CHAPTER 1

INTRODUCTION

1.1. INTRODUCTION TO THE STUDY

The introduction of the study is the reliability and general usability of descriptive statistics of the physical output of Industrial commodities. Commodity markets have been highly volatile in recent year. Volatility brings opportunity and risk to traders and investors. There are many reasons for volatility to occur in commodity markets .Changes in demand and supply for the product of an industry that uses commodities as an input may lead to fluctuations in prices of commodities.

The introduction of industrial product features trading in the Multi Commodity Exchange (MCX) of India allows Investor to buy and sell commodities product. The future trading in the following commodity categories Bullion, Plantation, Metal, Energy, Weather, Oil and Seeds, Spices, Fiber, Pulses, Cereals and Others soft commodities.

In Industrial commodities more industry products are listed and the investor buys and sells few products and the remaining items are kept unmoved. The industry commodities have two commodities exchanges in India. They are MCX and NCDEX (National Commodities and Derivatives Exchange). Most of the stocking and investment people like MCX. This has more risk but more profit.

Commodity risk refers to the uncertainties of future market values and of the size of the future income, caused by the fluctuation in the prices of commodities. These commodities may be metals, gas, electricity and then the commodity enterprise needs to deal with the some of risk such as Price risk (Risk arising out of adverse movements in the world prices, exchange rates, basis between local and world prices), Quantity risk, Cost risk (Input Price risk), Political risk.

COMMODITIES IN INDIA

Since independence to 1980: During this period there was restrictive growth of private sector and government's permission was required to set up any private enterprise in India. Despite this the GDP grew at a rate of 1.4% per annum from 1940 – 1970. Other factors such as poverty and famine lowered India's economic growth rate during this period and with the presence of very few top producers of major industrial goods the absorption of domestic productivity was greater, which lead to monopolistic pricing. India during this phrase lagged behind in terms of economic growth as the rest of world grew and flourished through overseas trade.

1980 to mid-1990s: Post 1980s India saw liberalization and achieved further impetus in Mid-1991. The nation witnessed historical upsurge in per capita GNP. In 1994-95 the industrial output-growth registered 8.4% growth and the exports rose by 27%. This resulted in a 10% drop in inflation in the mid-1990s.

1990s to 2000s: Since its liberalization policy, India has opened several public sector enterprises. The exports saw a 17% rise in 1994 and 28% in 1995-96. Over 90% of India's imports are backed by export revenues. At present the current account arrears is less than 1% of GDP and foreign-exchange profits are soaring at $20 billion. The food stocks have witnessed an all-time increase of 37m tonnes. The private sector, which was neglected by previous governments, contributes to two-thirds of India's GDP. The shift of the state's responsibility from a chief investor to a catalyst of private enterprise has paved way to a new accord on liberalization.

Industries in India Experts believe that the contribution of India in the world GDP is estimated to increase from 6% to 11% by the year 2025, while on the flip side the contribution of US in world GDP is presumed to decline from 21% to 18%. This indicates towards the emergence of India as the third biggest global economy after US and China. The evaluation is supported by the overall development in all the sectors in India, in which the key sector is the industry sector.

Going by the past records the Industry sector in India registered a growth rate of 6.2% in October 2003 which further increased by 4% in the corresponding month of the next fiscal year.

MAJOR INDUSTRIES IN INDIA

Textile Industry

This industry covers a wide range of activities ranging from generation of raw materials such as jute, wool, silk and cotton to greater value added goods such as readymade garments prepared from different types of manmade or natural fibers. Textile industry provides job opportunity to over 35 million individuals thus playing a major role in the nation's economy. It has 4 per cent share in GDP and shares 35% of the gross export income besides adding 14% of value addition in merchandizing sector.

Food processing Industry

In terms of global food business, India accounts less than 1.5% in spite of being one of the key food producing nations worldwide. But this on the other hand also indicates the enormous possibilities for the growth of this industry. Supported by the GDP estimates, the approximate expansion of this sector is between 9-12% and during the tenth plan period the growth rate was around 6-8%. Food Processing Industry provides job opportunities to 1.6 an people and it is estimated to expand by 37 an by 2025.

Chemical Industry

Indian Chemical industry generates around 70,000 commercial goods ranging from plastic to toiletries and pesticides to beauty products. It is regarded as the oldest domestic sector in India and in terms of volume it gives a sense of pride to India by featuring as the 12 largest producers of chemicals. With an approximate cost of $28 billion, it amounts to 12.5% of the entire industrial output of India and 16.2% of its

entire exports. Under Chemical industries some of the other rapidly emerging sectors are petrochemical, agrochemical, and pharmaceutical industries.

Cement Industry

India has 10 large cement plants governed by the different State governments. Besides this India have 115 cement plants and around 300 small cement plants. The big cement plans have installed competence of 148.28 million tons per annum whereas the mini cement plants have the total capacity of 11.10 million tonnes per annum. This totals the capacity of Indian cement industry at 159.38 million tonnes. Ambuja cement, J K Cement, Aditya Cement and L & T Cement are some of the major steel companies in India.

Steel Industry

Indian Steel Industry is a 400 years old sector which has a past record of registering 4% growth in 2005-06. The production during this period reached at 28.3 million tones. India steel industry is the 10th largest in the world which is evident from its Rs 9,000 core of capital contribution and employment opportunities to more than 0.5 million people. The key players in Steel Industry are Steel Authority of India (SAIL), Bokaro Steel Plant, Rourkela Steel Plant, Durgapur Steel Plant and Bbilai Steel Plant.

1.2 OBJECTIVE OF THE STUDY

PRIMARY OBJECTIVE

- To study on the risk and return analysis of commodities listed in MCX in India.

SECONDARY OBJECTIVE

- To identify the investment patterns of investors.
- To test the presence of the day of week effect on share price volatility on commodity.
- To test the presence of the day of week effect on share price return on commodity.

- To find out the day on which the volatility is high or low.
- To find out the day on which the return is high and low.

1.3 INDUSTRY PROFILE

ABOUT COMMODITY MARKET

Commodity market is a place where trading in commodities takes place. It is similar to an equity market, but instead of buying or selling shares one buys or sells commodities.

The government has now allowed national commodity exchanges, similar to the Bombay Stock Exchange and the National Stock Exchange, to come up and let them deal in commodity derivatives in an electronic trading environment. These exchanges are expected to offer a nation-wide anonymous, order-driven, screen-based trading system for trading. The Forward Markets Commission (FMC) will regulate these exchanges.

Consequently four commodity exchanges have been approved to commence business in this regard. They are:

- Multi Commodity Exchange of India Ltd (MCX), located at Mumbai
- National Commodity and Derivatives Exchange Ltd (NCDEX), located at Mumbai
- National Board of Trade (NBOT), located at Indore

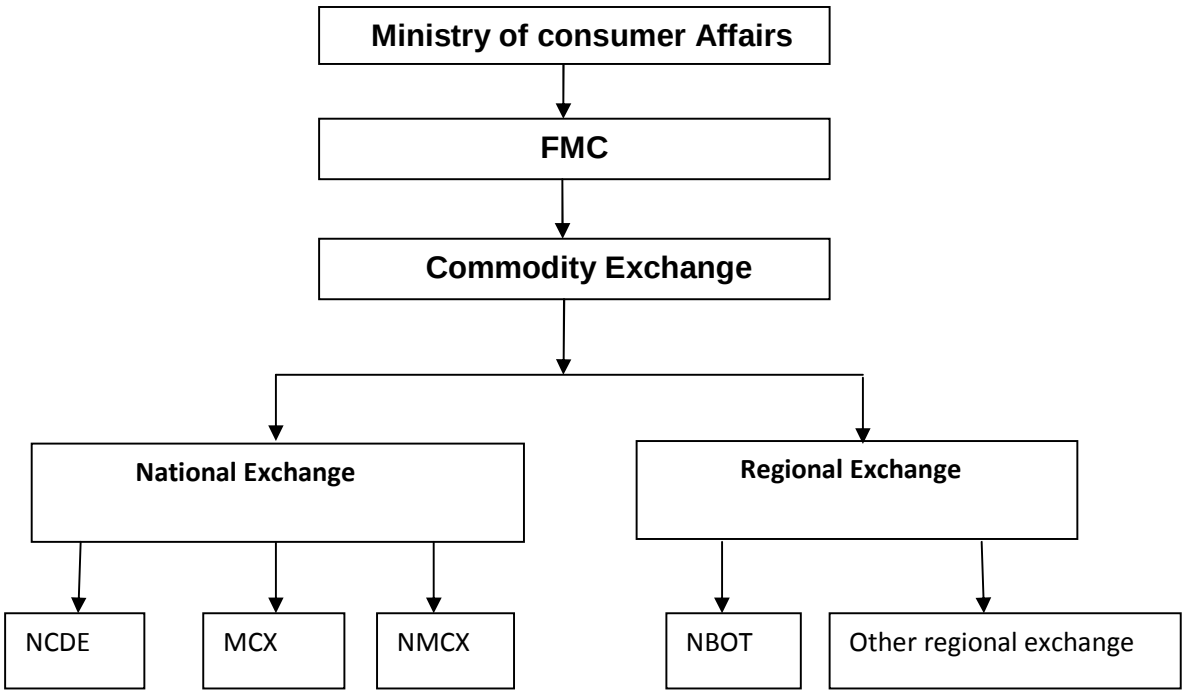
National Multi Commodity Exchange (NMCE), located at Ahmadabad.

COMMODITY PRODUCTS

- Bullion
- Plantation
- Metal
- Energy

- Weather
- Oil and Seeds
- Spices
- Fiber
- Pulses
- Cereals
- Others

STRUCTURE OF COMMODITY FUTURES MARKETS IN INDIA



1.3 ORGANIZATION PROFILE

Product and services

AWARDS AND ACHIVEMENTS

- A Wired companies along with Reliance, Hill, Infosys, etc by ‘Business Today’, January 2004 edition.
- It was awarded ‘Top Domestic Brokerage House’ four times by Euro and Asia money.

- It was Winner of “Best Financial Website” award.
- India’s most preferred brokers Within 5 years. “Awaaz customers Award 2005”.
- RCF wins National Award 2012.

SHAREKHAN ACCOUNT

- De-mat a/c [Free account opening]
- Trading a/c [for cash calculation]
- Bank a/c [for found transfer]
- Dial and Trade [for offline trading/for query relating trading]

1.5 STATEMENT OF THE PROBLEM

Research study on “The day of the Week Effect on Share Price Volatility on selected Stocks of Multi Commodity Exchange” has been taken up rarely in Indian Stocks. Some research study was conducted on the basis of the stock market as a whole of the companies listed in the stock exchange. Hence it was decided to conduct a research on a company specific share price analysis for the selected stock for the past 1-1/2 years. This research tests the presence of day of week effect on share price volatility and return on the basis of some commonly used statistical tools.

1.6 SCOPE OF THE STUDY

It is important to know whether there are variations in volatility of stock returns by day of the week patterns and whether a high (low) return is associated with a corresponding high (low) return for a given day. Having such knowledge may allow investors to adjust their portfolios by taking into account day of the week variation in volatility. For exchange, Engle (1993) argues that investors who dislike risk may adjust their portfolios by reducing their investments in those assets whose volatility is

expected to increase. Finding certain patterns in volatility may be useful in several ways, including the use of predicted volatility patterns in hedging and speculative purpose and use of predicted volatility in valuation of certain assets specifically shares.

CHAPTER 2

REVIEW OF LITERATURE

Don Hover male ICI Since (1979)[1] Commodities, Inc. has been delivering quality food ingredients to customers across the United States. They take pride in the variety of customers they serve and, whether you are a large food manufacturer or a corner bakery can be assured of the same high standards.**"**It is the strength of our people that really sets ICI apart. They are loyal to our customers and suppliers and committed to working hard to ensure they have what they need."

David Hallam (1998)[2] this paper examines the nature, origins and implications of the sharp decline in coffee prices since 1998. The decline is attributed to the significant expansion in global supplies against sluggish demand growth. Recent efforts on the part of producers and exporters to control supply growth or to promote demand growth are reviewed. It is argued that so-called "producer-only agreements" to restrict production or exports are unlikely to succeed because of the difficulties in maintaining the commitment of participants and policing such schemes. The organization of demand promotion is also problematic where stakeholders may see their interests as competing, and the experience with coffee indicates that there is a need to `establish clear strategic aims to which all can subscribe. However, in the longer term the tendency towards oversupply in the coffee market can only be addressed by encouragement of diversification out of coffee production at least in marginal areas.

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[1] *Don Hover male ICI Since (1979)* "Stock Trading in India", Society for Capital Market Research and Development, Delhi, 1992.

[2] *David Hallam (1998)* "The Risk Return Trade-off in shares" *Tlze Hindu* Daily, Vol.116, February 12,1993,

James Wolfensohn (2001)[3] although depressed prices have been common to most commodities much attention has focused on coffee. As the single most important tropical commodity accounting for almost half of total net exports of tropical products, coffee has become emblematic of the problems faced by all developing country agricultural commodity exports. Price falls after a brief recovery in the mid-1990s when buffer stocks were finally cleared real coffee prices had fallen by 2001 to levels lower than ever recorded. In real terms coffee prices today are less than one third of their 1960 level, and for many producers less than the cost of production. According to the International Coffee Organization (ICO), this impact directly upon an estimated 20-25 million households in coffee-producing countries, and indirectly upon up to a further 100 million engaged in upstream and downstream activities.

A.Gurkan (2001)[4] the reduction of coffee prices and also other commodities. Is undermining the economic sustainability of countries and millions of families in Latin America, Africa and Asia. Declining prices and export revenues also have macroeconomic consequences. Especially in the case of the highly dependent producers/exporters, declining prices and export revenues, and declining incomes in the coffee sector can have an impact on government revenues. Recent research shows this link continues to be particularly strong for African coffee exporting countries in spite of market liberalization, although there is apparently no significant statistical relationship in Latin America.

Kelvin Balcombe and Adam Prakash (1970-2001)[5] The study analyses in detail the historical developments observed during the period 1970-2001 in the food import bills of two groups of countries. The first part of the study puts these developments into a broader economic perspective using data at the country level for all basic food

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[3]. *James Wolfensohn (2001*)"The Risk Return Trade-off in shares" *Tlze Hindu* Daily, Vol.116, February 12,1993.

[4] *A.Gurkan (2001)* "Value at Risk", ***Express Iizzlestiirent Week,*** Weekly Vo1.8, No. 49, November 30 to December 6,1998.

[5]. *Kelvin Balcombe and Adam Prakash (1970-2001*) “Good News for Value Stocks: Further Evidence on Market Efficiency.” *Journal of Finance,* 52 (1997), 859–874.

commodities, while the second part of the study delves into the commodity aspects of food import bills at the country level by analyzing the sources of variation in the import bills of selected food commodities. Put briefly the study finds evidence that quantities and prices of food commodities tend to be affected by policy shifts, substantive changes in the behavior of economic agents or other factors affecting the market fundamentals, the effects of which tend to be concentrated around certain important events, such as the 1974 world food crisis. Furthermore, the variances of prices, quantities and the total import bill were discovered not to be constant over time, with periods of high volatility, which tended to decline towards the end of the period. There is also evidence that prices tend to have a significant contemporaneous influence on quantities imported, with more income-elastic food commodities' changes in prices exerting a larger influence on quantities imported.

Charles Dow (1900)[6] The Japanese began using technical analysis to trade rice in the 17th century. While this early version of technical analysis was different from the US version initiated by Charles Dow around 1900. Formation: In order to create a candlestick chart, you must have a data set that contains open, high, low and close values for each time period you want to display.

Preethi Singh (1986)[7] disclosed the basic rules for selecting the company to invest in. She opined that understanding and measuring return mad risk is fundamental to the investment process. According to her, most investors are 'risk averse'. To have a higher return the investor has to face greater risks. She concludes that risk is fundamental to the process of investment. Every investor should have an understanding of the various pitfalls of investments. The investor should carefully analyses the financial statements with special reference to solvency, profitability, EPS, and efficiency of the company.

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[6]. *Charles Dow (1900)* "Market Under reaction to Open Market Share Repurchases." Journal of Financial Economics, 39 (1995), 181–208.

[7]*Preethi Singh (1986*). "The Stock Market and Corporate Investment: A Test of Catering Theory."Review of Financial Studies, 22 (2009), 187–217.

David. L. Scott and William Edward (1990)[8] reviewed the important risks of owning common stocks and the ways to minimize these risks. They commented that the severity of financial risk depends on how heavily a business relies on debt. Financial risk is relatively easy to minimize if an investor sticks to the common stocks of Companies that employ small amounts of debt. They suggested that a relatively easy way to ensure some degree of liquidity is to restrict investment in stocks having a history of adequate trading volume. Investors concerned about business risk can Reduce it by selecting common stocks of firms that are diversified in several unrelated industries.

Carter Randal (1992)[9] offered to investors the underlying principles of winning on the stock market. He emphasized on long-term vision and a plan to reach the goals. He advised the investors that to be successful, they should never be pessimists. He revealed that though there has been a major economic crisis almost every year, it remains true that patient investors have consistently made money in the equities market. He concluded that investing in the stock market should be an un-emotional Endeavour and suggested that investors should own a stock if they believe it would perform well.

Squelch and Kenny (1994)[10] Product selection and the availability of products has a high impact on the retailer' sales, and assay result gross profits and assortment planning has been the focus of numerous industry studies, mostly concerned with whether assortments were too broad or narrow. Retailers have increased product selection in all merchandise categories for a number of reasons, including heterogeneous customer preferences, consumers seeking variety and competition between brands: Squelch and Kenny (1994) report that the number of products in the market place increased by 16% per year between 1985 and 1992 while shelf space expanded only by 1.5% per year during the same period. This has raised questions as to whether rapid growth in variety is excessive

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[8] "*David. L. Scott and William Edward (1990)* "A Simple Implicit Measure of the Effective Bid-Ask Spread in an Efficient Market.", 39(1984), 1127–1139.

[9] Carter Randal (1992) "Risk Management of Financial sector", Tlze Expressly weekly, February 8-14,1999, p.10

[10] Squelch and Kenny (1994)"Managing Lenders risk in the agricultural credit to the form business sector", Monthly, Vol. 39, No. 10, October 1988, p.725.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 TYPE OF RESEARCH

Descriptive and analytical research:

The Study uses Descriptive and analytical Research design.

Research design

Data source:

All the data have been collected from the multi commodity exchange (MCE) website www.mcxindia.com

The data for the entire 7 product were collected from the Multi Commodities Exchange (MCX) website, than they were sorted according to the day of the week. All Mondays were grouped as on set, like that for each day of the week the data was sorted. Since they were small in number and there will not be any regular trading on these days they were eliminated from the data set. Each Product had around 349 daily observations. Then the sorted data were used for analysis in which the return equation was to be found for each and every product. The return for each product was found on the assumption that the investor will buy the share of the product on a particular day of the week at the opening price and sell the same at the closing price of that day itself. This was the formula used for calculating the return for each day of the week:

((Closing Price-Opening Price)/Opening Price * 100)

Then the returns found for each day of the week were analyses using statistical tools like mean, variance, skewness, and kurtosis. To find out volatility for each stock, standard deviation was calculated on the closing price of the each stock for every day of the week.

3.2. Data and sources of data

Nature of data

The data used is secondary data.

Source of data

Data were collected for the period from 1st Jan 2011 to 30th July 2012.The data are collected from the MCXINDIA website.

Data collection

Data has been collected under the following commodities:

- Aluminum
- Lead
- Crude oil
- Zinc
- Cardamom
- Silver
- Gold

3.3 Time period covered

- Data has been collected for 1-1/2 years ranging from 1st January 2011 to 31st July 2012 for all the above 7 commodity.
- The data collected for each and every commodity comprises of 349 daily observations.
- The table below depicts the number of days in each day of the week.

Day of the week	No of daily criteria
Monday	72
Tuesday	70
Wednesday	69
Thursday	70
Friday	68
Total criteria	349

3.4. Tools for data analysis

Statistical tools used for calculating stock return:

- Mean
- Variance
- Skewness
- Kurtosis

Tools used for calculating stock volatility

- Standard Deviation

3.5. Limitations of the study

1. Since this study has been made as a commodity wise analysis only 7 commodity products were analysis and it was not possible to analysis or an analysis for the whole of stock market.

2. Analysis are made only for a period of 1-1/2 years ranging from 1st Jan 2011 to 31st July 2012 so the findings are based only on the Investors behavior for the last 1-1/2 years.

3. The finding of this project might differ In case if some other researcher does a research study in this topic for a different time as the results are purely based on the investor behavior.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

Table No: 4.1

Analysis and Statistics for Aluminum Stock return and volatility

Criteria	Monday	Tuesday	Wednesday	Thursday	Friday	All Days
Observations	72	70	69	70	68	349
Mean	1.10	109.96	110.07	109.98	1.10	332.14
Standard Deviation	4.20	4.15	4.41	4.31	4.45	21.52
Variance	17.67	17.22	19.47	18.58	19.82	92.76
Skewness	.48	.47	.60	.50	.46	2.51
Kurtosis	-.32	-.22	-.30	-.53	-.53	-.190

Interpretation:

The above table is provides the Statistics for Aluminum stock return and volatility. Mean test gives the preliminary evidence for variation in return for presence of day of the week effect. The average return of aluminum for entire study is 332.14%, variance is 92.76, skewness is 2.51, and kurtosis is -.190. When return on each day is analyzed, the findings indicate that Wednesday had a return of 110.07%. This proves that there is a day of the week effect on this stock. Return for Wednesday was found to be at the maximum of 110.07% and Monday had a minimum return of 1.10%.Hence we observed highest return on Wednesday and lowest return on Monday for Aluminum.

To measure the volatility standard deviation test was done and it was observed that, Standard deviation was found to be more on Friday i.e. 4.45 and low on Tuesday i.e. 4.15.

Table 4.1.1 showing day of the Week Effect results for Aluminum

Day of the Week Effect	High	Low
On Return	Wednesday	Monday
On Volatility	Friday	Tuesday

Chart No: 4.1

Chart showing Criteria representation of Aluminum Stock return

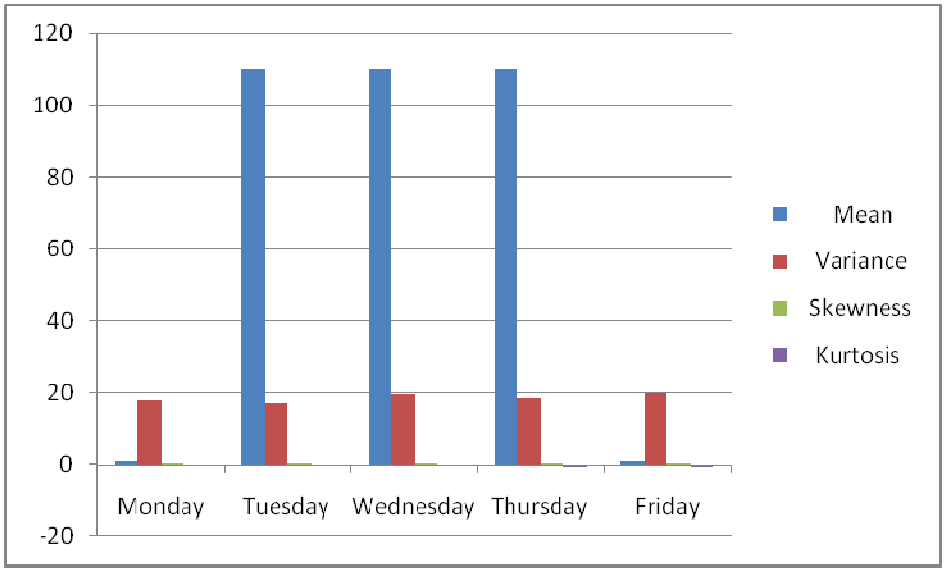


Chart No 4.2

Chart showing Criteria representation of Aluminum Stock volatility

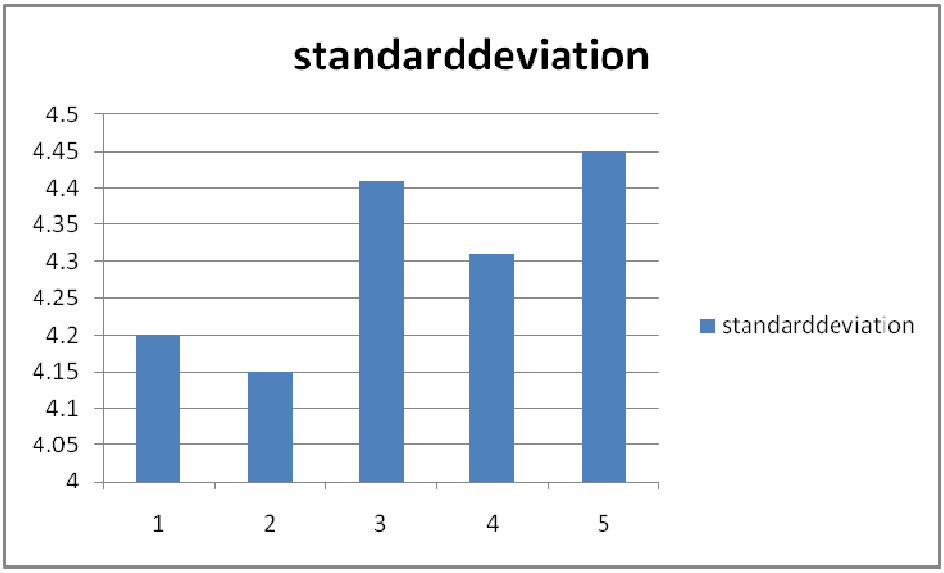


Table No 4.2

4.2 Analysis and Statistics for Lead Stock return and volatility

Criteria	Monday	Tuesday	Wednesday	Thursday	Friday	All Days
Observations	72	70	69	70	68	349
Mean	1.09	109.38	109.72	109.74	1.09	331.02
Standard Deviation	7.19	7.19	7.17	7.11	7.08	35.74
Variance	51.64	51.81	51.43	50.62	50.13	41.1

Skewness	.11	.09	.32	.25	.18	.95
Kurtosis	-.46	-.23	-.007	-.45	-.69	-.190

Interpretation:

The above table is provides the statistics for Lead stock return and volatility. Mean test gives the preliminary evidence for variation in return for presence of day of the week effect. The average return of lead for entire study is 331.02%, variance is 41.1, skewness is -.95, and kurtosis is -.190. When return on each day is analyzed, the findings indicate that Thursday had a return of 109.74%. This proves that there is a day of the week effect on this stock. Return for Thursday was found to be at the maximum of 109.74% and Monday had a minimum return of 1.09%.Hence we observed highest return on Thursday and lowest return on Monday for lead.

To measure the volatility standard deviation test was done and it was observed that, Standard Deviation was found to be more on Tuesday i.e.7.19 and low on Friday i.e.7.08.

Table 4.2.1

Table showing day of the Week Effect results for Lead

Day of the Week Effect	High	Low
On Return	Thursday	Monday
On Volatility	Tuesday	Friday

Chart No 4.1

Chart showing Criteria representation of Lead Stock return

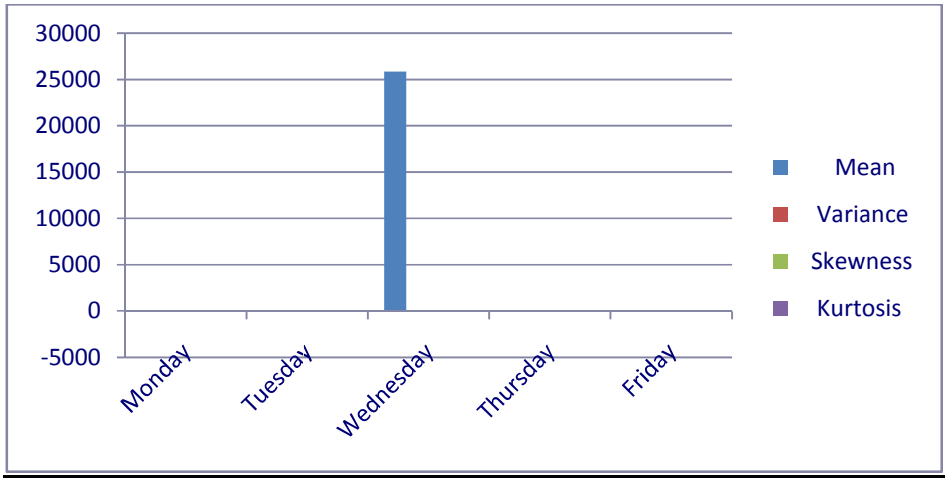


Chart 4.2

Chart: Criteria representation of Lead Stock volatility

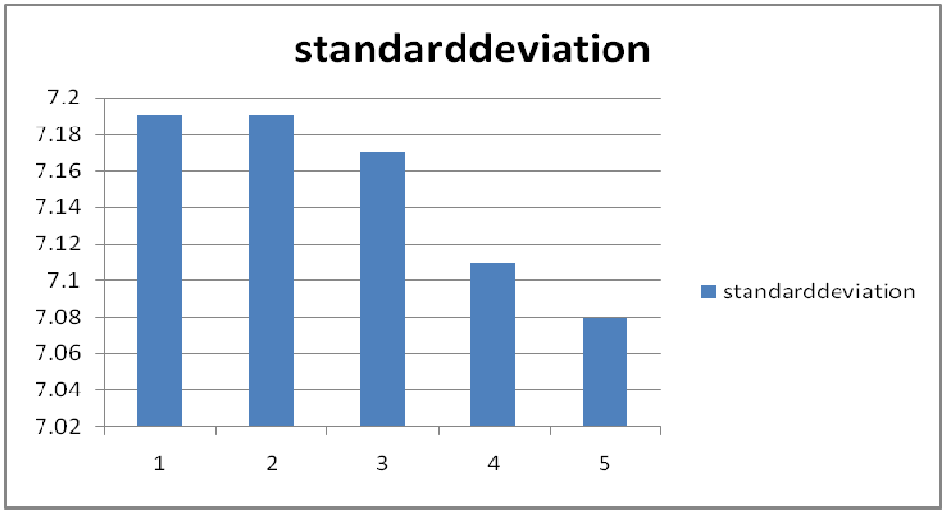


Table No 4.3

4.3 Analysis and Statistics for Crude oil Stock return and volatility

Criteria	Monday	Tuesday	Wednesday	Thursday	Friday	All Days
Observations	72	70	69	70	68	349
Mean	4.64	4643.89	4661.79	4659.07	4.68	13,974.07
Standard Deviation	4.67	470.51	474.31	486.05	4.75	1440.29
Variance	2.18	2.21	224966.91	2.36	2.25	44,995.18
Skewness	-.016	-.014	-.056	.039	-.006	-.013
Kurtosis	-.98	-1.05	-.99	-1.07	-.97	-5.03

Interpretation:

The above table provides the Statistics for Crude oil stock return and volatility. Mean test gives the preliminary evidence for variation in return for presence of day of the week effect. The average return of crude oil for entire study is 13,974.07%, variance is 44,995.18, skewness is -0.013, and kurtosis is -5.03. When return on each day is analyzed, the findings indicate that Wednesday had a return of 4661.79%. This proves that there is a day of the week effect on this stock. Return for Wednesday was found to be at the maximum of 4661.79% and Monday had a minimum return of 4.64%. Hence we observed highest return on Wednesday and lowest return on Monday for crude oil.

To measure the volatility standard deviation test was done and it was observed that, Standard deviation was found to be more on Thursday i.e.486.05 and low on Monday i.e.4.67.

Table 4.3.1

Table showing day of the Week Effect results for Crude oil

Day of the Week Effect	High	Low
On Return	Wednesday	Monday
On Volatility	Thursday	Monday

Chart No 4.1

Chart showing Criteria representation of crude oil Stock return

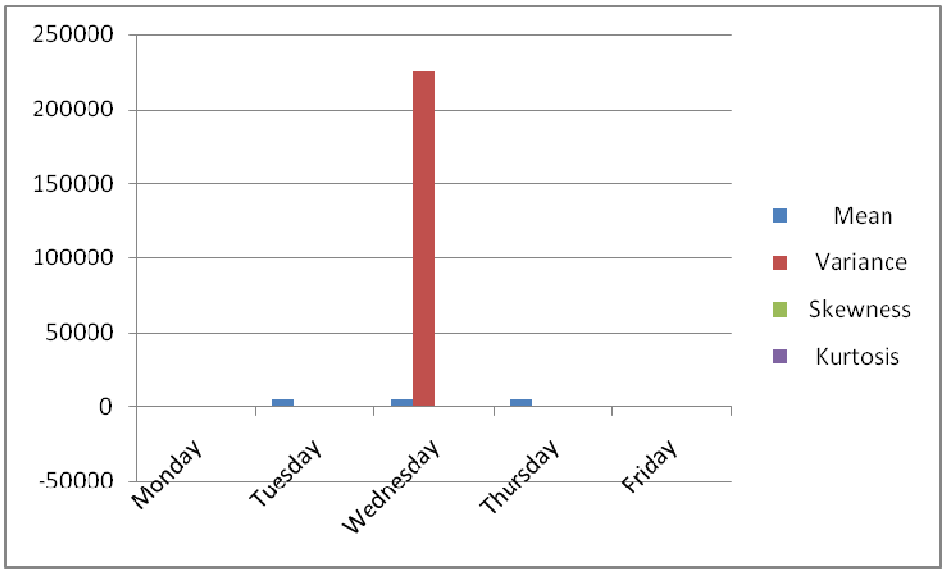


Chart No 4.2

Chart showing Criteria representation of crude oil Stock volatility

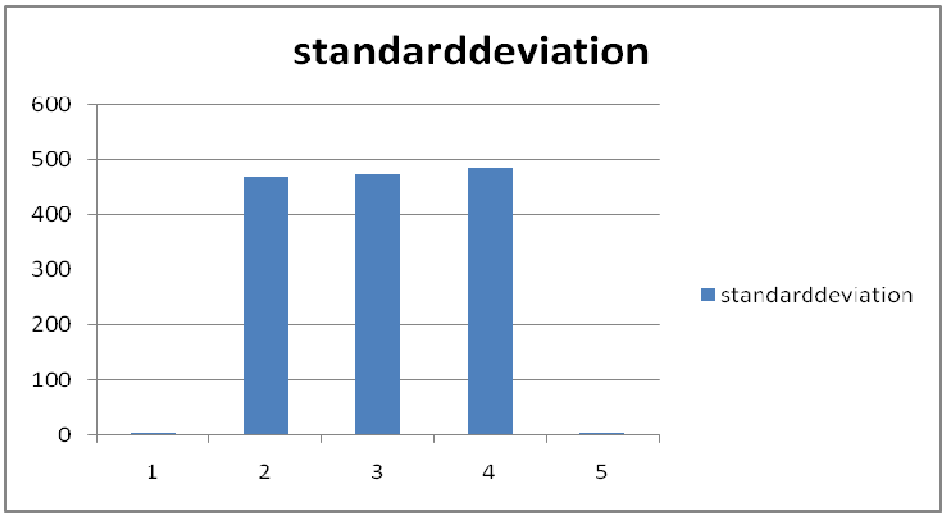


Table No 4.4

4.4 Analysis and Statistics for Zinc Stock return and volatility

Criteria	Monday	Tuesday	Wednesday	Thursday	Friday	All Days
Observations	72	70	69	70	68	349
Mean	1.03	102.74	102.78	102.89	1.03	310.467
Standard Deviation	4.76	4.79	4.99	5.14	5.07	24.75
Variance	22.64	22.93	24.96	26.42	25.71	24.53
Skewness	-.04	.02	.01	-.04	-.10	-.15
Kurtosis	.06	-.02	.09	.21	.77	0.34

Interpretation:

The above table provides the Statistics for zinc stock return and volatility. Mean test gives the preliminary evidence for variation in return for presence of day of the week effect. The average return of zinc for entire study is 130.467%, variance is 24.75, skewness is -.15, and kurtosis is 0.34. When return on each day is analyzed, the findings indicate that Thursday had a return of 102.89%.This proves that there is a day of the week effect on this stock. Return for Thursday was found to be at the maximum of 102.89% and Monday had a minimum return of 1.03%.Hence we observed highest return on Thursday and lowest return on Monday for zinc.

To measure the volatility standard deviation test was done and it was observed that, Standard Deviation was found to be more on Thursday i.e.5.14 and low on Monday i.e.4.76.

Table 4.4.1

Table day of the Week Effect results for Zinc

Day of the Week Effect	High	Low
On Return	Thursday	Monday
On Volatility	Thursday	Monday

Chart No 4.1

Chart showing Criteria representation of zinc Stock return

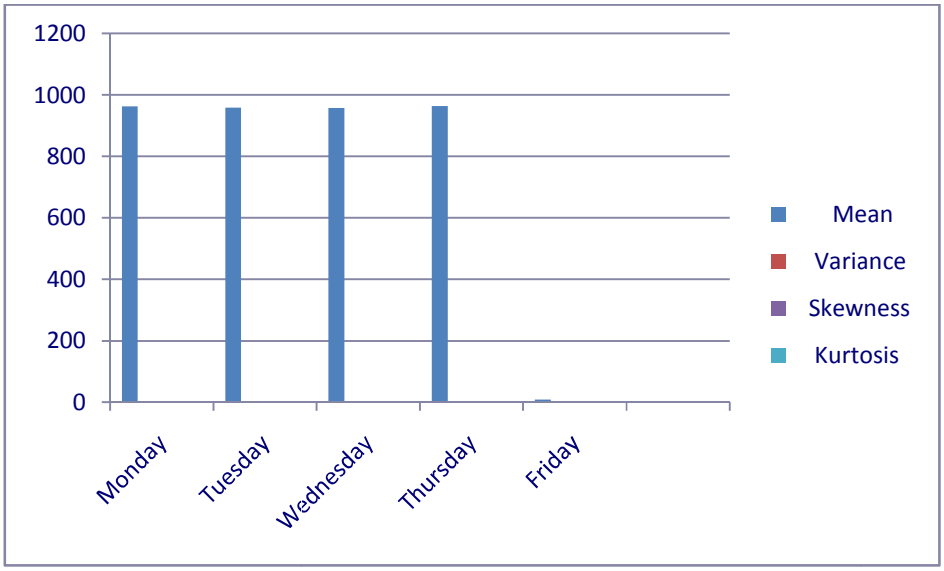


Chart No 4.2

Chart showing Criteria representation of zinc Stock volatility

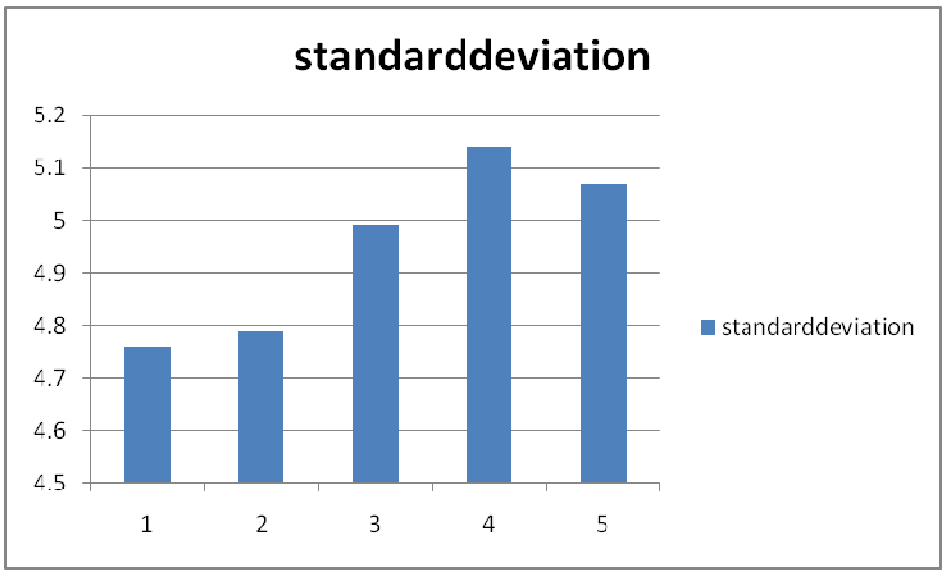


Table No 4.5

4.5 Analysis and Statistics for cardamom Stock return and volatility

Criteria	Monday	Tuesday	Wednesday	Thursday	Friday	All Days
Observations	72	70	69	70	68	349
Mean	962.73	959.17	956.27	964.19	9.56	2,981.92
Standard Deviation	262.04	264.67	259.16	257.81	2.53	1,046.21
Variance	68666.93	70049.63	67165.60	66464.23	6.42	54,470.5
Skewness	.39	.41	.36	.33	.31	.180
Kurtosis	-1.009	-1.04	-1.039	-1.11	-1.11	-5.31

Interpretation

The above table provides the Statistics for cardamom stock return and volatility. Mean test gives the preliminary evidence for Variation in return for presence of day of the week effect. The average return of cardamom for entire study is 2,981.92%, variance is 54470.5, skewness is .180, and kurtosis is -5.31 When return on each day is analyzed, the findings indicate that Thursday had a return of 964.19%. This proves that there is a day of the week effect on this stock. Return for Thursday was found to be at the maximum of 964.19% and Friday had a minimum return of 9.56%.Hence we observed highest return on Thursday and lowest return on Friday for Cardamom.

To measure the volatility standard deviation test was done and it was observed that, Standard Deviation was found to be more on Tuesday i.e.264.67 and low on Friday i.e.2.53.

Table 4.5.1

Table showing day of the Week Effect results for Cardamom

Day of the Week Effect	High	Low
On Return	Thursday	Friday
On Volatility	Tuesday	Friday

Chart No 4.1

Chart: Criteria representation of cardamom Stock return

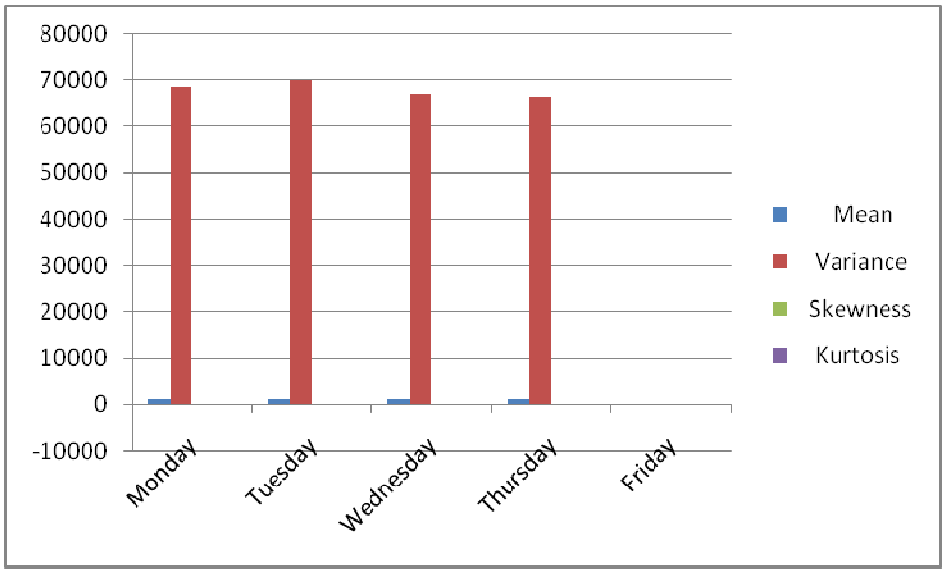


Chart No 4.2

Chart showing Criteria representation of cardamom Stock volatility

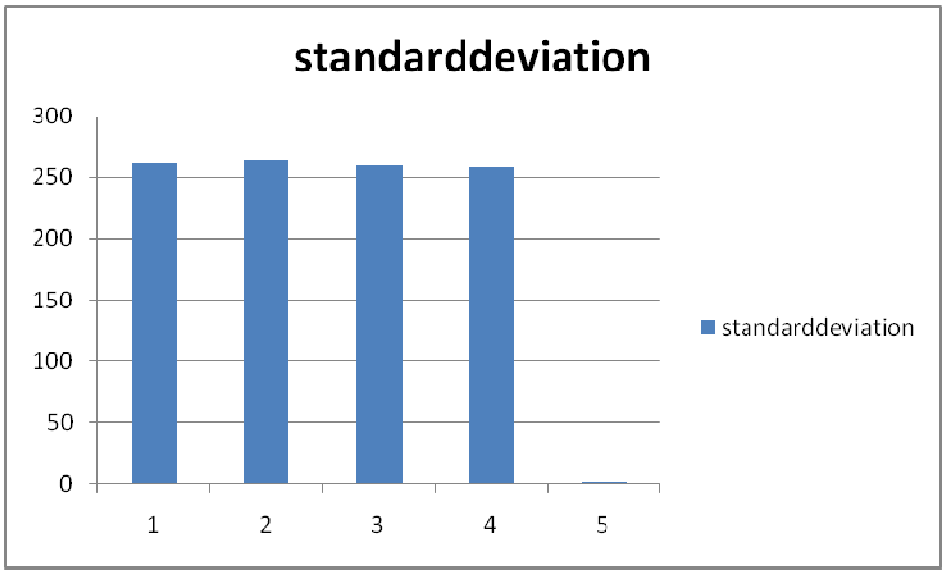


Table No 4.6

4.6. Analysis and Statistics for silver Stock return and volatility

Criteria	Monday	Tuesday	Wednesday	Thursday	Friday	All Days
Observations	72	70	69	70	68	349
Mean	5.64	5.65	56598.24	5.65	5.64	56,620.83
Standard Deviation	3.79	3.94	4074.22	4.06	3.93	4,089.94
Variance	1.43	1.56	1.66	1.65	1.55	1.057
Skewness	1.23	1.47	1.43	1.51	1.27	5.191
Kurtosis	1.45	2.80	2.73	3.31	2.007	10.236

Interpretation

The above table provides the Statistics for silver stock return and volatility. Mean test gives the preliminary evidence for variation in return for presence of day of the week effect. The average return of silver for entire study is 56,620.83%, variance is1.057,

skewness is 5.20, and kurtosis is 10.24. When return on each day is analyzed, the findings indicate that Wednesday had a return of 56598.24%. This proves that there is a day of the week effect on this stock. Return for Wednesday was found to be at the maximum of 56598.24% and Monday had a minimum return of 5.64%.Hence we observed highest return on Wednesday and lowest return on Monday for silver.

To measure the volatility standard deviation test was done and it was observed that, Standard Deviation was found to be more on Wednesday i.e.4074.22 and low on Monday i.e.3.93.

Table 4.6.1

Table showing day of the Week Effect results for Silver

Day of the Week Effect	High	Low
On Return	Wednesday	Monday
On Volatility	Wednesday	Monday

Chart No 4.1

Chart showing Criteria representation of Silver Stock return

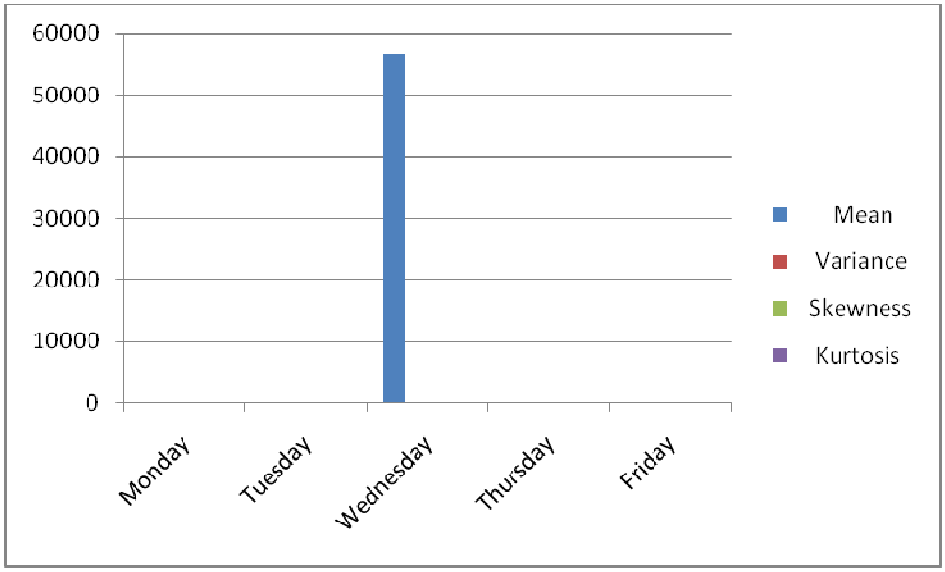


Chart No 4.2

Chart showing Criteria representation of silver Stock volatility

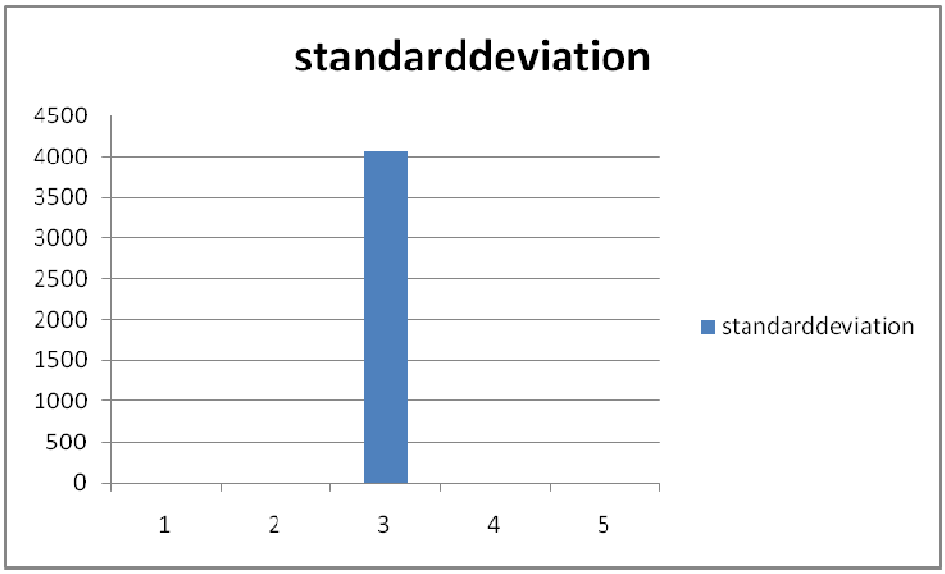


Table No 4.7

4.7 Analysis and Statistics for gold Stock return and volatility

Criteria	Monday	Tuesday	Wednesday	Thursday	Friday	All Days
Observations	72	70	69	70	68	349
Mean	2.58	2.58	25867.64	2.59	2.59	25,877.98
Standard Deviation	3.33	3.37	3333.96	3.32	3.29	3,347.27
Variance	1.11	1.14	1.11	1.10	1.09	1.11
Skewness	-.39	-.38	-.39	-.39	-.42	-.197
Kurtosis	-1.56	-1.57	-1.55	-1.52	-1.51	-5.271

Interpretation

The above table provides the Statistics for gold stock return and volatility. Mean test gives the preliminary evidence for variation in return for presence of day of the week effect. The average return of gold for entire study is 25,877.98%, variance is 1.11, skewness is 197, and kurtosis is 5.27. When return on each day is analyzed, the findings indicate that Wednesday had a return of 25867.64%.This proves that there is a day of the week effect on this stock. Return for Wednesday was found to be at the maximum of 25867.64% and Monday had a minimum return of 2.58%.Hence we observed highest return on Wednesday and lowest return on Monday for gold.

To measure the volatility standard deviation test was done and it was observed that, Standard deviation was found to be more on Wednesday i.e.3333.96 and low on Friday i.e.3.29.

Table 4.7.1

Table showing day of the Week Effect results for Gold

Day of the Week Effect	High	Low
On Return	Wednesday	Monday
On Volatility	Wednesday	Friday

Chart No 4.1

Chart showing Criteria representation of gold Stock return

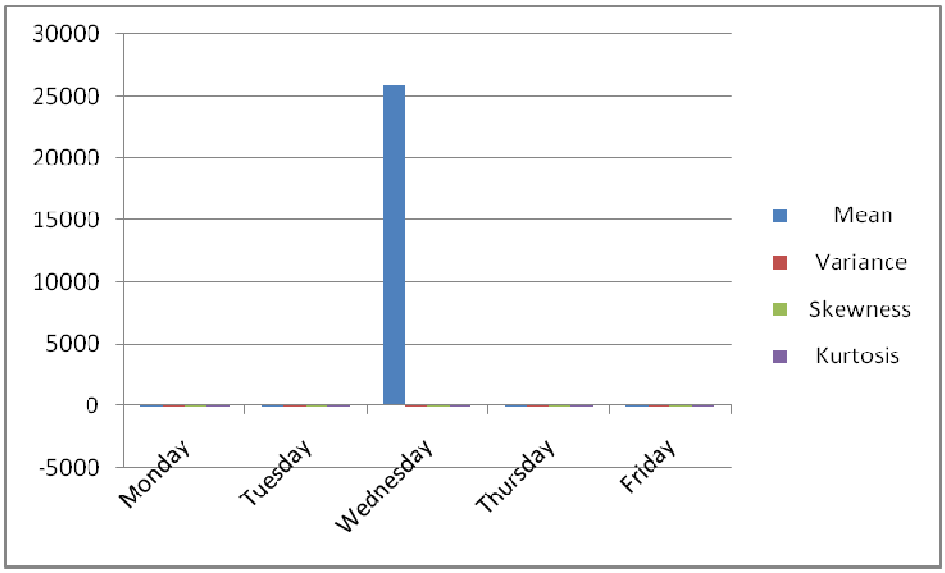
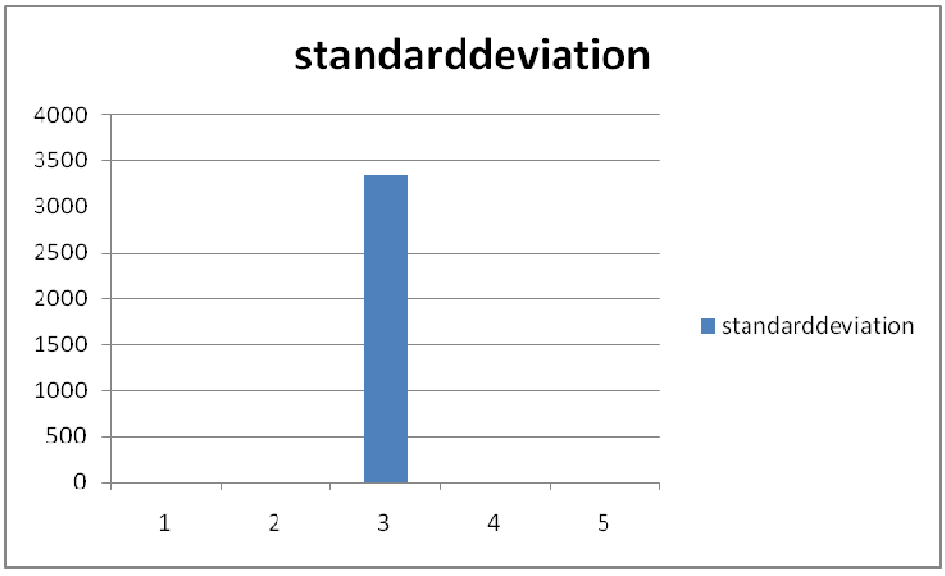


Chart No 4.2

Chart showing Criteria representation of gold stock volatility



CHAPTER 5
FINDINGS, SUGGESTIONS AND CONCLUSION

5.1.1 Aluminum

Return for Wednesday was found to be at the maximum of 110.07% and Monday had a minimum return of 1.10%.Hence we observed highest return on Wednesday and lowest return on Monday for Aluminum.

To measure the volatility standard deviation test was done and it was observed that, Standard deviation was found to be more on Friday i.e.4.45 and low on Tuesday i.e.4.15.

Table 5.1.1

Table showing day of the Week Effect results for Aluminum

Day of the Week Effect	High	Low
On Return	Wednesday	Monday
On Volatility	Friday	Tuesday

5.1.2 Lead

Return for Thursday was found to be at the maximum of 109.74% and Monday had a minimum return of 1.09%.Hence we observed highest return on Thursday and lowest return on Monday for lead.

To measure the volatility standard deviation test was done and it was observed that, Standard Deviation was found to be more on Tuesday i.e.7.19 and low on Friday i.e.7.08.

Table 5.1.2

Table showing day of the Week Effect results for Lead

Day of the Week Effect	High	Low
On Return	Thursday	Monday
On Volatility	Tuesday	Friday

5.1.3 Crude oil

Return for Wednesday was found to be at the maximum of 4661.79% and Monday had a minimum return of 4.64%. Hence we observed highest return on Wednesday and lowest return on Monday for crude oil.

To measure the volatility standard deviation test was done and it was observed that, Standard Deviation was found to be more on Thursday i.e.486.05 and low on Monday i.e.4.67.

Table 5.1.3

Table showing day of the Week Effect results for Crude oil

Day of the Week Effect	High	Low
On Return	Wednesday	Monday
On Volatility	Thursday	Monday

5.1.4 Zinc

Return for Thursday was found to be at the maximum of 102.89% and Monday had a minimum return of 1.03%.Hence we observed highest return on Thursday and lowest return on Monday for zinc.

To measure the volatility standard deviation test was done and it was observed that, Standard Deviation was found to be more on Thursday i.e.5.14 and low on Monday i.e.4.76.

Table 5.1.4

Table showing day of the Week Effect results for Zinc

Day of the Week Effect	High	Low
On Return	Thursday	Monday
On Volatility	Thursday	Monday

5.1.5 Cardamom

Return for Thursday was found to be at the maximum of 964.19% and Friday had a minimum return of 9.56%.Hence we observed highest return on Thursday and lowest return on Friday for Cardamom.

To measure the volatility standard deviation test was done and it was observed that Standard Deviation was found to be more on Tuesday i.e.264.67 and low on Friday i.e.2.53.

Table 5.1.5

Table showing day of the Week Effect results for Cardamom

Day of the Week Effect	High	Low
On Return	Thursday	Friday
On Volatility	Tuesday	Friday

5.1.6 Silver

Return for Wednesday was found to be at the maximum of 56598.24% and Monday had a minimum return of 5.64%.Hence we observed highest return on Wednesday and lowest return on Monday for silver.

To measure the volatility standard deviation test was done and it was observed that, Standard Deviation was found to be more on Wednesday i.e.4074.22 and low on Monday i.e.3.93.

Table 5.1.6: Day of the Week Effect results for Silver

Day of the Week Effect	High	Low
On Return	Wednesday	Monday
On Volatility	Wednesday	Monday

5.1.7 Gold

Return for Wednesday was found to be at the maximum of 25867.64% and Monday had a minimum return of 2.58%.Hence we observed highest return on Wednesday and lowest return on Monday for gold.

To measure the volatility standard deviation test was done and it was observed that, Standard Deviation was found to be more on Wednesday i.e.3333.96 and low on Friday i.e.3.29.

Table 5.1.7

Table showing day of the Week Effect results for Gold

Day of the Week Effect	High	Low
On Return	Wednesday	Monday
On Volatility	Wednesday	Friday

5.2 SUGGESTIONS

The study tests the presence of day of the week effect in stock market volatility in addition to returns during the period of 1st January 2011 to 31st July 2012 by examining 7 different commodities listed in Multi Commodity Exchange (MCX) in India. Day of the week effect for aluminum, lead, crude oil, zinc, cardamom, silver, gold all the commodities. The day of the week effect on return is high on Wednesday and on return is low on Monday. The day of the week effect on volatility is high on Wednesday, Tuesday and Thursday and on volatility is low Monday and Friday. So all the commodities have the return high and low and also volatility have high and low day of the week effect.

5.3 CONCLUSIONS

This research study tests the presence of day of the week effect in stock market volatility in addition to returns during the period of 1st January 2011 to 31st July 2012 by examining 7 different commodities listed in Multi Commodity Exchange (MCX) in India, in which the commodity market represent 7 different commodities like Aluminum, Lead, Crude oil, Zinc, Cardamom, Silver and Gold. The findings for the commodity reveal that the day of week effect is present in both commodity return and volatility. As an overview of the findings of the 7 commodities, it has been documented that 7 commodities have the high day of the week effect On return during Friday and 4 commodities have the low returns during Monday. In case of the Presence of the day of the week effect on volatility, 2 commodities have high volatility on Tuesday and Thursday. 3 commodities have low volatility on Monday and Friday. All these findings are Criteria significant. In summary, we defect the day of the week effect is present on both Return and Volatility. Finding certain patterns in volatility may be useful in several ways, including the use of predicted volatility patterns in hedging and speculative purposes and use of predicted volatility in valuation of certain assets-specifically commodities index options. Furthermore, investors may adjust their portfolios by reducing their commitments to assets whose volatility is expected to Increase and vice versa.

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