RESEARCH METHODOLOGY IN SOCIAL SCIENCES

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1. Introduction

Investors select better stocks to invest through sectoral analysis. They identify most promising sectors and review the performance of companies within the sector to determine which individual stock would provide better returns and ultimately, be purchased. There are three aspects that would generally affect the performance of a company's stock in the stock market. The first aspect is the performance of the individual company. The second is the performances of the industry to which the company belongs. The third is the performance of the market as a whole. It is a known fact that sectors are groups of companies which perform similar functions in the economy. The sector analysis involves the process of dividing the total market into sectors and then studying the market performance of each sector individually, so that each sector can be compared to other sector or to the market as a whole.

The sectoral analysis covers the market efficiency of different sectors of the economy. It focuses on the key points of the latest reforms of economy as initiated by the Government of India. The IT industry is one of the core sectors of the economy. The IT industry has played a major role in placing India on the international map. Indian IT companies encompass various aspects of computing and technology covering almost every segment of human activities. Therefore, this paper tests the market efficiency across the companies under IT sector, listed at the BSE, using daily closing share prices during the study period.

2. Review of Literature

The following are the select few research studies available on sector analysis.

Tasneem Alam and Muhammad Waheed (2003), in their study entitled, "The Monetary Transmission Mechanism in Pakistan: A Sectoral Analysis", examined the monetary transmission mechanism in Pakistan at a sectoral level. Taking the structural transformation of the economy and the monetary and financial reforms during 1990s, the Researchers assessed whether the reform process exercised notable impact on the monetary transmission mechanism. The study found evidence to support sector-specific variation in the real effects of monetary policy. The study also suggested significant changes in the transmission of monetary shock to real sector of the economy during the post-reform period.

Mufeed Rawashdeh and Jay Squalli (2004), in their article entitled, 'A Sectoral Efficiency Analysis of the Amman Stock Exchange", tested the market efficiency across four sectors, namely, Banking, Industrial, Insurances and Services in the Amman Stock Exchange (ASE). This study used daily sectoral indices between 1992 and 2004 by using Variance Ratio and Runs Tests. It was found from the analysis that the random walk and weak form efficiency hypotheses were rejected for all sample sectors.

The study entitled, "Sectoral Analysis of Small and Large Firms and its Implications for Size Premium in Indian Stock Market", by Vanita Tripathi (2007), studied the Small and Large Firms implications. The study found that small firms were concentrated in certain poor performing sectors (Chemicals, Capital Goods, Textile, Consumer Durables) while many large firms operated in healthy, stable and highly profitable sectors (IT, FMCG, Banking). This study also found that although small firms sectors tended to be less profitable, it was not the sector specific effect but firm specific effect which accounted for large size premium in Indian Stock Market.

A study entitled, "A Sectoral Efficiency Analysis of Malaysian Stock Exchange under Structural Bank", by Chin Wen Cheog (2008), investigated the weak form market efficiency by using daily returns of nine sectoral indices in Malaysian Stock Market between 1996 and 2006. The study found that the sectoral indices of Malaysian Stock Markets were inefficient weak-form (except the property index).

The study entitled, "Analysis of Sectoral Efficiency- A Study of Oil and Power Sector in BSE", by R.Rajesh Ramkumar, M.Selvam and G.Indhumathi (2010), studied the market efficiency across the

companies under Oil and Power Sector listed at the BSE by using the daily closing share prices from Jan 2005 to Dec 2009. The study found that the Oil and Power sector was efficient during the study period.

The above literature provided an overview of different models which could be used to study the sectoral efficiency around the world. However, there was no comprehensive study carried out in Indian Stock Markets. Hence an attempt has been made in this study to evaluate market efficiency in the Indian context by applysing the models used in the above studies.

3. Statement of the Problem

The Capital Market is a vital institution as it facilitates mobilization of funds for economic development. It is appropriate that so many parties are interested in knowing the efficiency of the Capital Market. The retail investors can be motivated to save and invest their savings in the Capital Market only if their securities in the market are correctly priced. The Random Walk Hypothesis of stock prices is concerned with the question of whether one can predict future price movement from past prices. Many studies tested the efficiency in global stock market and also tested the random walk hypotheses for various popular indices. But in India, only a few studies examined the returns of the stock market, especially with reference to stock indices like S&P CNX Nifty, BSE 100 Index, and Nifty Junior etc. It is important to note that there were no comprehensive studies carried out to test the sectoral efficiency in the Indian context. Individual investors are not fully informed of the sectoral efficiency in the Indian Stock Market. Therefore, the present study aims to investigate the efficiency of Indian Stock Market for different sectors which were actively traded in the Bombay Stock Exchange (BSE). This study analyses the market efficiency among the sample companies under IT sectors listed in the BSE.

4. Objectives of the Study

The present study was carried out to examine the market efficiency of the IT Companies listed in the BSE-IT Index.

5. Hypotheses of the Study

The present study tested the following null hypotheses.

NH1. There is no significant difference in the share price behavior of sample stocks.

NH2. There is no normal distribution in the returns of the shares of sample companies.

6. Methodology of the Study

6.1 Sample Selection

In the IT sector, there are totally ten companies which were listed on 1st July 2010. For the purpose of this study, stocks of all ten companies stocks listed in BSE were taken as the total sample population as given below.

Sl.No	Name of the Company	Sl.No	Name of the Company
1	Infosys	6	Patni Computer
2	Oracle Finance	7	Wipro
3	Finance Technology	8	HCL Tech
4	TCS	9	Rolta India
5	MPhasis Ltd	10	Tech Mahindra

Source: www.bseindia.com

6.2 Sources and Collection of Data

The present study was mainly based on secondary data (IT stock daily closing prices) which were collected from the Prowess Corporate Database. Further, the available secondary data were collected from the Annual Reports, published Research Reports by IT Industry etc. In addition, other related information were collected from various books, periodicals and websites like www.bseindia.com and www.yahoofinance.com.

6.3 Period of the Study

The present study was mainly intended to examine the sectoral efficiency (market) of stocks of IT companies listed under the BSE IT Index. The analysis covers a period of five years from 1st January 2005 to 31st December 2009.

6.4 Tools Used for Analysis

In order to evaluate the sectoral efficiency of IT Sector, tools like Runs Test and Autocorrelation were used.

(a) Runs Test- It is a non-parametric test used for measuring market performance. It does not require specification of the probability distribution. It depends only on the price movements. They are essentially concerned with direction of changes in price movement

$$M = \frac{N(N+1) - \sum_{i=1}^{3} n_i^2}{N}$$

Where,

M = Expected number of runs

ni = Number of price changes of each sign $(i=1,2,...)$

N = Total number of price changes.

Autocorrelation- It is the statistical tool used for measuring the company's successive terms in a given series and dependence of the successive share price ages.

$$P_k = \frac{\sum_{i=1}^{n-k} (R_i - \overline{R})(R_{i-k} - \overline{R})}{\sum_{i=1}^{n} (R_i - \overline{R})^2}$$

Where,

K is the number of lags

Rt represents the real rate of returns

n is the total number of observations

Pk is the sample autocorrelation function for the lag K

R is the mean returns

Limitations of the Study

The study suffers from the following limitations.

The study was based on secondary data and hence it is riddled with certain limitations which are bound to be connected with the use of secondary data.

This study focused only on the IT Sector as it is one of the core sectors of the economy.

All the limitations associated with Runs Test and Autocorrelation Test, are applicable to this study also.

Analysis of Market Efficiency of IT Sector's Stocks.

As stated earlier, the present study aims to test market efficiency of Indian IT Sector. The analysis market efficiency of IT stocks is arranged as follows:

Sectoral (Market) Efficiency of IT Sector - Runs Test

Sectoral (Market) Efficiency of IT Sector- Autocorrelation

Sectoral (Market) Efficiency of IT Sector- Runs Test

TABLE - 1

THE ANALYSIS OF RUN TEST WITH MEAN BASE FOR SAMPLE IT STOCKS

Company Name	N	Significance-level	Z
	597	.210	-1.253
Finance	604	.473	-.718
ce tech	532	.000	-4.812*
	615	.757	-.310
	634	.225	1.213
Com	587	.104	-1.625
	624	.823	.224
Tech	628	.596	.531
India	613	.765	-.298
Mahindra	639	.224	1.215

Source: Computed from Prowess

Table-1 shows the analysis of Runs Test by having mean value as the base for sample IT stocks. From the Table, it is understood that out of ten stocks taken

for this study, nine stocks in the IT Sector, namely, stocks of Infosys, Oracle Finance, TCS, Mphasis, Patni Computer, Wipro, HCL Tech, Rolta India and Tech Mahindra did not follow the normal distribution as its mean values were not significant. The remaining sample stocks (the stocks of Finance Technology) followed the normal distribution. Only the Z values of Finance Technology Company were significant under normal distribution at 5% level. Therefore, the null hypothesis (NH2), "There is no normal distribution in the returns of the shares of sample companies", is accepted.

TABLE-2

THE ANALYSIS OF RUN TEST WITH MEDIAN BASE FOR SAMPLE IT STOCKS.

Company Name	N	Significance level	Z
Infosys	593	.118	-1.561
Oracle Finance	618	.887	-.142
Finance tech	542	.000	-4.462*
TCS	615	.757	-3.10
Mphasis	639	.293	1.052
Patni Com	583	.158	-1.127
WIPRO	620	.977	-.028
HCL Tech	628	.670	.426
Rolta India	613	.670	-.426
Tech Mahindra	633	.477	.711

Source: Computed from Prowess

The results of Runs Test by having median value as the base for sample IT stocks are given in Table-2. It is clear that nine stocks out of ten stocks in the IT Sector did not follow the normal distribution. Stocks from Infosys, Oracle Finance, TCS, Mphasis, Patni Computer, Wipro, HCL Tech, Rolta India and Tech Mahindra did not follow the normal distribution. Besides, the Z values for these nine Companies were not significant under normal distribution at 5% level. From the analysis, it is noted that majority of sample companies did not follow the normal distribution. Hence the null hypothesis (NH2), "There is no normal distribution in the returns of the shares of sample companies", is accepted under the median base analysis. The stocks of Finance Technology followed normal distribution at 5% significant level.

7.2 Sectoral (Market) Efficiency of IT Sector - Autocorrelation

Table-3 reveals the results of autocorrelation of sample IT stocks during the study period. It is understood from the above Table that out of ten sample companies taken for this study, only six companies recorded

significant value in all the 10 lags. Those companies are Infosys, Finance Technology, TCS, Mphasis, Patni Com and HCL. Further, it is to be noted that the values of these six companies were significant at 5%. The analysis of autocorrelation reveals the fact that four companies (Oracle Finance, Wipro, Rolta India and Tech Mahindra) did not earn significant value at 5% level in all the 10 lags. **Chart-1** explains the results of autocorrelation for the IT Sector. From the above Chart, it is found that the residuals of companies exhibit a distinct behaviour. Some of the companies were initially positive, then became negative and after that again turned positive. This shows that the returns were not randomly distributed.

TABLE-3

### THE RESULT OF AUTOCORRELATION OF SAMPLE IT STOCKS DURING THE STUDY PERIOD

Name of the Company	ACF & Probability	Lag 1	Lag 2	Lag 3	Lag 4	Lag 5	Lag 6	Lag 7	Lag 8	Lag 9	Lag 10
Infosys	ACF	.035	-.112	-.046	.002	-.016	-.017	.025	.034	.003	.025
	Probability	.000*	.000*	.000*	.001*	.002*	.004*	.006*	.007*	.012*	.016*
Oracle Finance	ACF	.031	.055	-.028	-.007	.076	.010	.024	.010	-.017	.030
	Probability	.275	.082	.112	.195	.188	.197	.098	.075	.103	.109
Finance tech	ACF	.212	.089	.075	.000	.017	.030	-.003	.064	.008	-.022
	Probability	.000*	.000*	.000*	.000*	.000*	.000*	.000*	.000*	.000*	.000*
TCS	ACF	.017	-.090	-.089	-.064	.022	.032	.036	.005	-.018	-.002
	Probability	.000*	.005*	.000*	.000*	.000*	.000*	.000*	.000*	.001*	.001*
Mphasis	ACF	-.068	-.062	.003	-.018	.055	-.050	-.015	.042	-.007	-.029
	Probability	.016*	.005*	.015*	.027*	.011*	.007*	.011*	.009*	.015*	.018*
Patni Com	ACF	.076	-.096	-.040	-.015	.040	.025	.024	.020	.011	-.006
	Probability	.007*	.000*	.000*	.000*	.000*	.001*	.001*	.002*	.003*	.005*
WIPRO	ACF	-.023	-.020	-.053	-.077	.019	.007	.045	.002	-.013	.044
	Probability	.425	.573	.200	.151	.092	.051	.077	.058	.083	.060
HCL Tech	ACF	.004	-.033	-.047	-.038	-.055	-.057	-.004	.078	.040	.014
	Probability	.880	.502	.253	.206	.085	.109	.056	.067	.071	.105
Rolta India	ACF	.103	-.056	.015	.036	-.014	-.069	-.050	.070	.021	-.035
	Probability	.000*	.000*	.001*	.001*	.002*	.000*	.000*	.000*	.000*	.000*
Tech Mahindra	ACF	.013	.048	.045	.001	-.010	-.020	.016	-.037	.015	.008
	Probability	.648	.217	.133	.232	.334	.401	.481	.413	.485	.573

Source: Computed from Table-3

Source: www.bseindia.com

CHART-1
THE CHART SHOWING THE RESULT OF AUTOCORRELATION FOR IT SECTOR
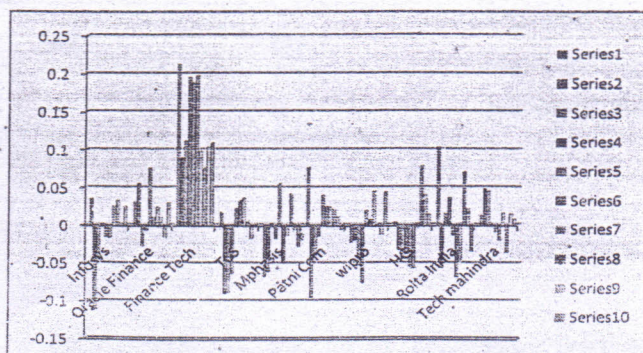
5. Findings of the Study

The important findings of the study are given below.

1. The Sectoral (market) efficiency of IT Sector was tested by Runs Test and it indicated that there was no randomness in the stock market, because the returns for all sample stocks were not normally distributed during the study period.

2. It is found that nine companies, namely, Infosys, Oracle Finance, TCS, Mphasis, Patni Computer, Wipro, HCL Tech, Rolta India and Tech Mahindra did not follow normal distribution during the study period based on their mean and median values under the Runs Test.

3. The results of autocorrelation for some sample IT Companies have revealed significant returns at 5% level.

4. The returns of sample companies were not distributed randomly under the Autocorrelation Test during the study period.

Conclusion

The study examined the returns of ten sample companies to study the Sectoral (market) Efficiency by using Runs Test and Autocorrelation Function (ACF). The study reveals the fact that the results of both tests (Runs and Autocorrelation) for Finance Technology alone support normal distribution. The other nine companies (Infosys, Oracle Finance, TCS, Mphasis, Patni Computer, Wipro, HCL Technology, Rolta India and Tech Mahindra) did not record normal distribution. This shows that only Finance Technology was in a good position during the study period and the investors of this company would have earned maximum returns during the study period. This depicts the growth of IT Sector and their efficiency in the Indian Capital market.

Scope for Further Research

The followings are pointers towards further research.

❖ The study with similar objectives could be made with reference to other Sectors.

❖ BSE Sector Indices, Midcap Indices and Small Cap Indices could be taken up for further study.

❖ There could be further study to examine the Information Content relating to economy, political, legal procedure etc.

❖ The study to determine the market factors, which affect the share price movements of the companies could be taken up.

❖ The NSE market could be researched upon with different Sectors.

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INCREDIBLE INDIA TOURISM DEVELOPMENT IN INDIA

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Introduction

Tourism plays a major role in the development of Indian economy and employment generation particularly in remote and backward areas. The growth of Tourism in India is significant and consistant in the last five years. The rank of India in international arrivals and tourism receipts rose from 51st and 37th respectively in 2003 to 42nd and 20th respectively in 2007. Tourism provides the second highest net foreign exchange earnings to our economy. It is estimated that, by 2010, this industry will create 7 million new jobs, may contribute Rs.1,30,000 crore in capital investment and it occupies 11% of the world's GDP.

TABLE - I

FOREIGN TOURIST ARRIVALS IN INDIA DURING 1996-2008

Year	FTAs (in Million)	Percentage (%) change over the previous year
1996	2.29	7.7
1997	2.37	3.8
1998	2.36	-0.7
1999	2.48	5.2
2000	2.65	6.7
2001	2.54	-4.2
2002	2.38	-6.0
2003	2.73	14.3
2004	3.46	26.8
2005	3.92	13.3
2006	4.45	13.5
2007	5.08	14.3
2008 (Jan-June) (P)	2.72	11.1

Source: (i) Bureau of Immigration, Govt. of India, for 1996-2007

(ii) Ministry of Tourism, Govt. of India, for 2008

There is steady growth in the Foreign Tourist Arrivals(FTAs) from 2002 in India. In 2007 FTA in India has been recorded a maximum of 5.08 million. India witnessed a highest percentage of change in 2004 of 26.8% followed by 2003 and 2007 (14.3%) . The Foreign Tourist Arrivals in Indian during 1996- 2008 is given in table I.

Month-wise Foreign Tourist Arrivals in India during 2006-2008.

Tourist prefer different countries to visit due to number of reasons. Different festivals, trade fairs, climatic condition, important incidents attract tourist to a particular country. Astro- tourism at present attracted many people from all over the world to see the lengthy solar eclipse. It is clear from the table II that , during 2006 and 2007 December has been the peak month for FTAs in India followed by January and November of 2006 and 2007. May month has been the leanest month. This may due to hot summer in India. In 2008 January has been the peak month among the available data from January to June.