosi (2018) who carried out a study on the day of the week effect in European countries, France, Germany, Italy and Spain in the period 2011 to 2017 and found no evidence for the existence of the day of the week effect. In addition, Gayaker, Yalcin and Berument (2020) found out that the day of the week effect is not a market anomaly in majority of capital markets. The results however conflict with the findings by Obalade and Muzindutsi (2019) who found out that all the markets in their survey except for Johannesburg Stock Exchange (JSE) have day of the week calendar anomalies.

4.3.2 Volatility of the daily returns

Another test was performed on the volatility of the stock returns to determine if the stock returns are uniformly volatile on each day of the week. The following hypotheses were tested.

H_0: The daily volatility of average stock returns is uniform on all week days.

H_1: The daily volatility of average stock returns is not uniform on week days.

Table 4.5 and Table 4.6 show the results of the tests performed.

Table 4. 5: Chi-square tests on volatility of daily stock returns

	Observed N	Expected N	Residual
Monday	132.71	134.26	.000
Tuesday	132.89	134.26	.018
Wednesday	134.27	134.26	.004
Thursday	135.01	134.26	.036
Friday	136.46	134.26	.014

Source: Secondary data (ZSE 2011-2020)

The test statistics results are presented in Table 4.6 below.

Table 4. 6: Test statistics

	Std dev
Chi-Square	.07a
Df	4
Asymp. Sig	0.05
Asymp. Val.	9.48

Source: Secondary data (ZSE 2011-2020)

The results in Table 4.6 show that the chi-square test statistic was 0.07. The critical value at 0.05 level of significance with four degrees of freedom is 9.48. The test statistic of 0.07 was below 9.48, leading to the acceptance of the null hypothesis. The results indicate that the volatility of daily returns on the ZSE are uniform on each day. There is therefore no day of the week calendar anomaly at ZSE. However, Shikta and Chandrabhanu (2020) inspected calendar effects in service sector indices in the Indian securities market and established the presence of day of the week effect and turn of the month effect on stock returns and volatility.

4.4 Descriptive statistics of the monthly stock returns on the ZSE

The descriptive statistics of the monthly stock returns are illustrated in Table 4.7 below. The results show that the month of June had the smallest minimum return of 93.39 cents in one of its days. The maximum of the minimum returns on a month was found in September, with 130.49 cents. The minimum of the maximum values on a month was recorded in April, with 446.56 cents. The maximum return was recorded in the month of June with 773.06 cents.

The minimum of the mean values of the monthly returns was recorded in the month of April with a mean of 190.00 cents, with a standard deviation of 84.62 cents. The maximum of the mean values was for the monthly stock returns was 255.06 cents, with a standard deviation of 148.36 cents. The month of April had the lowest standard deviation of returns of magnitude of 84.62 cents, with the month of June having recorded the highest standard deviation of returns of 161.70 cents.

Table 4. 7: Descriptive of monthly stock returns data

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
January	224	102.30	537.21	2.0688	110.05	1.88	.16	2.54	.32
February	224	98.92	528.42	2.0334	107.92	2.04	.16	3.34	.32
March	224	97.17	495.37	1.9232	93.76	1.82	.16	2.55	.32
April	224	97.31	446.52	1.9000	84.61	1.70	.16	2.07	.32
May	224	104.43	640.29	2.1103	118.13	1.81	.16	2.55	.32
June	224	93.39	773.06	2.2832	161.70	2.11	.16	3.59	.32
July	224	98.83	658.45	2.2984	154.92	1.83	.16	2.23	.32
August	224	97.75	620.00	2.1164	141.87	1.76	.16	2.07	.32
September	224	130.29	809.67	2.5506	148.36	1.70	.16	2.74	.32
October	224	98.98	699.89	2.3652	147.85	1.48	.16	.86	.32
November	224	117.55	571.47	2.3219	138.53	1.48	.16	.70	.32
December	224	112.89	538.74	2.1198	106.30	1.87	.16	2.73	.32

Source: Secondary data (ZSE 2011-2020)

The results in Table 4.7 also show that the data for all the twelve months has some positive skewness, ranging from +1.48 to +2.11. This implies that data is more packed on the left (lower) side of the means, with fewer values on the upper side, such that the medians and the modes are less than the means. The kurtosis of the data range between 0.86 and 3.59. The data for the month of June had the highest kurtosis of 3.59, which implies that the data for June was more peaked than all the other data (leptokurtic). All the other months had kurtosis values less than 3, showing higher flatness of the distribution (platykurtic).

In order to determine the shape of the distribution, as either normal or not normal, the normality tests were performed on the daily stock returns data. The results are presented in Table 4.8 below.

Table 4. 8: Normality test results

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
January	.285	224	.000	.953	224	.000
February	.187	224	.000	.941	224	.000
March	.279	224	.000	.898	224	.000
April	.147	224	.000	.631	224	.000
May	.248	224	.000	.947	224	.000
June	.139	224	.000	.979	224	.000
July	.279	224	.000	.846	224	.000
August	.171	224	.000	.677	224	.000
September	.175	224	.000	.989	224	.000
October	.229	224	.000	.844	224	.000
November	.178	224	.000	.691	224	.000
December	.173	224	.000	.912	224	.000

a. Lilliefors Significance Correction

Source: Secondary data (ZSE 2011-2020)

The results presented in Table 4.8 show that the Shapiro Wilk significance values for all the twelve months were less than 0.05, which meant that the data was not normally distributed. As a result, non-parametric tests were performed.

4.5 Existence of the month of the year effect on stock returns on the ZSE

The second objective of this study was to establish if there exists month of the year effect at the Zimbabwe Stock Exchange. Both the mean returns and the volatility of returns were tested for significance in their differences at the 5% level.

4.5.1 Mean monthly returns

The average monthly returns were used to determine if there are any significant differences in the mean monthly returns on the stocks on the ZSE. The following hypotheses were developed and tested with regards to mean monthly returns on the stock.

H_0: The mean monthly returns are uniform on all months of the year.

H_1: The mean monthly returns are not uniform on all months of the year.

In order to perform the tests, a Chi-square test for uniformity was performed using the mean monthly returns for the twelve months. The results are tabulated in Table 4.9 below.

Table 4. 9: Chi-square test of uniformity of mean monthly returns

	Observed N	Expected N	Residual
January	206.88	217.42	0.51
February	203.34	217.42	0.91
March	192.32	217.42	2.89
April	190.00	217.42	3.46
May	211.03	217.42	0.18
June	228.32	217.42	0.54
July	229.84	217.42	0.70
August	211.64	217.42	0.15
September	255.06	217.42	6.51
October	236.52	217.42	1.67
November	232.19	217.42	1.00
December	211.98	217.42	0.13

Source: Secondary data (ZSE 2011-2020)

Table 4.9 shows the observed frequencies and the expected frequencies for each month. The Chi-square values are indicated as the residual values. The test statistics are tabulated in Table 4.10.

Table 4. 10: Test statistics

	Mean
Chi-Square	18.70[a]
df	11
Asymp. Sig	0.05
Asymp. Val.	19.67

Source: Secondary data (ZSE 2011-2020)

The results show in Table 4.10 that chi-square calculated values is 18.70. The critical value at 0.05 level of significance with 11 degrees of freedom is 19.67. The chi-square value of 18.70 is less than the critical value of 19.67. The results have led to the acceptance of Ho which claims that there are differences in the mean monthly returns at the ZSE. The study therefore established that the mean monthly returns are uniform, hence there is no month of the year effect. This result also concurs with Shikta and Chandrabhanu (2020) who inspected calendar effects in Indian securities market and established the presence of January effect and turn of the month effect on the stock returns and volatility.

4.5.2 Volatility of stock returns

In order to test the existence of the month of the year effect on the volatility of the monthly stock returns, a chi-square test was performed using the following hypotheses

H_0: The monthly volatility of stock returns is uniform on all months of the year.

H_1: The monthly volatility of stock returns is not uniform on all months of the year.

Table 4. 11: Chi-square test for monthly volatility of the stock

	Observed N	Expected N	Residual
January	110.06	126.17	2.05
February	107.92	126.17	2.64
March	93.77	126.17	8.32
April	84.62	126.17	13.68
May	118.14	126.17	0.51
June	161.70	126.17	10.00
July	154.92	126.17	6.55
August	141.87	126.17	1.95
September	148.36	126.17	3.90
October	147.86	126.17	3.72
November	138.54	126.17	1.21
December	106.31	126.17	3.12

Source: Secondary data (ZSE 2011-2020)

Table 4.11 shows the observed frequencies on the volatility of stocks per month, and the expected frequencies. The chi-square test values are shown as residual values. Table 4.12 gives a summary of the test statistics.

Table 4. 12: Test statistics

	Std. dev.
Chi-Square	57.69[a]
df	11
Asymp. Sig	0.05
Asymp. Val.	19.67

Source: Secondary data (ZSE 2011-2020)

The results in Table 4.12 above show that the chi-square test value is 57.69. The critical value at 0.05 level of significance with 11 degrees of freedom is 19.67. The chi-square calculated value of 57.69 is greater than the critical value of 19.67, leading to the rejection of Ho. The results show

that there are significant differences in the volatility of the stock returns per month. The results show that there exists a month of the year effect on the volatility of monthly returns although the mean returns are uniform. This result confirms the findings of Mehran and Hojat (2021) and Lucrezia and Vijay (2020) who found that there exists month of the year effect (January effects) in the volatility of monthly stock returns in capital markets that they studied, criticizing the efficient market hypothesis.

4.6 Correlation and regression analysis of stock returns and trading volumes at ZSE

The researcher regressed and correlated daily stock returns with daily trading volumes to establish if volatility of the daily stock returns is explained by daily trading volumes. The results of the correlation and regression analysis are presented in this section.

4.6.1 Correlation analysis

Correlational analysis was meant to find out the nature of relationship between stock returns and trading volumes, as well as the strength of the relationship. The correlational analysis results are presented in Table below.

Table 4. 13: Correlation analysis test results

		Stock Returns	Trading Volume
Stock Returns	Pearson Correlation	1	.402**
	Sig. (2-tailed)		.000
	N	2426	2426
Trading Volume	Pearson Correlation	.402**	1
	Sig. (2-tailed)	.000	
	N	2426	2426

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

The results show a Pearson correlation coefficient of 0.40 significant at 1% level of significance (p-value = 0.000). This means that there is a weak to moderate positive relationship between trading volume and stock returns. The receipt of favourable information at ZSE results in an

improvement in the stock returns and the receipt of unfavourable information results in a decrease in stock returns. Therefore, stock returns are positively related to information. However, there is a 60% influence on stock returns by other factors other than information that result in changes in improvement in the value of stock returns. The results here resonate with the findings of Wen-Cheng and Fang-Jun (2010) and Ananzeh, Jdaitawi and Al-Jayousi (2013) who investigated the effect of trading volume on volatility of stock returns and established that trading volume is positively related to volatility of stock returns. However, in these two research studies, the relationships established strong positive relationship between trading volume and volatility of stock returns

4.6.2 Regression analysis

The regression analysis done was to quantify the impact of trading volume on volatility of stock returns. Stock returns has been used as the dependent variables and trading volume as the independent variable. The main aspect of the regression model was the adjusted R-squared which was critical to show the extent of impact of trading volume on volatility of stock returns. The results are presented in the Table below.

Table 4. 14: Regression analysis results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.402[a]	.162	.162	63.08432

a. Predictors: (Constant), Trading Volume

The regression results show an adjusted r-squared of 0.162 which is 16.2%. This means that trading volumes have 16.2% impact on volatility of stock returns. In other words, trading volumes at ZSE explain only up to 16.2% of the volatility of stock returns. The adjusted r-squared is small and it indicates that the impact of trading volume is minimal and not very effective to cause the volatility of stock returns. The following table presents the analysis of variance to measure the fitness of the regression model to explain the dependent variable which is volatility of stock returns.

4.6.3 ANOVA test

The ANOVA test results show the ability of the model to explain the volatility of stock returns. The results are presented in Table 4.15 below.

Table 4. 15: ANOVA test results

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1864450.620	1	1864450.620	468.498	.000[a]
	Residual	9646625.602	2424	3979.631		
	Total	1.151E7	2425			

a. Predictors: (Constant), Trading Volume
b. Dependent Variable: Stock Returns

The F-value of 468.498 with a significant value of 0.000 shows that the regression model was fit to explain the volatility of stock returns.

4.6.4 Beta coefficients

Table 4.16 that follows presents the coefficients of regression that are used to develop the regression equation.

Table 4. 16: Beta coefficients

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	63.674	2.359		26.989	.000
	Trading Volume	2.463	.114	.402	21.645	.000

a. Dependent Variable: Stock Returns

The beta coefficients table shows a constant value of 63.674. The standardized coefficient for trading volume is 0.402 and the unstandardized coefficient 2.463. All beta coefficients are positive showing that trading volume positively influences volatility of stock returns. The standardized beta coefficient is smaller than the unstandardized beta coefficient. The sizes of the standardized coefficient and unstandardized beta coefficient show that the actual impact of trading volume have

a smaller impact on the volatility of stock returns. Using the constant and beta coefficients, the researcher came up with the regression model presented as below:

$ST = 63.674 + 0.402TV_{it} + \mu_t$:

The regression model shows that trading volume can be used by investors to predict the volatility of stock returns. There is some positive relationship between trading volume and volatility of stock returns. Information that gets into ZSE should not be neglected as that information has an impact on the behaviour of stocks. The finding here is in line with the finding of Emenike and Opara (2014) and Wen-Cheng and Fang-Jun (2010) who analyzed the nature of the relationship between stock returns volatility and trading volume using the daily returns and daily trading volume. The results of their researches show that changes in trading volumes explain movements in stock returns. This suggests that stock returns variability increases with the number of information events.

4.7 Chapter summary

The chapter has looked at the analysis, presentation and discussion of findings. The study has found no evidence for the day of the week effect on the daily mean returns on the ZSE. The study has also found no evidence of the day of the week effect on the volatility of the daily returns on stock at the ZSE. The study also found no evidence for the month of the year or January effect on the monthly returns on the ZSE, but found the existence of the month of the year effect on the volatility of the monthly stock returns on the ZSE market index. The next chapter focused on the summary, conclusions and recommendations of the study.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter looks at the summary of the research and research findings, the conclusions to the research objectives and the recommendations to the stakeholders of the study. The recommendations are based on the research findings. The chapter gives recommendation to future researchers who intend to undertake related research. The chapter starts by recapturing the study objectives, then looks at the summary of the research. It then looks at the summary of the research findings and conclusions to the research study. It then looks at the recommendations of the study to its stakeholders other than future researchers. After that the research limitations are presented, followed by the theoretical contribution of the study. After that the recommendations to future researcher are proffered.

5.2 Summary of the research

This research investigated the presence of calendar anomalies on the Zimbabwe Stock Exchange. The calendar anomalies investigated are the day of the week (DOW) effect (which entails that some days have statistically different behaviour of stock returns from others) and the month of the year effect (where some months may show statistically different behaviour of stock returns than others – the January effect [JE]). In an effort to establish this, the research areas were logically broken down into the following areas. The first chapter looked at the preliminary aspects of the research. It looked at the background to the research problem, the statement of the problem, the research objectives and the research questions. The chapter also looked at the importance of the research to various stakeholders. It also looked at the delimitations of the study. The chapter also presented the assumptions of the study, among other introductory aspects.

The second chapter examined the existing literature on calendar anomalies on stock exchanges. The chapter looked at both theoretical and empirical literature. The major theory discussed was the efficient market hypothesis theory and the random walks theory. The chapter also reviewed the

meaning and existence of the day of the week (Monday) effect and the month of the year (January) effect on stock market indexes. The empirical literature represented the findings by previous researchers on the existence of these calendar anomalies on the market indexes studies. This was important in exposing the research gap, formulating the methodology of the study and in discussing the results.

The third chapter was the research methodology. It gave an outline of the methods the researcher used to collect and analyze data into findings. It looked at the research philosophy, the research approach, the research design, the populations of the study, the data types used, the methods of data analysis, the tests performed, the hypotheses tested and the ethical standards followed.

The fourth chapter focused on the examination, presentation and clarification of the collected data. This is where the collected data was turned into information, to establish the reasons for the conclusions in line with the research purpose. The results where then discussed and compared to the extant literature studied to determine concurrences and conflicts between the results. The fifth which is this chapter looked at the summary, conclusions and recommendations of the study.

5.3 Summary of research findings

In line with the sub-objectives of this study, the following summaries and conclusions were made in relation to each of the two secondary research objectives of the study.

5.3.1 Existence of the day of the week effect on stock returns at ZSE

The study performed a chi-square test using mean daily stock returns for the days from Monday to Friday. The null hypothesis claimed that the mean daily returns are uniform, whereas the alternative hypothesis claimed that the mean daily stock returns are not uniform over the week. 5% level of significance was used. A chi-square test statistic of 0.05 was obtained against a critical value of 9.48, leading to the acceptance of the null hypothesis. The volatility of the daily stock returns as measured by the standard deviations of the stock returns were used to test whether volatility of the returns significantly differ between the days of the week. The chi-square test statistic of 0.07 was obtained against a critical value of 9.48, leading to the acceptance of the null

hypothesis which claimed that the volatility of the stock returns is uniform across all the days of the week.

The study concluded that the mean daily stock returns at the ZSE are uniform on all the days of the week, therefore there is no day of the week effect. The study also concluded that there is no day of the week effect in terms of the volatility of the returns on the stock at the ZSE. The study also concluded that the ZSE market is efficient in that there is uniformity and unpredictability of stock returns and their volatility on all the days of the week.

5.3.2 Existence of the month of the year effect on stock returns on the ZSE

The study performed a chi-square test using mean monthly stock returns for the months from January to December. The null hypothesis stated that the mean monthly returns are uniform, whereas the alternative hypothesis claimed that the mean monthly stock returns are not uniform over the year. A 5% level of significance was used. A chi-square test statistic of 18.70 was obtained against a critical value of 19.67, leading to the acceptance of the null hypothesis. The volatility of the monthly stock returns as measured by the standard deviations of the stock returns were used to test whether volatility of the returns significantly differ between the months of the year. The chi-square test statistic of 57.69 was obtained against a critical value of 19.67, leading to the rejection of the null hypothesis which claimed that the volatility of the stock returns is uniform across all the months of the year. The results showed that there are significant differences in the volatility of the stock returns per month. The results reflected that there exists a month of the year effect on the volatility of monthly returns although the mean returns are uniform.

The study concluded that average monthly stock returns at the ZSE are uniform on all months of the year, therefore there is no January effect (JE). The study also concluded that there is a month of the year effect in terms of the volatility of the average returns on the stock at the ZSE. The study also concluded that the ZSE market is efficient only in terms of average monthly returns, but is not efficient in terms of the volatility of the returns on a monthly basis. The January effect exists in terms of monthly stock volatilities at the ZSE.

5.3.3 Effect of daily stock returns on daily trading volumes at ZSE

The research found out a Pearson correlation coefficient of 0.40 significant at 1% level of significance which reflects that there is a weak to moderate positive relationship between trading volume and stock returns. The receipt of favourable information at ZSE results in an improvement in the stock returns and the receipt of unfavourable information results in a decrease in stock returns. Stock returns are positively related to information receipt. However, there is a 60% influence on stock returns by other factors other than information that result in changes in improvement in the value of stock returns. The adjusted r-squared is small and it indicates that the impact of trading volume is minimal and not very effective to cause the volatility of stock returns.

The study concludes that receipt of information as indicated by trading volume has weak positive influence on the stock returns. This implies that the receipt of favourable information at ZSE results in an improvement in the stock returns and the receipt of unfavourable information results in a decrease in stock returns.

5.4 Conclusions

This section presents the conclusions to the research objectives. The researcher gives closure to the research objectives that the research study intended to accomplish.

5.4.1 Existence of the day of the week effect on stock returns at ZSE

The study concludes that the mean daily stock returns at the ZSE are uniform on all the days of the week, therefore there is no day of the week effect. The study also concludes that there is no day of the week effect in terms of the volatility of the returns on the stock at the ZSE. The study also concludes that the ZSE market is efficient in that there is uniformity and unpredictability of stock returns and their volatility on all the days of the week.

5.4.2 Existence of the month of the year effect on stock returns on the ZSE

The January effect exists only in terms of monthly stock volatilities at the ZSE. This means that there is a month of the year effect in terms of the volatility of the average returns on the stock at

the ZSE. In terms of average monthly stock returns at the ZSE, the research concludes that there is uniformity on all months of the year, therefore there is no January effect (JE). Overall, the study therefore concludes that ZSE is efficient only in terms of average monthly returns, but is not efficient in terms of the volatility of the returns on a monthly basis.

5.4.3 Effect of daily stock returns on daily trading volumes at ZSE

The study concludes that receipt of information as indicated by trading volume has weak positive influence on the stock returns. This implies that the receipt of favourable information at ZSE results in an improvement in the stock returns and the receipt of unfavourable information results in a decrease in stock returns.

5.5 Recommendations

Basing on the conclusions of the study, the researcher makes the following recommendations to the ZSE and the investors. To ensure that the recommendations are effective in practical applicability, the researcher evaluated them using the Johnson and Scholes (1997) suitability-feasibility-acceptability (SFA) test. This means that the research ensures the suitability, feasibility and acceptability of the recommendations to the stakeholders as he presents them.

5.5.1 Recommendations to investors

The research concluded that there is no day of the week effect at ZSE. In light of this, the researcher recommends that investors disregard days of the week in their trading transactions at the ZSE. This is suitable for ZSE considering that the research findings do not reflect calendar anomalies with respect to days of the week. In practical sense, the researcher recommends that investors carry out detailed fundamental and market analysis to identify factors that affect changes stock returns at the ZSE. Disregarding days of the week is feasible as it is accompanied by the use of fundamental and market analysis.

The research concluded that the January effect exists in terms of monthly stock volatilities at the ZSE. This finding enables investors to utilize trading rules to manage their portfolio to make

abnormal returns. The existence of monthly stock volatilities at the ZSE in January entails that investors should exercise caution when performing stock transactions in January in light of the January effect results.

As a recommendation to investors, the existence of the January effect in terms of volatility of stock returns on the ZSE can be regarded as useful in the buying and selling decisions. Investors who decide to sell stock can actually sell their stock before January and buy stocks in January or soon after when the prices are comparatively lower. This is meant to reduce buying price and increase selling price, so as to realize significant gains in capital value. In the case of the Zimbabwe stock exchange, buying and selling stock when volatilities of returns are lowest reduces risk for either buyers or sellers.

5.5.2 Recommendations to regulators and policy makers

The existence of the January effect in terms of monthly stock volatilities also reflects the issue of market inefficiency which provoke regulators and policymakers' conscious effort for informational and operational efficiency. For example, Securities Exchange Commission can assist ZSE in its operations to allow improved investor activity. This can be done by assisting the ZSE with infrastructure that allow listing of other securities than just equity, so as to allow more investor activities on the market. The more investors trade, the better the market efficiency and reduction of January effect in terms of monthly stock volatilities.

From the conclusion that the receipt of information as indicated by trading volume has weak positive influence on the stock returns, the study recommends that there is need to improve the communication infrastructure by the regulators which can be in form of news portal dedicated to delivering information on daily happenings about quoted companies and other stock market activities, particularly price sensitive news speedily to guide investors. This will enhance fair playing ground for investors. The implication of this is that the investors can formulate their investment strategies and timing on the basis of this result and can earn some abnormal return by predicting future prices.

5.6 Contribution of the study

This study is believed to have contributed theoretically to the body of knowledge. There was very scanty empirical literature that focused on the existence of calendar anomalies on the Zimbabwe Stock Exchange. This study has helped towards filling the research gap. The local study by Mahonye and Mandishara (2019) indicated that the value of stocks returns at ZSE has mixed trends. This shows that there was a gap that needed a research study.

5.7 Study limitations

The research faced limitations that had the potential to compromise the quality of the research findings. Accessing data from ZSE was not an easy task. The researcher was charged a certain amount to get stock returns data. The research faced financial constraints to the extent that this limited the amount of data he could afford to get from ZSE. For longer periods than 10 years, the researcher was supposed to pay an extra amount to acquire the data. The researcher only managed to acquire data for 10 years covering the period from 2011 to 2020. However, longer periods would further reflect the trends and nature of ZSE.

The analysis of the research was limited to descriptive analysis and regression and correlation analysis. At the start of the research journey, the researcher had enrolled on a Big Data Analytics Certificate which could equip the researcher with adequate knowledge on econometric models of GARCH and OLS models in the analysis. However, due to Covid-19 restrictions that banned face to face lectures, the researcher was not able to finish the course. Therefore, the researcher had limited skills of using STATA and could not run GARCH models like majority of past researchers who used it.

In addition, the regression model used in this study was a simplified model which resulted in a error due to absence of control variables. It simply stated that returns are a function of trading volume only, yet returns are affected by a number of factors, including macroeconomic factors. The error term carried all the other variables and the model became under specified. This entails that future researchers are recommended to include other factors in the model as well as control variables to strengthen the predictive power of the regression model.

5.8 Recommendation for further study

The research study looked at calendar anomalies on the ZSE using data for a period of 10 years covering January 2011 to September 2020. Further research can look at the same topic, same market, but using a longer time period of more than 10 years. Resources allowing, future researchers can acquire data for longer periods such as 30 years. The research has found some anomalies on the month of the year on volatility of monthly stock returns. Future researchers can look into the actual months that show statistical differences with others.

Future researchers are recommended to use different models, for example, instead of using chi-square tests and regression, analysis can be performed using GARCH models. Further research may also study stock market seasonality around popular holidays such as the Easter holiday, Heroes holiday and Independence Day holiday.

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