International Journal of Commerce and Management Research
ISSN: 2455-1627, Impact Factor: RJIF 5.22
www.managejournal.com
Volume 3; Issue 2; February 2017; Page No. 152-157

Performance evaluation of equity mutual fund in India with special reference to sector funds

[1] Megharaja B, [2] Dr. Chalawadi CI

[1] Assistant Professor and Research Scholar, Department of Studies and Research in Commerce, VSK University, P.G Centre, Nandihalli, Karnataka, India

[2] Coordinator and Assistant Professor, Department of Studies and Research in Commerce, VSK University, P.G Centre, Nandihalli, Karnataka, India

Abstract
The mutual fund is tailor made avenue for the small investors, who would like to take reasonable return by taking less risk as compare to other avenues at financial market in present context, it has been attracting of small savers or investors in India. Mutual fund in the present days has been introducing different products or schemes as for investor's desire base by the different Asset management Companies in India. It consist Equity, Debt and Hybrid scheme; debt fund Investment Avenue gives constant return and doesn't have the risk but in case of Equity fund included multiple schemes like small cap fund, large cap funds, saving funds and sector funds. The researcher has considered selected sectors as well as AMCs in India, such as AMCs are Birla sun life, Reliance, UTI and SBI returns of their introduced schemes in others sector funds, such MNCs, Opportunities fund, Diversified power sector, media and entertainment funds, energy fund, transportation and logistics funds etc.. In the Equity mutual fund in India.
The study going to attempt to analysis and interpretation with S&P Sensex index as benchmark of selected other sectors equity mutual fund through their returns and risk by net asset value in mutual fund industry as an entitled "Performance Evaluation of Equity Mutual Fund in India with Special Reference to Sector Funds".

Keywords: Possible return, Descriptive Statistics, variance analysis, Correlation, Beta, Risk Adjusted schemes comparison: Sharpe Ratio, Treynor Ratio, Jensen Alpha, Fama's Net Selectivity, Information ratio, M Square, CAGR etc.

1. Introduction
The movements of fund from surplus to deficit, who has the excess income over the expenditure and who has the excess expenditure over the income, who does have an idea to initiate enterprise for earning additional income through the financial system in India. Financial system plays significant role for control nation by its circulation of money with it aids like financial market, financial instruments, financial institutions and financial services. In each aids of financial system play vital role for developing India economy. Mutual fund product has been attracting young investor in financial service who would like to take moderate rate of risk and return due to available suitable schemes as per investors wish and it managed by the professional expert at AMCs in India. Mutual fund has been contributing some percentage to gross domestic product in present scenario in India. Mutual fund included N number of scheme in different AMCs in India. In equity mutual fund has multiple schemes with high risk as compare to rest schemes. Especially sectors fund have been producing more returns rather than others schemes in sectors equity mutual fund in India. Hence this study is going to analyses and examines the rate of return and risk with help of the statistical tools on an entitled Performance Evaluation of Equity Mutual Fund in India with Special Reference to Sector Funds".

1.1 Objectives of the study
The study measure the performance of selected others sectors equity mutual funds in India and evaluate them by using statistical instruments for measuring the risk return and managerial efficiency, risk adjusted scheme comparison of each with the help of mean, standard division with different ratios in the study area.

1.2 Hypotheses of the study
1. There is change the performance of selected AMCs returns of other sector equity mutual fund in India.
2. There is change the performance of selected years return of other sector equity mutual fund in India.

1.3 Research Design
Types of the research: the study has analyzed and interpreted with the type of descriptive research and analytical in nature.
Sampling technique: the study took ten schemes in others sectors equity mutual fund in India on the basis of Convenience sampling in parametric sampling and S&P Sensex return took as a Benchmark index in this study.
Sample size: the study has selected 10 others sectors equity mutual fund in 4 AMCs in India, others sectors open-ended equity mutual funds are X1 Birla Sun Life Buy India Fund, X2 Birla Sun Life India GenNext Fund, X3 Birla Sun Life India Opportunities Fund, X4 Birla Sun Life MNC Fund, X5 Reliance Diversified Power Sector Fund, X6 Reliance Media & Entertainment Fund, X7 UTI Energy Fund, X8 UTI MNC Fund, X9 UTI Transportation and Logistics Fund, X10 SBI Magnum COMMA Fund and S&P Sensex. (AMCs are Birla sun life AMC 4, Reliance AMC2, UTI 3, and SBI 1). Risk free rate of return is 5.96% 364 day T–bills.
Source of data: the study data was collected with the help of Value Research Journal, Books and magazine, Research articles in national and international in India etc.as under the Secondary sources.

Period of the study: the study information has been collecting for 10 years from 2006 to 2015
Study Analysis Tools used: he research paper used statistical tools for analysis and interpretation of study such as Descriptive statistics and parametric test which is suitable to the study.

1.4 Data analysis and interpretation

Table 1: The table shows the Asset management Companies returns of other sectors equity mutual fund in India

Tools	N	Range	Min	Max	Sum	Mean	Median	Std. Dev	Variance	Skewness		Kurtosis	
										Statistic	Std. Err	Statistic	Std. Err
X1	10	142.79	-49.72	93.07	235.16	23.52	25.08	40.66	1653.16	-.213	.687	.432	1.334
X2	10	106.55	-48.10	58.45	218.24	21.82	27.79	34.68	1202.62	-.878	.687	.227	1.334
X3	10	171.62	-62.01	109.61	210.05	21.01	23.03	45.64	2083.25	.042	.687	1.556	1.334
X4	10	134.08	-43.59	90.49	256.11	25.61	24.33	38.29	1466.10	-.057	.687	.460	1.334
X5	10	174.81	-50.39	124.42	252.61	25.26	17.18	57.27	3279.63	.359	.687	-.688	1.334
X6	10	146.00	-62.44	83.56	238.77	23.88	28.41	44.58	1986.98	-.586	.687	-.001	1.334
X7	10	132.89	-57.34	75.55	106.50	10.65	7.73	39.14	1531.91	.046	.687	.065	1.334
X8	10	124.90	-42.77	82.13	225.87	22.59	21.30	34.52	1191.80	-.091	.687	.913	1.334
X9	10	182.03	-48.68	133.35	274.69	27.47	18.30	54.45	2964.88	.907	.687	.608	1.334
X10	10	158.71	-59.71	99.00	178.86	17.89	11.56	49.49	2449.23	.304	.687	-.421	1.334
Index	10	133.48	-52.45	81.03	174.76	17.48	21.57	38.35	1470.84	-.291	.687	.217	1.334

1.5 Interpretation

Kurtosis: X1, X2, X4, X10 and Index values indicates a distribution those are less peaked than a normal distributions called leptokurtic, X6 and X7 points out its leptokurtic having sharp/long tail. X5, X8 and X9 implies distribution that have slower rising centre peak than the peak of normal distribution. X3 indicates a distribution that is more peaked than a normal distribution and peaked tail Platykurtic curve.

Skewness: The above funds return calculated value represents X1, X2, X4, X6, and X8 along with index shows the negative (Left) skewed since those mean is smaller than median which means that there are extremely lower values and rest of the funds show the positive (Right) Skewed since those mean is greater than median which means that there are extremely higher values in a normal distribution, there is no extreme skewed in study selected funds.

Table 2: Risk and returns of Selected AMCs other sectors equity mutual fund in India

0	AMCs	Returns	Std De	Alpha	Beta	T Stat	P-Value	Anova
X1	Birla Sun Life Buy India Fund	23.52	40.66	6.276	0.986	7.185	9.18	51.63
X2	Birla Sun Life India GenNext Fund	21.82	34.68	7.32	0.829	6.53	0	42.76
X3	Birla Sun Life India Opportunities Fund	21	45.64	1.81	1.098	6.77	0	45.92
X4	Birla Sun Life MNC Fund	25.61	38.29	10.38	0.87	5.05	0	25.53
X5	Reliance Diversified Power Sector Fund	25.26	57.27	1.828	1.34	5.77	0	33.3
X6	Reliance Media & Entertainment Fund	23.87	44.58	5.06	1.076	6.94	0	48.27
X7	UTI Energy Fund	10.65	39.14	-6.196	0.96	8.133	3.87	66.16
X8	UTI MNC Fund	22.59	34.52	8.63	0.79	5.43	0	29.53
X9	UTI Transportation and Logistics Fund	54.49	54.45	8.63	1.077	3.29	0.01	10.88
X10	SBI Magnum COMMA Fund	17.89	49.49	-3.68	1.234	9.28	1.47	86.24

1.6 Return

For each mutual fund scheme under study, the yearly returns are computed as:

$$Rp = \frac{NAVt - NAVt - 1}{NAVt - 1} * 100$$

Where NAVt is Net Asset Value of a mutual fund scheme for January, value t, NAVt-1is the Net Asset Value for December value (t-1). For the benchmark index, the return is calculated as:
Return= (Indext-Indext-1)/ Indext-1

1.7 Risk

The risk is calculated on the basis of month-end NAV. The following measures of risks associated with mutual funds have been for the study: Standard Deviation- The total risk is measured by the standard deviation of the monthly returns which was calculated using the following formula:

$$\sigma = \sqrt{\frac{1}{n-1}\sum(Rt - R\ mean)^2}$$

Where, σ = Standard Deviation, n= number of monthly return Rt = monthly returns of the mutual fund, *R* = mean return of the mutual fund

The square of the standard deviation is called the variance. Variance= (σ) 2

Risk and Return: The above table depicted that return rank values of first depicted high return visa- versa, Total risk rank value of first tells that high risk visa-versa. The study selected scheme X9 does show the equilibrium means equal return and risk, hence it shows the returns first rank in the returns, again it takes last rank in the total risk. X7 reveals that last rank in the return but first rank in the total risk, rest of the schemes falls within the above said information. (Returns ratio=mean/Std dev), (Total Risk Ratio=Std dev/mean)

Alpha: The excess return on set of investment have been made rank on their returns, first rank indicate higher returns, visa-versa, the above said table represents that X4 got first rank and last rank taken by the X7.

Beta: Systematic risk measured with help of beta, first rank represents high systematic risk visa versa, the above study X5 hold the first rank, X8 is last rank.

T Stat: the test measured values of all above said schemes greater than the table values (2.31) at 5 % level of Significance, 8 Degree of freedom in two tailed, hence in this study or test concludes the there is significant changes of risk and returns of selected schemes of others sectors equity mutual funds in India.

P-Value: Statistically X1, X7 and X10 funds are not significant i.e. the calculated values more than 0.05, rest of the funds are significant at 5% level of significance.

F-Test: variance of analysis have done, the calculated values fall in accepted region at normal distribution as compare to table value (5.32) at 5% level of significance, Degree of freedom (V1) =1, Degree of freedom (V2)=8 in two tailed, hence this test concludes that there is changes of returns and risk of selected sectors equity mutual funds in India.

Table 3: risk adjusted performance measures of selected AMCS other sectors equity mutual fund in India

AMCs	Returns	Std Dev	Beta	Excess return	Sharpe Ratio	Treynor Ratio	Jensen Alpha	Fama's Net Sel	Inform. ratio	M Square	CAGR
X1	*23.52*	*40.66*	0.986	17.56	0.43	17.81	6.2	5.35	0.025	22.52	-0.06
X2	*21.82*	*34.68*	0.829	15.86	0.46	19.13	6.31	5.44	0.029	23.5	-0.12
X3	*21*	*45.64*	1.098	15.04	0.33	13.7	2.39	1.33	0.022	18.6	-0.08
X4	*25.61*	*38.29*	0.87	19.65	0.51	22.59	9.63	8.15	0.026	25.64	-0.03
X5	*25.26*	*57.27*	1.34	19.3	0.34	14.4	3.86	2.1	0.017	18.88	-0.19
X6	*23.87*	*44.58*	1.076	17.91	0.4	16.64	5.51	4.52	0.022	21.37	-0.15
X7	*10.65*	*39.14*	0.96	4.69	0.12	4.89	-6.37	-7.07	0.026	10.56	-1.82
X8	*22.59*	*34.52*	0.79	16.63	0.48	21.05	7.53	6.26	0.029	24.44	-0.03
X9	*54.49*	*54.45*	1.077	48.53	0.89	45.06	36.12	32.17	0.018	40.14	-0.07
X10	*17.89*	*49.49*	1.234	11.93	0.24	9.67	-2.29	-2.94	0.02	15.2	-1.81
Index	*17.48*	*38.35*	1	11.52	0.3	11.52				17.48	-0.18

Risk free rate of Return is 5.96% (364 day T-Bill)

1.8 Risk adjusted performance measures based on

Sharpe ratio: The Sharpe ratio was introduced as the reward to variability ratio4 in order to evaluate the performance of mutual funds. The Sharpe ratio is defined as follows:

$$S = \frac{E[R] - Rf}{\sigma}$$

Where E[*R*] is the expected rate of return, *Rf is Risk free rate, and σ the standard deviation,*

While a high and positive Sharpe Ratio shows a superior risk-adjusted performance of a fund, a low and negative Sharpe Ratio is an indication of unfavorable performance.

The above study are Sharpe ratios indicate the selected others sectors equity mutual performance better than the benchmark index except X7.

Treynor ratio: This performance measure evaluates funds on the basis of ratio of return generated by the fund over and above risk free rate of return during a given period and systematic risk associated with it (beta). Symbolically, it can be represented as:

$$\textbf{Treynor's Measure} = (\textbf{Rp} - \textbf{Rf}) / \boldsymbol{\beta}$$

Rp represents return on fund,

Rf is risk free rate of return and

β is beta of the fund.

All risk-averse investors would like to maximize this value. While a high and positive Treynor's Measure shows a superior risk-adjusted performance of a fund, a low and negative ratio is an indication of unfavorable performance.

The study data Treynor ratio shows the selected schemes performance greater than market index except X7, X10.

Jensen Alpha: This measure involves evaluation of the returns that the fund has generated in relation to the returns actually expected out of the fund given the level of its systematic risk.The surplus between the two returns is called Alpha, which measures the performance of a fund compared with the actual returns over the period.

Required return of a fund at a given level of risk (β) can be calculated as:

$$\boldsymbol{\alpha} = (\textbf{Rp} - \textbf{Rf}) - \boldsymbol{\beta}\,(\textbf{Rm} - \textbf{Rf})$$

Where,
Rp = Average return on the portfolio, Rm = average market return, Rf = risk free rate of return
α = Intercept measuring of the forecasting ability of the manager, β = Systematic risk measure
ep = error term. Rf after calculating it, alpha can be obtained by subtracting required return from the actual return of the fund.
Jensen measure study reveals that selected schemes have been earned superior returns due to superior managerial skills and above X7 and X10 is vise verse.

Fama Net Selectivity: The purpose of performance evaluation is to identify the mistakes and suggest a direction for making necessary corrections. According to Fama, portfolio return constitutes four components. They are:

$$Fama's\ net\ selectivity = Rp - [Rf + (\frac{\sigma p}{\sigma m})(Rm - Rf)$$

a) Risk-Free return Rf
b) Compensation for systematic risk {β (Rm-Rf) }
c) Compensation for inadequate diversification (Rm-Rf) (σ p /σm
d) Net Superior returns due to selectivity (Rp-Rf) - (σp/βm) (Rm-Rf)
In the above, second and third measures indicate the impact of market risk (Systematic risk) and diversification. By altering systematic and Unique risk a portfolio can be reshuffled to get desired level of return. A portfolio manager can earn superior return by identifying the undervalued securities through constant research and professional acumen. The ability of selectivity can be known with the help of the fourth component.
The selected study the majority of funds have been attempted to earn a higher return than the market return assumes higher risk and depends on his superior stock selection ability to achieve the higher return, in case of X7 and X10 indicates that due to poor stock selection, have been earned negative returns.
M Square: M square measure provides the same portfolio ranking as the sharpe ratio but is stated in percentage terms as follows

$$\boldsymbol{M - Squared = (Rp - Rf)\sigma m/\sigma p - (Rm - Rf)}$$

The selected scheme compare favorably with the market return of 17.48% during the study period. The schemes have outperformed the market on risk adjusted basis but reverse action of the X7 in this study
Compound Annual Growth Rate: the selected schemes growth is negative as compare study period along with market index.

Table 4: Analysis of variance: Two way without replicable

Source of Variation	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit*
Rows	163348.5	9	18149.83	57.97665	1.27E-33	1.985595
Columns	2248.566	10	224.8566	0.718267	0.705258	1.937567
Error	28174.87	90	313.0541			
Total	193771.9	109				

1. **Ho: - There is no significance changes the performance of selected AMCs returns of other sector equity mutual fund in India.**

The observed value is (57.98) too more than the table value (1.99) i.e. rejecting the null hypothesis under the 5 percent level of significance in two tailed test, hence it concludes that There is a significance changes the performance of selected AMCs returns of other sector equity mutual fund in India

2. **H0:- There is no significance change the performance of selected years return of other sector equity mutual fund in India.**

The calculated value is (0.72) less than the table value (1.94) i.e. Accepting the null hypothesis under the 5 percent level of significance in two tailed test, hence it concludes that There is no significance change the performance of selected years return of other sector equity mutual fund in India

Table 5: Pearson Correlation of selected AMCs return of Sectors equity mutual fund in India

Correlations										
		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
X1	Pearson Correlation	1	.941**	.967**	.983**	.817**	.886**	.941**	.982**	.906**	.872**
	Sig. (2-tailed)		.000	.000	.000	.004	.001	.000	.000	.000	.001
	N	10	10	10	10	10	10	10	10	10	10
X2	Pearson Correlation	.941**	1	.853**	.895**	.883**	.969**	.941**	.915**	.743*	.892**
	Sig. (2-tailed)	.000		.002	.000	.001	.000	.000	.000	.014	.001
	N	10	10	10	10	10	10	10	10	10	10
X3	Pearson Correlation	.967**	.853**	1	.959**	.735*	.800**	.891**	.954**	.925**	.829**
	Sig. (2-tailed)	.000	.002		.000	.015	.005	.001	.000	.000	.003
	N	10	10	10	10	10	10	10	10	10	10
X4	Pearson Correlation	.983**	.895**	.959**	1	.712*	.804**	.875**	.987**	.952**	.788**
	Sig. (2-tailed)	.000	.000	.000		.021	.005	.001	.000	.000	.007
	N	10	10	10	10	10	10	10	10	10	10
X5	Pearson Correlation	.817**	.883**	.735*	.712*	1	.935**	.937**	.759*	.555	.969**
	Sig. (2-tailed)	.004	.001	.015	.021		.000	.000	.011	.096	.000
	N	10	10	10	10	10	10	10	10	10	10
X6	Pearson Correlation	.886**	.969**	.800**	.804**	.935**	1	.938**	.834**	.623	.931**
	Sig. (2-tailed)	.001	.000	.005	.005	.000		.000	.003	.054	.000
	N	10	10	10	10	10	10	10	10	10	10
X7	Pearson Correlation	.941**	.941**	.891**	.875**	.937**	.938**	1	.921**	.767**	.968**

	Sig. (2-tailed)	.000	.000	.001	.001	.000	.000		.000	.010	.000
	N	10	10	10	10	10	10	10	10	10	10
X8	Pearson Correlation	.982**	.915**	.954**	.987**	.759*	.834**	.921**	1	.937**	.833**
	Sig. (2-tailed)	.000	.000	.000	.000	.011	.003	.000		.000	.003
	N	10	10	10	10	10	10	10	10	10	10
X9	Pearson Correlation	.906**	.743*	.925**	.952**	.555	.623	.767**	.937**	1	.655*
	Sig. (2-tailed)	.000	.014	.000	.000	.096	.054	.010	.000		.040
	N	10	10	10	10	10	10	10	10	10	10
X10	Pearson Correlation	.872**	.892**	.829**	.788**	.969**	.931**	.968**	.833**	.655*	1
	Sig. (2-tailed)	.001	.001	.003	.007	.000	.000	.000	.003	.040	
	N	10	10	10	10	10	10	10	10	10	10
**. Correlation is significant at the 0.01 level (2-tailed).											
*. Correlation is significant at the 0.05 level (2-tailed).											

The Correlation of selected majority of schemes has positive co- relation among their return in this study, some of them medium Co-relation, hence overall conclude that there are good co-relation of selected schemes under 1 percent and 5 percent level of significance in two tailed test.

Table 6: Non parametric Correlations of selected AMCs return of Sectors equity mutual fund in India **(**Kendall's tau b & Spearman's rho**)**

Correlations											
		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
X1	Pearson Correlation	1	.941**	.967**	.983**	.817**	.886**	.941**	.982**	.906**	.872**
	Sig. (2-tailed)		.000	.000	.000	.004	.001	.000	.000	.000	.001
	N	10	10	10	10	10	10	10	10	10	10
X2	Pearson Correlation	.941**	1	.853**	.895**	.883**	.969**	.941**	.915**	.743*	.892**
	Sig. (2-tailed)	.000		.002	.000	.001	.000	.000	.000	.014	.001
	N	10	10	10	10	10	10	10	10	10	10
X3	Pearson Correlation	.967**	.853**	1	.959**	.735*	.800**	.891**	.954**	.925**	.829**
	Sig. (2-tailed)	.000	.002		.000	.015	.005	.001	.000	.000	.003
	N	10	10	10	10	10	10	10	10	10	10
X4	Pearson Correlation	.983**	.895**	.959**	1	.712*	.804**	.875**	.987**	.952**	.788**
	Sig. (2-tailed)	.000	.000	.000		.021	.005	.001	.000	.000	.007
	N	10	10	10	10	10	10	10	10	10	10
X5	Pearson Correlation	.817**	.883**	.735*	.712*	1	.935**	.937**	.759*	.555	.969**
	Sig. (2-tailed)	.004	.001	.015	.021		.000	.000	.011	.096	.000
	N	10	10	10	10	10	10	10	10	10	10
X6	Pearson Correlation	.886**	.969**	.800**	.804**	.935**	1	.938**	.834**	.623	.931**
	Sig. (2-tailed)	.001	.000	.005	.005	.000		.000	.003	.054	.000
	N	10	10	10	10	10	10	10	10	10	10
X7	Pearson Correlation	.941**	.941**	.891**	.875**	.937**	.938**	1	.921**	.767**	.968**
	Sig. (2-tailed)	.000	.000	.001	.001	.000	.000		.000	.010	.000
	N	10	10	10	10	10	10	10	10	10	10
X8	Pearson Correlation	.982**	.915**	.954**	.987**	.759*	.834**	.921**	1	.937**	.833**
	Sig. (2-tailed)	.000	.000	.000	.000	.011	.003	.000		.000	.003
	N	10	10	10	10	10	10	10	10	10	10
X9	Pearson Correlation	.906**	.743*	.925**	.952**	.555	.623	.767**	.937**	1	.655*
	Sig. (2-tailed)	.000	.014	.000	.000	.096	.054	.010	.000		.040
	N	10	10	10	10	10	10	10	10	10	10
X10	Pearson Correlation	.872**	.892**	.829**	.788**	.969**	.931**	.968**	.833**	.655*	1
	Sig. (2-tailed)	.001	.001	.003	.007	.000	.000	.000	.003	.040	
	N	10	10	10	10	10	10	10	10	10	10
**. Correlation is significant at the 0.01 level (2-tailed).											
*. Correlation is significant at the 0.05 level (2-tailed).											

There is highly positive linear relationship among various schemes of others sectors equity mutual fund, it conclude that there is enough evidence of significant relationship of selected schemes at the level of 0.01 level of significance and 0.05 level of significance at two tailed test.

1.10 Limitations of the Study

1. The Study was conducted only open ended schemes and close ended schemes were ignored.
2. The data have been collected for Ten years with ten schemes.
3. The study was selected others sectors equity mutual funds in India, but it has ignored other sectors like Banking, FMCG, Infrastructure, Pharmacy and Technology sectors.
4. The study has been conducted and analyzed based on set of available information, which were governed by time factor.

2. Conclusion

The researcher has been selected sectors equity mutual fund to measure their performance in terms of risk and returns base as compare with benchmark return in the market along with risk free rate of return 364 day T-bill and majority of schemes performing better than the market, the study majority selected schemes returns made better than market returns, SBI Magnum COMMA Fund, UTI Energy Fund were not able to earn rather than market, totally concludes that which researcher selected schemes managed by the portfolio manager has taken good stock selection.

3. Reference

1. Sundar Sankaran. Indian mutual funds handbook, 2nd edition vision book, 2010.
2. Aswath Damodaran. Damodaran on Valuation-Security analysis for investment and corporate finance, Second Edition, Willy publication, 2016.
3. Jeelan Bhasa and Veeresh. Foreign tourist satisfaction-a case of Hampi visit, Southern Economist. 2014; 15:25-29.
4. Kothari SP, Jerold B. Warner. Evaluating mutual fund performance" Journal of finance. 2001; 56(1):1985-2010.
5. Sharpe WF Mutual Fund Performance. Journal of Business. 1966; 39:119-138.
6. Treynor JL. How to rate management of investment funds? Havard Business Review.1965; 43:63-75.
7. Jensen MC the performance of mutual funds in the period 1945-1964, Journal of Finance. 1968; 23:389-416.
8. Fama EF Components of Investment Performance, Journal of Finance. 1972; 27:551-567.
9. Financial Services by Dr. S. Guruswamy, McGraw Hill Publication, 2nd Edition, Fourth Reprint 2012, 216.
10. Financial Services by Dr. S. Guruswamy, McGraw Hill Publication, 2nd Edition, Fourth Reprint 2012; 229-233.
11. Franco Modigliani and Leah Modigliani, "Risk-Adjusted Performance: How to Measure It and Why," Journal of Portfolio Management, winter. 1997; 23(2):45-54.
12. Gangadhar, V (1992). The Changing Pattern of Mutual Funds in India, Management Accountant. 27(12):924-928.
13. Garg S. A Study on Performance Evaluation of Selected Indian Mutual Funds. International Journal of Innovation Creativity and Management (IJICM), 2011; 1(1):1-10.
14. Kevin S, Security Analysis and Portfolio Management, PHI Learning Private Limited, New Delhi, 2012; 222-3.
15. Shakeela Naz & others, "Risk Adjusted Performance Evaluation of Balanced Mutual Fund Schemes in Pakistan" European Journal of Business and Management ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) 2015; 7(1).
16. Timotej jagric risk-adjusted performance of mutual funds: Some tests, south-eastern europe journal of economics 2 2007; 233-244.
17. Syed Husain Ashraf Performance Evaluation of Indian Equity Mutual Funds against Established Benchmarks Index, International Journal of Accounting Research, 2014,
18. Dr. JK Raju, Mr. Manjunath BR, Performance Evaluation Of Indian Equity Mutual Fund Schemes, Journal of Business Management & Social Sciences Research (JBM&SSR) ISSN No. 2015; 4(11):2319-5614.
19. www.moneycontrol.com
20. www.mutualfundindia.com
21. www.valuereserachonline.com
22. http://en.wikipedia.org/wiki/Sortino_ratio