CHAPTER II
REVIEW OF LITERATURE – MARKET EFFICIENCY
CHAPTER II
THEORETICAL AND REVIEW OF LITERATURE

2.1 INTRODUCTION - REVIEW OF LITERATURE

The Review of literature can be classified into two categories:

2.1.1 Theoretical review, and
2.1.2 Empirical review

The theoretical review discusses the basic meaning of market efficiency and the Efficient Market Hypothesis (i.e.,) Weak form, Semi-strong form and the Strong form efficiency and are also explained. Weak form means past available information (Historical price information). Semi-strong means publicly available information (companies information), and the Strong form means both public as well as private information.

The empirical review deals with efficiency of stock market are Weak form or Semi-strong form or Strong form. In this review many studies examined in the weak-form efficiency. In Semi-strong form many researchers testing the event study method and few studies done in this method. Finally, the strong form efficiency analysed by the researchers and they concluded that there is no strong form efficiency in India. We can see these aspects elaborately below,
2.1.1.1 MARKET EFFICIENCY: INTRODUCTION

Market efficiency is a stock market concept which was expressed by Eugene Fama in 1969. Every stock market has efficient or inefficient concept. When stock market is efficient the securities prices are reflected based on the market information. So, the investor can earn excess or abnormal return based on the investments. The Market price and market information are the major factors of market efficiency. These factors are not easily predicted by the investors. Technical analysis is the base for stock market efficiency. Technical analysis looks at the price movement of a security and uses this data to predict its future price movements.

The market is said to be efficient if the prices of assets at any moment reflect all available information. Noel Amenc and Veronique (2003)

An efficient financial market is one in which security prices reflect new, relevant information about a company’s future prospects so rapidly that investors are unable to profit from publicly available information. Market efficiency implies that capital markets are a fair and competitive source of finance for the firm. Jim Mc Menamin (2005)

The degree to which financial security prices adjust to “news” and the degree (and speed) with which stock prices reflect information about the firm and factors that affect firm value is referred to as ‘Market efficiency’. Anthony Saunders and Marcia Millon Cornett (2008)

If stock markets are efficient, the prices of stocks at any point in time should fully reflect all the available information. As investors attempt to capitalize on new information that is not already accounted for, stock prices should adjust immediately. Jeff Madura (2008)

An efficient market is the one in which the market price of a security is an unbiased estimate of its intrinsic value. Note that market efficiency does not imply that the market price equals intrinsic value at every point of time. All that, it says, is the errors in the market prices are unbiased. This means that the price can deviate from the intrinsic value but the deviations are random and uncorrelated with any observable variable. If the deviations of market price form intrinsic value are random, it is not possible to consistently identify over or under-valued securities. Prasanna Chandra (2008)
An efficient capital market is one in which security prices adjust rapidly to the arrival of new information and, therefore, the current prices of securities reflect all information about the security. Sudhindra Bhat (2008)

The term efficient capital market has been used is several contexts to describe the operating characteristics of a capital market. There is a distinction, however, between an operationally (or internally) efficient market and pricing (or externally) efficient capital market. In an operationally efficient market, investors can obtain transaction services as cheap as possible, given the costs associated with furnishing those services. Pricing efficiency refers to a market where prices at all times fully reflect all available information that is relevant to the valuation of securities. Frank J Fabozzi et al., (2009)

A share price reflects all known information and represents the collective beliefs of all investors about the business’ prospects. In this sense, the stock market is ‘efficient’. Paul Barnes (2009)

An efficient market, all the relevant information is reflected in the current stock price. James H. Lone explained what is meant by efficient security market in these words: “Efficiency in this context means the ability of the capital markets to function so that prices of securities react rapidly to new information. Such efficiency will produce prices that are appropriate in terms of current knowledge, and investors will be less likely to make unwise investments. A corollary is that investors will also be less likely to discover great bargains- and thereby earn extraordinary high rates of return.” Dhanesh Khatri (2010)

A market in which prices of securities quickly and fully reflect all available information. Charles P Jones (2012)

An efficient market, the current price of a security fully reflects all available information and is the fair value. The market price is fair value because the market has traded in that price. As new information becomes available, the market assimilates that information by adjusting the security’s price up (buying) and down (selling). Ranganatham M and Madhumathi R (2012)

A market in which prices are close to intrinsic values and stocks seem to be in equilibrium. Market price: the current price of a stock, intrinsic value: the price at which the stock would sell if all investors had all knowable information about a Stock. And Equilibrium price: the price that balances buy and sell orders at any given time. Eugene F Brigham and Joel F Houston (2013)
An efficiency of markets refers to the way they incorporate information into prices, or informational efficiency, which is more general than mean-variance efficiency. Nico Van Der Wijst (2013)

“A securities market is informationally efficient when news is rapidly and accurately reflected in the prices of financial securities”. Robert A Weigand (2014)

Capital market efficiency is the ability of securities to reflect and incorporate all relevant information, almost instantaneously, in their prices. Pandey I M (2015)

Market efficiency is the characteristic of a market in which the prices of the instruments trading therein reflect their true economic values to investors. In an efficient market, prices fluctuate randomly and investors cannot consistently earn returns above those that would compensate them for the level of risk they assume. Don M Chance and Robert Brooks (2016)

### 2.1.1.2 EFFICIENT MARKET HYPOTHESIS

The Efficient Market Hypothesis is a base for efficient market or market efficiency. It has three forms. They are Weak form, Semi strong form and Strong form efficiency as follows,

An efficient Capital Market Hypothesis has several forms of efficiency, depending on the information set. Weak form efficiency is defined by the information set that is only the history of prices and returns. For example, if investors can follow price trends to realize abnormal excess returns, then the market is not weak form efficient. Semi strong form efficiency includes all publicly available information. For example, if investors can realize abnormal excess returns using the published financial statements, then the market is not Semi strong form efficient. Strong form efficiency includes all information known to any market participant (both public and private information). It is difficult to prove or reject because the set of private information is difficult to specify. Thomas S Y Ho and Sang Bin Lee (2004)

**EMH:** Weak form efficiency - Here, the relevant set of information comprises all current and past prices (equivalently, rate of return) for the assets being studied. Semi-strong form efficiency - This asserts that the asset market is efficient relative to all publicly available information. Strong form efficiency - Here, the assertion is that the market for an asset is efficient relative to all information. For an asset market to be efficient in this sense, even private information would be reflected in asset prices. Bailey R E (2005)
The efficient market hypothesis (EMH): Weak form efficiency - This form of the EMH states that current market prices immediately and fully reflect all historical information contained in past security price movements. Semi-strong form efficiency - If the market is in semi-strong form efficiency, then current market prices will immediately and fully reflect all historical and all relevant publicly available information. Publicly available information is that contained in, for example, company’s annual reports and accounts, government reports and statistics, and so on. Strong form efficiency - Strong form efficiency goes a stage further than the semi-strong form and asserts that current market prices will immediately and fully reflect all relevant information, whether publicly or privately held. There is less evidence to support this form of efficiency than the other two. Jim Mc Menamin (2005)

Stages of efficiency have the weak form, Semi strong form, and Strong form. Weak-form market efficiency means that the unanticipated return is not correlated with previous unanticipated returns. In other words, “the market has no memory. Knowing the past does not help you earn future returns. Semi strong-form market efficiency means it is not correlated with any publicly available information. Finally, with Strong-form market efficiency, the unanticipated return is not correlated with any information, be it publicly available or insider.” James C Van Horne (2007)

The three different ‘strengths of the EMH’. In the Weak form of efficiency, each share price is assumed to reflect fully the information content of all past share prices. In the semi-strong form, the information impounded is assumed to include not only that given by all past share prices, which are of course public knowledge, but all publicly available information relevant to the share value. The strong form will thus include what is known as insider’s information, for reflect the information available, and reflect it quickly enough to prevent excess returns being consistently made through trading on that information. Janette Rutterford (2007)

Weak form market efficiency - According to the weak form of market efficiency, current stock prices reflect all historic price and volume information about a company. Semi strong form market efficiency - The semi strong form market efficiency hypothesis focuses on the speed with which public information is impounded into stock prices. Semi strong form market efficiency has been examined by testing how security prices react to unexpected news releases or announcements “events”. Some specific announcements such as earnings and dividend changes, stock splits, mergers and acquisitions. Strong form market efficiency - The strong form of market efficiency states that stock prices fully reflect all information about the firm, both public and private. Anthony Saunders and Marcia Millon Cornett (2008)
Efficient markets can be classified into three forms: weak, Semi strong, and Strong. Weak-form efficiency - Weak-form efficiency suggests that security prices fully reflect all trade-related information, such as historical security price movements and volume of securities trades. Semi strong-form efficiency - Semi strong-form efficiency suggests that security prices fully reflect all public information. Thus, if semi strong-form efficiency holds, weak-form efficiency must hold as well. It is possible, however, for weak-form efficiency to hold, while semi strong-form efficiency does not. Strong-form efficiency - Strong-form efficiency suggests that security prices fully reflect all information, including private or insider information. If strong-form efficiency holds, semi-strong form efficiency must hold as well. In insider information leads to abnormal returns, however, semi strong form efficiency could hold, while strong-form efficiency does not. Jeff Madura (2008)

The efficient-market hypothesis (EMH) states that security prices fully reflect all available information. The Levels of the EMH can be described as: Weak-form hypothesis: Current prices reflect all stock market information. Semi-strong from hypothesis: Current prices reflect all public information. Strong-form hypothesis: Current prices reflect all public information and non-public information. All trading rules are pointless. Strong-form hypothesis premise that stock prices reflect all public information and non-public information. Mark Hirschey and John Nofsinger (2008)

Forms of the efficient market hypothesis. Test of the market efficiency are essentially tests of whether the three general types of information - past prices, other public information and inside information - can be used to make above average returns on investments. The test of market efficiency termed as weak-form (Price information), Semi-strong form (other public information), and Strong form (inside information). Sudhindra Bhat (2008)

Weak form - the past history of the shares is fully reflected in current prices. Semi-strong form - all publicly available information is already reflected in share prices. Strong form - all information including information that is not publicly available is already reflected in share prices. Andrew M. Chishom (2009)

The words of Eugene Fama suggested that it is useful to distinguish three levels of market efficiency: Weak-form efficiency prices reflect all information found in the record of past prices and volumes. Semi-strong form efficiency prices reflect not only all information found in the record of past prices and volumes but also all other publicly available information. Strong-form efficiency prices reflect all available information, public as well as private. Prasanna Chandra (2009)
Different types of efficiency - The most common classification system identifies three types: The weak form: A capital market is said to be weakly efficient or to satisfy weak form efficiency if it fully incorporates the information in past stock prices. The semi strong and strong forms: A market is semi strong form efficient if prices reflect (incorporates) all publicly available information, including information such as published accounting statements for the firms as well as historical price information. A market is strong form efficient if prices reflect all information, public or private. Stephen A Ross et al., (2009)

The efficient market hypothesis has historically been subdivided into three categories, each dealing with a different type of information. Weak-form tests are tests of whether all information contained in historical prices is fully reflected in current prices. Fama changed the weak form for return predictability. Semi strong-form tests of the efficient market hypothesis are tests of whether publicly available information is fully reflected in current stock prices. Fama has changed semi strong form efficiencies to event studies or studies of announcements, and we will also adopt this classification. Finally, Strong-form tests of the efficient market hypothesis are tests of whether all information, public or private, is fully reflected in security prices and whether any type of investor can make an excess profit. Edwin J Elton et al., (2010)

The efficient market hypothesis (EMH) asserts that financial markets are “informationally efficient”, or that prices on traded assets (Stocks, bonds, or property) already reflect all know information, and instantly change to reflect new information. The financial journalist Roger Lowenstein noted that “the upside of the current great recession is that it could drive a stake through the heart of the academic nostrum known as the efficient market hypothesis.” Mahipal Singh (2011)

The weak form of market efficiency, all worthwhile information about previous prices of the stock has been used to determine today’s price; still earn abnormal returns. In the Semi strong form of market efficiency, the current asset prices reflect all publicly available information. In the strong form of market efficiency, the market (which includes all investors) knows everything about all financial assets, including information that has not been released to the public. The strong form implies that investors cannot generate abnormal returns form trading on inside information, where inside information is information that is not yet public. Mark J Anson et al., (2011)
Efficient market hypothesis means the proposition that securities markets are efficient, with the prices of securities reflecting their economic value. Weak form: If security prices are determined in a market that is weak-form efficient, historical price data should already be reflected in current prices and should be of no value in predicting future price changes. Technical analysis that relies on the past history of price information is little or no value. Semi strong form: a more comprehensive level of market efficiency involves not only known and publicly available market data, but all publicly known and available data, such as earning, dividends, and stock split announcements. The Strong form, which asserts that stock prices fully reflect all information, public and non-public. Charles P Jones (2012)

Classifies the market efficiency into three forms. The weak form of market efficiency theorizes that current price does not reflect fair value and is only a reflection of past prices. The semi-strong form of market efficiency theorizes that current price reflects all readily available information. This information includes annual reports, annual report fillings, earnings reports, announcements and other relevant information that can be readily gathered by market participants. Strong form market efficiency tests the trading of specialists such as mutual fund managers, investment consultants, FIIs, etc. The superior performance of a fund versus a random trading strategy proves that the market is inefficient in the strong form. Ranganatham M and Madhumathi R (2012)

The efficient market hypothesis (EMH) shows the three forms of the EMH: the weak form, Semi strong form and strong form. The weak form of the EMH implies that analysis of historical data on prices or returns will not help an investor earn abnormal profits. However, under the weak form EMH, fundamental analysis might be able to generate abnormal profits. If a market is semi-strong form or strong form efficient then the analysis of historical data on prices (using technical analysis), returns (using econometric analysis), or on company fundamentals (using fundamental analysis), will not generate abnormal profits. Robert Sollis (2012)

The weak form efficiency - all the past information is reflected in the current market price of the share. In such a market, the information availability determines the market price of the share. Semi-strong form of efficiency - The market price of securities in the capital market adjusts readily to all information available to the public. Such information may either be in the form of financial statements or reports. Strong form of efficiency - Here the market prices of securities in the capital market reflect all information, whether publicly available or unpublished or confidential. Sheeba Kapil (2012)
The weak form of the EMH is summed up in the words of the pseudonymous “Adam Smith”, author of the Money Game: “Prices have no memory, and yesterday has nothing to do with tomorrow”. The Semi strong form - The semi strong form of the efficient market hypothesis centres on how rapidly and efficiently market prices adjust to new publically available information, including the expectations of future financial reports and revision of data series previously published. And, the Strong form - The strong form is concerned with whether or not certain individuals or groups of individuals possess inside information which can be used to make above average profits. Bhalla V K (2013)

The EMH is made up of the following assumptions with respect to the current price of the stock. According to it, the current price of the stock reflects the following: All known information that includes: Past information (financial statements and announcements of the previous year). And The continuous flow of information (dividend, bonus share, stock split, mergers, takeovers, etc.). Falguni H Pandya (2013)

Fama in 1970 showed three forms of market efficiency: Weak form market efficiency occurs when all past price histories are fully reflected in current prices. Under the semi-strong form of market efficiency current prices fully reflect all publicly available information. In addition to price histories this includes financial statements, articles in the financial press, product-, industry- and macroeconomic data, etc. A market is strong form efficient if all information is reflected in current prices, including private and inside information. Nico Van Der Wijst (2013)

The three forms of capital market efficiency, given as follows, Weak form of efficiency - The weak form of efficiency of capital market suggests that the market price of securities reflects the past information about the firm. Semi strong form of efficiency - In semi-strong form of efficiency, the capital market is rapidly able to adjust to all information publicly available. The Strong form of efficiency - In the strong form of efficiency, the market price of securities includes the impact of all information whether published or unpublished. It means that the security prices reflect all information that is available about the firm. Sumit Gulati and Singh Y P (2013)
Different forms of efficiency stems from the interpretation of ‘fully’ and ‘available information’ found in the definition of market efficiency. Roberts (1959) notes three forms of efficiency. Weak form of efficiency - Weak form efficiency is one where the information set includes only past sequences of returns. Semi-strong form efficiency - When information set includes all publicly available information like information on macroeconomic variables, company’s performances, etc., including past sequences of returns, it is termed as semi-strong efficiency. Strong-form efficiency - The information set includes private or monopolistic information. Gourishankar S Hiremath (2014)

The Weak form efficiency - With weak form market efficiency, no investor can expect to earn excess returns based on an investment strategy using such information as historical price or return information. Semi strong form efficiency - With semi strong form market efficiency, no investor can expect to earn excess returns based on an investment strategy using any publicly available information. Strong form efficiency - With strong form market efficiency, security prices fully reflect all information, both public and private. In a semi strong form efficient capital market, no individual or group of individuals should be able to consistently earn above-normal profits, including insiders possessing information about the economic prospects of a firm. Charles Moyer (2015)

The Weak form EMH - Efficient market hypothesis based on the belief that current prices have taken past information into account, but not necessarily current information. Semi strong form EMH - A variation of the efficient market hypothesis that assumes current stock prices include past publicly known information as well as current information about a company, and that prices change immediately as a result. And, the Strong form EMH - A variation of the efficient market hypothesis (EMH) in which all information, regardless of whether it is known publicly, is immediately reflected in the current price of stock. Michael C Thomsett (2015)
The Related review or Empirical review deals with three forms of market efficiency. They are as follows, Empirical studies of weak form efficiency, Empirical studies of Semi-strong form efficiency, and Empirical studies of Strong form efficiency.

2.1.2.1 EMPIRICAL STUDIES OF WEAK FORM EFFICIENCY / RANDOM WALK

Annuar Md. Nassir et al., (1993), this study investigates the predictability efficiency of KLSE using unit root analysis which incorporates the drift and time-trend factors. The findings suggest that the average unit root coefficient is 0.9 which implies that there is less than 10 per cent chance that the indices are inefficiently priced over the period of study. The findings from the average serial correlation tests were consistent with unit root analysis. This implies that KLSE is weak form efficient though there are pockets of inefficiencies for some indices.

Chris Fawson et al., (1996), this paper evaluates monthly stock index price from the Taiwan stock market for evidence of weak form market efficiency. Four empirical methodologies are employed: the Ljung-Box Q test, the binomial distribution test, the runs test and the unit root test of stationarity in stock prices. Empirical evidence suggests that the monthly stock price for the Taiwan stock market exhibits weak-form efficiency.

Martin Laurence et al., (1997), tested the weak-form efficiency in these markets and explore the statistical relationships and causality among these Chinese stock markets with each other and with the U.S. and Hong Kong stock markets. The results indicate the existence of a weak-form efficiency in the market for “A” shares but not “B” shares, statistically weak linkages between the Chinese markets, a weak causal effect of the Hong Kong to the four Chinese markets, and a strong causal effect from U.S. stock mark to all four Chinese stock markets and the Hong Kong Stock market, particularly during the second period of the sample. These results support the assertion that the Chinese stock markets are becoming more integrated to the global economy.

Michael J. Seiler and Walter Rom (1997), examined the degree of random walk in daily stock prices for all stocks listed on the NYSE since February 1885 through July 1962. Modern day anomalies are examined in conjunction with historical data in an attempt to explain the return series. While many regularly observed patterns occurred before 1962, they
were unable to aid in the prediction of future stock price movements. The results are consistent with the preponderance of modern, efficient market studies in that historical stock returns are found to follow a random walk.

Kabir M. Hassan et al., (2003), examined the weak-form efficiency by taking into consideration the institutional features of the KSE. Furthermore, as a robust-ness check on the predictability of returns, they employ EGARCH and GARCH-M to account for time-varying risk premia in the KSE. They find that the KSE is weak-form inefficient, even though the efficiency improves towards the end of 1990s.

Andrew C. Worthington and Helen Higgs (2004), This paper tests for random walks and weak-form market efficiency in European equity markets. Daily returns for sixteen developed markets (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom) and four emerging markets (Czech Republic, Hungary, Poland and Russia) are examined for random walks using serial correlation coefficient and runs tests, ADF,PP, and KPSS tests and multiple variance ratio (MVR) tests. The results, only Hungary is characterized by a random walk and hence is weak-form efficient, while in the developed markets only Germany, Ireland, Portugal, Sweden and the United Kingdom comply with the most stringent random walk criteria.

Moustafa M.A (2004), examined the behaviour of stock prices in United Arab Emirates (UAE) stock market. The data consists of the daily prices of the 43 stocks included in the Emirates market index covering the period commencing October 2, 2001 through September 1, 2003. The results reveal that the returns of 40 stocks out of the 43 are random at a 5per cent level of significance. Hence, the empirical study supports the weak-form EMH of UAE stock market. These results are surprising and challenging to traditional views because the UAE stock market is newly developed and just recently became official with sound regulations.

Khan Masood Ahmad et al., (2007), This paper attempts to seek evidence for the weak form of efficient market hypotheses using the daily data on returns for stock prices of 24 listed firms on the Indian stock market during the period 2000-2004. The Jarque-Bera test, unit root test, autocorrelation function and Kolmogorov-Smirnov (K-S) test have been used for the analysis. The results vary across tests and sub periods indicating that stock prices for most of the firms do not support the hypothesis of independence and randomness. The important firms, which have significant autocorrelation in both periods, are ONGC, Infosys, SAIL and Grasim.
Rakesh Gupta and Parikshit K. Basu (2007), tested the weak form efficiency in the framework of the random walk hypothesis for the two major equity markets in India for the period 1991 to 2006. The evidence suggests that the series do not follow the random walk model and there is an evidence of autocorrelation in both markets rejecting the weak form efficiency hypothesis.

Victor K. Gimba (2007), tested the Weak-form Efficient Market Hypothesis of the Nigerian Stock Exchange by hypothesizing Normal distribution and Random walk of the return series. Daily and weekly All Share Index, and five most traded and oldest bank stocks of the NSE are examined from January 2007 to December 2009 for the daily data and from June 2005 to December, 2009 for the weekly data. The empirical findings derived from the autocorrelation tests for the observed returns conclusively reject the null hypothesis of the existence of a random walk for the market index and four out of the five selected individual stocks. In general, it can be concluded that the NSE stock market is inefficient in the weak form.

Chin Wen Cheong (2008), investigated the weak-form market efficiency of nine daily Sectoral indices of the Malaysian stock market between 1996 and 2006. The empirical results were in sharp contrast to the traditional unit-root test which ignored the economic crisis and currency control. The findings concluded that the Malaysian Sectoral stock markets were weak-form inefficient (except the property index) under the structural change.

Hazem Marashdeh and Min B. Shrestha (2008), investigated whether the stock price index in the United Arab Emirates Securities Market meets the criterion of weak-form market efficiency. Beside the conventional unit root tests, the study applies Perron models to test for a unit root in the presence of one endogenously determined structural break. The test results show that the Emirates Securities Market data contain unit root and follow a random walk, which suggests that the market meets the criterion of weak-form market efficiency.

Bogdan Dima and Laura Raisa Milos (2009), tested the Efficient Market Hypothesis in Bucharest Stock Exchange. The tested hypothesis is carried on time series of stock index BET (daily observations), for the period 2000- 2009. The econometric results assert that the weak form of the efficient market hypothesis is accomplished.

Ibrahim Awad and Zahran Daraghma (2009), examined the efficiency of the Palestine Security Exchange (PSE) at the weak-level for 35 stocks listed in the market by using daily observations of the PSE indices. The serial correlation tests and the runs test both revealed that the daily returns are inefficient at the weak-form. Also, the unit root tests (Augmented Dickey-Fuller (ADF) unit root test and Phillips-Peron (PP) unit root test) suggest the weak-
form inefficiency in the return series. However, the PSE is inefficient at the weak level; as a result, this is likely to be an evidence that the prudent investor who deals with the PSE will achieve abnormal returns using historical data of stock prices, and trading volume.

Walid Abdmoulah (2009), tested the weak-form Efficiency using GARCH-M (1,1) approach along with state-space time-varying parameters is implemented for 11 Arab stock markets for periods ending in March 2009. All markets show high sensitivity to the past shocks and are found to be weak-form inefficient, as the efficiency does not improve towards the first quarter of 2009 and negatively react to contemporaneous crises.

Ibrahim A. Onour (2010), examined the statistical tests have been employed to assess the weak-form efficiency of Khartoum Stock Exchange (KSE) market. The finding of the paper indicates the inefficiency hypothesis cannot be rejected.

Korkmaz and Akman (2010), highlighted that, Weak Form Market Efficiency of Efficient Market Hypothesis was tested in Istanbul Stock Exchange (ISE). For this purpose, an analysis was reported by selecting 2 indices from Istanbul Stock Exchange. These indices are ISE 100 and ISE Industrial indices. It was concluded after the implementation that ISE was “Weak Form Efficient”. Unit root and co-integration tests were used to be analyzed the efficiency in our study. Following the co-integration test implemented, it was resolved that there was not a co-integration among indices in the long term.

Manoj Kumar (2010), elucidated that the weak form efficiency in Indian stock market. As a result, it has been conclusively established that the stock market is efficient in weak has been conclusively established that the stock market is efficient in weak form. Therefore, it can be inferred that share price behaviour in the Indian Stock Market follows the random walk model. Hence, Indian Stock Market is Weakly Efficient. So, on the conclusion basis of this study, it can be said that the Indian Capital Market is efficient in the weak form as per the runs test while taking sample raw data of fifty companies.

Mishra P K (2010), tested the weak form efficiency of select emerging and developed capital markets (India, China, Brazil, South Korea, Russia, Germany, US and UK) over the sample period spanning from January 2007 to December 2010. The application of unit root test and GARCH (1,1) model estimation provides the evidence that these markets are not a weak form efficient which has both positive and negative implications.

Muhammad Irfan et al., (2010), in their paper, focuses on the existence of weak from efficiency whether the Karachi Stock Exchange (KSE) is efficient market or not. The sample includes the daily and monthly closing prices of KSE- 100 indexes for the period of 1st January,1999 to 31st August,2009. Several different parametric approaches: unit root test,
autocorrelation tests and ARIMA model are used to test the certainty of the KSE market. All parametric methods tell us that both return series do not follow the random walk model and the significance autocorrelation reject the hypothesis of weak from efficiency. Therefore, it strongly recommends that the Karachi Stock Market of Pakistan is not efficient in weak form.

Shahram Fattahi (2010), examined the weak-form efficiency of the DAX stock market. Five randomly chosen companies and different sub samples are used to confirm the results. The results show that the DAX stock market follows a random walk and supports the weak-form efficiency of efficient market hypothesis (EMH). However, in some models, the strict rational expectations (RE)/EMH element of ‘unpredictability’ is rejected, but not necessarily the view of EMH which emphasizes the impossibility of making supernormal profits.

Srinivasan P (2010), examined the random walk hypothesis to determine the validity of weak-form efficiency for two major stock markets in India. The study uses daily observation over the span from 1st July 1997 to 31st August 2010. The ADF and PP unit root tests clearly reveals that the null hypothesis of unit root is convincingly rejected in the case of stock market returns of two major indices, viz. S&P CNX NIFTY and the SENSEX. The empirical results do not support the validity of weak-form efficiency for stock market returns of Indian stock exchanges.

Abdul Haque et al., (2011), investigated the weak form efficiency of Pakistani stock market by examining the weekly KSE-100 index over the period 2000 to 2010. Return series has a leptokurtic and negatively skewed distribution, which is away from normal distribution as reflected by significant Jarque-Bera statistic. Estimated results of ADF, PP and KPSS tests, Ljung-Box Q-Statistic of Autocorrelations and Runs test of randomness reject the Random Walk Hypothesis (RWH) for the returns series. Moreover the results of variance ratio test reject the RWH and prove the robustness of other estimated results. The RWH reveals that the Pakistani stock prices are not in Weak Form Efficient.

Amna Tahir (2011), evidenced that the weak form of efficiency in the Pakistani stock market. The predictability of stock prices using historical data is tested by employing unit root test, runs test and autoregressive integrated moving average (ARIMA) on twenty companies from the Karachi stock exchange. It was concluded that the capital market is inefficient in the weak form.

Anil K. Sharma and Neha Seth (2011), analysed the recent financial crisis on stock market efficiency in emerging stock markets such as India. The data for the last 10 years were collected from both BSE and NSE in India. The study concludes that the Indian stock
markets do not exhibit a weak form of market efficiency and thus do not follow a random walk.

Carl B. McGowan (2011), evaluates the weak form efficiency of the Russian Stock Market using the Russian Trading System Index for the period from when the market opened, September 4, 1995 to June 1, 2007. There does appear to have been a speculative bubble in the run-up to the market peak in late 1997 early 1998 that burst when the government defaulted on debt. However, based on the empirical results of this paper, it appears that the RTSI is generally weak form efficient, particularly in the last eight periods of the study.

Faiq Mahmood et al., (2011), determined that the efficiency of Chinese stock market, they apply efficient market hypothesis of random walk. Here they apply ADF, DF-GLS, PP and KPSS tests on stock market returns in order to check the unit root in data series for both Shenzhen and Shanghai stock exchanges separately. The results of the study show that the Chinese stock market is weak form efficient and past data on stock market movements may not be very usable in order to make excess returns. In both periods of crises Chinese stock market is observed weak form efficient.

Juliana Ibrahim (2011), examined that the weak-form efficiency of the foreign exchange market in thirty (30) Organizations for Economic Cooperation and Development (OECD) countries. We employ Augmented Dickey-Fuller (ADF), Philip-Perron (PP) and Kwiatkowski-Phillips-Schmidt-Shin analysis to examine for the unit root. Using weekly data for the period 2000 to 2007, the results for weak-form efficiency using ADF and PP tests indicate that the exchange rates studied follow random walks. In addition, the OECD foreign exchange market consistent with the weak-form of the Efficient Market Hypothesis.

Khan A. Q et al., (2011), tested the market efficiency of Indian Capital Market in its weak form based on the indices of two major stock exchanges of India viz; NSE and BSE. The efficiency of the Indian capital market is tested using the daily closing values of the indices of NSE and BSE over the period of 1st April 2000 to 31st March 2010 by employing Runs Test, which is a nonparametric test. Based on the result of runs test alternate hypothesis is rejected and it is proved that an Indian Capital market neither follow the random walk model nor is a weak form efficient.

Nikunj R. Patel et al., (2011), examinee that the weak-form market efficiency of Indian stock markets, namely Bombay Stock Exchange and National Stock Exchange for the period August 1998 to July 2010. Daily returns are examined for random walks using Unit Root Test, Auto correlation and runs tests. In all months, Null hypothesis is accepted of
random walk except January month. But in all days random walk is prevailing. The period of 2004 to 2010 support weak form Market Efficiency.

Otilia Saramat and Bogdan DIMA (2011), examined the weak form of informational, efficient for three major capital markets, namely United Kingdom, United States of America and Japan. Results are obtained for the DJI, FTSE 100 and NIKKEI 225 indexes, over a time span from 1995 to 2010. The results suggest that the Hurst exponent for the price series cannot be described as random walk processes. They conclude that the adjustment process on this market cannot be described accordingly to the postulates of weak informationally efficiency hypothesis.

Philip Ifeakachukwu NWOSA and Isiaq Olaskanni OSTENT (2011), examined the weak form efficient market hypothesis in the Nigerian stock market, using a sample data spanning the period 1986 and 2010. The study recommended that to enhance informational efficiency of the Nigerian stock exchange, especially in this era where the loss of the global financial crisis have dominated the minds of investors, the Nigeria stock market through appropriate policies which would enhance the informational efficiency of the market. Hence, the Nigerian stock market is not informationally efficient.

Sami N. M. Abushammala (2011), tested the efficiency of Palestine Exchange in this research the Researcher finds that the (PEX) is an inefficient in weak form by using the analysis of all daily time series of the (PEX) indices during the Period from 1st January 2007 to 31st December 2010 that (ADF, PP, and KPSS) tests for the (general index, Al-Quds index and all sectoral indices) do not follow the random walk theory in all significant levels and it proved the inefficiency of the (PEX) in the weak level, which means the possibility of taking advantage of technical analysis to be able to predict future prices by extrapolating the past prices.

Sogir Hossain Khandoker (2011), tested the Random walk hypothesis to test market efficiency in the Dhaka Stock Exchange Ltd (DSE). In this paper; with Runs test, Dickey-Fuller Unit root test processed and analysed the behaviour of the daily return of Dhaka Stock Market indices during the past 11 years. The sample includes the daily price indices of all securities listed on the DSE general, DSI (All Share), DSE top 20 indices, and Daily indices listed on the market. The results provide evidence that DSE does not follow the random walk model and so the Dhaka stock exchange (DSE) is not efficient even in weak form.

Tabassum Riaz (2011), study investigates the weak form efficiency for Karachi stock market by taking monthly index data for the period of July 1, 1997 to July 2, 2011. Jarque Bera test, Kolmogorov Smirnov test, Unit root tests, Autoregressive Model, Run test and
Variance ratio test employed to test the evidence of weak form efficiency. The results show that for selected sample period the Karachi stock market is not weak form efficient and hence not found to be random walk.

Taqadus Bashir (2011), examined the Weak form informational efficiency of textile sector. Market efficiency receives high focus within the studies conducted in the context of European, American and Greek capital markets. The daily data from June, 1997 to April 15, 2009 was used from twelve high volume trading textile companies listed on Karachi Stock Exchange. The statistical techniques used include ADF and PP tests in order to check stationarity, while Co-integration and VAR tests are applied to examine the weak form efficiency and concluding inefficiency in banking sector of KSE.

Babu and Srinivasan (2012), tested the weak form efficiency in multi commodity exchange India Ltd, using runs test and Johansen co-integration test. The study period was from 1st April, 2008 to 31st March, 2011. A sample of 8 commodities based on the total turnover during the study period was selected. The results of the study provide evidence against a weak form of efficient market hypothesis for the majority of the select sample commodities during the study period. The present paper made an attempt to evaluate the weak form efficiency and to find the relationship between spot and futures prices Indian commodities markets.

Chien-Ping Chen and Massoud Metghalchi (2012), investigated the predictive power of various trading rules with different combinations of the most popular indicators in technical analysis for the Brazilian stock index (BOVESPA) over the period of 5th January, 1996 to 3rd January, 2011. The empirical results show that all the buy-sell differences under single, double and triple-indicator combinations are insignificant in t-test. The results support strongly the weak form of market efficiency for the Brazilian stock market.

Chris O. Udoka (2012), focused on the information efficiency of the Nigerian Stock Market. The study investigated the weak-form information efficiency of the Nigerian Stock Market between 1986 to 2004 using monthly price index. Finding resulting from test of data has shown that the Nigerian Stock Market is weak-form efficient. Therefore, the Nigerian Stock market was in weak-form efficient.

Faisal M. Zahid et al., (2012), found that the weak form efficiency of Karachi stock exchange (KSE) market of Pakistan for the period March 2000 to October 2011. The hypothesis of randomness in a return series of KSE market is also rejected by runs test and auto-correlation test. The results revealed that stock return series do not follow the random
walk model and the significant autocorrelation rejects the hypothesis of weak form efficiency.

Hira Irshad and Ghulam Sarwar (2012), conducted to analyse the weak form of market efficiency in the Karachi Stock Market. Daily, weekly and Monthly data was collected ranging from 1998 to 2012. Data was analyzed using Unit Root Test, Run Test and KS test. Results reported that Karachi Stock Market was weak form inefficient. Technical and Fundamental Analysts do have the opportunity to get abnormal returns using stock valuation techniques.

Jeetendra Dangol (2012), The paper examines random-walk behaviour and weak-form market efficiency on daily market returns of All Share Price Index (ASPI) and Sensitive Index (SI) on the Nepal Stock Exchange (NEPSE) using Lo and MacKinlay’s (1988) variance-ratio tests and runs tests for the period between September 13, 2006 to May 13, 2010. There is no evidence for weak-form efficiency in either series. It implicates that market participants have opportunities to predict future price and earn abnormal returns from the Nepalese stock market.

Lutfur Rahman and Jashim Uddin (2012), examined that the weak form of efficiency of three South Asian markets named as Dhaka Stock Exchange (DSE), Bombay Stock Exchange (BSE) and Karachi Stock Exchange (KSE) for a period between January 2000 to June 2010. An empirical result reveals that the returns do not follow a normal distribution and the distributions are leptokurtic. The tools like Autocorrelation and unit root tests, Johansen co-integration and Granger causality test exhibits inefficiency. So test result implies that the markets are not a weak form of the efficient.

Mayowa Gabriel Ajao and Richard Osayuwu (2012), tested the weak form of efficient market hypothesis in the Nigerian capital market. On the basis of findings, they conclude that successive price changes of stocks traded on the floor of the Nigerian Capital Market are independent and random therefore, the Nigerian Capital Market is efficient in the weak form.

Mishra P K (2012), verified the weak form efficiency of select South Asian capital markets (India, Sri Lanka, Pakistan, Bangladesh, and Mauritius) over the sample period spanning from January 2005 to October 2010. The application of unit root test provides the evidence that these markets are not a weak form efficient which has both positive and negative implications.

Monika Aggarwal (2012), tested the NSE Nifty closing price for the period of 15 years starting from April 1, 1996 to March 4, 2011. The statistical techniques like Kolmogorov-Smirnov Test, Skewness, Kurtosis, Scatter plot analysis, Sequence plot, Run
test and Autocorrelation analysis had been applied. It was found that Indian markets are random and successive index value changes are independent. The past index changes do not help the investor or analyst to forecast the future.

Muhammad Arshad Haroon (2012), in this paper weak form efficiency has been tested of Karachi Stock Exchange covering the period of 2nd November 1991 to 2nd November 2011. Descriptive statistics indicated the absence of weak form efficiency while results of non-parametric tests, showed consistency as well. The non-parametric tests like KS Goodness-of-Fit test, run test and autocorrelation test to find out serial independency of the data. Results prove that KSE is not weak form efficient.

Naznin Sultana Chaitly and Sanjida Sharmin (2012), Dhaka Stock Exchange have experienced two market crashes since its inception (November 1996 and December 2010). The Result of the study indicates that the DSE is not ‘Weak form of Efficient’ and not follow ‘Random Walk model’.

Nikunj R. Patel (2012), investigated that the weak form of market efficiency of Asian four selected stock markets. They take a daily closing price of stock markets under the study from the 1st January 2000 to 31st March 2011. The Runs Test indicated BSE-SENSEX and NIKKEI markets are weak form, inefficient whereas HANSENG and SSE Composite hold a weak form of efficiency. The results of the Variance Ratio test elucidates all the four markets does not follow Weak Form of efficiency. The overall results from the empirical analysis suggest that the stock markets under study are weak-form inefficient.

Njimanted Godfrey Forgha (2012), This study presents empirical evidence of the efficiency and volatility of stock returns in five stock markets in Africa namely, Cameroon, Nigeria, South Africa, Egypt and Kenya. Although the markets have proven to be inefficient based on Generalized Autoregressive Conditional Heteroskedasticity Mean (GARCH-M), Augmented Dekey Fuller (ADF) and the Variance Ratio tests, there are still supporting evidences to justify that, there are profit opportunities in these markets.

Pothupityage Narada Damitha Fernando (2012), tested the efficiency of emerging Colombo stock exchange (CSE) through independence tests and technical trading strategies. The study uses daily market closing prices of All Share Price Index (ASPI) for twenty five years from January 1985 to December 2010. The results of the independence tests provide evidence on the significant serial correlation in daily market returns with their lag returns and confirmed that the CSE is not in weak-form efficient.. The findings further confirm that the technical trading strategies have predictive ability in explaining the performances of CSE.
Pyemo Afego (2012), examined the weak form efficiency of the Nigerian stock exchange (NSE) using the non-parametric runs test over the period 1984 to 2009. Specifically, this paper tested the random walk hypothesis for the Nigerian All share monthly index returns. On the whole, the results from this study suggest that stock price changes on the NSE are not random, and that exploitable patterns exist, making it possible for arbitrage portfolios to be constructed based on trading rules. This observation contradicts the weak form of the EMH.

Sameer Elbarghouthi et al., (2012), applied the runs test - runs up and down, distributions of runs by length, and runs above and below to examine whether ASE is a weak form efficient. The empirical results obtained in this paper suggest that the price behaviour in ASE does not follow the random walk model over time. However, this does not necessarily imply a violation of weak form efficiency.

Sameer Elbarghouthi et al., (2012). in this paper to investigate the behavioural properties of Amman Stock Exchange (ASE) indices. Box-Jenkins estimation, irrespective of the index examined, produced different models with a high prediction performance, violating the EMH conditions. The unit-root test also confirmed these results since the return series for all indices did not exhibit unit root, and all processes were stationary.

Saqib Nisar and Muhammad Hanif (2012), examined the weak form of the efficient market hypothesis on the four major stock exchanges of South Asia are included, India, Pakistan, Bangladesh and Sri Lanka. Historical index values on a monthly, weekly and daily basis for a period of 14 Years (1997-2011) were used for analysis. They applied for statistical tests, including runs test, serial correlation, unit root and variance ratio test. Findings suggest that none of the four major stock markets of south-Asia follows Random-walk and hence all these markets are not the weak form of efficient market.

Vesarach Aumeboonsuke (2012), investigated the weak form efficiency of six equity indices in ASEAN countries including the FTSE Bursa Malaysia Index, Jakarta Stock Exchange Composite Index, Philippines Stock Exchange Index, Stock Exchange of Thailand Index, Singapore’s Straits Times Index, and Vietnam Ho Chi Minh Stock Index. The research examines the weak form efficiency across different equity exchange indices and also investigates whether there is an improvement in the weak form efficiency of each equity exchange index across time (1991-2012). The results from runs test and autocorrelation test show that the ASEAN equity markets were not efficient and not improving over time except for Thailand and Singapore, where the efficiency has been improved during the period from 2001 to 2012.
Zabiulla (2012), tested the market efficiency of Indian Capital Market in its weak form by using the data set of BSE Sensitive Index. The study period ranges from April 2, 2001 to March 31, 2011. Unit root tests, autocorrelation test and runs test are used for the analysis. Based on the result of these models, it can be concluded that Indian Capital Market neither follows random walk model nor is a weak form efficient.

Abdus Salam Md (2013), tested the Weak Form Efficient Market Hypothesis in Dhaka Stock Market. The sample included total 1099 daily observations for sample-1 (2004-2007), 1189 for sample-2 (2008-2012) and 20 for each month return. Return distributions studied by comparing the descriptive statistics of the Dhaka Stock Exchange Index (DGEN). This study concluded that Descriptive statistics, Kolmogrov-Smirnov goodness of fit test (K-S test), and Autocorrelation provides that daily return of Dhaka stock market is not weak form efficient and strongly rejects the null hypothesis. The Run test of monthly return of Dhaka Stock market accepts the Null hypothesis and shows efficient at weak form.

Abu Towhid Muhammad Shaker (2013), verified that the weak form efficiency of the Finnish and Swedish stock markets are employing a serial correlation test, an Augmented Dickey-Fuller test and a variance ratio test. The tests are performed using ten years daily the OMX Helsinki and OMX Stockholm indices data from 2003 to 2012. Overall, results conclude that daily prices of returns do not follow random walks and both the Finnish and Swedish stock markets are not a weak form efficient.

Asha Nadig and Shivaraj (2013), examined the efficient market hypothesis in its weak form (random walk model) for the banking index BSE BANKEX in India are considered for the period June 2003 to Dec 2012. The random walk hypothesis is examined using Auto Correlation test, Runs test, ADF test. The banking stocks in India do not show the characteristics of random walk and as such are not efficient in the weak form. The rejection of weak form efficiency means that investors can better predict stock price movements and earn abnormal profits.

Ayhan Kapusuzoglu (2013), examined the Istanbul Stock Exchange (ISE) National 100 index has a weak form market efficiency or not under the efficiency market hypothesis. For this purpose, daily closing values of the related index during the period from 1996 to 2012 were used. In order to test the weak form market efficiency under this study, unit root tests were implemented. The findings suggest that, it was determined that the related set not shows random walk and in other words, ISE National 100 market is not an efficient market in weak form.
Ayyappan et al., (2013), analysed the efficiency of National Stock Exchange of India Ltd (NSE) by testing Board Indices and CNX Nifty. The result found that the linear dependence is existed in the NSE (Broad Market Indices) returns and it is determined from the analysis that the Broad Market Indices in National Stock Exchange India Ltd is not weak-form efficient.

Batool Asiri and Hamad Alzeera (2013), tested the weak-form market efficiency in Saudi Arabia's stock market, Tadawul which is expected to follow a random walk. All share index and sectoral indices for daily closing prices in Tadawul between 2006 and 2012 are collected. Unit root Dickey-Fuller test, Pearson Correlation test, Durbin-Watson test and Wald-Wolfowitz runs-test are used. The four tests confirmed the weak-form market efficiency in the Saudi stock market for All share prices and 11 individual sectors. Hence, Saudi stock market is in weak form efficient.

Batsirai Winmore Mazviona and Davis Nyangara (2013), tested whether the ZSE exhibits weak form market efficiency or not. The data used to carry out the empirical study was obtained from the ZSE for the period 19 February 2009 to 28 June 2012. The results of the study provide evidence that the ZSE is not weak form efficient. This article adds to the existing body of knowledge and offers for the first time an investigation of the weak form efficiency on the ZSE following currency reform.

Chikoko Laurine and Muparuri William (2013), the research tested the efficiency of the ZSE in its weak form after the country adopted a multiple currency exchange rate regime. The research employed the runs test and autocorrelation test. The results confirmed with each other that the ZSE was inefficient in the weak form.

Desmond Tutu Ayentimi et al., (2013), This paper examines the weak-form efficiency of listed firms on the Ghana Stock Exchange (GSE) by applying the Random Walk Hypothesis using weekly closing stock prices on the GSE from January, 2007 to June, 2012. The GSE financial market returns series exhibit volatility clustering that shows an indication of inefficiency on the GSE. The results of both the descriptive statistics of the weekly market returns and the normality tests show that returns from GSE did not follow the normal distribution.

Haritika Arora (2013), verified that the weak form of the Indian Stock Market specifically S&P CNX Nifty (Index of National Stock Exchange) for the period of 1 January 2000 to 31 Dec 2011. Statistical analysis is done with help of Augmented Dickey and Fuller (ADF) test, Auto-correlation test, Ljung-Box Q test, Auto-regression, ARIMA model, portmanteau BDS test and GARCH(1,1) model. Results exhibited that return series are
characterised by linear as well as nonlinear dependencies and a high persistence of volatility clusters over the sample period. Hence, it can be concluded that Indian Stock market does not show evidence of weak form of market efficiency.

Hitesh J. Shukla and Ravi H. Sakhareliya (2013), examined the random walk hypothesis to determine the validity of weak form efficiency for two major stock markets (BSE & NSE) in India. The study uses daily observation over the span from 01/01/2003 to 31/12/2012 comprising of 2497 observations each. The RWH is examined using Normality, Run Test, KS Test, Autocorrelation using Q-statistic & Multiple Variance Ratio Test. On the basis of empirical results given by various tests, they reject the null hypothesis. This implies that the Indian stock markets are not a weak form efficient signifying that there is a systematic way to exploit trading opportunities and acquire excess profits.

Hojatallah Goudarzi (2013), The main purpose of this study was to study market efficiency through modeling one stylized fact of asset returns series i.e., mean reversion in the Indian stock market. To achieve this purpose, the study used ADF test and GARCH model. The study found that the underlying series is stationary and therefore mean reverting. Therefore, based on the results the study concluded that, the Indian stock market is informationally weak-inefficient.

Ikenna Nneji (2013), investigated the efficiency of the Nigerian capital market from 1986 to 2009 through the Random Walk Theory, the rate at which stock information is reflected in the stock price and its impact on Nigeria’s economic development. These are the ADF unit root test, the ARMA Test, the VAR-based granger causality test, the Cointegration analysis are tested. The results revealed that there is still room for improvement of the efficiency level of the Nigerian Capital Market.

Kapil Jain and Paryul Jain (2013), tested the randomness of Indian stock market using BSE-SENSEX as a base index representing the Indian stock market and comment on its weak form of efficiency. The study uses both non parametric (Runs test) and parametric test (Autocorrelation, Dickey Fuller Test) to test the weak form of efficiency. The results of the study are in support of random walk of Indian stock market suggesting the existence of the weak form of efficiency in the market.

Khurram Sultan et al., (2013), highlighted that the empirical research is undertaken to check out the weak form of efficient markets, Karachi Stock Exchange (Pakistan) Vs. Kuwait Stock Exchange. Daily based observations were taken from 1st January 2005 to 30th December 2010. With the help of ADF and Autocorrelation, null hypothesis were accepted. Descriptive statistics were used to identify whether yearly return are normally distributed or
not. We conclude that the stock markets of both countries are weak and inefficient. By using this research investors can earn excessive returns based on historical database.

Kinjal Jethwani and Sarla Achuthan (2013), tested the Weak Form Efficiency of Indian Stock Market. The daily return series of S&P CNX Nifty (National Stock Exchange), is considered for the period from 1st January 1996 to 31st December 2012. Different parametric and non-parametric tests such as Autocorrelation, Variance Ratio test, Kolmogrov Smirnov test and Runs test are used in this study. This paper also investigates the weak form efficiency during, before and after Financial Crisis which took place in the year 2002 (Dot Com Bubble) and 2007 (Sub Prime Crisis). The result shows that Indian stock market is not a weak form efficient in all periods; however after the 2002 stock market behaves in a more efficient manner.

Maruf Rahman Maxim (2013), tested the weak form of efficiency in DSE. The sample includes DSEGEN price index daily closing values. The data is divided among two time periods, year 2009-2010 is used to test the efficiency before the market crash and 2011-2012 is used to test the efficiency after the market crash. Kolmogorov-Smirnov and the Shapiro-Wilk tests are used to test the normality of returns and the return distributions are non-normal. Runs test is used to test for the randomness of returns. It shows that returns were not random before the market crash. Numerous other previous researches also show the non randomness of returns in DSE.

Mohammed Hokroh (2013), tested the efficiency of the Saudi Stock Market (SSM) after “Tadawul”. The weak form of the efficiency theory was applied to test the SSM efficiency. The SSM daily stock price returns index was examined using autocorrelation and the run test of randomness from 1st January 2007 to 18th March 2007 (before Tadawul) and from 19th March 2007 to 29th May 2007 (after Tadawul). The results suggest more investigation to be done on the SSM behavioural finance and under reaction and overreaction split to confirm the SSM “efficiency”.

Muhammad Mudassar et al., (2013), tested the random behaviour of the Karachi Stock Exchange (KSE 100 Index) during the period of past three financial years to know whether investors could generate abnormal profits during the period or otherwise. Tests used were Runs Test, ADF Test, PP Test and Autocorrelation Function Test. During the study it was found that the performance of KSE 100 Index remained in the weak form of inefficiency and investors have been able to generate excessive returns on their investment most of the times.

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Nadhem Al-Saleh and Jasim Al-Ajmith (2013), paper reports the results of a series of tests carried out to examine weak-form efficiency of the Saudi Stock Market (SSM). The paper examines whether SSM follows a martingale process. Both traditional and newer econometric techniques were applied to test the data between 22 January 1994 and 31 December 2007 (inclusive) of eight industry-based indexes and a composite index. The outcomes of the ten different tests indicate mixed results. The random walk hypothesis is mostly rejected for the daily data and some of the weekly indexes.

Nicholas Muthama and Nicholas Mutothya (2013), investigated that whether or not stock prices at Nairobi stock exchange follow a random walk model. This study employed serial correlation tests and runs tests to analyse daily price returns for eighteen companies whose stocks constituted the NSE 20 share over the period July 2008 to June 2011. The findings suggest that the random walk, model cannot be a good description of successive price returns at the Nairobi stock exchange.

Sajeela Rabbani et al., (2013), tested the weak-form market efficiency hypothesis is tested on an emerging stock market Karachi stock exchange Pakistan. Secondary data has been taken for twelve years from January 1999 to December 2010 of KSE 100 Index. Weak-form efficiency tests such as Augmented Dickey-fuller test, Auto-correlation function test, Phillip Perron test and Runs test are applied to analyze the data. All these tests rejected efficient market hypothesis (EMH) in its weak-form except Runs test. Overall KSE of Pakistan is weak-form inefficient and investors are compensated for taking augmented risk.

Salim Lahmiri (2013), tested the random walk hypothesis (RWH) of stock markets in the Middle East and North Africa (MENA) region using more recent data from January 2010 to September 2012. He concludes that Jordan and KSA stock market are weak efficient. In sum, the empirical results suggest that return series in Kuwait, Tunisia, and Morocco are predictable.

Shahid Ali et al., (2013), examined that Random walk and Weak Form Efficiency of capital markets of Pakistan, India, Srilanka and Bangladesh constituted as SAARC countries. The Daily, Weekly and Monthly observations of period Jan, 2005 to Dec, 2010 were examined by using broadly used tests; Autocorrelation, Ljung-Box Q-Statistic, Run test, Unit root test and Variance Ratio tests were used. To sum all, we conclude that none of capital markets are characterized by Random walk and hence are not Weak form Efficient for the examined period.

Shikha Mahajan and Manisha Luthra (2013), examined the random walk hypothesis to determine the validity of weak form efficiency for BSE Bankex. Monthly returns from
January, 2002 to September, 2013 for the BSE Bankex are used in this paper. The random walk hypothesis is examined using three statistical methods, namely a serial autocorrelation test, a non-parametric runs test, and an Augmented Dickey-Fuller unit root tests. The statistical tests are conducted for a full sample period. The empirical results of this study support that BSE Bankex is weak-form efficient.

Sushil Kumar and Manisha Singh (2013), studied the Efficiency of Indian stock market that is, whether Indian Stock Market efficient or inefficient. This research paper investigates one facet of efficiency of Indian Stock market. This study is conducted to know that whether Indian stock Market is efficient or inefficient particularly at weak levels. Finally, concluded that Indian Stock markets do not exhibit a weak form of market efficiency.

Thian Cheng Lim et al., (2013), investigated the efficiency of the two official stock markets in China. The sample includes the daily closing prices of A-share and B-share indexes in both the Shanghai and Shenzhen stock exchanges for the period of 1st January, 2006 to 31st December, 2010. Three different approaches are employed; namely, Serial correlation test, Runs test and Variance Ratio test. Statistical evidence from serial correlation test shows that returns are correlated in both Shanghai and Shenzhen indexes and therefore the markets are weak-form efficiency.

Vladimir Khrapko (2013), tested the weak-form market efficiency of the stock market index in Ukraine as compared with other countries’ stock indexes. Data Daily data were investigated for the period from August 2008 to October 2011. Methods they applied different statistical tests to verify the hypothesis that the Ukrainian stock market follows a random walk.

Abdul Aziz Farid Saymeh (2014), examined the Weak Efficient Form Hypothesis for two emerging stock markets, which are: Amman Stock Exchange, (ASE) and Turkish Stock Exchange (BORSA Istanbul) through examining their monthly indexes for the period 2000-2011. Tests used: Ljung Box Autocorrelation, Runs, Dickey-Fuller Unit Root, and Variance Ratio tests. Based on these test results, both ASE and BORSA Istanbul are not perfect Weak Form Efficient markets.

Akram Alkhatib and Murad Harasheh (2014), examined the weak-form market efficiency of Palestine Exchange (PEX). The study employs the serial correlation and the ADF test as parametric tests. The Runs test is also used as a non-parametric test. Results of the parametric tests are consistent with the alternative hypothesis that the stock market is inefficient at the weak-form level as the indices exhibited autocorrelation and stationary
behaviour. Finally, result of the regression analysis of stock indices does not support the random walk model.

Ali Saeedi et al., (2014), studied that the weak-form efficiency of the Iranian capital markets. This study examined the behaviour of daily returns in Tehran Stock Exchange (TSE) utilizing autocorrelation and augmented Dickey-Fuller for the period of 2005-2013. The results of all the tests do not support that TSE daily returns follow a random walk. Therefore, they conclude that it is possible to use technical skills to attain abnormal gains.

Augustas Degutis and Lina Novickytė (2014), reviewed that the development of the capital markets is changing the relevance and empirical validity of the efficient market hypothesis. This paper presents also an examination of stock market efficiency in the Baltic countries. Finally, the research methods are reviewed and the methodology of testing the weak-form efficiency in a developing market is suggested.

Fatih Konak, and Yasin Şeker (2014), examined that the presence of random walk in financial time stock exchange (FTSE) 100 during the period from 2001 January to 2009 November. Unit root tests such as ADF and PP shows that the market is non-stationary and therefore, random walk hypothesis is accepted. According to GARCH (1,1) outcomes, in all conditions the market prices follow the random walk supporting the weak form market efficiency hypothesis. It can be concluded that in developed markets such as the FTSE 100, the existence of weak form market efficiency is evident.

Ghada Abbas (2014), examined that whether daily stock returns on Damascus Securities Exchange follow a random walk for the period of 2009 to 2014. This study applies two parametric tests, namely serial-correlation test and variance ratio test, and two non-parametric tests, i.e., runs test and BDS test. It is found that daily returns do not confirm to a random walk during the period under examination. The broad conclusion emerging from this study is that price returns might be predictable; hence, it is possible for investors to earn higher returns than average by using historical successive prices.

Hemalatha and Nedunchezian (2014), tested the weak form efficiency of National Stock Exchange. The study uses the daily adjusted closing price of the stock from 1st Apr 2008 to 31st Mar 2013 comprising total of six companies from Fast Moving Consumer Goods (FMCG) sector. To test the Market Efficiency the study has used both parametric and non-parametric tests like Run Test, Autocorrelation, and Augmented Dickey Fuller test. These tests are used to analyze randomness, independence, stationality for the data collected. To test the volatility E-Garch has been used. The study reveals drifts in market efficiency, which offers investors a diversified way to make their investment activities in an effective manner.
Ilona Shiller and Ishmael Radikoko (2014), tested the validity of the weak-form EMH on the Canadian TSX equity market using seven TSX daily index returns. Tools used: Autocorrelation, the BG, the runs tests, ADF, PP, KPSS, and BDS test. Overall, results uniformly reject the RWM is governing TSX equity index returns, implying that the Canadian equity market is weak-form inefficient.

Ishaq Ahmad Bhat et al., (2014), focused on analysing and comparing the efficiency of the capital markets of India and Pakistan. For the purpose of realizing the objectives, Adjusted Daily closing prices of CNX Nifty (NSE India) and KSE 100 (KSE Pakistan) are taken into consideration for the period ranging between 01st April,2003 to 31st March,2013. The researchers have relied on Descriptive Statistics, ADF test, Auto-Correlation test and Jarque-Bera Statistic, Runs test to analyze the data and reach to the results. The results derived that the stock markets of India and Pakistan being efficient in weak form.

Jagannathan (2014), investigated that whether the Indian stock market follows a random behaviour or not. For analysis, three indices from the BSE have been selected. The time period of analysis is Sept 2010 - Sept 2013. The results and analysis show that the three indices selected for analysis do not exhibit a random walk. Therefore, the weak form of market efficiency is rejected for the three indices for the time period in consideration.

Kalpana Hooda (2014), tested on Weak Form Efficiency of Indian Capital Market. This study had been conducted to achieve the following objective to trace the trend of the movement of stock market index over the study period to known whether the prices of the skips follow random walk to test weak form efficiency of Indian Capital Market.

Kasilingam Lingaraja et al., (2014), this research paper investigates the efficiency of stock market and volatility behaviour of eight Asian Emerging market indices. This study used the secondary daily time series data for the period of ten years from 01st Jan ,2004 to 31st Dec, 2013. The Econometric models (GARCH, Autocorrelation and Runs Test) where used to test the volatility and market efficiency of Asian emerging stock markets. This paper provides significant evidences of market efficiency and randomness distribution in these emerging Asian markets.

Khoa Cuong Phan and Jian Zhou (2014), studied that whether or not, weak-form efficiency, which is relatively popular in emerging stock markets, holds in the Vietnamese stock market. The three statistical techniques, namely autocorrelation test, variance ratio test, and runs tests. Data for analysis was collected from July 28th 2000 to July 28th 2013. The main conclusion drawn from the results of this research is that it may be the case that the weak-form efficient market hypothesis does not hold in the Vietnamese stock market.
Knowledge Chinhamu and Delson Chikobvu (2014), investigated that the random walk for platinum prices over the period January 1970 to May 2012. Monthly log returns of platinum prices are examined using the Augmented Dickey-Fuller test (ADF) and a GARCH model with time-varying properties. From the year 1999 to the year 2010, the drift parameter is positive and statistically significant. Therefore, the platinum market is regarded as weak-form efficient.

Krishnaveni and Varadaraj (2014), analysed the efficiency of foreign exchange market using Random Walk Models. For the efficient market hypothesis, daily rates of USDCHF currency pairs for 5 years period from 01st January 2009 to 31st December 2013 are taken. It is found that the foreign exchange market is not a weak form efficient with respect of this currency pair, and traders of foreign exchange.

Mohammad Anees and Sumit Kumar (2014), examined the Random Walk Behaviour of three major stock exchanges of Asian countries, namely; China (SSEC index), Japan (N225 index) and India (BSE30-Index). With the help of Run-Test and Autocorrelation, the weak form of market efficiency has been tested. The results of the study clearly reveal that all the three stock markets of Asia follow Random walk i.e., all these markets are in the weak form of efficiency.

Mohammad Shafi (2014), tested whether Indian Capital Market is efficient in Weak Form or not. With help of NSE (Nifty) 50 companies and Daily return from 2003-2013. All Tests including run tests, autocorrelation tests reveal that Indian Capital Markets are inefficient in the weak form.

Neeraj Gupta and Ashwin Gedam (2014), tested the Indian stock market of efficient market hypothesis. In this paper runs test has been used to find out market efficiency. The stock price of the selected companies has been taken from NSE (National Stock Exchange). They found that the evidences do not reject the null hypothesis and therefore favour the random walk theory.

Nwidobie and Barine Michael (2014), Analysis of all-price-index (API) data on shares of listed firms on the Nigerian Stock Exchange from January 2000 to December 2012 using the Augmented Dickey-Fuller (ADF) test shows that share price movements of the Nigerian Stock Exchange do not follow the random walk. Results also indicate the existence of market inefficiencies in the Nigerian capital market necessitating the inflow of cheap and free information about security fundamentals into the market for share pricing by the forces of demand and supply.
Ravi Kumar Gupta (2014), examined that the efficiency of Indian stock market. BSE index, SENSEX was used in the study to represent the Indian stock market. The daily closing points were taken for the sample period of ten years from January 2003 to December 2012. Different statistical tools like Unit Root test, Runs test and Kolmogorov–Smirnov test (K–S test) were used. The study concluded that Indian stock market was not showing any sign of weak form efficiency, which means information about the past, are not completely absorbed in the current prices.

Rehman, Sania and Qamar Muhammad Rizwan (2014), conducted that the major Stock Market in Pakistan such as the Karachi Stock Exchange. Different tests are applied to form a distinctive opinion on the Weak Form Efficiency of the KSE. The results of this study revealed that there exists a positive correlation in the KSE 100-index. The runs test gives zero p-value which shows continues growing trend. This illustrates that the performance of the market is inefficient.

Sachin K and Kantesha Sanningammanavara (2014), examined the random walk hypothesis to determine the validity of weak-form efficiency of Indian stock markets. Daily returns from 1st April 2004 to 31st March 2014 used for the study. The empirical results of this study support previous studies that the Indian stock markets are weak-form inefficient. The results show that the Indian stock markets does not exhibit weak form market efficiency and thus do not follow a random walk.

Syed Tauseef Raza Gilani et al., (2014), examined the weak-form market efficiency of Islamabad Stock Exchange in Pakistan. The main objective of the study is to test that it follows a random walk or not. This study analyses the daily closing index of ISE-10 for the period Jan 1, 2013 to Dec 31, 2013. It also reveals that no excess profits can be earned through using technical analysis. Run test and auto correlation test show market inefficiency at specific periods, but ADF test descriptive showed market efficiency in weak form. It shows Islamabad Stock exchange is in weak efficient.

Vanita Tripathi and Arnav Kumar (2014), examined the issue of sectoral efficiency of the Indian Stock Market. For this, daily data for 11 sectoral indices on NSE have been used. The study period spans from Jan, 2004 to Jan, 2014. The results suggest that overall Indian stock market seems to be a weak form efficient. Weak form inefficiency in Bank, Metal, PSU Bank and Realty sectors is suggestive of exploitable arbitrage opportunities in these sectors.

Ushna Akber and Nabeel Muhammad (2014), examined the market performance of KSE 100 Index from 1st January 1992 to 30th April 2013. The results of different tests illustrate that the market is moving towards efficiency. In this paper, we have attempted to
test for weak-form efficient market hypothesis in KSE 100 Index by checking for random walk hypothesis. They found that KSE 100 does not follow random walk hypothesis. Thus overall, the market is not weak-form efficient.

Abu Hasan Md (2015), tested the weak form efficiency of Bangladesh stock market, employing the Runs test and Phillips-Perron test, Autocorrelation test, Augmented Dickey-fuller test, and Variance Ratio test. The study uses daily return data for the three stock indices of Dhaka Stock Exchange such as DSI (1993 to 2013), DGEN (2002 to 2013), and DSE-20 (2001 to 2013). The evidence suggests that all the return series do not follow the random walk model, and thus the Dhaka Stock Exchange is inefficient in weak form.

Abu Sufian Md (2015), examined the market efficiency level of Dhaka Stock Exchange. DSE general index, DSE all-share price index and DSE 20 index are used for the empirical data analysis. In this study ARIMA model, Kolmogrov-Smirnov goodness of fit test and Runs test are employed to find out the result. In all the tests the null hypothesis is rejected indicating DSE do not follow random walk model. The results of these tests confirmed that DSE is not weak form efficient.

Amjad GH Alhabashneh (2015), evolving efficiency of ASE. GARCH-M (1,1) approaches along with state space, time-varying parameters are used for the period 1992-2009. ASE market shows high sensitivity to past shocks and found to be weak-form inefficient, as the efficiency does not improve toward the begging of 2009 and negatively reacts to contemporaneous crises.

Anjala Kalsie and Jappanjyot Kaur Kalra (2015), studied the efficiency of Indian stock markets during the period 2001 2011. The weak form of efficient markets is extensively tested using NIFTY and 6 major NSE sectoral indices Pharma, IT, MNC, Bank, FMCG and Nifty Junior. Tools tested for analysis - Runs test, Unit Root testing, ACF, Correlogram and other relevant statistical methods. The study concludes that Indian markets are inefficient in its weak form for the study period.

Ankesh mundra et al., (2015), in their study applied to run test for the weak form of efficient market hypothesis on the companies contributing to nifty. The monthly data on closing stock prices for last eight years of 46 companies contributing to nifty have been considered. The data analysis was done in Microsoft excel, null hypothesis was accepted for 38 stocks out of 46 stocks. The price changes during the great global recession of 2008 have also been considered. Hence, it be can say that national stock exchange is a weak form efficient.
Davinder Suri (2015), tested the weak form efficiency in the framework of the random walk hypothesis for the National Stock exchange in India for the period March 2003 to February 2015. The tests conducted include tests for stationarity and normality. The test results of the data series of NSE S&P 500 Index series and daily returns from the index show that the NSE mostly follows a random walk.

Dennis Bulla (2015), Random walk theory explains the concept of efficient markets. The study, therefore examined whether the Nairobi Securities Exchange provides evidence of weak form efficiency for the period 2000-2009. Results indicate that going by the evolving efficiency argument and contrary to prior period findings, the stock market price data pattern in this study yielded results that is consistent with the random walk hypothesis.

Elmar Gräterand and Jean Struweg (2015), studied that the efficiency of developing markets with a specific focus on the JSE Limited. Both the Augmented Dickey-Fuller and Phillips-Perron tests were employed to test whether the JSE followed a random walk between 1999 and 2014. The null hypothesis (H0) for both tests is that the series of logarithmic returns has a unit root and is therefore a weak form efficient. In both tests this H0 is rejected, which proves that for the period under analysis the JSE was not a weak form efficient.

Halime Temel Nalın and Sevinç Güler (2015), investigated that the weak form efficiency in the BRIC countries and Turkey with the use of autocorrelation analysis, unit root tests, Johansen cointegration and Granger causality test. Monthly data covers the period from July 1997 to December 2013. The findings indicate the efficiency among the stock markets in the weak form. The empirical findings indicate monthly closing prices of indices follow the random walk procedure.

Hemalatha and Nedunchezian (2015), tested the weak form efficiency of National Stock Exchange. The study uses the daily closing price of the stock from 1st Apr 2013 to 31st Mar 2014 comprising total of seven sectors. To test the Market Efficiency the study has used both parametric and non-parametric tests like Run Test, Autocorrelation, and Augmented Dickey Fuller test. These tests are used to analyze randomness, independence, stationality for the data collected. To test the volatility TGarch has been used. The study reveals drifts in market efficiency, which offers investors a diversified way to make their investment activities in an effective manner.

Izz eddien N. Ananzeh (2015), conducted to examine EMH at the weak form level of Amman stock Exchange (ASE) by using daily observations for the period span from 2000 to 2013. The results of serial correlation reject the existence of random walks in daily returns of the ASE, and the unit root tests also conclude the return series of ASE are stationary and
inefficient at the weak-level. Also the runs tests verify that the stock returns series of ASE are not random, and our final conclusion reports that the ASE is inefficient at the weak form level.

Joel Obayagbona and Sunday Osaretin Igbinosa (2015), investigated the weak-form market hypothesis in the emerging capital market of Nigeria from January 2006 to December 2011. The overall results suggest that the emerging Nigerian Stock Market is not efficient in the weak form.

Krishnaveni (2015), analysed the efficiency of foreign exchange market using Random Walk Models. For the efficient market hypothesis, daily rates of GBPUSD currency pairs for 5 year period from 01/01/2009 to 31/12/2013 are taken. It is found that the foreign exchange market is not a weak form efficient with respect of this currency pair, and traders of foreign exchange in respect of these current pair are able to predict their future values based on their values in the recent past.

Muhammad Asif et al., (2015), tested the Karachi stock exchange KSE for the weak form efficiency and whether the technical analysis in stock market worth any value or not. It implies that whether the historically available price information can be used to predict the future prices or not? For this purpose monthly data of KSE-100 index were used for ten years from 2000-2010. The concluded that the Pakistani market KSE is not a weak form efficient and prices in it does not follow a random walk which means that the previous data and price information can be used to predict the future prices.

Muhammad Raquib and Khairul Alom (2015), stated Dhaka Stock Exchange General Index (DGEN) demonstrates that a positive autocorrelation in Dhaka Stock Exchange returns exists, particularly in the period of 2001-2013 and DSE does not hold a weak form of efficiency and not following the Random walk model. The inefficiency of the Dhaka Stock Exchange follows on from the violation of the necessary conditions for an efficient market with a developed financial system and also implies financial markets and institutional imperfections.

Nalini R (2015), tested the random walk hypothesis in the Bombay stock exchange. The top thirty companies traded on the Bombay stock exchange have been considered for the study. Runs test was used for the data analysis and interpretation. The results shows that the price movements in share for predicting their future prices. It was proved that the weak form of market efficiency or the random walk theory is applicable in the BSE.

Noman Siddikee and Noor Nahar Begum (2015), examined that the weak form market efficiency of the thirteen listed pharmaceutical company on Dhaka Stock Exchange
The data consist of the daily returns from 1st January, 2009 to 31st December, 2013. The finding of the runs test is completely rejecting the random walk theory, whereas the ADF test strongly support the weak form efficiency of the Pharmaceuticals stock return. The results of the Autocorrelation and Box-Ljung statistics support random walk theory for ten companies. However, from the summery of findings, we can agree that the Pharmaceuticals industry of Bangladesh is just becoming weak-form efficient.

Owen Jakata et al., (2015), examined that whether the share prices of companies listed on the Zimbabwe Stock Exchange follow the Random Walk Hypothesis. The period covered by the research was January 2014 to December 2014. The data were analysed using the Chi-square Test, the Runs Test and the Auto-correlation Test. The findings showed that changes in share prices on the ZSE refute the Random Walk Hypothesis. The study also concluded that the ZSE provides an opportunity for investors to create wealth as they take advantage of its weak-form inefficiency.

Pyemo N. Afego (2015), examined for the development of stock markets in Africa. They find that much of the research into the efficiency of AEMs has focused on weak-form efficiency and the results, though mixed, lean towards rejection of the weak-form efficiency. Finally, considering the traditionally small size of most AEMs, increased harmonization and integration of the various national exchanges may improve the informational efficiency and depth of AEMs.

Rajasekhar Raly and Bhargava (2015), examined the efficiency of the major stock markets in the world after the financial crisis, which originated in America and erode entire world during 2006-2008. Stock indices of Australia, Austria, Belgium, Brazil, France, Germany, United Kingdom, Hong Kong, Indonesia, America, Japan, New Zealand, India, Singapore, Switzerland and Taiwan was considered for the study. Daily closing values of all these 16 major stock indices were considered for the period from 1st January, 2009 to 31st May, 2015 to test the market efficiency. To test the market efficiency of the indices, Random Walk Hypothesis model i.e., Autocorrelation test was employed. Results obtained from the study provide the reasonable evidences to prove the weak-form of market efficiency in all selected major stock markets in the world.

Satish Kumar and Lalit Kumar (2015), examined whether the Indian stock market is efficient if the stock returns follow a random walk. The study employs daily closing prices of NSE Midcap 50 Index for a time period of 15th Sept 2010 to 28th Nov 2014. The existence of random walk for NSE Midcap Index has been examined through autocorrelation, Q-statistics.
and the run test and finds that the Indian stock market was not efficient in the weak form during the testing period.

Susan Watundu et al., (2015), This study presents empirical evidence of volatility and market efficiency of Uganda Securities Exchange. Results indicate that the Uganda Securities Exchange exhibits a weak-form efficiency based on Generalized Autoregressive Conditional Heteroscedasticity (GARCH), Augmented Dickey Fuller (ADF) and the serial correlation tests.

Adisetiawan R and Yunan Surono (2016), tested the movement of the Jakarta Composite Index (JCI) at the Indonesia Stock Exchange (IDX) during the period 2000-2015. The research results reveal that the patterns of movement of the JCI in the Indonesia Stock Exchange (IDX) during the research period are predictable with a model of the ARCH/GARCH. On the study also identifies that the Indonesia capital market can be categorized as a weak form of the efficient market is not.

Bing Xiao (2016), This study is to model and forecast the volatility of the Russell 3000 index during 2000 - 2015, using various models from the ARCH family. The analysis covers from October 2, 2000 to April 29, 2015 as an in-sample set, and from April 30, 2015 to September 16, 2015 as an out-of-sample set. Based on out-of-sample statistical performance, the results reveal that the best estimated model is EGARCH (1,1), and the best model to make dynamic forecasts of volatility is TARCH(1,1).

Fatma Siala Guermezi and Amani Boussaada (2016), investigated that the weak form of market efficiency hypothesis over eleven Tunisian banks listed on the Tunisian Stock Exchange during the period July 2012 to June 2013. GARCH (1,1) and its extension EGARCH (1,1) are developed in order to describe the sign and size of financial volatility asymmetry. The results indicate that the Tunisian stock market, in particular the banking sector would not show the characteristics of market efficiency. The implication of rejecting the weak form of efficiency for investors is that they can better predict stock price movements and abnormal earnings.

Geetha Iyer and Dimple Pandey (2016), suggested that the Efficient Market Hypotheses (EMH) is a theory in Finance developed by Eugene Fama which states that share prices reflect relevant information. This empirical study was conducted to test the January effect on the stock prices and hence to agree or disagree with the Efficient Market Hypotheses. The analysis asserts that the January effect does not exist and market reflects a weak form of efficiency.
Harikumar and Susha (2016), tested the weak form of efficiency for the stock markets of BRIC countries. For this, tests, namely Jarque-Bera, Run test, Kolmogorov-Smirnov (K-S) test, Serial Correlation and GARCH model have been applied. The study is based on daily data for stock indices of the Brazil, Russia, India and China for the period of 1st July 2011 to 31st August 2015. The results of the study revealed that all tests used in present study reject the hypothesis of random walk for all BRIC stock markets except the Run test, which supports the hypothesis of random walk for Brazil and China. Thus, the results of the study make clear that inefficiency is prevented in the stock markets of BRIC countries.

Hemalatha and Nedunchezian (2016), tested "The Weak Form Efficient Market Hypothesis in National Stock Exchange” by taking the Daily closing prices of selected realty companies. The three conventional ways: Augmented Dickey Fuller Test, Autocorrelation and TGarch are used to prove the evidences of weak form market efficiency. The evidences have confirmed that during 2015, National Stock Exchanges is not efficient in a weak form.

Ikeora, Joseph Jackson Emeka et al., (2016), The study empirically examined the presence of weak form efficiency in the Nigerian stock market using time series data, 1985-2014. The data used to conduct this research is the All Share Index (ASI) converted to stock market returns. The study shows that in the recent period, 2011 to 2014, it is found that stock returns are normally distributed. Thus the study concluded that the NSE was not efficient in the weak form between 1985 and 2010, however, it has become efficient from 2011 up to 2014.

Iwedi Marshal et al., (2016), examined whether the Nigerian capital market follows a random walk. The result shows that the Nigeria capital market follows a random walk and is efficient in the weak form. Thus, the Nigerian stock market is weak form efficient to beat the market and make abnormal profit.

Jeetendra Dangol (2016), investigated the weak form of market efficiency for overall and sectoral indices. The Nepalese stock returns are found not being normally distributed during the study period. The autocorrelation of the stock returns was reduced by correcting the data with the application of the methodology. Overall, the Nepalese market is not weak-form efficient on the basis of the analysis performed by employing observed returns series. Hence, the study is supported to the random-walk and weak form of market efficiency.

Johannes Peyavali Sheefeni Sheefeni (2016), analysed the weak form efficiency in the Namibian stock market, covering the period 1997 to 2012. Weak form efficiency is examined using the traditional unit root tests, namely, Augmented Dickey-Fuller, Phillips-Perron, and Kwiatkowski-Phillips-Schmidt-Shin. These tests were applied to the monthly data. The
results of all tests used in this study showed the evidence of weak form efficiency in Namibia’s stock market.

Mohammad Taslim Uddin et al., (2016), tested the market efficiency of Dhaka stock exchange. The daily prices from January 2004 to April 2013 collected through DGEN index. The findings are that the stocks in DSE follow a random walk which suggests that the market meets the criterion of weak form efficiency. The ARIMA confirms the random walk hypothesis. The results of GARCH (p,q) model indicate the tendency of returns to exhibit volatility clustering; and a significant positive link between risk and returns for DGEN index.

Prateek Verma and Krishna Kumar Jaiswal (2016), examined that the weak form efficiency of the EMH in S&P BSE PSU Index. On the basis of empirical results we can conclude that BSE PSU Index is still not efficient in weak form which implies that by using technical analysis one can beat the market because returns does not follow the random walk.

Rakesh Kumar and Shalini Sagar (2016), tested the EMH for selected five leading automobile stocks in India. The Daily, Weekly and Monthly closing prices of Ashok Leyland, Hero Motocorp, Mahindra & Mahindra, Maruti Suzuki, Tata Motors Ltd. for the period of April, 2010 to March 2015, taken as sample. The result shows that Daily return of selected five automobile stocks and weekly return of Mahindra & Mahindra do not follow a random walk which means the market is inefficient for that period. But in weekly and monthly return of all selected company’s stock follow random walk during the study period which means market is efficient.

Rakhi Arora (2016), Market Efficiency is a useful precursor to assess the performance of markets. In the Indian context, the weak form efficiency of 11 securities was examined. They were listed on the Bombay Stock exchange (BSE) using weekly data from July 2007 to October 2007. The results concluded that the securities were weak form efficient.

Ranjit Singh et al., (2016), tested that the weak form of Efficient Market Hypothesis applied to carbon efficient stock market indices, of India, the United States of America (USA), Japan, and Brazil and their corresponding market indices which are used as their benchmark indices. The study concluded that the monthly returns are following random walk in the case of India, USA, and Brazil, but not in case of Japan.

Shveta Singh and Teena (2016), examined the weak form efficiency of the sectoral indices of the NSE is analysed by taking the daily, weekly and monthly returns from 1st April 2009 to 31st March 2016. In results, evidence was found to support weak form inefficiency in all sectors along with nifty in daily and weekly returns while some sectors like Auto, Energy, IT, Media, Metal, Realty and fin. Services exhibited weak form efficiency to some extent in
monthly returns. All sectors showing the inefficiency in daily and weekly returns need focus to make them efficient. Hence, the sectoral indices of NSE are not a weak form efficient.

Shahadat Hussain et al., (2016), We study the random walk behavior of Chittagong Stock Exchange (CSE) by using daily returns of three indices for the period of 2006 to 2016. The results of run test; autocorrelation and Ljung–Box (LB) statistics provide evidences against random walk behavior in the Chittagong Stock Exchange. Overall result suggests that Chittagong Stock Exchange does not exhibit weak form of efficiency. Hence, there is opportunity of generating a superior return by the active investors.

Sitaram Pandey and Amitava Samanta (2016), examined the random walk hypothesis to determine the validity of weak-form efficiency for one of the major stock market in India. Daily returns from February 1, 2008 to December 30, 2011 of the Nifty Index are used in this study. To verify the weak-form of efficiency four statistical tests used, namely a serial autocorrelation test, an Augmented Dickey-Fuller unit root test & a non-parametric runs test. The empirical results of this study support previous studies that Indian stock markets are weak-form inefficient. This excess returns can be earned in the long run by using investment strategies based on historical share prices.

Srikanth Parthsarathy (2016), examines the weak form market efficiency of the major stock indices in the Indian stock market. The empirical results have rejected the null hypothesis of random walk or martingale behavior for all the tested indices, namely large-capitalisation, mid-cap and small-cap indices, for both the daily and weekly data, under conditions of both homoskedasticity and heteroskedasticity. There is also no evidence of evolving market efficiency in the Indian stock market. The results show that the Indian stock market is not weak form efficient and investors can make abnormal profits by analyzing past prices.

Srinivasan and Kalaivani (2016), investigated the weak form efficiency of Indian stock markets using both parametric and nonparametric tests, viz., autocorrelation test, augmented Dickey Fuller test, runs test and variance ratio test. To test the market efficiency, the study considers the daily closing prices of 13 and 10 sectoral indices of Bombay Stock Exchange (BSE) and National Stock Exchange (NSE), respectively, along with the BSE-SENSEX and CNX NIFTY. The empirical results provide evidences for the absence of the weak form efficiency and random walk hypothesis in the case of all sectoral indices of NSE and BSE along with the CNX NIFTY and BSE-SENSEX.

Vasudevan and Vetrivel S C (2016), verified that the weak form of efficient market hypothesis using daily data for the indices of Indian stock market, namely, Nifty 50 (NSE-
50), CNX 500 (NSE-500), CNX IT Index (NSE-IT), Bank Nifty Index (NSE-BANK) and Nifty Midcap 100 (NSE-MC100). For the analysis, the study employed GARCH (1,1) model and EGARCH (1,1) model over the sample period of 1st January 2010 to 5th November 2015. The study results exhibited that return series are characterized by high persistence of volatility clusters and leverage effects over the sample period. The empirical findings show that the indices of National Stock Exchanges are not weak form efficient.

Muneer Shaik and Maheswaran S (2017), examined the stock market efficiency of the members of the Association of South East Asian Nations (ASEAN). This study rejects the efficient market hypothesis for the stock markets of Indonesia, Malaysia, Philippines, Thailand and Vietnam. However, they find that the stock markets in Cambodia, Lao and Singapore are weak form efficient.

Nagarajan S and Karthika P (2017), found the efficiency level and random walk nature of National Stock Exchange of India Ltd. This will be accomplished by testing selected Automobile companies with the help of Descriptive Statistics, Runs Test, and Augmented Dickey Fuller test (ADF) etc., the researcher was used five years daily data from January 2012 to December 2016. The result was found that the linear dependence is existed in the selected Automobile companies’ returns and the selected Automobile companies in National Stock Exchange of India Ltd are not weak form efficient.

2.1.2.2 EMPIRICAL STUDIES OF SEMI-STRONG FORM EFFICIENCY

Simranjeet Kaur Sandhar et al., (2009), studied that the weak and semi strong form of hypothesis that the prices or movements in the share prices are affected by past and publicly available information. The present study examined the behaviour of daily stock returns for 10 prominent stocks listed on National Stock Exchange (NSE) from January 1, 2005 to December 31, 2005. Five major events were taken into consideration to evaluate the effect of publicly available information on the stock prices. The study revealed that the market instantaneously absorbs all relevant information as it becomes publicly available which indicates that the Weak and Semi-strong forms are inefficient during the study period. The study depicted that the NSE is weak form efficient during the selected period.

Ananthi M and Dinesh S (2010), found that the present study is an attempt to test the efficiency of Indian stock market with respect to a corporate announcement by LIC Housing Finance Limited. The study carried as event study under the Semi-strong Form of market efficiency using Rate of Return, Beta, Excess Return, and Average Excess Return, Pivot
Point, and t-statistics as a tool to test market efficiency. Finally the study concluded that the announcement of corporate events has made a slight impact on the capital market.

Baharuddin M Hussin et al. (2010), This study focuses on the announcement effect of both dividend and corporate earnings on stock prices to examine evidence of Semi-strong form efficiency in Malaysian Stock Exchange. A sample of 120 companies listed on the Main Board of Bursa Malaysia that announced the final dividends in their fourth financial quarter was selected covering a time period from January 1, 2006 to November 30, 2006. The results provide some evidence of Semi-strong form efficiency in the Malaysian stock market, where stock prices adjust in an efficient manner to dividend and earnings announcements.

Christos Alexakis (2010), The paper examines the predictability of stock returns in the Athens stock exchange during 1993-2006 by using accounting information. Using panel data analysis, the paper concludes that the selected set of financial ratios contain significant information for predicting the cross-section of stock returns. Results indicate that portfolios selected on the basis of financial ratios produce higher than average returns, suggesting that the emerging Greek market does not fully incorporate accounting information into stock prices and hence it is not semi-strong efficient.

Khan A.Q and Sana Ikram (2010), tested the efficiency of the Indian Capital Market in its Semi-strong form of Efficient Market Hypothesis (EMH). The efficiency is tested in relation to the impact of Foreign Institutional Investors (FII’s) largely on the Indian Capital Market. For the purpose, two major stock indices viz; NSE and BSE that represent the Indian Capital Market have been taken. Monthly averages of NSE & BSE and Monthly FII’s net investment have taken over the period 1st April 2000 to 30th April. Karl-Pearsons’ Product Moment Correlation Coefficient (Simple Correlation) and linear regression equations have been used to analyze and determine the degree and direction of the relationship between the variables involved. The results suggest that the FII’s do have significant impact on Indian Capital Market, which leads to the conclusion that Indian Capital Market is Semi-strong form efficient.

Koustubh Kanti Ray (2010), suggest that the Indian market is efficient in its Semi-strong form with respect to bonus issue announcements only. In the overall study it can be concluded that under bonus issue announcements Indian market is efficient, but the efficient market hypothesis are failed prove that Indian market is efficient around rights issues announcements where investors still can make abnormal returns.

Muhammad Akbar and Humayun Habib Baig (2010), tested the Semi-strong form of market efficiency by investigating the reaction of stock prices to dividend announcements. It
analyses cash, stock, and simultaneous cash and stock dividend announcements of 79 companies listed on the Karachi Stock Exchange from July 2004 to June 2007. Abnormal returns from the market model are evaluated for statistical significance using the t-test and Wilcoxon Signed Rank Test. The findings suggest negligible abnormal returns for cash dividend announcements. However, the average abnormal and cumulative average abnormal returns for stocks and simultaneous cash and stock dividend announcements are mostly positive and statistically significant.

Raja M and Clement Sudhahar J (2010), A capital market is said to be efficient with respect to corporate event announcement (stock split, buyback, right issue, bonus announcement, merger & acquisition, dividend etc.,) contained information and its disseminations. How quickly and correctly the security prices reflect these event contained information show the efficiency of stock markets. Present study is an attempt to test the efficiency of Indian stock market with respect to bonus issue announcement by IT companies.

Prithul Chakraborty (2011), examined that whether the Indian stock market is pricing, efficient in its Semi-strong form. Such examination is made in the context of the price reaction to the announcement of stock splits witnessed by 17 constituent stocks of S&P CNX Nifty during the period from 2000 to 2010. Although no statistically significant AR is found to be generated on and around the announcement day, the CAARs for most of the time intervals in the pre- and post-announcement periods are statistically significant. Thus the study fails to provide any strong and consistent evidence in support of the Semi-strong form of pricing efficiency of the Indian stock market.

Azeem Ahmad khan and Sana Ikram (2012), tested the efficiency of the Indian Stock Market with respect to the announcement of Mergers and Acquisitions in the Indian Banking Sector. In order to analyse the effects of the announcements of Bank’s Merger and Acquisitions on Stock Prices Risk Adjusted Rate of Return using 6 recent mergers as of 21st Jan 2003 to 19th May 2009. All the acquiring banks are either traded on the SENSEX, BSE 200 or BSE 100. Evidence here supports the efficiency of the market in its Semi-strong form of EMH by accepting both the null hypotheses. It is observed that neither before nor after the merger announcement, investors are able to earn abnormal/excess return.

Bharath and Shankar (2012), investigated the informational efficiency of the Indian Stock Market in the Semi-strong form of efficient market hypothesis with respect to the information content of the event bonus issue announced by companies listed in BSE 500 during the study period. The AARs and CAARs were analysed to ascertain whether an opportunity was available to make above abnormal returns during the price adjustment.
period. The study reveals that the investors have not been able to earn abnormal returns in the study companies.

Mario Domingues Simões et al., (2012), investigated the relationship between the announcement of mergers and acquisitions, the existence of positive abnormal returns for shares of these firms, and market efficiency in Argentina, Brazil and Chile. The absence of Semi-strong efficient market behavior could prove valuable to investors who could use a window of a few days after the event announcement to accumulate abnormal returns, provided the appropriate research into news of possible Mergers or Acquisitions has been made.

Misnen Ardiansyah and Abdul Qoyum (2012), examined the Semi-strong form efficiency of Islamic capital market, which focuses on the Jakarta Islamic Index (JII). The research finding, the regulator can make a good solution to create the real Islamic capital market. This study concludes that the Islamic capital market is not efficient in information. This is proved by test, where the result for both mean adjusted model and market adjusted model shows not significant, which means that the stock price that occurred has not been able to reflect a strong relationship with the real conditions that exist within the company. The next conclusion is the magnitude of abnormal returns suggests that the market still has asymmetric information that will cause the occurrence of abnormal return.

Rajagopalan N.V.R and Shankar .H (2012), studied the stock returns around the buyback announcement made during a 10 year period between 2000-01 and 2009-10 by taking the S&P CNX 500 index companies. By having observed AAR of 1.32 per cent on the announcement day and CAAR of 4.34 per cent in the -10 to +10 event frame for the 43 companies considered, this study documented support for the undervaluation signalling in the Indian stock market. In spite of experiencing an early response to the announcement of buybacks by way of increased returns, the market had not given any scope for earning abnormal returns on a sustained basis by getting the information adjusted into prices, to favour the Semi-strong form efficiency in the Indian stock market.

Tobias Olweny (2012), investigated that whether Nairobi Stock Exchange in Semi-strong efficient or not,. The data were purely secondary data of the firms listed on the NSE, stock prices and dividend announcements. The event study methodology was used to analyze information content of dividend announcements for the four firms. The results show that the NSE is not Semi-strong form efficiency and therefore market participants can make abnormal profits by trading on public information, such as dividend announcements.
Vishal Kutchu (2012), elucidated the Semi-strong efficiency of the Indian stock market - Budget 2012 on six select sectoral indices. The results of our study show that there is a chance to make abnormal returns for the investor and that the impact of the budget seems to be company-specific. Our results suggest that the Investor should be very cautious while interpreting such reports. But for the rest 68 stocks, their returns in pre-event period and returns in the event period are about the same; therefore we do have evidence to conclude that the Indian stock market is Semi-strong efficient.

Dharmarathne D G (2013), This study attempts to examine stock price reaction to subsequent dividend announcements and information efficiency in Sri Lankan Share Market with a sample of 61 major companies from those listed on the Colombo Stock Exchange (CSE), which have made 137 dividend announcements for the period of 1999-2005. The stock price reacts positively to subsequent dividend announcements in Sri Lankan Capital Market. More specifically, dividend increase announcements support the information content of dividend hypothesis. Moreover, dividend decrease announcements and dividend no change announcements against with the information content of dividend hypothesis. In addition, the results in this study supported the Semi-strong form of the efficient capital market hypothesis.

Mercy Kangai Gatabi Kiremu et al., (2013), This paper examines the effect of annual earnings announcement at the Nairobi Securities Exchange (NSE) by analyzing changes in share prices and trading volumes for the period from 2006 to 2010. Abnormal returns during the event window of 91 days were determined using the event study methodology employing the market model on data from 5 listed companies. Further, the volume reactions were examined by use of the trading activity ratio (TAR). Inferential and descriptive statistics were used to test for significant effect on TAR and price changes. The results obtained indicate that the abnormal returns and TAR were not significant at 5 per cent probability level. Thus the NSE is of Semi-strong efficiency.

Nalina and Suraj (2013), tested the market efficiency of Indian Capital Market in its weak form based on ‘Nifty’ of National Stock Exchange (NSE). Based on the result of Runs test and Auto correlation test null hypothesis is rejected and it is proved that the Indian equity market follow random walk model and is a weak form efficient. Similarly, Present study is an attempt to test the efficiency of Indian stock market with respect to a stock split, dividend and bonus announcement by the companies using event study and analysis proves that markets are not efficient in its Semi-strong form.

Nehal Joshipura (2013), This study investigates market reaction to stock splits using the standard event study methodology. The study uses stock splits in large and liquid stocks
in the Indian markets during the years 2001 to 2012. According to a Semi-strong form of efficient market hypothesis, any information content associated with corporate announcements must be reflected fully on announcement day itself resulting in an abnormal return. Studies from India on market reaction to stock splits offer mixed results. This study reports reaction to stock split in large and liquid stocks that are constituents of NIFTY or NIFTY Junior.

Remya Ramachandran (2013), examined the efficiency of Indian Stock market by studying stock price and trading volume reaction resultant upon the corporate action information. Hence, it can be concluded that the bonus information release will not influence the stock price. The analysis reveals that the information release of dividend, bonus issue, stock split and merger do not influence the security returns in any significant manner. As regards the informational efficiency of the market, the results of the study suggest that the Indian stock market tends to indicate Semi-strong form of efficiency.

Sekar P. C. and Dinesh S. (2013), This study aims to measure the impact of dividend announcement in Indian stock market and determine the factors which influencing the behaviour of stock market. Event study has conducted with major industries viz., banking and automobile scripts listed in BSE-SENSEX. Market significantly reacted with the information of dividend. Based on the structural model depicts that excess return and average excess return are the mediating factor for determining the efficiency of the market. Hence it is accepted that pour Indian stock market is the nature of Semi-strong form of efficiency.

Faizil Ikram and Anggoro Budi Nugroho (2014), tested the efficiency of Indonesian Stock Market in Semi-strong form with respect to 19 recent merger announcements since year 2000. In order to analyze the effect of the announcement, Event Study Methodology is conducted by calculating the Abnormal Returns (AR) of each stock, Average Abnormal Returns (AAR), and Cumulative Abnormal Return (CAR) 30 days prior to the merger announcement and 30 days after the merger announcement (event window). To calculate the Abnormal Return, market model is employed by regressing the daily stock return with the corresponding market return on the estimation period. The finding from this research is that Indonesian stock market is efficient in Semi-strong form in the case of merger announcements.

Gita Denaya Rizkianto and Budhi Arta Surya (2014), tested whether the Indonesian stock market is efficient on both weak form level of efficiency and Semi-strong form level of efficiency. The results of this final project show that the Indonesian stock market is not a weak form efficient and it is not Semi-strong form efficient. This means that investors can
gain abnormal returns by doing technical analysis on the historical movements and fundamental analysis.

Mallikarjunappa et al., (2013), tests the Semi-strong form market efficiency by taking earnings announcements of companies as the publicly available information. They have used June 2008 quarterly results of BSE200 index based companies collected from the BSE website. They got 160 company results for this quarter from the BSE website and the results of other companies were not available. To study the information flow and information content in the equity prices, computed abnormal return (AR), the average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) on the event day, over 30 days before and after the event day. It indicates that the results have given negative Signals to the market. This is a Sign of market inefficiency. Therefore, it concludes that Indian stock market is not efficient in the Semi strong form.

Nikunj Patel and Kalpesh Prajapati (2014), tested the empirical evidences of stock dividend announcement on selected 20 companies of Indian stock market and try to investigate the existence of abnormal returns. Sample data period was January 2008 to December 2011. No significant AAR on event day during any period of dividend announcement, whereas CAAR has been found significant on event period 57 times positive move, 49 times negative move and 64 times constant or near to zero volatility. The results of paired t-test for means have shown that there are significant differences in average number of transactions before and after announcement during the period 2008 to 2011 for the companies like HUL, ITC, Jaiprakash, L & T, Reliance Industry, SBI, Tata Motor, and Wipro. Further research can be extended using other event studies on Indian Market and Industry wise study can also be carried out.

Tarun Kanti Bose (2014), examined that the efficiency level of Dhaka Stock Exchange and Chittagong Stock Exchange. In this research it is trying to find out is there relation between the past information and the share price that means are the prices follow random walk or not. The result of the study shows that Dhaka Stock Exchange and Chittagong Stock Exchanges are not in the form of ‘Weak efficiency’ and ‘Strong efficiency’. So both stock belongs to the ‘Semi strong’ form of efficiency and Chittagong Stock Exchange is more efficient than Dhaka Stock Exchange.

Udhaya R (2014), tested the Semi strong capital market efficiency with reference to the annual earnings announcement. This study is based on the secondary market price data on the Bombay Stock Exchange, India. The data for the calendar years 2009 to 2013 was analysed and searched for the 30 companies included in the Sensex to identify the stock price
reaction to annual results announcements. Event study methodology was followed for the data analysis. For event study methodology, announcement window (AD-15 to AD+15) was used. The analysis has shown that the BSE and the sectors analysed have reflected Semi-strong efficiency.

Elijah Maronga et al., (2015), determined that the speed of price adjustment and the pricing efficiency of the Nairobi Stock Exchange market after earnings announcements. The study targeted all the companies listed at the Nairobi Stock Exchange, utilizing a sample of 20 companies. Data consisted of the closing prices of the stocks on the day of announcement, and on the 1st, 3rd, 7th, 14th and 28th day before and after earnings announcements. Data was analysed quantitatively for excess returns using a single factor market model. The study found that excess returns were realized both before and after the day of announcement. Excess returns did not approach zero within the 28th day window, which means that it takes more than 28 days for excess returns to cease. There was also evidence of the market anomalies of overreaction and under reaction. The study concludes that the Nairobi Stock Exchange is not Semi strong-form efficient.

Faisal Mahmood et al., (2015), conducted that the efficiency of Karachi stock exchange. As the event study approach is used so mean of companies share prices and KSE 100 index are compared before and after the even.. Statistical tools Jarque-bera, mean, standard deviation, correlation and paired sample t-test are used. Results proved Karachi stock exchange to be inefficient at Semi-strong level. These results guide the investors that Karachi stock exchange has the opportunities for them to have abnormal returns on their investments.

Ghada ABBAS (2015), This study attempts to investigate the stock prices response to dividend announcement in the Damascus Securities Exchange. The purpose of the study is to identify whether there are any significant abnormal returns around the public announcement of dividend. An event study methodology is used for an event window of forty days surrounding the announcement day. Research results indicate that most AAR are statistically insignificant, whereas the CAAR are statistically significant for the whole event window. The downward drift of the cumulative average abnormal returns six days after the announcement suggests that prices don’t adjust immediately to dividend information. The stock reactions appear within post-event window gradually in response to the dividends announcement.

Hasnain Manzoor (2015), examined the reaction of stock returns in relation to earnings dividend information releases using data on the Karachi Stock Exchange. Using the event study method, the speed of reaction of the market to annual earnings information
releases for a sample of 114 firms listed on the Karachi Stock Exchange. Event window of 41 days, 20 days before and 20 days after the announcement is used. Event day is represented by (0). Estimation window is used 230 days before the event window. Analyses also concludes that positive and negative earning information disclosure are unable to influence the stock market efficiency, and therefore cannot fully reflect the changes on the stock price, investors can get the abnormal returns by using this earning information during whole event window. Finally, Karachi Stock Market reacts inefficiently on the release of information of earnings and dividends announcements.

Samson Ogege et al., (2015), tested whether stock prices adjust to dividend and earnings announcements in the Nigerian Stock Exchange. They adopted the event study methodology for the period of six years ranging from 2006-2011. The findings of the study reveal that stock prices in the Nigerian stock market did adjust efficiently to dividend and earnings announcements. In addition, the cumulative average abnormal returns for the different combinations of dividend and earnings in the three sub periods are not significant suggesting that the Nigerian stock market is Semi-strong form.

Sukhjeet K. Matharu and Ravi Changle (2015), The present study investigates the reaction of stock prices to dividend announcements by testing the Semi-strong form of market efficiency. It analyses the dividend announcement of 25 companies representing various sectors listed on the Bombay Stock Exchange for the year 2013. Expected and abnormal returns from the market model were evaluated using the Capital Asset Pricing Model and Paired t-test was employed to test the impact of dividend announcements on share prices of select companies. To test the significance the CAAR were studied for the varied categories of event days. The findings suggest that there is a significant difference in the impact of dividend announcements in pre and post announcement period on the share prices of the selected companies.

Swati Mittal (2015), tested whether efficient market hypothesis holds for Indian stock market or not i.e., whether there is any movement in share prices before or after the rights issue announcements. The study includes Top 100 companies rated by Chartered Financial Analyst Survey 2008 and informational efficiency for last ten calendar periods- January. 2004 to December 2013 has been investigated. The results show that the Indian Capital Market is Semi-strong efficient as it is using the information relevant for security valuation and for investment decision making.

Uma Priyadharshini and Lourthuraj S. A (2015), examined the Semi-strong form efficiency in FMCG sector. The major objectives of this study are to analyse the Semi-strong
form efficiency in FMCG sector, and to examine the stock market reaction to dividend announcement, to evaluate the risk of the stocks in particular index and to offer valuable suggestions to the investors to take the right investment decision. These results confirm the theoretical background regarding the impact of the dividend announcement on stock prices. The Semi-strong form efficiency therefore is tested and proved.

Biswajit Kumar (2016), measured the Efficient market hypothesis can be best summarised in the words “The expected value of abnormal returns is zero, but chance generates deviations from zero (anomalies) in both directions” Fama in 1998, he present event study supports the Semi-strong form of market efficiency in case of dividend announcements by public sector banks.

Charles O. Manasseh et al., (2016), tested the consistency of the Nigerian Stock Market with the efficient market hypothesis (EMH) in the Semi-strong form using bonus issues as the information generating event. Using daily data, a total of 121 bonus issues were observed and examined for the period 2002-2006. Using the event study methodology, the market and the market adjusted models as well as the vector auto regression models, the study discovered that information release impacts significantly only in the year 2002. Also, it reveals that small bonus issues responded speedily to bonus issues more than medium and large bonus issues. In addition, the test between penny stocks and blue chips shows that only penny stocks were significantly affected.

Fadi Hassan Shehadeh and Azzam (M.T.) Hannon (2016), studied that, the Palestine Exchange is an efficient market in its Semi-strong form by studying the effect of cash dividend announcements on stock prices for companies listed on the Palestine Exchange. We studied sixty events that have been announced in the nine years for the period between 1st January 2006 and 31st March 2014 by using the appropriate statistical tests to examine if the cumulative abnormal return is statistically significant around the announcement day; which is ten days before and ten days after the event day. The results reveal that we can accept the alternative hypothesis that assume there were statistically significant differences between cumulative abnormal returns and zero. Thus, investors could realize abnormal returns during the event window for the study period. From this study, concluded that the Palestine Exchange is inefficient in Semi-strong form in the study period.

Frank Owusu et al., (2016), stated that, the event study methodology was adopted for this study because it examines the effect of information on stocks. With a 21 day window and a 60 day estimation period, the researchers used the Standardized Excess Return approach which corrected for most of the challenges associated with intercompany aggregation of
stocks. Using the Single Index and Risk Adjusted Returns Model the study found out that earnings announcement had no effect on stock price and as such that the Ghana Stock Exchange is not efficient in the Semi-strong form.

Jasbir Singh Matharu (2016), highlighted the quarterly earnings and dividend announcements on the stock prices in India and the abnormal returns before and after the announcements. The sample consists of 59 quarterly earnings and dividend announcements from April 2004 to March 2008, of companies belonging to the Nifty Fifty. The study is not able to separate the effect of dividends and earnings announcements on the stock prices. The study contributes to the on-going debate on efficient market hypothesis and specifically in the Semi-strong form of efficiency.

Jeenlanbasha (2016), investigated that the study focuses on Cipla Ltd. listed on the Bombay Stock Exchange and uses the announcement of dividend payment as an event. The market adjusted model using single and two factors is used to measure the abnormal returns. The stock price behaviour is examined through event study methodology. Student T test is applied for statistical significance. The result based on the announcement of dividend payment shows that the investors cannot earn abnormal returns and market is efficient in Semi-strong form.

Jeetendra Dangol (2016), examined that the abnormal returns of dividend announcements such as cash dividend, stock dividend, and both cash and stock dividend in the Nepalese stock market using the market model of event methodology after adjustment of existing thin-trading problem. To examine the abnormal returns of dividend announcements, 139 dividend announcement samples were partitioned into dividend-initiation (good-news), dividend-increase (good-news), dividend-decrease (bad-news), and no dividend-change (no-news) sub-samples. The dividend announcements have a signalling effect in the Nepalese stock market. The study also found that, to some extent, the Nepalese stock market supported the Semi-strong form of market efficiency.

Jeetendra Dangol (2016), The paper investigates the effect of dividend and earnings announcements on share prices in Nepal between 2000 and 2011. The study finds, dividend increased (decreased) announcement effect positively (negatively) during the dividend announcement period. Similarly, the announcement of Dividend increased-Earnings increased (Dividend decreased-Earnings decreased) shows positive (negative) influence on the share prices. The study also finds the significant effect of constant dividend announcement on share price. The reason behind this phenomenon could be that the investors perceive ‘no change in the dividend’ positively. This result suggests that the both dividend
increase and decrease convey useful information to the market. The results accept the dividend signalling hypothesis but reject the Semi-strong form of market efficiency.

John Okey Onoh and Nkama O (2016), investigating to find out if the Nigerian stock market reacts efficiently to dividend announcements in terms of price adjustments. In capturing reactions around the 3 day, 21 day and 61 day windows before and after the announcements, the study considered the level of the speed of adjustment of share prices to the announcement of dividend payments. Since the studies indicate a drift in share prices 30 days after announcements The CERs for the 3 day, 21 day and 60 day event windows are positive and statistically significant for dividend announcements. Overall, this provides evidence that the Nigerian stock market is not Semi-strong efficient, that dividend policy matters and that share prices do react to dividend announcements.

Mitesh Patel et al., (2016), tested the informational efficiency of the Indian Stock Market in the Semi-strong form of efficient market hypothesis with respect to the information content of the event budget announcement of BSE 30 in the year 2016. The AARs, CAARs and t test were analysed to ascertain whether an opportunity was available to make above abnormal returns during the price adjustment period. AARs after the announcement day (except +3 day) are statistically not significant. The study reveals that the investors have not been able to earn abnormal returns in the study companies.

Mitesh Patel et al., (2016), examined the stock market and trading volume reaction with respect to the information content of the event stock split announcement for selected 34 companies who announce stock split between 1st January to 31st July 2016. The AARs, CAARs and t test were analysed to ascertain whether an opportunity was available to make above abnormal returns during the price adjustment period. The study shows that Indian stock market is efficient while stock splits announcement and no one can get abnormal return from Indian stock market, but stock split announcement have negative impact on stock return. The study also reveals the same as stock price because here, volume ratio is decrease after stock split announcement.

Rajesh Khurana and Warne D P (2016), This study belongs to event study methodology. The focus was on what happened to the stock price prior and after the bonus issue announcements. For analyzing the reaction during bonus issue announcement 34 companies from 11 sectors have been considered in the sample period from 2006 to 2012. The present study test the semi strong form of market efficiency by investigating the reaction of stock prices to bonus issue announcements of stocks related to NSE 100. The results indicate that there are significant positive abnormal returns for an eight-day period prior to
bonus issue announcement in line with evidence from developed stock market. On the announcement day there is negative AAR of -0.01 per cent which is very low and significant at 1 per cent level (z value = 3.84). The results provide stronger evidence of Semi-strong efficiency of the Indian stock market.

Tran Thi Xuan Anh et al., (2016), studied that whether Vietnam is efficient in Semi-strong form by identifying the market’s reaction to publicized information and events. With a sample covering all listed companies on Ho Chi Minh Stock Exchange from 2014 to 2015, they investigate whether announcements of earnings and dividend changes provide any signalling effect to the share price movements. It concludes that both announcements have significant effects on the stock price with relative significantly abnormal return surrounding announcement date. However, changes in cash dividends do convey more useful information to the market. Therefore, Ho Chi Minh stock exchange has not fully achieved at its efficient level.

2.1.2.3 EMPIRICAL STUDIES OF STRONG FORM EFFICIENCY

Mahdi M. Hadi (2006), identified the EMH and provided some detail on the types of EMH, as well as identifying the In this paper empirical evidence has been provided from Jordanian market, and it shows the security market reacted with mixed signal on releasing profitability, liquidly, and solvency information. In Kuwait, a few research has been investigated in market efficiency in strong form, he suggest for future research test for insider information.

Khan A.Q and Sana Ikram (2011), examined the Strong Form Market Efficiency (SFME) of Indian Capital Market by evaluating performance of Mutual Funds over the period from 1st April 2000 to 30th April 2010, using monthly returns, based on NAV’s of 8 fund schemes. In this study, the index of NSE (i.e., Nifty) is being used as a benchmark in order to compare the performance of mutual funds with that of the benchmark. Risk and Return Analysis, Sharpe’s Measure, Treynor’s Measure, Jensen’s Measure are the risk adjusted performance measure used under this study in order to measure the performance of mutual funds against the benchmark to appraise the efficiency of Indian Capital Market. The results of this study suggest that the mutual funds outperformed the market, which in turn leads to the conclusion that the Indian Capital Market is not Strong form Efficient.

Amalendu Bhunia (2012), Market Efficiency has been a subject of the main debate of traditional finance for a long period of time. In this study risk and return is calculated by using CAPM and attempts made to test the relationship between risk and return is linear. Beta
and necessary statistical models have been used for testing the hypothesis framed in this study. This study evidence there is no strong efficiency found in the Indian market.

Azeez, B.A. and Sulaiman, L.A (2012), examined the strong form of market efficiency prevail in the Nigerian capital market or not. With the extraction of the returns on 240 stocks from the database of the Nigerian Stock Exchange (NSE), a comparison was made between a constructed random portfolio and a 3-years annualized average return on the portfolios of the mutual fund industry. In this empirical study, the analysis deduced that mutual funds were unable to out-perform the random portfolios created from the index stocks, which thus implies that the strong form of market efficiency holds in the Nigerian Capital Market. Nonetheless, profound analysis on stock volatility risk is essential to avoid substantial loss in the stock market.

Oke, Micheal Ojo and Azeez (2012), tested whether the Nigerian capital market exists in the strong-form efficiency or not. The empirical analysis employs the ARCH and GARCH models. The study covers a period from 1986 to 2010. The findings reveal that the Nigerian capital market is weak-form efficient, suggesting that current market price of securities reflect past or historical information.

Tomasz Potocki and Tomasz Świst (2012), verified that the strong form of market informational efficiency, based on the assumption that the institutions issuing recommendations have access to information inaccessible to the community of investors. The research sample consists of 3,270 recommendations produced between 1 January 2005 and 31 March 2010 by 63 financial entities with reference to companies making up the WIG 20 index. In most cases the obtained results provide evidence for the hypothesis that the strong form efficiency is characteristic of the WIG 20 index shares listed on the Warsaw Stock Exchange.

Yu-Wei Lan et al., (2012), tested the efficient market hypothesis (EMH) by investigating the importance of securities lending information and the trading patterns in the Taiwan Stock Exchange (TWSE). Tools used: ADF Unit Root Test and causality effect of the VAR model were applied as research instruments. Finally, the empirical results show that the strong form EMH was rejected. Specifically, it also indicates that if investment trust consultants had obtained the securities lending information. Therefore, the setup of a securities lending system is crucial and investors risk control must be carefully considered.

Fapetu and Adesina (2013), investigated that the efficiency of the Nigerian Stock Market and to test whether professionally managed funds beat the market index or not. The average monthly returns data of five banks over the period 2007 to 2011 were used.
result indicates that the Nigerian Stock Market is efficient in the strong form. The results of their findings thus recommend fully computerisation of the Nigerian Stock Exchange and Stock broking firms so that effective communication system; and timely, quick and instant access to price-sensitive information to maintain the strong form efficiency of the Nigerian Stock Market.

Johannes Peyavali Sheefeni Sheefeni (2015), analysed the strong form efficiency of the capital market in Namibia using the autoregressive conditional heteroscedasticity and general autoregressive conditional heteroscedasticity modelling techniques. These tests were applied to the monthly data for the period covering the year 1997 to 2012. The results from the study showed that there is no evidence of strong form efficiency in Namibia’s stock market. However, there is evidence of weak form efficiency. Therefore, investors in Namibia Stock Exchange cannot predict stock prices or returns in the short term or from historical prices or returns or from volume traded.

2.2 RESEARCH GAP

The following research gap filled by the researcher. This review is intended to throw light the natures and scope of these studies and to find out the research gap.

Firstly, many of the Indian previous studies results only focused on the Weak form efficiency. But, this study not supported to Weak form efficiency.

Secondly, only few studies made on the Semi-strong form efficiency. However, this study dedicated both Weak form as well as Semi-strong form efficiency.

Thirdly, Return predictability done with three Non-linear models like GARCH (1,1), EGARCH (1,1) and TGARCH (1,1).

Fourthly, all the event studies conducted within short period. But, in this study BSE-SENSEX Dividend announcements examined for ten years i.e., from 1st April, 2007 to 31st March, 2017. And, Reaction of BSE-SENSEX Dividend announcements measured through Dividend Increases, Dividend Decreases and Dividend No changes. And,

Finally, this Research study highly support to Semi-strong form efficiency in the BSE-SENSEX 23 stocks.

The list of companies, on which the application of different forms of efficiency under the study, has been detailed in the next chapter.
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