The Weak Form of Informational Efficiency –
A Case Study of Muscat Securities Market, Sultanate of Oman

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ABSTRACT

Market efficiency means the degree to which market prices reflect all available and relevant information. Efficient Market Hypothesis (EMH) is theory in financial economics, which focuses on informational efficiency and measures whether the share prices reflect the available information. The presence of informational efficiency in the market will not provide an opportunity for the fundamental and technical investors to beat the market return. Hence, the researchers conducted the present study to examine whether the weak-form of efficiency applies to the Muscat Securities Market, Oman using Runs test, Serial Correlation test and Unit Root test. The closing value of MSM 30 index and the closing share prices of the thirty companies representing MSM30 index for a period of 10 years i.e. from 1st Jan 2009 to 31st December 2018 were considered for the analysis. The results of the study will help the investor to understand whether technical analysis provides an opportunity to take better investment decisions.

Keywords: Efficient Market Hypothesis, MSM 30 Index, Muscat Securities Market, Weak form of Efficiency.

INTRODUCTION:

Investors always expect a higher rate of returns from their investments in the securities market. The Fundamental Analysis and Technical Analysis helps the investors to identify the companies for investment. A fundamental investor identifies the shares trading less than its intrinsic value for investment. A Technical investor invests in the shares with bullish trend in the prices. The presence of various forms of Market efficiency in the securities market determine whether the investors can earn a higher rate of return. If the markets are not efficient in weak form, the technical analysis can be used to predict the trend in the share prices and helps the investors in taking buy or sell decisions.

REVIEW OF LITERATURE:

The past research studies on market efficiency in stock markets in Oman, in gulf region and in other countries are reviewed to understand the procedures used in testing the weak form of efficiency.

Fama defined 'efficient' market as "A market where there are large numbers of rational, profit 'maximisers' actively competing, with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants"[1]. He proposed three forms of efficiency viz., weak form, semi strong form and strong form. The theory questioned the usefulness of fundamental analysis and technical analysis as the efficient market prices reflect all the available information and hence encouraged a large amount of research to compare EMH with other investment concepts. Most of the studies provided support for using trading strategies according to technical and fundamental principles to gain abnormal returns.

Al-Kalbani and Campbell (2010) discussed the weak-form of EMH applies to the Muscat Securities Market (MSM). The daily returns for the MSM30 Index from 1st January 2003 to 31st December 2007 were used in this research. Based on the results of the statistical techniques used the hypothesis of weak-form efficiency was rejected in MSM [2]. Almujamed (2018) studied the performance of the weak form of the Efficient Market Hypothesis at the Qatari Stock Exchange. The study considered the daily closing share prices of forty four listed companies during the period 2004 to 2017. The findings gave an indication that the QSE is not efficient in weak form [3]. Thomas and Kumar (2010) examined the weak form efficiency of India stock market from the year 2007 to 2010. The research concluded that the Indian stock market is not efficient in weak form and also implies financial institutional imperfections and also point to the fact that trade liberalization policies, Deregulation, and privatization has generated a degree of instability in the market [4]. Parikh (2013) carried out a study on EMH based on the closing prices of the select chares for the period January 1, 2004 to December 31, 2011. The researcher used statistical tests like one sample t-test, Filter Test, and ANOVA Test. The results found that the weak form of market efficiency exists in large companies. However, the weak form of market efficiency did not display on small and mid-cap stocks. Company size played a vital part in efficiency [5]. Kashif, Syed, Muhammad, and Rana (2010) examined the market efficiency in the stock exchanges in fourteen Asian countries. Random walk theory was analyzed by using the variance ratio, autocorrelation and unit root tests. The study concluded a non-randomness non-stationary returns. Moreover, monthly prices do not follow a random walk. So in each country the stock market is not efficient in weak form [6]. Emeh Yadirichukwu and Obi Joseph Ogochukwu (2014) examined the weak form hypothesis of market efficiency using the annual monthly return in Nigeria stock market. They also studied the relationship between average expected stock market annual monthly returns, growth rates and interest rates. They observed that Nigeria stock market is efficient and follows random walk method [7]. Richard Osayuwu (2012) examined the Efficient Market Hypothesis at the weak form level in Nigerian Capital Market for a period of 10 years, from the year 2001-2010 with the use of serial correlation technique and runs test to analyze data. The researcher concluded that Nigerian Capital Market is efficient in the weak-form [8]. Md. Siddikur Rahman, H. M. Simon and Md. Murad Hossain (2016) investigated the existence of Weak Form Market Efficiency in Chittagong Stock Exchange in Bangladesh from the year 2006-2015.This study used different tests like Variance Ratio Test, Wald-Wolfowitz Runs Test, and Kolmogorov Smirnov (K-S) Goodness of Fit Test. The study concluded that the Chittagong Stock Exchange is not efficient in weak form [9].

Few studies were carried out in Oman and they were based on the market index and did not consider the individual behavior of the stock prices. Hence, the present study focuses on analyzing the efficiency market based on the index and daily closing prices of the stocks representing MSM 30 Index. The results of this study will give more comprehensive idea about the existence of market efficiency in Muscat Securities Market.

OBJECTIVE OF THE STUDY:

The main objective of the study is to test the existence of weak form of efficiency in Muscat Securities Market.

METHODOLOGY OF THE STUDY:

Population of the study:
The three indices at Muscat Securities Market and the around 116 companies listed at MSM constitutes the population of the study.

Sample Size:
The most popular index of Muscat Securities Market i.e. MSM 30 index was selected for the study. The thirty companies representing MSM30 index were selected from the different companies listed at MSM.

Study period:
The present study is carried out based on the index values and the closing share prices for the select companies for the period 1st January 2009 to 31st December 2018.

Data collection:
The closing value of MSM 30 index and the closing prices of the select company shares will collected from www.investing.com for the study period.

Statistical Tools/ Techniques:
The researcher aims to use to use the following statistical techniques for the analysis:

The Runs Test:
A run is defined as a series of increasing values or a series of decreasing values.
The run test was first proposed by Wald and Wolfowitz. At Muscat Securities Market, Runs test was used to check the hypothesis.
Ho: The index movement and the price movement of select stocks are random
H_1: The index movement and the price movement of select stocks are not random

Auto Correlation:
Auto correlation test examines how the values in time series are related to each other. Auto correlation also known as lagged correlation or serial correlation. Ljung Box statistic (LB Statistic) was used to check the hypothesis.
H_0: Today's price do not depend on past prices of the share (No Auto Correlation)
H_1: Today's price depend on the past prices of the share (Auto Correlation)

Unit Root test:
Unit root is used to check if time series is stationary or non-stationary. An augmented Dickey–Fuller (ADF) test was used to check the hypothesis.
H_0: The Markets are Non Stationary (has unit root)
H_1: The Markets are Stationary (do not have unit root)
The analysis is carried out with help of Microsoft Excel and EVIEWS software.

RESULTS OF THE ANALYSIS:

The summary of the results of RUNS test is provided in Table I. The analysis of the results of the runs test of MSM30 index indicates that the actual number of runs are 977 and the range of values at 5% level of significance is 1292.3-1194.6. As the actual number of runs are not in the range calculated, the null hypothesis is rejected i.e. the movement of index is not random, which indicates that Muscat Securities Market is not efficient in weak form. Out of the thirty companies, only six companies' price movements are found not random.

The summary of results of Auto Correlation Test using Ljung Box statistic is presented in Table II. The auto correlation coefficient of the time series of MSM30 index is 0.997 at Lag1 and 0.923 even at Lag 20 which indicates that there is an existence of auto correlation in the series. The Ljung Box Statistic (Q stat) value is 2474.9 at Lag 1 with probability of 0.000 and 46033 at Lag 20 with a probability of 0.000, hence the null hypothesis is rejected at 5% level of significance i.e. the time series of MSM 30 index has auto correlation which indicates that Muscat Securities Market is not efficient in weak form. The auto correlation coefficient of the time series of all of the thirty companies is high which indicates that the time series of the closing prices of the all the thirty companies have an autocorrelation in the series which indicates that MSM is not efficient in weak form.

The summary of results of Unit Root Test using ADF test statistic is presented in Table III. The ADF test statistic (t-Statistic) of the time series of MSM30 index is -1.39 which is more than critical value of -3.43 at 1% level of significance. Hence we accept null hypothesis i.e. the series is Non Stationary which indicates that Muscat Securities Market is not efficient in weak form. The ADF test statistic (t-Statistic) of the time series of all the thirty company's closing share prices is more than critical value of -3.43 at 1% level of significance i.e. the series is non stationary which indicates that Muscat Securities Market is not efficient in weak form.

CONCLUSION:

The overall findings of the tests conducted by the researchers which were based on the closing values of MSM30 index and the closing share prices of all 30 companies in MSM30 reached to a conclusion that Muscat

Securities Market is not efficient in the weak form level. This provides an opportunity for the investors to use technical analysis for taking better investment decisions. The tools of technical analysis can be used to predict the prevailing trend in the share prices to gain higher returns in the market.

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TABLES:

Table I: Results of Runs Test

Index	Actual Runs	Expected no. of Runs E(R)	Variance (σ2)	Range E(R) ± 1.96(σ)	Decision (At 5% Level of Significance)
MSM 30 INDEX	**977**	**1243**	**620.9**	**1292.3-1194.6**	**Not random**
Name of the Company	**Actual Runs**	**Expected no. of Runs E(R)**	**Variance (σ2)**	**Range E(R) ± 1.96(σ)**	**Decision (At 5% Level of Significance)**
Financial Sector					
Al Madina Takaful	311	307	130.8	284.7-329.6	Random
Al Madina Investment	1037	994	435.7	952.9-1034.7	Not random
Bank Dhofar	797	791	361.8	754.0-828.6	Random
Alizz Islamic Bank	282	304	94.6	284.9-323.1	Not random
Bank Muscat	1139	1186	570.8	1139.6-1233.3	Random
Bank Nizwa	492	476	140.5	452.9-499.4	Random
Sohar International Bank	1119	1077	484.8	1034.3-1120.6	Random
Gulf Invest Services Holding	1083	1056	483.0	1013.3-1099.5	Random
HSBC Bank Oman	711	691	290.5	657.4-724.3	Random
National Bank Of Oman	1140	1059	498.9	1015.4-1102.9	Not random
Al Anwar Holding	1113	1135	528.4	1089.6-1179.7	Random
Ahli Bank	939	914	412.9	874.1-953.7	Random
Oman And Emirates Inv. Holding	1025	1012	478.2	969.0-1054.7	Random
Ominvest	910	897	415.3	857.3-937.2	Random
Al Sharqia Investment Holding	642	652	298.0	617.7-685.4	Random

Index	Actual Runs	Expected no. of Runs E(R)	Variance (σ2)	Range E(R) ± 1.96(σ)	Decision (At 5% Level of Significance)
MSM 30 INDEX	**977**	**1243**	**620.9**	**1292.3-1194.6**	**Not random**
Name of the Company	**Actual Runs**	**Expected no. of Runs E(R)**	**Variance (σ2)**	**Range E(R) ± 1.96(σ)**	**Decision (At 5% Level of Significance)**
Industrial Sector					
Raysut Cement	972	964	464.4	922.1-1006.5	Random
Oman Fisheries	1087	1031	451.7	989.7-1072.9	Not random
Oman Flour Mills	702	685	322.1	649.5-719.9	Random
Al Anwar Ceramic Tiles	1073	1045	481.9	1001.6-1087.6	Random
Oman Cement	971	948	441.1	907.3-989.6	Random
Galfar Engineering and Con.	1137	1133	526.9	1178.0-1088.1	Not random
Services Sector					
Al Jazeera Services	1055	1016	487.0	1059.5-972.9	Random
National Gas	493	534	242.8	564.5-503.5	Not random
Oman Investment And Finance	1135	1136	539.1	1181.9-1090.8	Random
Ooredoo	773	798	349.8	834.9-761.7	Random
Oman Telecommunication	1219	1181	569.2	1228.2-1134.7	Random
Phoenix Power	336	333	137.4	356.6-310.3	Random
Renaissance Services	1089	1077	525.2	1122.4 - 1032.5	Random
Shell Oman Marketing	557	535	216.1	563.9-506.4	Random
Sembcorp Salalah	216	225	62.8	240.9-209.9	Random

Table II: Results of Serial Correlation Test

Index	Auto Correlation Coefficient		LB Statistic at Lag 1		LB Statistic at Lag	
	At Lag 1	At Lag 20	Value	Probability	Value	Probability
MSM 30 INDEX	0.997	0.923	2474.9	0.000	46033	0.000
Name of the Company						
Financial Sector						
Al Madina Takaful	0.992	0.867	708.03	0.000	12641	0.000
Al Madina Investment	0.996	0.930	2246.6	0.000	42184	0.000
Bank Dhofar	0.997	0.948	1723.5	0.000	33084	0.000
Alizz Islamic Bank	0.986	0.785	645.15	0.000	10390	0.000
Bank Muscat	0.997	0.986	2452.2	0.000	46697	0.000
Bank Nizwa	0.985	0.910	1559.7	0.000	28849	0.000
Sohar International Bank	0.996	0.908	2371.2	0.000	43455	0.000
Gulf Invest Services Holding	0.998	0.950	2299.1	0.000	44050	0.000
HSBC Bank Oman	0.997	0.961	1623.8	0.000	31647	0.000
National Bank of Oman	0.994	0.891	2218.6	0.000	39914	0.000
Al Anwar Holding	0.996	0.912	2415.9	0.000	44620	0.000
Ahli Bank	0.995	0.904	2000.5	0.000	36697	0.000
Oman And Emirates Inv.	0.996	0.900	2124.3	0.000	38950	0.000
Ominvest	0.994	0.873	1912.8	0.000	34119	0.000
Al Sharqia Investment	0.995	0.904	1407.7	0.000	25729	0.000
Industrial Sector						
Raysut Cement	0.997	0.925	1989.1	0.000	37285	0.000
Oman Fisheries	0.996	0.909	2333.4	0.000	43138	0.000
Oman Flour Mills	0.994	0.899	1438.0	0.000	26421	0.000
Al Anwar Ceramic Tiles	0.998	0.962	2254.3	0.000	43549	0.000

Index	Auto Correlation Coefficient		LB Statistic at Lag 1		LB Statistic at Lag	
	At Lag 1	At Lag 20	Value	Probability	Value	Probability
Oman Cement	0.997	0.921	2024.2	0.000	37763	0.000
Galfar Engineering and Con.	0.999	0.976	2429.1	0.000	47615	0.000
Services Sector						
Al Jazeera Services	0.988	0.948	2109.0	0.000	40318	0.000
National Gas	0.992	0.839	1154.6	0.000	19724	0.000
Oman Investment And	0.994	0.886	2367.1	0.000	42455	0.000
Ooredoo	0.995	0.925	1802.9	0.000	33576	0.000
Oman Telecommunication	0.996	0.937	2431.9	0.000	45922	0.000
Phoenix Power	0.990	0.817	789.25	0.000	13320	0.000
Renaissance Services	0.999	0.964	2203.5	0.000	42707	0.000
Shell Oman Marketing	0.987	0.865	1289.7	0.000	22958	0.000
Sembcorp Salalah	0.988	0.765	785.0	0.000	12560	0.000

Table III: Results of Unit Root Test

Index	ADF Test Statistic
MSM 30 INDEX	-1.40
Name of the Company	
Financial Sector	
Al Madina Takaful	-1.71
Al Madina Investment	-1.47
Bank Dhofar	-1.09
Alizz Islamic Bank	-1.19
Bank Muscat	-1.60
Bank Nizwa	-2.41
Sohar International Bank	-2.00
Gulf Invest Services Holding	-1.37
HSBC Bank Oman	-1.48
National Bank Of Oman	-2.09
Al Anwar Holding	-1.97
Ahli Bank	-2.45
Oman And Emirates Inv. Holding	-2.19
Ominvest	-2.51
Al Sharqia Investment Holding	-1.99
Industrial Sector	
Raysut Cement	-0.52
Oman Fisheries	-1.68
Oman Flour Mills	-2.29
Al Anwar Ceramic Tiles	-1.11
Oman Cement	**-1.21**
Galfar Engineering and Con.	**-0.78**
Services Sector	
Al Jazeera Services	**-1.25**
National Gas	**-2.18**
Oman Investment And Finance	**-2.27**
Ooredoo	**-2.06**
Oman Telecommunication	**-1.10**
Phoenix Power	**-0.31**
Renaissance Services	**-1.27**
Shell Oman Marketing	**-0.63**
Sembcorp Salalah	**-2.83**