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“STUDY ON INVESTMENT OPPORTUNITIES WITH SPECIAL REFERENCE TO TELECOMMUNICATION INDUSTRY”

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ABSTRACT

Investing in various types of assets is an interesting activity that attracts people from all walks of life, irrespective of their occupation, economic status, education, & family background. Investment has many alternatives to offer investors. In the present market wide variety of investment avenues are open to all type of investors to suit their needs. Knowledge regarding the different investment avenues is helpful to investors to choose right kind of investment.

Indian telecommunications sector is the second largest wireless network in the world after China. The telecommunications sector is growing at a very fast pace in India. Thus it is a potential sector where investor can invest and earn good profits.

Investors can invest money in stock market by the way of buying shares of different telecommunication company from Indian stock market. It includes return and risk. Before invest the money in particular companies share, evaluation is necessary in order to get proper return. This paper aims at to guide the investors to selection of stocks by using different methods of evaluation and analysis. The paper also has constructed an optimal portfolio in telecommunication industry which earns maximum profit in given level of risk which is minimum.

Key words: CAPM, Efficient frontier, Stock market, Investment, Sharpe's optimal portfolio, Telecommunication.

INTRODUCTION

Investment is the employment of funds on asset with the aim of earning income or capital appreciation. Investment has two attributes, namely, time and risk. Investor always expects maximum return from their investment with less amount of risk.



The Indian telecom industry can be primarily divided into basic, cellular and internet services. It also has segments such as radio paging services, very small aperture terminals (VSATs), public mobile radio trunked services (PMRTS) and global mobile personal communications by satellite (GMPCS). Even after achieving astounding growth over the past few years, Indian telecom market has still a huge untapped potential to grow further. With a large population, India is yet to have complete access to telecommunications across the length and breadth of India. The future progress of telecom in India is very promising.

As the investors are investing huge amount of money in stock market, the analysis must be done because it involves risk. However making money from stock market is not an easy task. It requires time and patience. He should do research and put efforts to understand the market.

Here a practical analysis has been done by considering 10 companies securities from Indian Stock Market with the help of their present performance for last 5 years on quarterly basis.

OBJECTIVE OF THE STUDY

The risk taker nature of the investors makes him to think twice before investing in any of the securities in the stock market. Considering this, present paper highlights the following objectives.

- To provide knowledge about basic financial concepts
- Guide the investor to determine the risk and return expected from an investment in telecommunication industry.
- Selection criteria of the securities
- Find out the attractive combination of securities for investment in telecommunication industry.

METHODOLOGY

1. SOURCES OF DATA:

a. Primary data:

This study is based on primary data. Data collected from the share price of 10 randomly selected companies from telecommunication industry and their capital market performance for last 5 years is recorded on the basis of each quarter end market price.



b. Secondary data:

Secondary data utilized for conceptual frame work. Information is collected from various sources like published books, research works, articles and websites.

2. TOOLS FOR ANALYSIS:

Basically this paper guides the investors to frame the proper and attractive investment plan. Different financial tools have been highlighted to guide the investor in selection of securities. This paper involves several concepts for the evaluation of securities. They are

- Expected return
- Standard deviation
- Beta
- Efficient frontier
- Optimal portfolio
- Capital asset pricing model
- Sharpe's model
- Treynor's model
- Jensen's model

All the calculation required for the study is done with the help of MS-Excel. Final conclusion and interpretation has been drawn from the results of the study.

LIMITATION OF THE STUDY:

- Study conducted on the basis of last five years quarter end market price.
- Study of one industry cannot give information for whole stock market.
- It limits only randomly selected ten companies.



FINDING OF THE STUDY:

This paper helps to an investor to analyze the securities by applying various tools & also select right kind of investment in order to get proper return for his investment in share market. Paper includes various kind tools to analyze the securities.

For the purpose of study following market information is used and Treasury bill rate of return is taken 1.43%, Beta of the market is considered as 1.

Table No.1 Market Information.

Particular	Market
Average Return	2.03
Standard Deviation	6.26
Variance of Market	39.16

The above information about the market is taken from the BSE Sensex on the basis Five year quarter end prices. With the help of market information these study is made.

Table 2: Evaluation criteria for selection of securities.

SL.NO	Company Name	Mean	Rank	S.D	Rank	C.V	Rank
1	Bharathi Airtel	0.82	8	15.54	1	1895.12	6
2	Reliance	2.83	5	32.38	7	1144.17	5
3	Gold Stone Infratect	3.69	4	25.22	5	683.47	4
4	Idea	5.54	2	17.07	2	308.12	1
5	Aishwarya Telecommunication	-0.50	9	30.01	6	-6002.00	
6	Himachal futuristic communication	6.72	1	32.80	8	488.10	3
7	Mahanagar Telephone Nigam(MTNL)	1.42	7	39.00	9	2746.48	8
8	Tata tele service	-0.11	10	23.78	4	- 21618.18	
9	Gemini communication	2.10	6	52.46	10	2498.10	7
10	Tata communication	4.79	3	19.33	3	403.55	2

(Source: Author's primary data)



INTERPRETATION:**Evaluation on the basis of Average Return (R_i):**

Return is the actual income received plus any change in market price of an investment. Investor always wants to good rate of return from his investment. The average rate of return can be calculated as follows.

$$\text{Return} = (((\text{closing price} - \text{opening price}) / \text{opening price}) * 100)$$

$$\text{Average Return} = (\sum \text{Return} / N)$$

Where N = number of observations.

SL.NO	Company Name	Beta
1	Bharathi Airtel	0.30
2	Reliance	0.89
3	Gold Stone Infratect	2.16
4	Idea	0.34
5	Aishwarya Telecommunication	2.60
6	Himachal futuristic communication	2.46
7	Mahanagar Telephone Nigam(MTNL)	3.58
8	Tata tele service	1.52
9	Gemini communication	-0.13
10	Tata communication	0.90

In the above table 2 given average expected return (mean) of selected companies. From the above observation, on the basis of average rate of return investor can choose Himachal futuristic communication (6.72%) & Idea (5.54%) as its return is more.

Evaluation on the basis of Standard Deviation (S D):

Investment decision will be more accurate if an investor consider along risk along with return. Risk means any deviation from expected returns. Proper measurement of risk helps to an investor to minimize the risk and increase the return from the investment. Standard deviation represents variation in the expected return. Higher standard deviation represents more variation in the expected return and vice-versa. The security having less standard deviation will be suggestible for the investment. The standard deviation will be calculated as follows.

$$\text{Standard Deviation (S D)} = \sqrt{\sum (\text{Return} - \text{Average Return})^2 / N}$$



In the above table 2, Standard deviation represents variation in the expected return. From the above observation, securities which are having less variation i.e. Bharathi Airtel(15.4%) & Idea (17.07%) companies' securities are suggestible for an investment.

Evaluation on the basis of beta:

Beta describes the relationship between the stock's return and the market returns. It indicates that one percentage changes in the market index return would cause to some percent of change in stock return. Beta 1 indicates that security price will move with market. A beta of less than one means that the security will be less volatile than the market and vice-versa. The beta of securities can be calculated as follows.

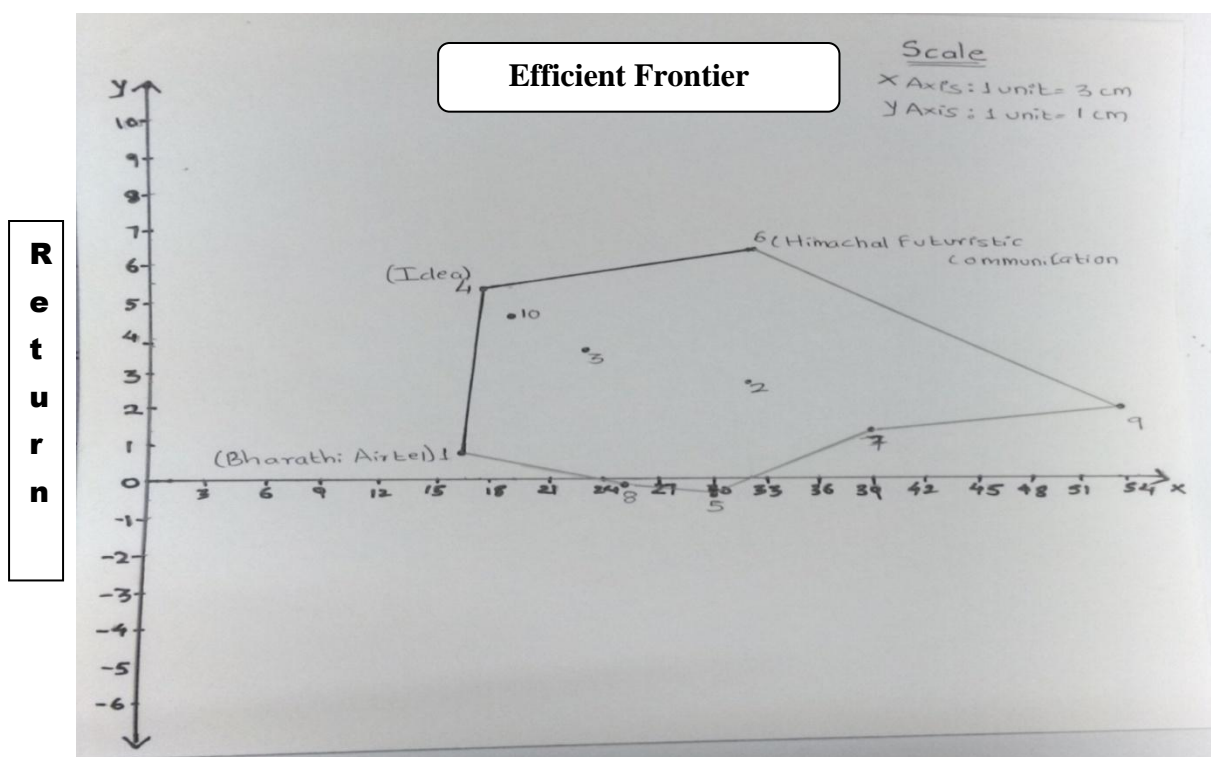
$$\text{Beta } (\beta) = \frac{\{\sum(R_m - \text{Mean return of Market})(R_i - \text{Mean return of Security})\}}{\{\sum(R_m - \text{Mean return of the Market})^2\}}$$

The investor who is interested to avoid risk to maximum extent, security with less beta Gemini communication ($\beta = -0.13$) is suggestible for investment. Also Bharathi Airtel and Idea also have less beta value.

Efficient Frontier:

Efficient frontier is the technical aspect of optimal portfolio selection to determine the risk-return opportunities available to an investor. This is also referred to as the determination of feasible set of portfolios or the portfolio opportunity set or the minimum variance portfolio opportunity set. Graphically these are summarized by the minimum variance frontier of risky assets. The point on the minimum variance frontier represents the global minimum variance portfolio. The highest point represents the global maximum return portfolio. The line segment between the global minimum variance portfolio and global maximum return portfolio constitutes the efficient frontier. It is shown in the graph.





(Source: Author's primary source)

In the above graphical representation OX axis denotes Standard deviation and OY axis denotes Percentage of return. Risk and returns space formed in the graph shows possible selection of stocks with their relative risk and return. Point 1 to 10 indicates name of the different companies which is shown in table No. 2.

There are three type of investors are available namely risk taker, risk neutral and risk avoider. Risk takers always expect that high rate of return with higher amount of risk since above space which created by risk-return factor, point 6 i.e. Himachal Futuristic communications to be selected to reach expectation.

Risk neutral investors are not more conscious about risk and return. They look medium coverage securities on both sides. To achieve the expectation point 4 i.e. Idea is selected for investment which gives medium coverage.

Finally risk avoiders always try to avoid the risk to make minimum return. Point 1 i.e. Bharathi Airtel has less risk and minimum return is suggestible for an investment. By these ways efficient frontier gives clear picture about the selection of security on the basis of their dominance over others.

Performance evaluation of securities

Portfolios are evaluated by portfolio managers, who can help identify a portfolio's strength and weakness and based on its performance, develop a better management strategy. For the purpose of evaluation different models are available. They are as follows.

Table 3: Performance evaluation model

<u>SL.NO</u>	<u>Company</u>	<u>Sharpe's</u>	<u>Rank</u>	<u>Treynor's</u>	<u>Rank</u>	<u>Jenson's</u>	<u>Rank</u>
1	Bharathi Airtel	-0.04	0	-2.03	0	-0.79	0
2	Reliance	0.04	5	1.57	4	0.87	5
3	Gold Stone Infratect	0.09	4	1.05	5	0.97	4
4	Idea	0.24	1	12.25	1	3.91	1
5	Aishwarya Telecommunication	-0.06	0	-0.74	0	-3.48	0
6	Himachal Futuristic Communication	0.16	3	2.15	3	3.83	2
7	Mahanagar Telephone Nigam(MTNL)	-0.0002	0	-0.0016	0	-2.14	0
8	Tata tele service	-0.06	0	-1.01	0	-2.44	0
9	Gemini communication	0.01	6	-5.24	0	0.75	6
10	Tata communication	0.17	2	3.72	2	2.82	3

(Source: Author's primary data)

Sharpe's performance index:

Sharpe's performance index offers a single value to be used for the performance ranking of different funds of securities. Under this performance is measured as follows

$$\text{Sharpe performance index} = [(R_p - R_f)/\sigma]$$

Treynor's performance index:

An investor should know the concept of characteristic line to understand Treynor's index model. The fund's performance is measured in relation to the market performance. Following formula is used under this index to evaluate the securities.

$$\text{Treynor's performance index} = [(R_i - R_f)/\beta]$$



Jensen's performance index:

According to this model performance of securities is to be compared with the CAPM return. It's because any professional fund manager would be expected to earn at least average portfolio return of CAPM. Following formula is used for the calculation.

$$\text{Jensen's performance index} = [R_f - \beta(R_m - R_f)]$$

In the table.3 performance of all the securities are evaluated and ranked on the basis of their performance.

Capital Asset Pricing Model:

It is the model of linear general equilibrium return in CAPM model. The required rate of an asset is having linear application with assets beta value. With the help of this model investor can take decision of either to sell or purchase security by comparing with equilibrium return. For the purpose of calculation following formula is used.

$$\text{CAPM return} = [R_f + \beta (R_m - R_f)]$$

Table 4: Capital Asset Pricing Model

<u>SL.NO</u>	<u>Company Name</u>	<u>Expected rate of return (%)</u>	<u>Required rate of return (%)</u>	<u>Valuation</u>	<u>Buy / Sell</u>
1	Bharathi Airtel	0.82	1.61	Over	Sell
2	Reliance	2.83	1.96	under	Buy
3	Gold Stone Infratect	3.69	2.72	under	Buy
4	Idea	5.54	1.63	under	Buy
5	Aishwarya Telecommunication	-0.5	2.98	Over	Sell
6	Himachal Futuristic Communication	6.72	2.9	under	Buy
7	Mahanagar Telephone Nigam(MTNL)	1.42	3.56	Over	Sell
8	Tata tele service	-0.11	2.34	Over	Sell
9	Gemini communication	2.1	1.35	under	Buy
10	Tata communication	4.79	1.97	under	Buy

(Source: Author's primary data)

In the above table No.4 the portfolios are evaluated on the basis of CAPM model suggestion in order to buy or sell is given.



Optimal Portfolio Construction:

Sharpe provided model for the selection of appropriate securities in a portfolio. The selection of any stock is directly related to its excess return-beta ratio. The excess return is the difference between the expected return on the stock and the risk free rate of interest such as the rate offered on a government security or Treasury bill the ratio provides relationship between potential risk and reward.

The ranking of stocks is done on the basis of their excess return to beta. Portfolio manager would like to include stocks with higher ratios. The selection of stocks depends on a unique cut off rate such as all stocks with higher ratio are included, and stocks with lower ratios are left out.

The excess return-beta ratio is calculated as follows.

$$\text{Excess return-beta} = [(R_i - R_f)/\beta]$$

Table 5: Ranking the securities on the basis of “excess return to beta”

<u>NO.S</u> <u>L</u>	<u>Company</u>	<u>Average</u> <u>Return</u>	<u>Beta</u>	<u>Unsystemat</u> <u>ic Risk</u>	<u>Excess Return</u> <u>to Beta</u>	<u>Rankin</u> <u>g</u>
1	Bharathi Airtel	0.82	0.30	237.96	-2.03	IX
2	Reliance	2.83	0.89	1017.52	1.57	IV
3	Gold Stone Infratect	3.69	2.16	452.87	1.05	V
4	Idea	5.54	0.34	287.14	12.09	I
5	Aishwarya Telecommunication	-0.50	2.60	635.45	-0.74	VII
6	Himachal futuristic communication	6.72	2.46	838.99	2.15	III
7	Mahanagar Telephone Nigam(MTNL)	1.42	3.58	1020.68	0.00	VI
8	Tata tele service	-0.11	1.52	475.15	-1.01	VIII
9	Gemini communication	2.10	-0.13	2751.89	-5.15	X
10	Tata communication	4.79	0.90	341.67	3.73	II

(Source: Author's primary data)

In the above table all the securities are ranked on the basis of their excess return-beta ratio.

After ranking the securities the portfolio manager should decide cut of rate. This helps to an investor to decide which the securities are should be involved in the portfolio. The cut off rate is calculated as follows.

$$C = \frac{\{\sigma_m^2 [\sum (R_i - R_f) \beta / \text{unsystematic Risk}]\}}{\{1 + \sigma_m^2 [\sum \beta_i^2 / \text{unsystematic Risk}]\}}$$

Portion of the investment is calculated as follows.

$$X_i = \{Z_i / \sum_{i=1}^N Z_i\}$$

Where $Z_i = (\beta_i / \text{unsystematic risk}) \{ (R_i - R_f / \beta_i) - C^* \}$

Table 6: Deciding about securities which to be involved in portfolio by using Sharpe's optimal portfolio

<u>S</u> <u>L.</u> <u>N</u> <u>o</u>	<u>Company</u>	<u>RI</u>	<u>Bet</u> <u>a</u>	<u>USR</u>	<u>(Ri-</u> <u>Rf)*β</u>	<u>(Ri-</u> <u>Rf)*β/U</u> <u>SR</u>	<u>C</u> <u>total</u>	<u>(Beta2</u> <u>/USR)</u>	<u>C</u> <u>total</u>	<u>Cut of</u> <u>point*</u>
4	Idea	5.54	0.3 4	287. 14	1.40	0.0049	0.0049	0.0004	0.000 4	0.188
1 0	Tata communication	4.79	0.9 0	341. 67	3.02	0.0089	0.0137	0.0024	0.002 8	0.485
6	Himachal futuristic communication	6.72	2.4 6	838. 99	13.01	0.0155	0.0292	0.0072	0.010 0	0.823
2	Reliance	2.83	0.8 9	1017 .52	1.25	0.0012	0.0305	0.0008	0.010 8	0.839
3	Gold Stone Infratect	3.69	2.1 6	452. 87	4.88	0.0108	0.0412	0.0103	0.021 1	0.885*
7	Mahanagar Telephone Nigam(MTNL)	1.42	3.5 8	1020 .68	-0.04	0.0000	0.0412	0.0126	0.033 6	0.696
5	Aishwarya Telecommunica tion	-0.50	2.6 0	635. 45	-5.02	-0.0079	0.0333	0.0106	0.044 3	0.447
8	Tata tele service	-0.11	1.5 2	475. 15	-2.34	-0.0049	0.0284	0.0049	0.049 1	0.380
1	Bharathi Airtel	0.82	0.3 0	237. 96	-0.18	-0.0008	0.0276	0.0004	0.049 5	0.368
9	Gemini communication	2.10	- 0.1 3	2751 .89	-0.09	0.0000	0.0276	0.0000	0.049 5	0.367

(Source: Author's primary data)

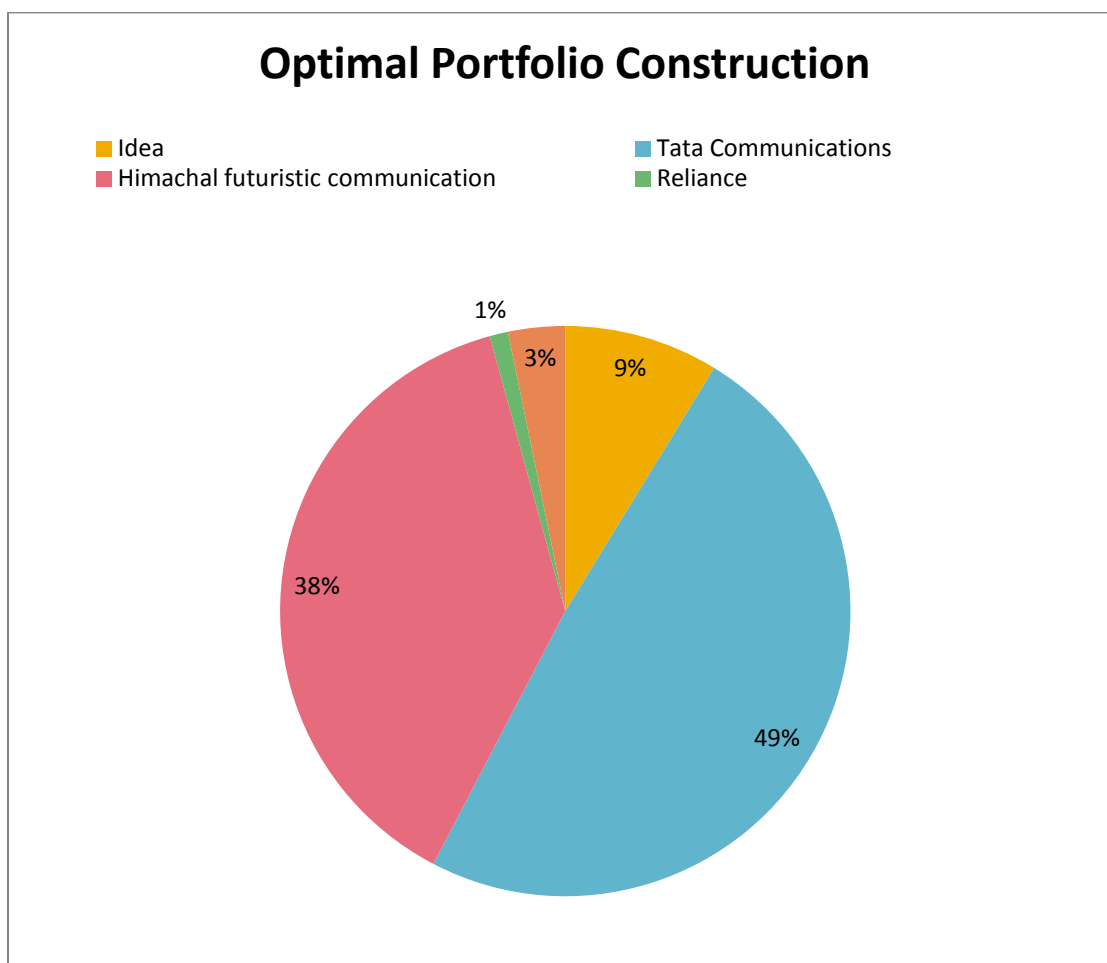
From the above calculation portfolio manager can decide to have investment in 7 different companies. The portion of investment in the portfolio is shown in following table.



Table no. 7 Portion of the investment in selected securities.

Company	Portion of investment. (%)
Idea	8
Tata Communications	50
Himachal futuristic communication	38
Reliance	1
Gold Stone Infratect	3

(Source: Author's primary data)



(Source: Author's primary data)

The allocation of investible fund between the securities is shown in pie diagram.

Table 8: Portfolio Risk and Return

<u>Company</u>	<u>Proportion of Investment</u>	<u>Return</u>	<u>Risk (SD)</u>
Idea	9	5.54	17.07
Tata Communications	49	4.79	19.33
Himachal futuristic communication	38	6.72	32.08
Reliance	1	2.83	32.38
Gold Stone Infratect	3	3.69	25.22
Portfolio Return		5.5383	

After making a optimal portfolio, the portfolio risk and return is shown above. Here these five companies are suggested for the investment among the ten selected companies.

CONCLUSION:

Some investors are funded their money in the stock market without having proper knowledge. And making money in the stock market is not an easy task. It requires immense knowledge, patience, and research to increase his understanding ability of the markets.

This study is helps for investor make a study about the securities in the stock market and select the right kind of investment in order to get optimum return. The study here concentrates on investment opportunities available in telecommunication industry

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