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Selection of Stock: A Practical Study on Selected Software Companies

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Abstract: *Traditionally a layman used to invest his extra cash would like to invest in those investment alternatives which he could fetch a handsome return. But it is not so in the present financial environment where in he has to even look into the risk and time factors associated with such investment alternatives.*
The sacrifice that has to be borne is certain but the return in the future may be uncertain. This attribute of the investment indicates the risk factor.

As global economies are getting integrated, technology companies are finding it an overow task to align to the changing realities. In such a scenario, analyzing stocks from the technology sector requires utmost caution and understanding. Present paper aims to guide an investor in respect of selection of securities using different evaluation criteria respectively supported with practical study.
Keywords: *Beta, CAPM, Expected Rate of Return (ERR), Investment, Return, Risk, Risk Premium.*

I. Introduction

Usually a potential investor who wishes to invest in the share market will be in the opinion that investment and speculation are one and the same. So, first we should make clear about the term speculation and investment. Because these terms itself has led to many dilemmas in the minds of the potential investors from being away from the share market. Firstly, in finance, investment refers to the allocation of money to assets expecting to yield returns and capital appreciation over the years. An investor likes to have a moderate return associated with limited risk. Speculations means buying the stock with the anticipation of price rise in the near future and hope for selling it at a gain price. A speculator likes to have high returns for assuming high risk. Therefore we are clear in our definition that investment means allocation of funds for anticipating capital appreciation in the future years.

It has lasted in the minds of a common investor that gaining in the share market is not within his limits. A person with professional skills can only make profits out of it. Also there might be some technical approach to gain return on such shares. But for the information of such investors, there are no such things. Therefore to simplify the selection process, investor can choose stock on the basis of return analysis, risk analysis, efficient frontier technique, Sharpe's optimal portfolio etc. Here a practical analysis has been done with an example of selected 15 software companies & their performance for past five year on quarterly basis.

II. Literature Review

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 and family background. When a person has more money than he requires for current consumption, he would be coined as a potential investor. With the development of economy investment decision could be taken effectively with different investment techniques. To understand these all techniques related to this study has been done with conceptual literature review.

III. Expected Return

Rational investor always would like to maximize his return in given condition for a group of investment alternatives. Expected or average rate of return for a particular share to which it's maximum could be selected for the investment. Average return for any stock can be calculated as under…

Return = (((closing price – opening price)/opening price)*100)
Average Return = (Σ Return / N)
Where N = Number of observation.

1. Standard Deviation

Movement from traditional view to modern view made people to think even about risk apart from return concept in investment decision. Investment decision may be more accurate if the concept of risk have considered for investment. Understanding the nature of the risk is not adequate unless the investor or analyst is capable of expressing it in some quantitative terms. Expressing the risk of a stock in quantitative terms make it comparable with other stocks. Measurements cannot be assured of cent percent accuracy because risk is caused

by numerous factors such as social, political, economic and managerial efficiency. Measurement provides an approximate quantification of risk. The statistical tool always used to measure and used as a proxy for risk is the standard deviation.

Variance = (Standard Deviation) $^2 = \sum_{i=1}^{N}(\boldsymbol{Return - Average\ Return})^2$

The standard deviation represents the variation in the expected return. Higher the standard deviation higher will be the variation in the expected return and vice versa. One can select those script which yield very minimum variance for investment.

2. The Concept of Beta:

Share market movement reflects in individual companies share price and some type of the direction in the movement share price can be noted. To study the average relationship between share market movement and individual companies share price variation, the concept of beta can be used. Beta indicates that one percent change in NSE index return would cause some percent change in the stock return. Beta is calculated for individual companies using regression analysis. Beta values range between negative and positive value and each value represents different meaning.

i) Beta = +1.0 stock moves in tandem with market.
ii) Beta = +0.5 stock is less volatile compared to the market.
iii) Beta = +2.0 stock return is more volatile.
iv) Negative Beta value indicates that the stock return moves in the opposite direction to the market return.

Note: Stock with more than 1 Beta value is considered to be risky.

B = {[Σ(Return – Avg Return)*(Rm – Avg market return)] / Σ(Rm – Avg market return) ^{2} **}**

Note: Where Rm means market return.

3. Capital Asset Pricing Model:

To decide about what might be the minimum return that a script should yield to satisfy current level of risk can be studied with the concept of capital asset pricing model. The risk averse nature of nature of the investors is the underlying factor for this behavior. The capital pricing theory helps the investors to understand the risk and return relationship of the securities. It also explains how assets should be priced in the capital market.

$$\mathbf{R_i = R_f + \beta\ (R_m - R_f)}$$

Note : Where Rf means risk free rate of return i.e., return given by government T- bills.

The general idea behind CAPM is that investors need to be compensated in two ways: time value of money and risk. The time value is represented by the risk free (r_f) rate in the formula and compensates the investors for time. The other half of the formula represents risks and calculates the amount of compensation the investor needs for taking a risk measure (beta) that compares the returns of the asset to the market once a period of time and to the market premium (R_m-R_f).

Under CAPM, investment decision can be taken by comparing actual average return with minimum return required according to this model.

4. Efficient Frontier Theory:

The risk and return of all portfolios or stocks plotted in risk-return space would be dominated by efficient stocks or portfolios. Stocks may be selected randomly from capital market. To make effective combination in selection of stock, the concept of efficient frontier technique may be used.

5. Models for Evaluation of Performance:

A brilliant investor always interested in feedback evaluation of securities in respect of performance and identifies the sources of strength and weakness. The evaluation of the portfolio provides a feedback about the performance to evolve better management strategy. Some of the technique for performance evaluations is explained bellow.

a. Sharpe's Model:

Sharpe's performance index gives a single value to be used for the performance of ranking of various funds. Sharpe's Index measure the risk premium of the portfolio relative to the total amount of risk in the portfolio. The index assigned the highest value to the asset that have best risk adjusted rate of return.

Sharpe's Model for individual company:

Sharpe's risk return ratio = [(R_t - R_f) / σ_p]

b. Treynor's Model:

When diversified portfolio eliminates unsystematic risk to the maximum extent therefore Sharpe's evaluation technique using variation ratio is not correct. Treynor developed model considering Beta or systematic risk for return ratio. The index assigned the highest value to the asset that have best risk adjusted rate of return.

Treynor's beta return ratio for company = $[(R_t - R_f) / \beta_p]$

c. Jensen's Model:

According to Jensen's Model the performance of the portfolio i.e., average return of portfolio is to be compared with the CAPM return. It is because any professional fund manager would be expected to earn atleast average portfolio return of CAPM. Therefore the performance of the fund is compared with the return generated with the model. The formula to calculate Jenson's performance model is:

Jensen's ratio for company =$\{ Rt – [R_f + \beta [(R_m - R_f)]\}$

Note: where Rt means average return of individual company.

6. Indian Software Industry

Technological revolutions sometimes bring unexpected opportunities for countries. India, as a developing country in terms of economic growth, seems to have found such an opportunity in the information technology revolution as an increasingly favoured location for customised software development. India's success at software has led to speculation about whether other developing countries can imitate its example, as well as whether this constitutes a competitive challenge to software industries in the developed world.

Labour arbitrage has been the competitive edge of the Indian software sector over the last few years. However, this seems to be threatened now by MNCs who are replicating the Indian outsourcing model and setting up captive bases in the country. A new trend of 're-shoring' has been observed, where US corporations are increasingly shifting operations, which were outsourced earlier, back to the US.

Financial Year 2013:

The Indian IT/ITES industry earned revenue of over US$ 100 bn during FY13. Out of this, exports accounted for 68% of the industry's revenue.

In terms of industry, BFSI contributed to 41.2% of the IT/ITES sector's export revenues followed by Telecom, which contributed roughly 19%. All other industries taken together contributed to 39.8% of the IT/ITES sector's revenue.

The USA still accounts for roughly 60% of the export revenue followed by the UK and Continental Europe, which together contributes roughly 29%. Other regions such as Asia Pacific are catching up, registering a growth of roughly 18% for exports made to this region.

At the end of FY13, total outstanding capex in the IT/ITES industry stood at more than Rs 1765 bn spread over 437 projects.

By keeping all this strong supportive measures on Indian software industry motivated us to select software companies for our research based study.

IV. Objectives of the study

Modern world is highly competitive one, future is completely uncertain; in this situation predicting future is very difficult. Basically present paper deals with following objectives.

- To highlight on basic financial concept.
- To guide an investor in selection of security.
- To compare actual return with standard expected return, this is calculated using CAPM.
- To focus on the concept of efficient frontier.
- To evaluate the concept of performance appraisal.

V. Methodology

Source of Data:

To understand the concept of different investment criteria with a practical example, Indian software companies have been taken as proxy. The study is mainly based on secondary data. Software companies & their capital market performance for last five year are recorded on the basis of each quarter end market price.

Sample Data:

The empirical study has been conducted in respect of Indian software companies. The study includes 15 software companies and their financial performance for last five year on the basis each quarter end market price.

Tools of analysis:

Present study is done on the basis of contents which are explained in the literature review.

Findings of the study:

Investing in the share market is a personal choice. No particular strategy or style fits everyone. These resources will help you identify which type of investor you are what may work best based upon your needs and goals and helps you in selection of the best shares. The key to successful investing is consistency in real profits and returns.

Evaluation on the basis of Actual Average Return:

The table below represents the percentage of return on different scripts earned in the past 5years. If an investor selects the scripts only on the basis of the return earned, he can select Hexaware Technologies Ltd(17.93%), HCL(16.67%), Tech Mahindra(15.51%) and so on.

1. Sl. No	***2.Name of the I.T Company***	***% of Return***	***S.D***	***Beta***	***CAPM - expected return***	***% Variation***	**Ranking**
1	Tata Consultancy Services	13.1	17.91	0.9	4.36	200.32	**3**
2	WIPRO	9.18	21.24	1.23	5.21	76.08	**6**
3	Infosys	6.18	14.3	0.74	3.95	56.49	**8**
4	HCL	16.67	26.25	1.76	6.58	153.31	**4**
5	Tech Mahindra	15.51	41.38	3.1	10.04	54.51	**10**
6	Mphasis Ltd	7.01	29.67	2.14	7.56	-7.29	**11**
7	Oracle	10.6	22.1	1.6	6.17	71.85	**7**
8	Ramco Systems	14.11	45.15	2.74	9.11	54.90	**9**
9	Hexaware Technologies Ltd	17.93	32.78	1.23	5.21	243.92	**2**
10	NIIT Ltd	12.98	24.92	1.67	6.35	104.45	**5**
11	3I infotec Limited	-1	37.68	2.83	9.34	-110.71	**13**
12	Onmobile Global Ltd	-4.55	26.37	5	14.94	-130.46	**14**
13	Polaris Financial Technologies	9.6	3.1	-0.14	1.68	471.84	**1**
14	Educomp Solutions	-7.98	34.78	2.4	8.23	-196.94	**15**
15	Sunsex	5.77	53.04	3.33	10.63	-45.73	**12**
	Market (Nifty)	4.62	11.8	1			
	Risk Free Rate of Return	2.04					

Statistically Standard Deviation and Beta estimation help to quantify the risk.

Standard Deviation:

The standard deviation represents the variation in the expected return.In the case of software companies here, Polaris Financial Technologies, Infosys and Tata Consultancy Services have 3.1, 14.3 and 17.91 percentage of variation in their expected return respectively. Therefore an investor with risk sensitiveness can select these securities without much variation.

The Concept of Beta:

In the above table, it should be noted that all the scripts except Polaris Financial Technologies has got positive Beta value. This represents that the stock return moves in tandem with the market return. Polaris's stock return moves in the opposite direction to the market return.

Investors with less risk tolerance can select those securities which has low beta that indicates less response to the market and are less risky. For example: Polaris Financial Technologies.

Risk neutral investors can select those securities having beta value nearing to 1. For example: WIPRO, Hexaware.

Risk lover investors can select the more volatile securities it means higher beta valued securities. For example: Subex, 3I infotec Ltd.

Capital Asset Pricing Model:

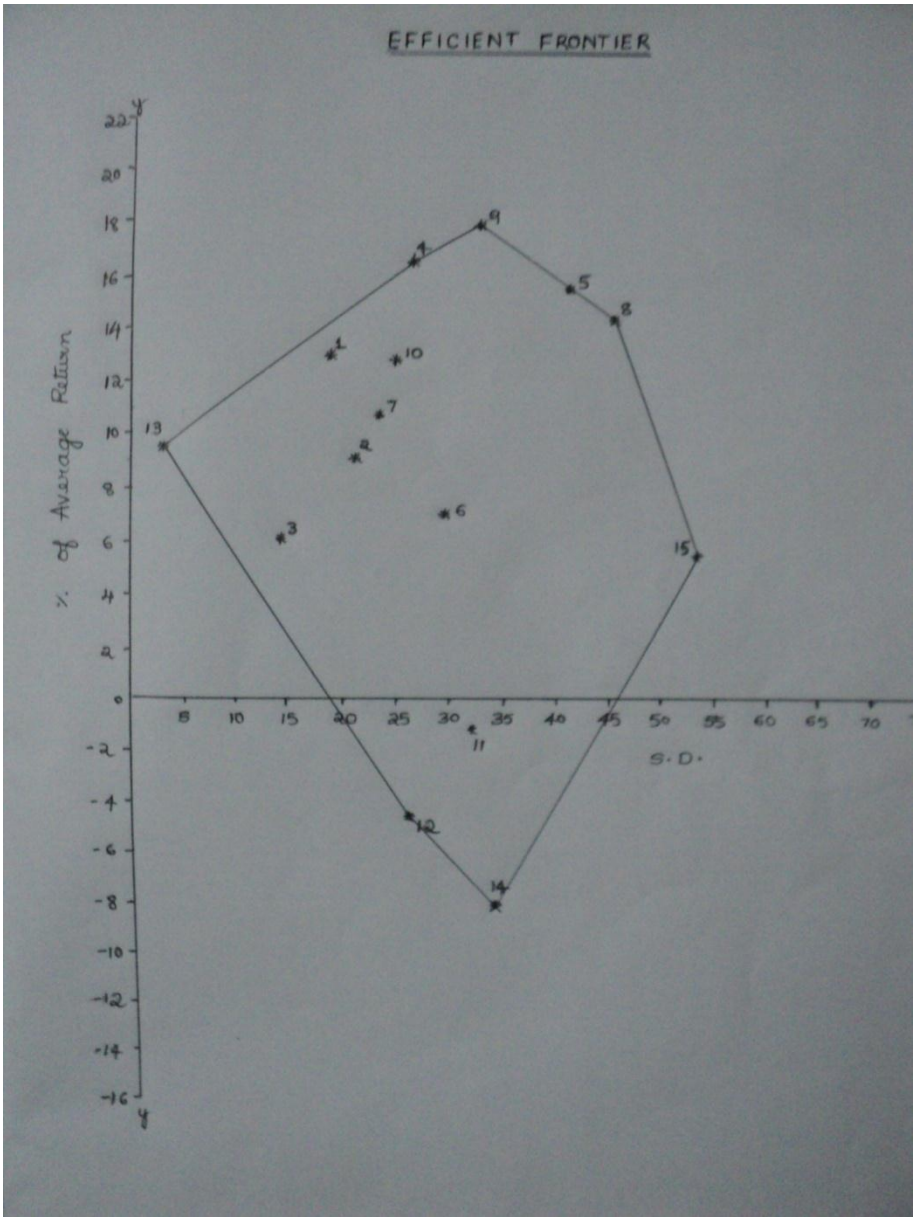
The CAPM theory helps the investors to understand the risk and return relationship of the securities. Here, 1,2,3,4,5,7,8,9,10 and 13 numbered securities earned more than the required rate of return as per risk adjusted model. The above table shows the ranking of the securities on the basis of variation of actual return and minimum return of CAPM. Polaris Financial Technologies, Hexaware Technologies Ltd, Tata Consultancy Services has bagged first three positions respectively in ranking given above.

Efficient Frontier Theory:

The following graphical representation of risk-return space of software companies has given frontier with possible choices. The efficient stock will dominate other stocks. It is not possible for the investor to have the stocks out of this space because no combination of return and risk is existed. When attainable sets are examined, some are more attractive than others.

OX axis denotes standard deviation and OY axis represents % of return. Risk return space formed by explained graph, shows possible selection of stocks and their relative risk. Here point 13, 4 and 9 are dominating other stocks. An investor can select any of the stock among this three. Picking stock is depends up on his perception towards risk tolerance.

If he is trying to avoide risk to maximum extent then point 13 i.e., Polaris Financial Technologies suits him best. The risk neutral or mediam risk taker can go for point 4 i.e., HCL. The person with risk averse nature can go for point 9 i.e., Hexaware ltd.



Models for Evaluation of Performance:

Sharpe's Model: Table showing performance appraisal represent bellow, according to Sharpe's index, funds have ranked in descending order according to their superiority. Negative valued stocks are kept away from ranking.

Table showing calculation of performance evaluation:								
Serial No	***Name of the I.T Company***	***% of Return***	**Sharpe"s Ratio**	**Sharpe's Rank**	**Treynor's Ratio**	**Treynor's Rank**	**Jensen's Ratio**	**Jensens Rank**
1	Tata Consultancy Services	13.1	0.62	**II**	12.29	**II**	8.74	**III**
2	WIPRO	9.18	0.34	**VII**	5.80	**V**	3.97	**X**
3	Infosys	6.18	0.29	**IX**	5.59	**VI**	2.23	**XI**
4	HCL	16.67	0.56	**III**	8.31	**III**	10.09	**II**
5	Tech Mahindra	15.51	0.33	**VIII**	4.35	**IX**	5.47	**VI**
6	Mphasis Ltd	7.01	0.17	**XI**	2.32	**X**	-0.55	Neg
7	Oracle	10.6	0.39	**VI**	5.35	**VII**	4.43	**IX**
8	Ramco System	14.11	0.27	**X**	4.41	**VIII**	5.00	**VII**
9	Hexaware Technologies Ltd	17.93	0.48	**IV**	12.92	**I**	12.72	**I**
10	NIIT Ltd	12.98	0.44	**V**	6.55	**IV**	6.63	**V**
11	3I infotec Limited	-1	-0.08	Neg	-1.07	Neg	-10.34	Neg
12	Onmobile Global Ltd	-4.55	-0.25	Neg	-1.32	Neg	-19.49	Neg
13	Polaris Financial Technologies	9.6	2.44	**I**	-54.00	Neg	7.92	**IV**
14	Educomp Solutions	-7.98	-0.29	Neg	-4.18	Neg	-16.21	Neg
15	Subex	5.77	0.07	**XII**	1.12	**XI**	-4.86	Neg
	Market (Nifty)	4.62						

Treynor's Model:

When diversified portfolio eliminates unsystematic risk to the maximum extent therefore Sharpe's evaluation technique using variation ratio is not correct. Treynor developed model considering Beta or systematic risk for return ratio.

In the above table, the market ratio is 0.38. Here all the shares except shares numbered 11, 12, 13 and 14 are not performing better in the market and hence they can be eliminated. And ranking also notified respectively with their superiority.

Jensen's Model:

According to Jensen's Model the performance of the companies from selected software companies also shown above. Jenson's ratio with negative are eliminated and remaining ranked. Hexaware Technologies Ltd has bagged first rank in yielding return more than standard.

Limitation of the study:

- Past performance is no guarantee of future result: all most all investment literature warn you that past performance is no guarantee of future result.
- Capital market doesn't mean that group of nationalized banks: present study is just done with nationalized bank. It is not possible to analyze entire banking sector with a group of nationalized bank. And only banking sector cannot judge entire share market.
- Study is just limited for last five year that too quarter end share market price comparison. But share market can see daily surprising direction.

VI. Conclusion

By proper evaluation of all the individual stocks the return and risk has been assessed. It is upto the individual what kind of investor he is, whether risk taker, risk avoider or risk neutral. He can also be assessed to the internet, weekly journals and television to update his information about the share market. Nowadays many telecommunication service providers are giving the updates about the share prices too through messages. It is not at all a difficult task if you have time, patience and knowledge about the share market.

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