STUDY OF RISK AND RETURN OF MUTUAL FUNDS

Submitted by

MERAJ ALI 22GSOB2010780

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BRANCH OF STUDY

SCHOOL OF BUSINESS

Under the Supervision of

Mr. Honey Kanojia

Assistant Professor
Galgotias University

1. INTRODUCTION

There are many avenues in financial market. An Investor can invest in Bank deposit, corporate debenture and bonds which has law risk with low return. He may also Investor in stock of company which has high risk with hight return.
Investors look for safer investment avenues and want to maximize their returns in according to their risk. Whereas people also tries to invest money as early as possible so that the money will grow accordingly in his lifetime.

Choose a good investing option is very critical because a balance is required to be maintained between the risks and returns involved in investment. Return is inspiring force and principal reward in the investment process. One of the essential, reason because ofwhich one needs to invest fairly is to meet the cost of inflation. Inflation is the rate at which the cost of living increases at that time.

A mutual fund is an expertly overseen company of collective investments that swimming pools money from numerous buyers and puts it in stocks, bonds, momentary money market instruments, as nicely as distinct securities.

Mutual money is emerging as helpful instrument for a large scope of speculators, from people looking to put some thing aside for retirement to subtle socialites concentrated on defending their belongings and businesspeople to make wealth. Mutual Fund is a trust that pools the reserve funds of various buyers who share a typical financial objective.

Anyone with an investible overflow of as little as two or three thousand rupees can put resources into mutual fund devices as indicated by means of their expressed objective and strategy.

Mutual Fund Company pools money from a gathering of individuals with normal hypothesis targets to buy securities, for example, stocks, bonds, money market instruments, a mixture of these instruments, or significantly unique belongings so as to acquire the reward of enhancement and expertly oversaw container of protections at a reasonably ease. In a mutual fund, the fund manager, who is likewise excellent as the portfolio manager, trades the funds underlying securities, acknowledging capital positive factors or losses, and gathers the dividend or hobby income.

The income are passed alongside to the investors. The charge of a share of the mutual fund, acknowledged as the net asset value (NAV), which is determined on day through day base, in mild of the absolute estimation of the mutual fund divided by the extent of high-quality shares presently issued.

REVIEW LITERATURE

Bansal, Garg and Saini, (2012), inspected the exhibition of chosen mutual fund schemes that the hazard profile of the total mutual fund universe can be exactly concept about by using a basic market index that provides comparative month to month liquidity, returns, systematic and unsystematic hazard and entire fund investigation by way of utilizing the special reference of Sharpe and Treynor's proportion.

Sharpe (1966) explains in a contemporary portfolio speculation placing that the anticipated return for a educated portfolio and its associated danger (unsystematic risk) are directly related. By consolidating distinct thoughts he built up a Sharpe index. In this paper he endeavoured to charge the presentation primarily based on the best portfolio with the risky portfolio and a risk free asset is the one with the great reward to-inconstancy .The unsystematic hazard is recognized with precise security due to the fact of inefficient management.

Gupta and Sehgal (1998) evaluated execution of eighty mutual fund schemes extra than four years (1992-96). The examination tried the advice identifying with fund diversification, consistency of execution, parameter of execution and risk return relationship.The investigation observed the presence of deficient portfolio expansion and consistency in execution amongst the pattern schemes.

Treynor (1965) thinking about that estimating a portfolio's return comparative with itssystematic threat is increasingly reasonable. In his endeavour he had appraised the exhibition of mutual funds on a features line graphically. The extra efficient risk or unpredictability a reserve has the more volatile a fund become. By incorporating assortment of concepts; he created single line index, referred to as Treynor index.

Roshni Jayam's (2002) study added out that equities had a decent possibility of gratefulness in future. The professional used to be of the view that, traders ought to efficiently pass by judgment on their funding objective and threat appetite choosing plans, diverse fairness money have been commonly more impenetrable than others and index dollars have been the nice when market moves were not sure. The researcher

proposed Systematic Withdrawal Plan (SWP) with development alternative used to be step by step fabulous for financial experts needing conventional money inflows.

DubravoMihaljek (2008) targeted on specific the ramifications of coverage responses. He has recognized two sizeable issues: I) below estimation of the development in credit chance arising from quick savings development, ii) Risk of a sharp slowdown or inversion in bank- intermediated capital streams.

Fama (1972) created techniques to apprehend observed return due to the fact of the potential to get the fine securities at a given degree of threat from that of expectations of value traits in the market. He a multi-period mannequin allowing evaluation on a period-by-period and on a cumulative basis. He marked that, return on a portfolio establishes of return for security dedication and return for bearing risk. His commitments joined the ideas from present day speculations of portfolio willpower and market equilibrium with steadily conventional thoughts of appropriate portfolio management.

3.RESEARCH OBJECTIVES

3.1 Objectives

The basic objective of this study is to find out how the selected mutual funds scheme have performed in the past on the basis of their past Net Asset values(NAVs) and with the application of statistical tool on the same. This helps in getting the basic understanding of how to analyse the performance of the mutual funds as well how to measure the risk that they possess with them.

3.2 Methodology

A sample of 3 types of mutual funds from 3 different categories of mutual funds is being taken.
Types of categories taken are follows-

- Large cap funds
- Mid cap funds
- Small cap funds

An analysis has been performed by using the following statistical tools:-

Annualized Return: It indicates the over the different period of times.
Compound annual growth rate: It indicates annualized average rate of revenue.
Standard Deviation: It shows the historical volatility
Beta: It measures the volatility or it can also be said that it measures the systematic risk of portfolio or security.
Sharpe ratio:it basically is a measure of risk adjusted return.
Treynor ratio- It is the measure how much excess return is generated for taking each unit of extra risk

3.3 limitations:

- sample size is limited factor, only last three years of data has been taken.
- Past performance does not guarantee the same performance in future.
- The data taken in consideration is only of micro level not of macro level.

FOUR WAYS TO MEASURE MUTUAL FUND RISK

There are four main major indicators of investment risk that are applied to perform the analysis of stock, bonds and mutual funds portfolios. They are beta, standard ratio, treynor ratio and sharpe ratio. These statistical measures are the historical forecasters of investment risk/volatility and are all major components of modern portfolio theory.

The modern portfolio theory may be a standard financial benchmark and academic methodology used to assess the performance of equity, fixed-income and mutual fund investments by comparing them to benchmarks of the market. All of these risk measurement tools are mean to assist investors determine the risk-reward parameters of their investments.

4.1 Standard Deviation

Standard deviation helps to calculate or quantify the dispersion of data from its mean. In simple words, the more that data is spread apart, the greater the difference is from the norm. In finance, standard deviation is applied to the annual rate of return of an investment to find out its volatility (risk).

A volatile stock would always be a high standard deviation. With mutual funds, the standard deviation tells us what proportion the return on a fund is deviating from the expected returns supported its historical performance.

Risk measurement is a very big component of many sectors of the finance industry. While it plays a role in economics and accounting, the impact of accurate or faulty risk measurement is most clearly illustrated in the investment sector.

Knowing the probability that a security—whether you invest in stocks, options, or mutual funds—moves in an unexpected way can be the difference between a well-placed trade and bankruptcy. Traders and analysts use a number of metrics to assess the volatility and relative risk of potential investments, but one of the most common metric is standard deviation.

4.2 Beta

Beta, also referred as the 'beta coefficient,' helps to measure the volatility, or systematic risk, of a security or a portfolio as compared to the market as a whole. Beta is calculated using regression analysis, and you will consider it as the tendency of an investment's return to respond to swings in the market. By definition, the market features a beta of 1.0. Individual security and portfolio values are measured consistent with how they deviate from the market.

A beta of 1.0 indicates that the investment's price will move towards lock-step with the market. A beta of less than 1.0 indicates that the investment is going to be less volatile than the market, and, correspondingly, a beta of more than 1.0 indicates that the investment's price is going to be more volatile than the market. For instance, if a fund portfolio's beta is 1.2, it's theoretically 20% more volatile than the market. Materialistic investors looking to save capital will specialize on securities and fund portfolios with low betas, whereas those investors willing to take more risk in search of higher returns will look for high beta investments.

A beta coefficient can measure the volatility of an individual stock compared to the systematic risk of the entire market. In statistical terms, beta represents the slope of the line through a regression of data points. In finance, each of these data points represents an individual stock's returns against those of the market as a whole.

Beta effectively describes the activity of a security's returns as it responds to swings in the market. A security's beta is calculated by dividing the product of the covariance of the security's returns and the market's returns by the variance of the market's returns over a specified period.

4.3 Sharpe ratio

This ratio was developed by a Nobel Prize winner economist William Sharpe, this ratio measures risk adjusted performance. It is measured by subtracting the risk-free rate of return from the rate of return for an investment and dividing the result by the investment's standard deviation of its return.

This ratio tells investors whether an investment's returns are due to smart investment decisions or the results of excess risk. This measurement is extremely useful because although one portfolio or security can reap higher returns than its peers, it is only the best investment if those higher returns do not accompany an excessive amount of additional risk. The greater an investment's Sharpe ratio, the higher its risk-adjusted performance.

The Sharpe ratio compares the return of an investment with its risk. It's a mathematical expression of the insight that excess returns over a period of time may signify more volatility and risk, rather than investing skill.

Economist William F. Sharpe proposed the Sharpe ratio in 1966 as an outgrowth of his work on the capital asset pricing model (CAPM), calling it the reward-to-variability ratio.1 Sharpe won the Nobel Prize in economics for his work on CAPM in 1990.2

The Nobel Prize. "William F. Sharpe."

The Sharpe ratio's numerator is the difference over time between realized, or expected, returns and a benchmark such as the risk-free rate of return or the performance of a particular investment category. Its denominator is the standard deviation of returns over the same period of time, a measure of volatility and risk.

4.4 Treynor ratio

Treynor ratio is a risk-adjusted measurement of return based on systematic risk. It indicates how much return an investment, such as a portfolio of stocks, a mutual fund, or exchange-traded fund, earned for the amount of risk the investment assumed.

The Treynor ratio, also known as the reward-to-volatility ratio, is a performance metric for determining how much excess return was generated for each unit of risk taken on by a portfolio.

Excess return in this sense refers to the return earned above the return that could have been earned in a risk-free investment. Although there is no true risk-free investment, treasury bills are often used to represent the risk-free return in the Treynor ratio.

Risk in the Treynor ratio refers to systematic risk as measured by a portfolio's beta. Beta measures the tendency of a portfolio's return to change in response to changes in return for the overall market.

4.5 Jension's Alpha

The Jensen's measure, or Jensen's alpha, is a risk-adjusted performance measure that represents the average return on a portfolio or investment, above or below that predicted by the capital asset pricing model (CAPM), given the portfolio's or investment's beta and the average market return.

- The Jensen's measure is the difference in how much a person returns vs. the overall market.
- Jensen's measure is commonly referred to as alpha. When a manager outperforms the market concurrent to risk, they have "delivered alpha" to their clients.
- The measure accounts for the risk-free rate of return for the time period.

5. TYPES OF FUNDS TAKEN FOR ANALYSIS

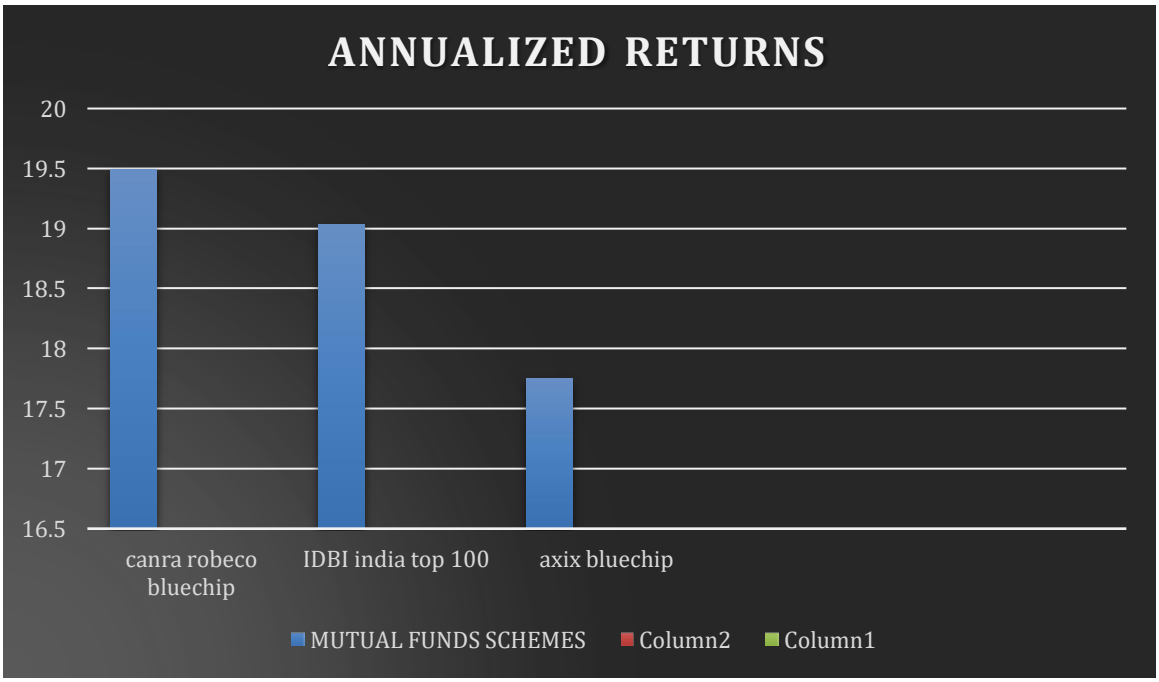
5.1 Large-Cap Funds

These are those types of funds which invest their money in Large Blue chip Companies, having with a market capitalization of more than ₹ 1000 crores. Investing in large cap fund may be a low risk return preposition because such funds are widely research and information available.

One among the advantage of large cap funds are that they are less volatile than mid cap and small cap funds because investors are investing in these types of funds for a long term prospective and help to stay these fund away from the volatility of the markets.

Top performer under this category-

1) **Canara RobecoBluechip Equity Fund Direct-Growth-** Its compounded annualized returns of last 3 year is 19.49 %
2) **IDBI India Top 100 Equity Fund Direct-Growth-** its compounded annualized returns for last year is 19.03%
3) **Axis Bluechip Fund Direct Plan-Growth**-its compounded annualized returns for the last 3 year is 17.75%

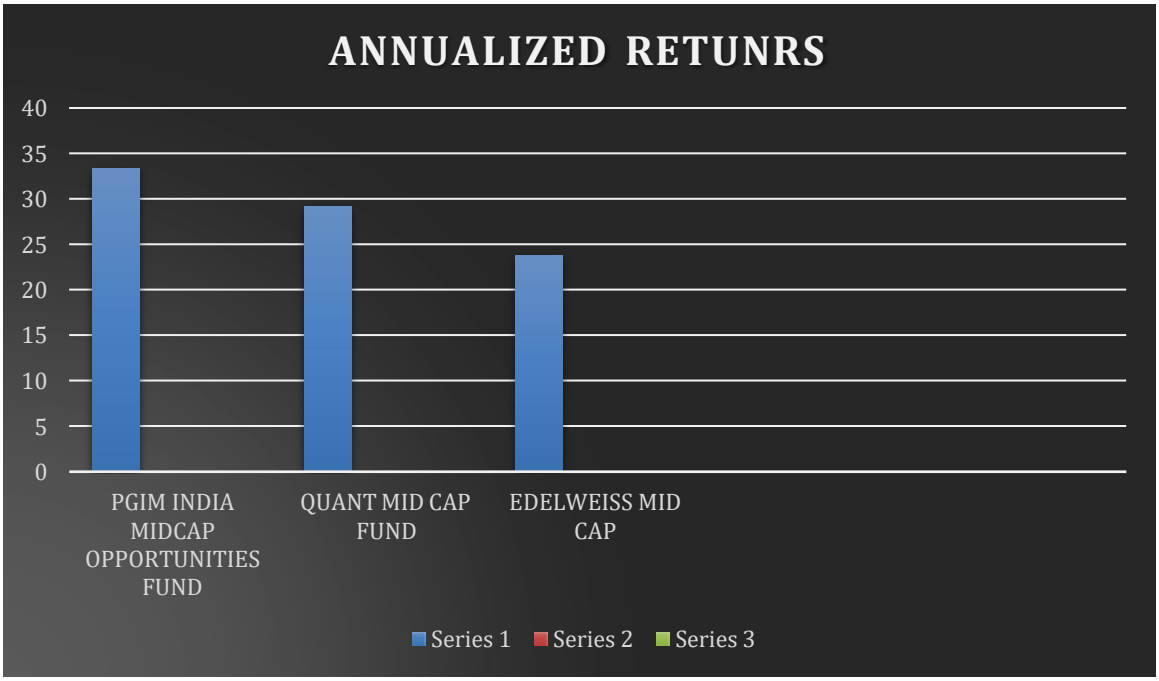


5.2 Mid-caps funds:

This type of funds invest their money in medium sizes companies. Companies having market capitalization between ₹ 500 crores to ₹ 1000 crores are come under the mid-cap companies. Mid-cap funds are very volatile and tend to fall if the market is fall in bad times. But this provides good return in short term.

Top performer under this category-

1) PGIM India Midcap Opportunities Fund Direct-Growth-its compounded annualized returns for the last year 3 year is 33.34%
2) Quant Mid Cap Fund Direct-Growth-its compounded annualized returns for the last year 3 year is 29.17%
3) Edelweiss Mid Cap Direct Plan-Growth-its compounded annualized returns for the last 3 year is 23.78%

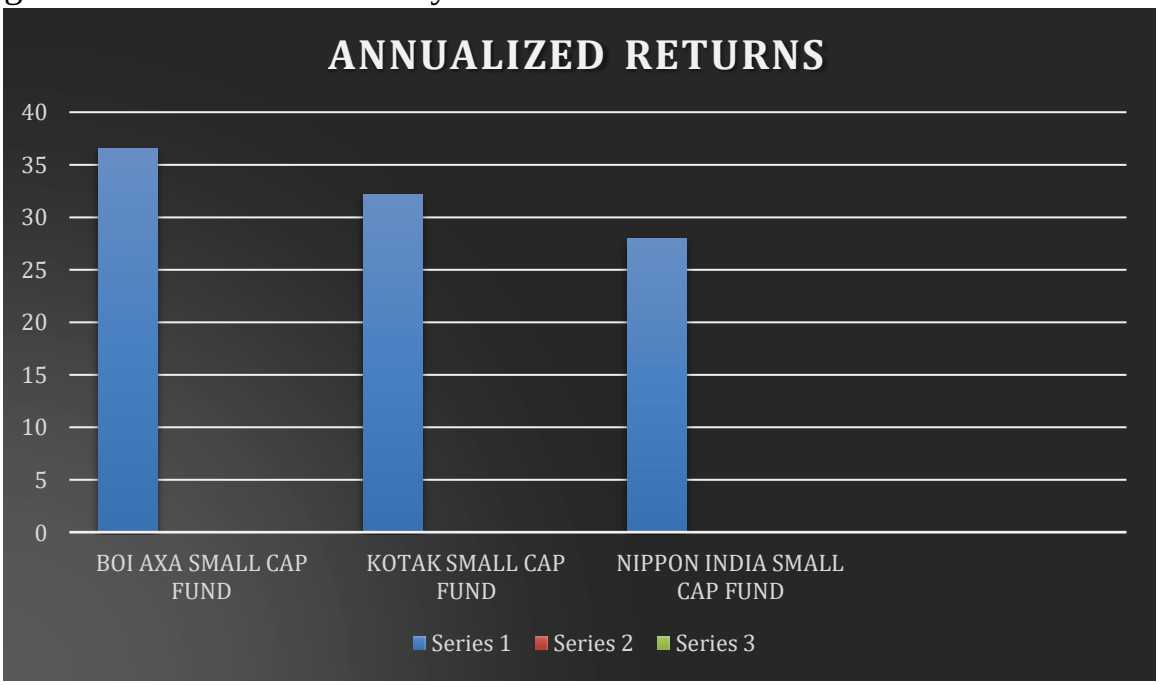


5.3 Small-cap funds:

These types of funds are investing their money in small sizes companies. Companies having market capitalization up to ₹ 500 crores come under the categories of small-cap companies. Small-cap funds are more flexible than Mid-cap & Large-cap Funds. Its risk-return matrix is very high.

Top performer under this category-

1) **Boi AXA small cap fund-** its compounded annualized returns for the last 3 year is 36.49%
2) **kotak small cap fund - Growth-**its compounded annualized growth returns for the last 3 year is 32.11%
3) **Nippon India small cap - Direct Plan - Growth-** its compounded annualized growth returns for the last 3 year is 27.94 %



6.STATISTICAL TOOLS

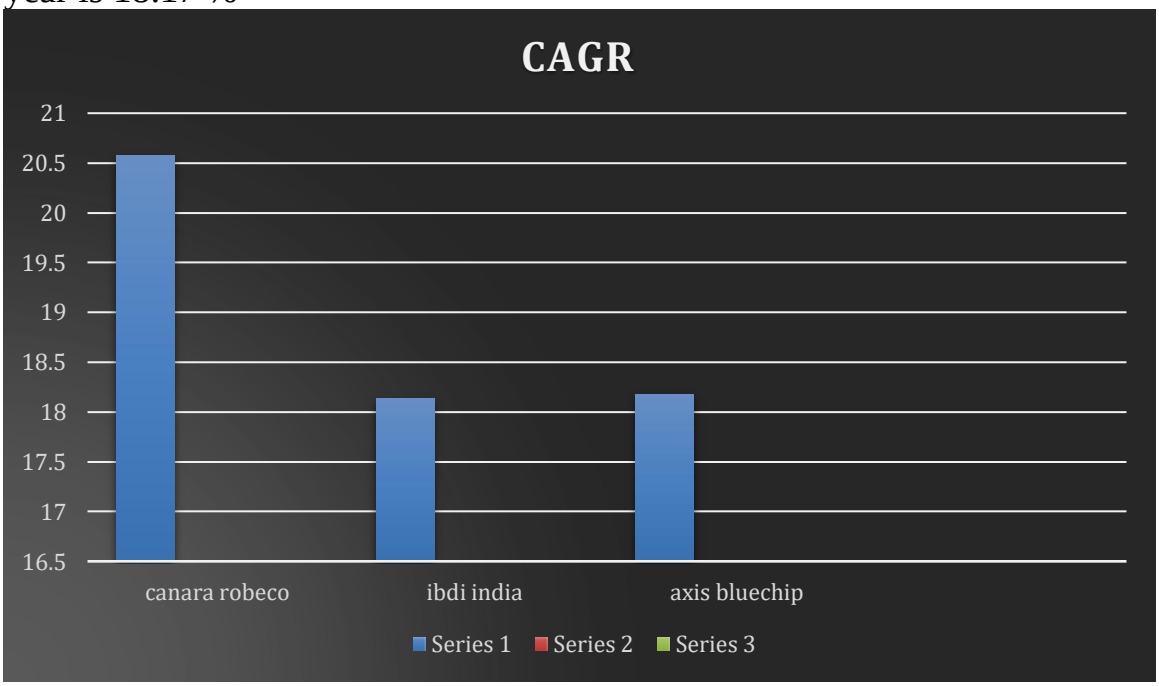
6.1 LARGE CAP MUTUAL FUNDS

6.1.1 COMPOUNDED ANNUAL GROWTH RATE OF LARGE CAP MUTUAL FUNDS

a) Canara RobecoBluechip Equity Fund - Direct Plan – Growth- its cagr based on the nav of last 3 year is 20.57%

b) Canara RobecoBluechip Equity Fund - Direct Plan – Growth- its cagr based on the nav of last 3 year is 18.13%

c) Axis Bluechip Fund - Direct Plan – Growth-its cagr based on the nav of last three year is 18.17 %



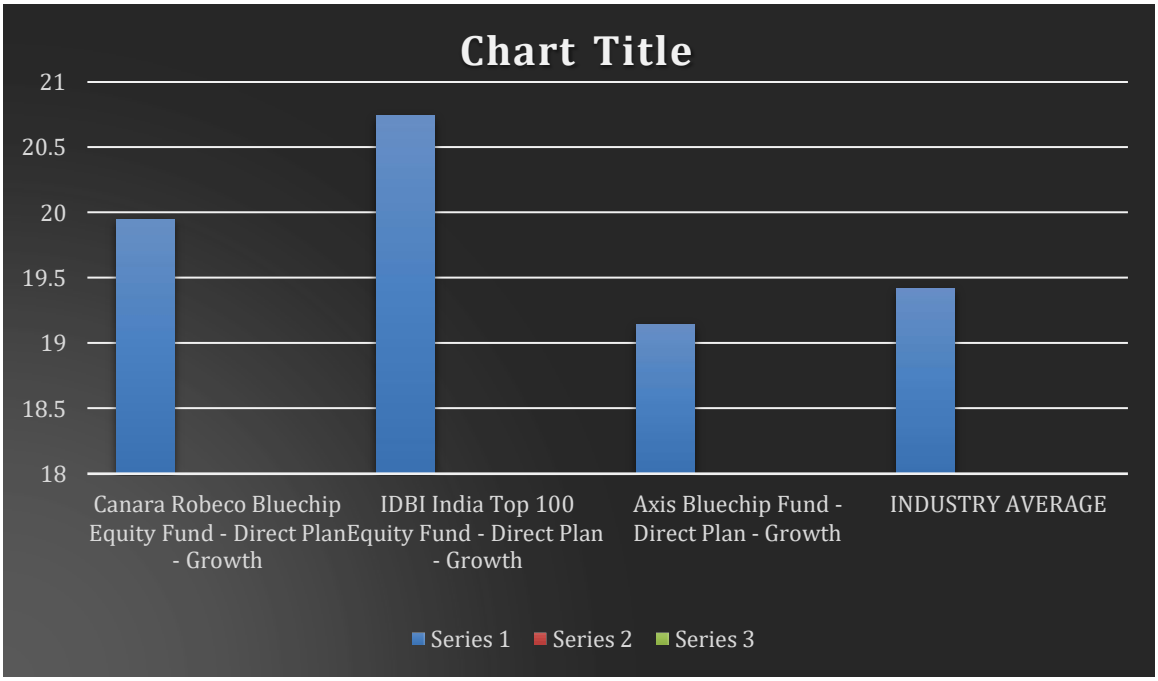
6.1.2 STANDARD DEVIATION OF LARGE CAP MUTUAL FUNDS

a) Canara RobecoBluechip Equity Fund - Direct Plan – Growth- its standard deviation for the last year 3 years is 19.95.

b) idbiindia top 100 equity fund-direct-growthits standard deviation for the last years is 20.74

c) Axis Bluechip Fund - Direct Plan – Growth- its standard deviation for the last 3 year is 19.14

d)The average standard deviation for these category of mutual funds is 19.42



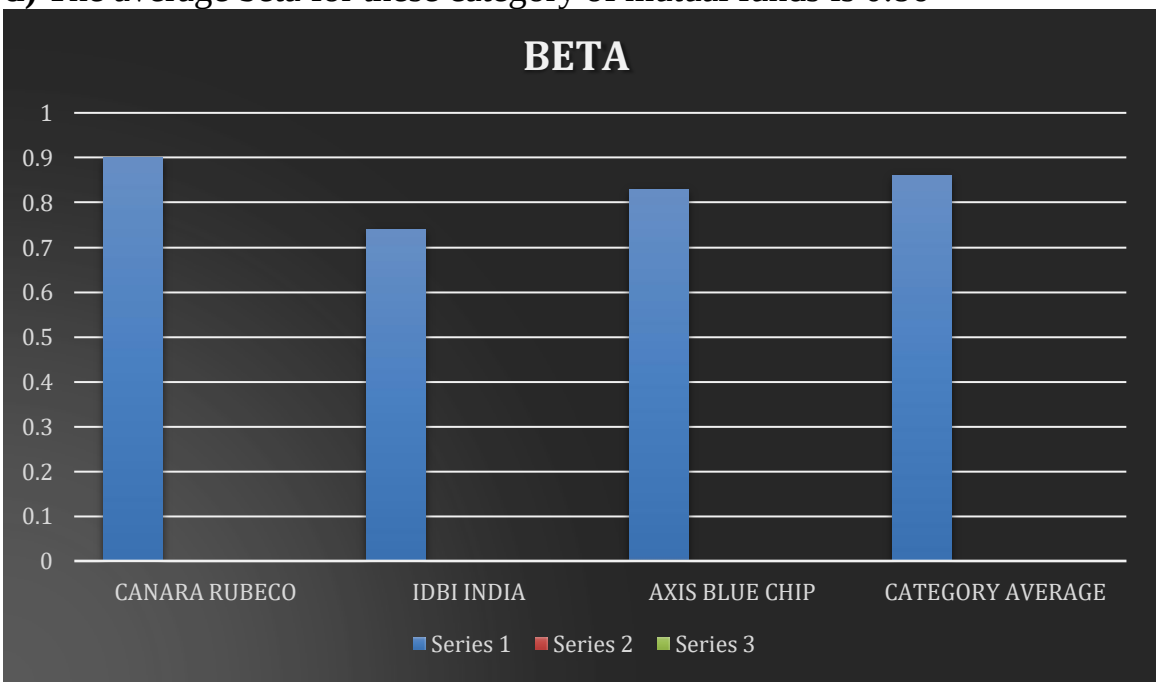
6.1.3 BETAOF LARGE CAP MUTUAL FUNDS

a)canararobecobluechip equity funds-direct plan-growth-its beta for the last 3 year is 0.9

b)idbiindia top 100 equity fund-direct-growth- its beta for the last 3 year is 0.94

c)axis bluechip fund direct plan-growth- its beta for the last 3 year is 0.83

d) The average beta for these category of mutual funds is 0.86



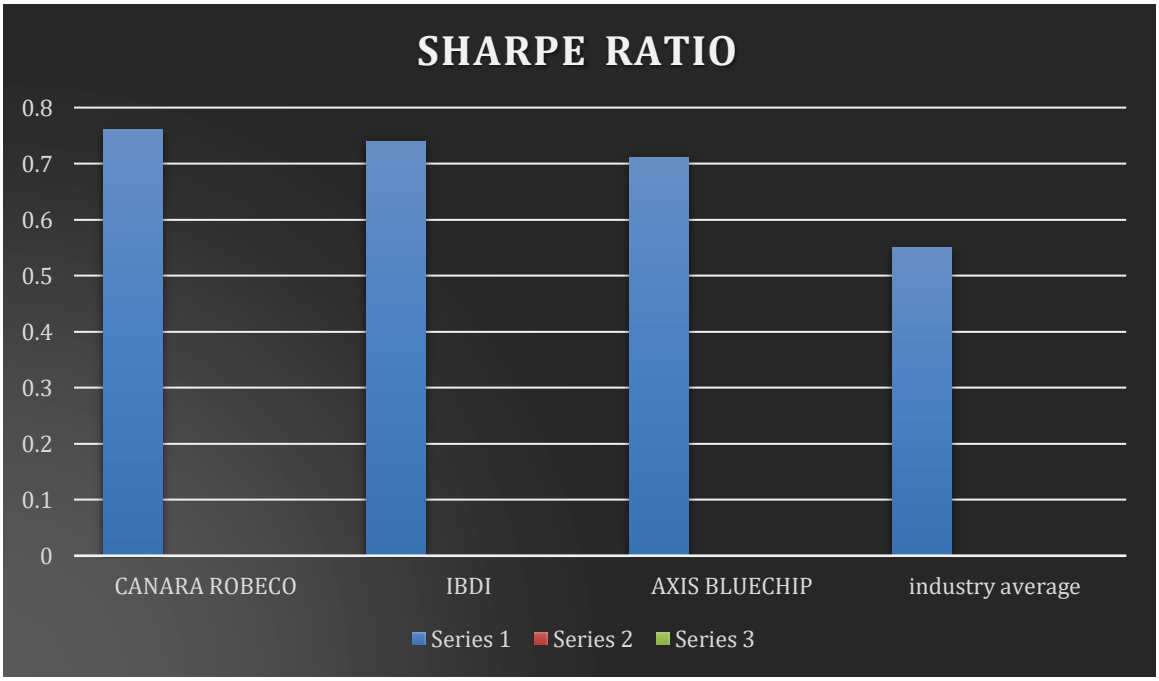
6.1.4 SHARPE RATIO

a) Canara RobecoBluechip Equity Fund - Direct Plan – Growth- its sharpe ratio for the last 3 year is 0.76.

b)Idbiindia top 100 equity fund-direct-growth- its sharpe ratio for the last 3 year is 0.74

c)axis bluechip fund direct plan-growth-its sharpe ratio for the last 3 year is 0.71

d)The average sharpe ratio for last 3 year for these category of mutual funds is 0.55



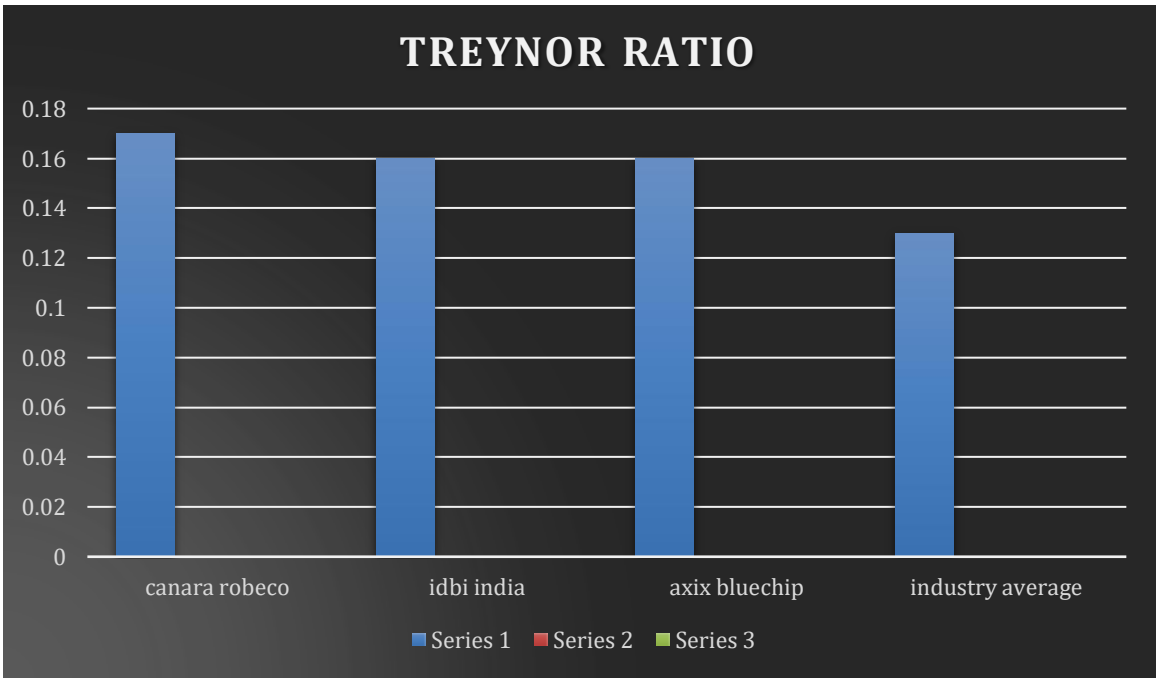
6.1.5 TREYNOR RATIO OF LARGE CAP MUTUAL FUNDS

a) canara-robeco-bluechip-equity-fund-direct-plan-growth- its treynor ratio for the last 3 year is 0.17.

b) Idbi-india-top-100-equity-fund-direct-plan-growth- its treynor ratio for the last 3 year is 0.16

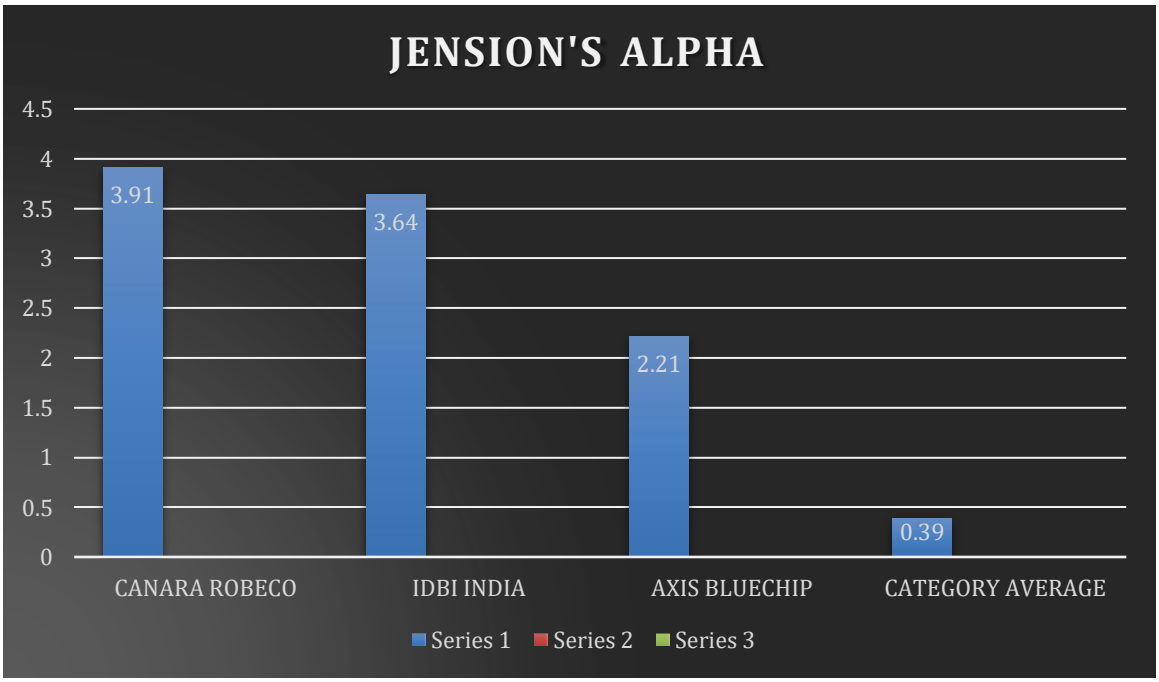
c) axis-bluechip-fund-direct-plan-growth-its treynor ratio for the last 3 year is 0.16

d) The category average treynor ratio for the last 3 year is 0.13



6.1.6 JENSION'S ALPHA RATIO OF LARGE CAP MUTUAL FUNDS

a) **canara-robeco-bluechip-equity-fund-direct-plan-growth-** its jension's alpha ratio for the last 3 year is 3.91
b) **idbi-india-top-100-equity-fund-direct-plan-growth-**its jension's alpha ratio for the last 3 year is 3.64
c) **axis-bluechip-fund-direct-plan-growth-**its jension's alpha ratio for the last 3 year is 2.21
d) The category average ratio for the last year is 0.39

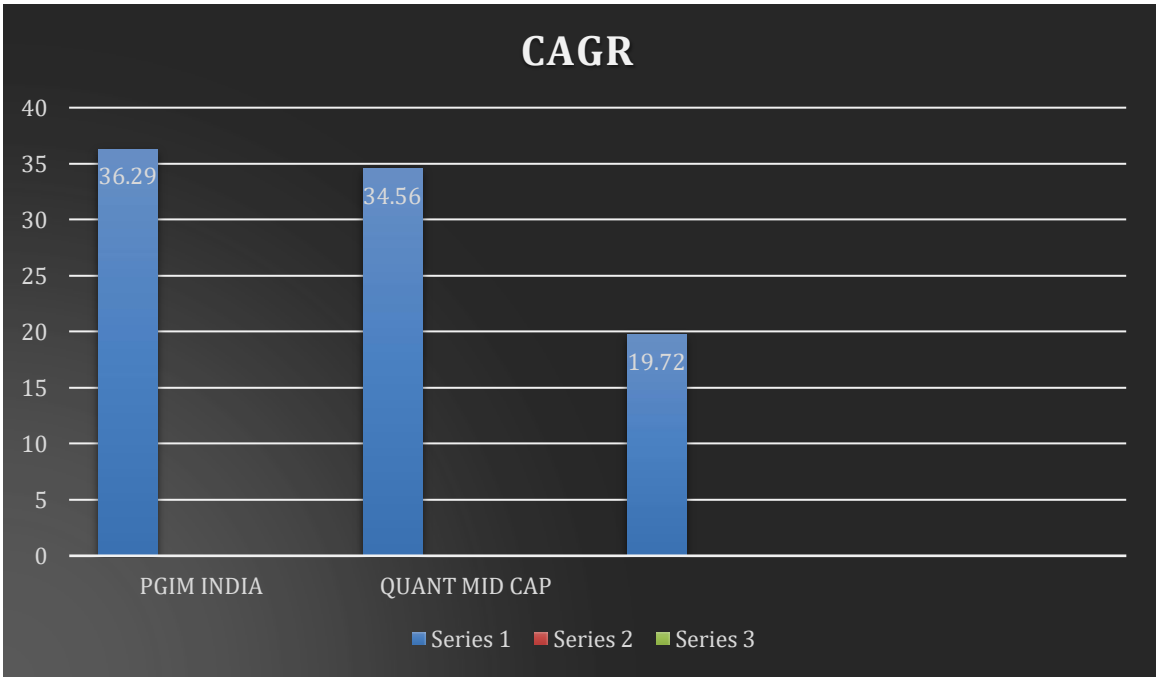


6.2.1 COMPOUNDED ANNUAL GROWTH RATE OF MID CAP MUTUAL FUNDS(CAGR)

a) pgim-india-midcap-opportunities-fund-direct-plan-growth-its CAGR based on the nav of last 3 year is 36.29%

b) quant-mid-cap-fund-direct-plan-growth-its CAGR based on the nav of the last 3 year is 34.56 %

c) edelweiss-mid-cap-fund-direct-plan-growth-its CAGR based on the nav of the last 3 year is 19.72 %



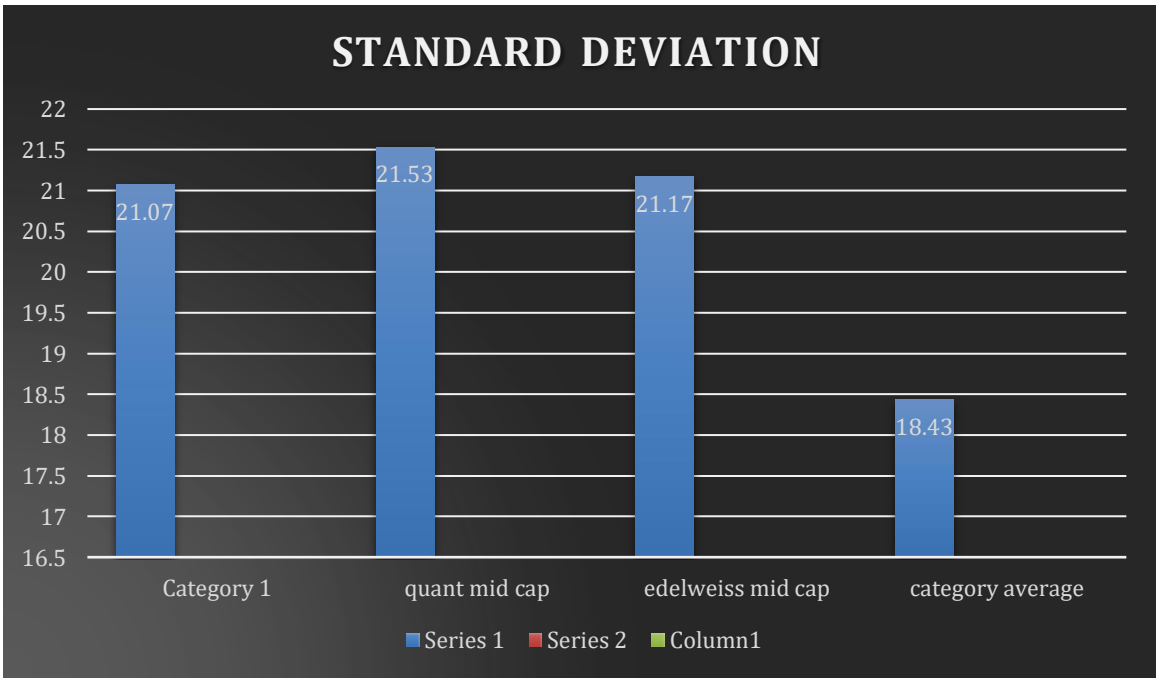
6.2.2 STANDARD DEVIATION OF MID CAP MUTUAL FUNDS

a) pgim-india-midcap-opportunities-fund-direct-plan-growth- its standard deviation for the last 3 years is 21.07.

b) quant-mid-cap-fund-direct-plan-growth-its standard deviation for the last 3 years is 21.53

c) edelweiss-mid-cap-fund-direct-plan-growth-its standard deviation for the last 3 years is 21.17

d) The average beta for these kind of mutual funds is 18.43



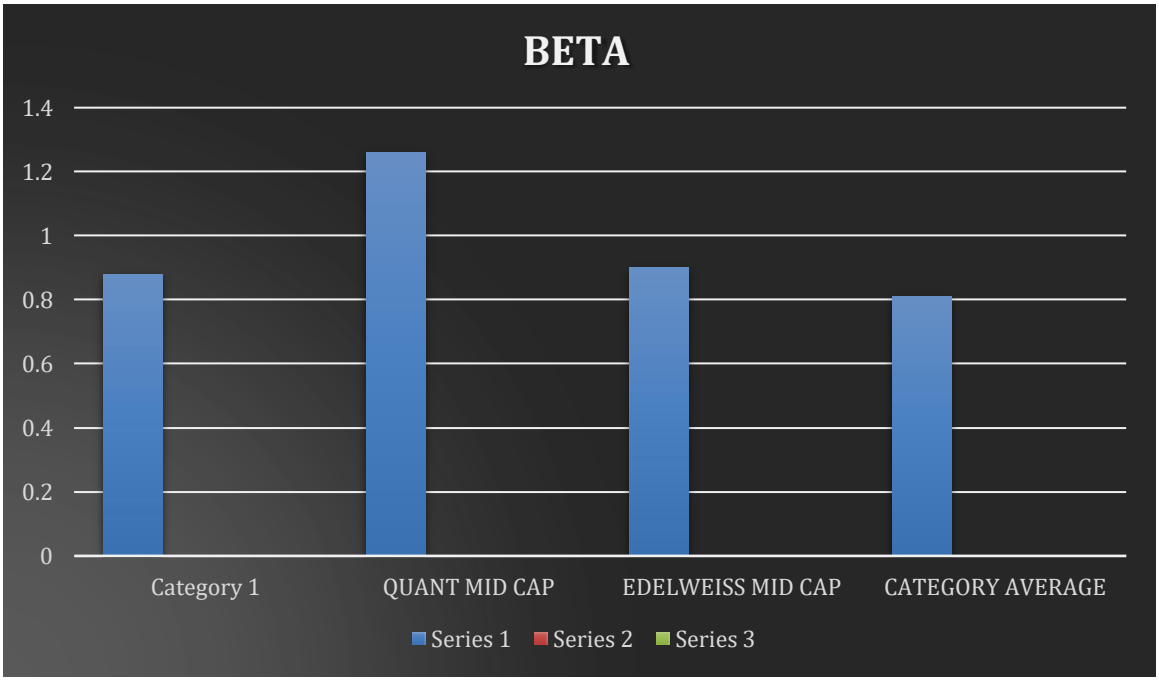
6.2.3 BETA OF MID CAP MUTUAL FUNDS

a) pgim-india-midcap-opportunities-fund-direct-plan-growth- its beta for the last 3 year is 0.88.

b) quant-mid-cap-fund-direct-plan-growth- its beta for the last 3 year is 1.26

c) edelweiss-mid-cap-fund-direct-plan-growth- its beta for the last 3 year is 0.9

d) The average beta for these category for these mutual fund is 0.81



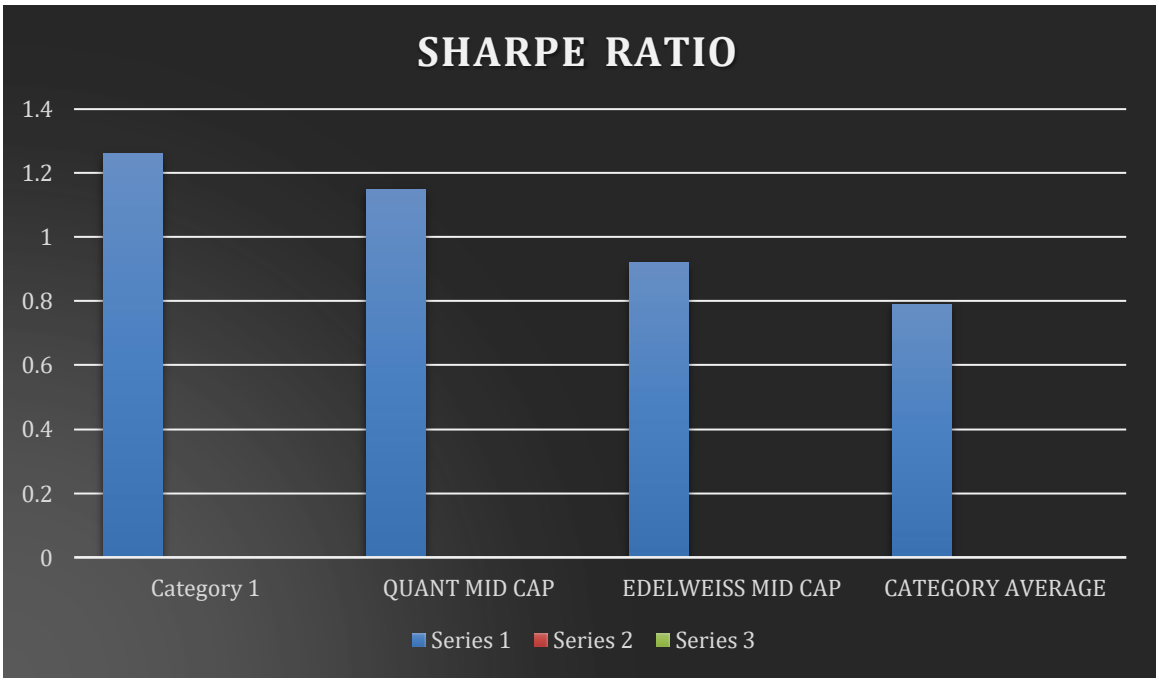
6.2.4 SHARPE RATIO OF MID CAP MUTUAL FUNDS-

a) pgim-india-midcap-opportunities-fund-direct-plan-growth- its sharpe ratio for the last 3 year is 1.26

b)quant-mid-cap-fund-direct-plan-growth- its sharpe ratio for the last 3 year is 1.15

c)edelweiss-mid-cap-fund-direct-plan-growth- its sharpe ratio for the last 3 year is 0.92

d) The average sharpe ratio for these category of mutual funds is 0.79



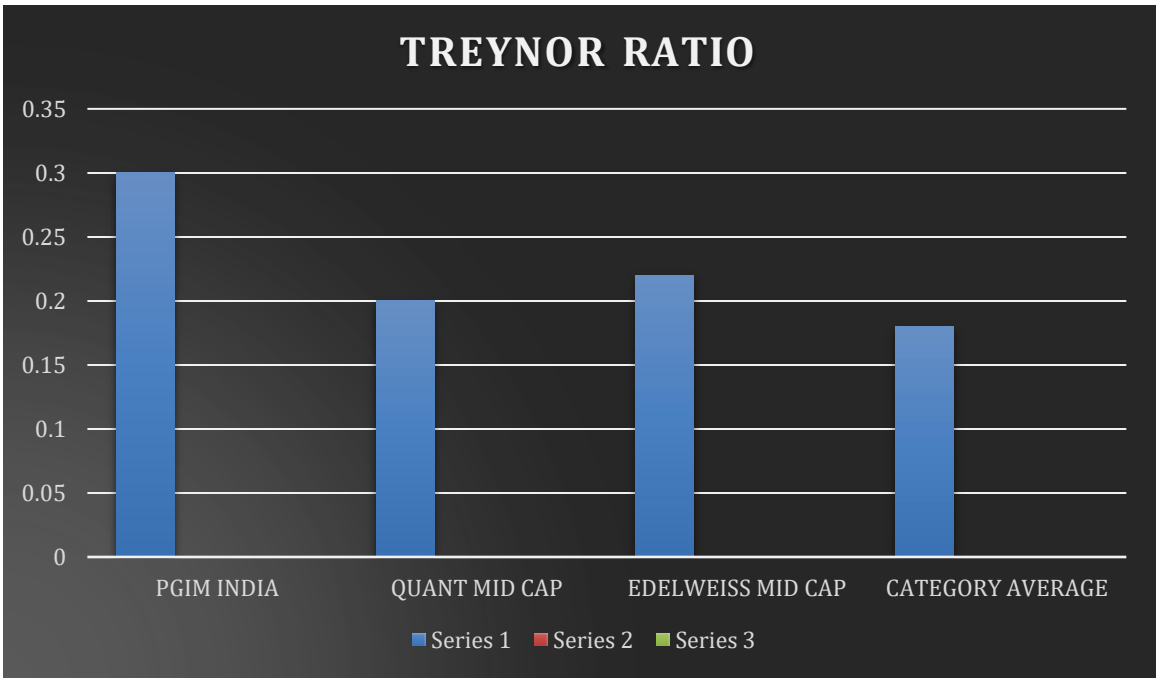
6.2.5 TREYNOR RATIO OF MID CAP MUTUAL FUNDS

a) pgim-india-midcap-opportunities-fund-direct-plan-growth- its treynor ratio for the last 3 year is 0.3

b) quant-mid-cap-fund-direct-plan-growth- its treynor ratio for the last 3 year is 0.2

c) edelweiss-mid-cap-fund-direct-plan-growth- its treynor ratio for the last 3 year is 0.22

d) The average treynor ratio for these category of mutual fund is 0.18



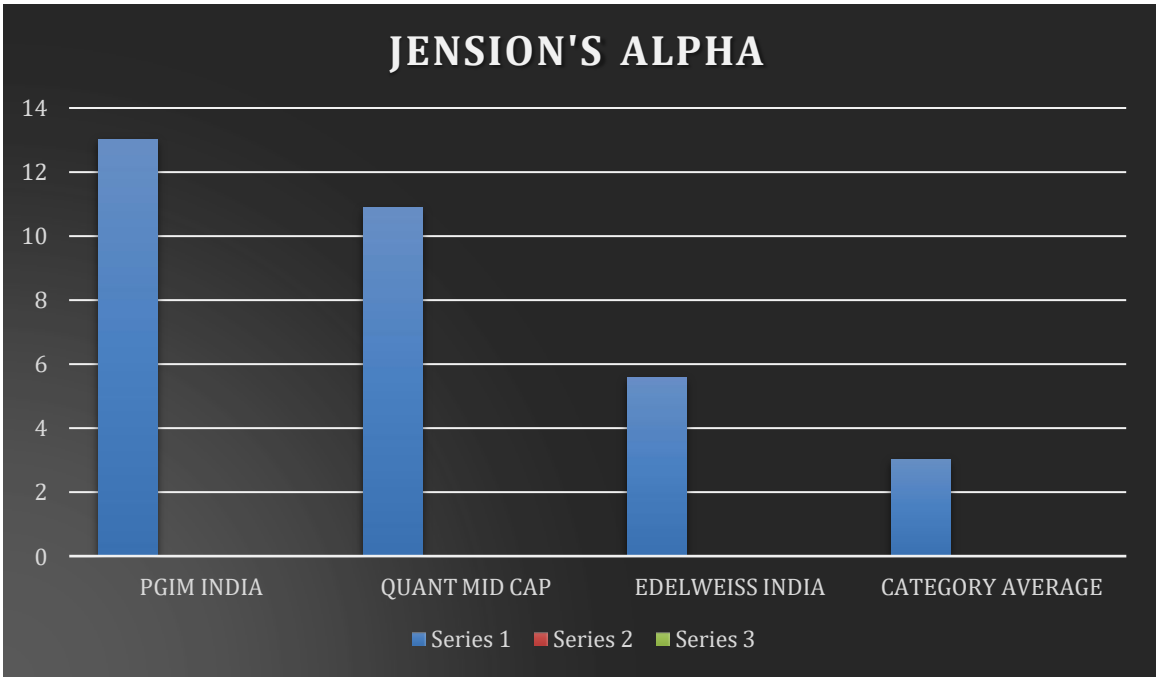
6.2.6 JENSION'S ALPHA FOR MID CAP MUTUAL FUNDS

a) **pgim-india-midcap-opportunities-fund-direct-plan-growth-** its jension's alpha based on the daily returns for the last three year is 13.03

b) **quant-mid-cap-fund-direct-plan-growth-** its jension's alpha based on daily returns for the last three year is 10.88

c) **edelweiss-mid-cap-fund-direct-plan-growth-** its jension's alpha based on daily returns for the last three year is 5.58

d) The average jension's alpha for these category of mutual fund is 3.02

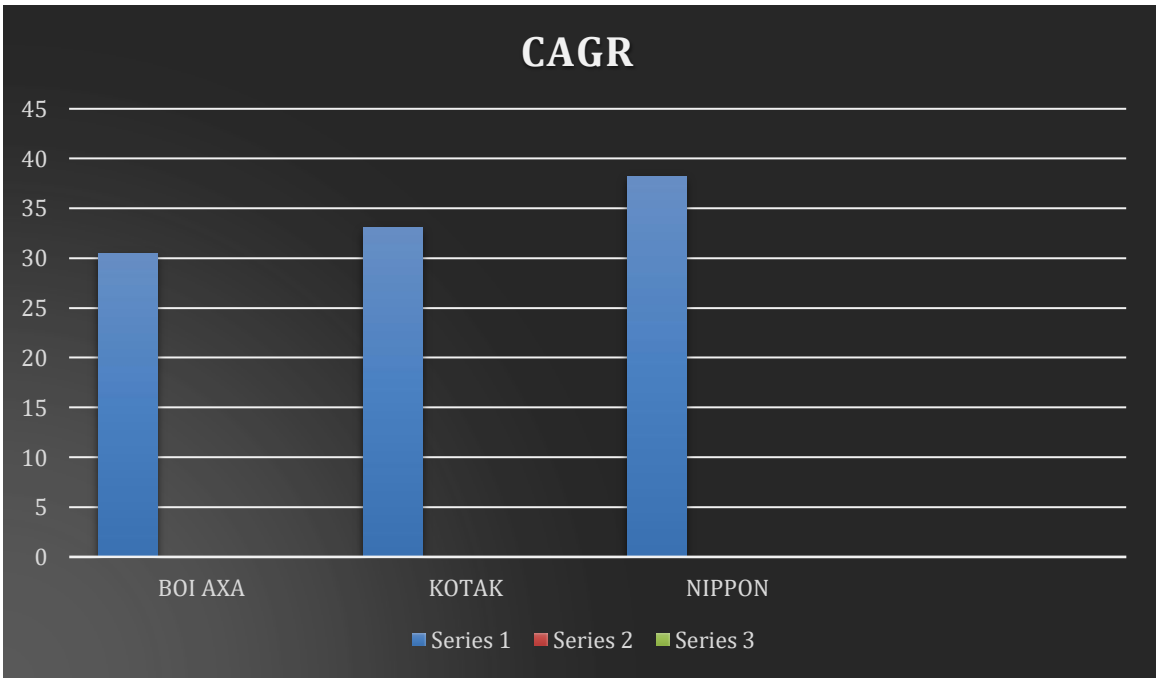


6.3.1 COMPOUNDED ANNUAL GROWTH RATE FOR SMALL CAP MUTUAL FUNDS-

a) boi-axa-small-cap-fund-direct-plan-growth- its CAGR based on the nav of last 3 year is 30.44%

b) kotak-small-cap-fund-regular-plan- its CAGR based on the nav of last 3 year is 33.04%

c) nippon-india-small-cap-fund-growth- its CAGR based on the nav of last 3 year is 38.23%



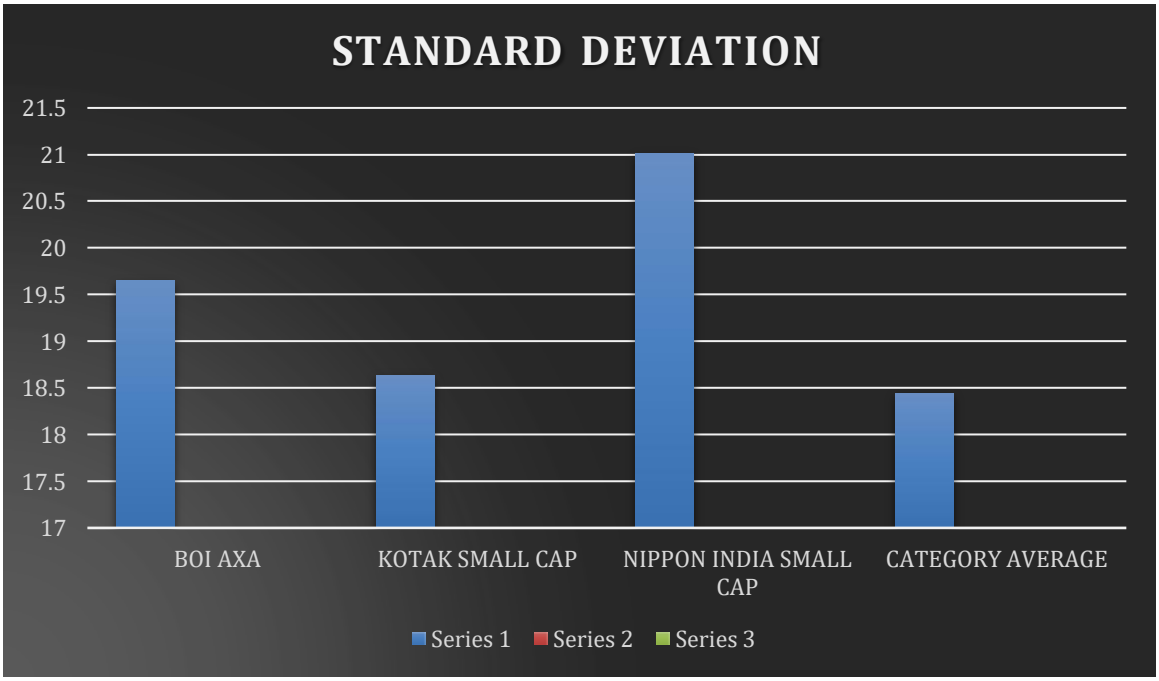
6.3.2 STANDARD DEVIATION FOR SMALL CAP MUTUAL FUNDS-

a) boi-axa-small-cap-fund-direct-plan-growth- its standard deviation based on the daily returns of the last three year is 19.65

b) kotak-small-cap-fund-regular-plan- its standard deviation based on the daily returns of the last 3 year is 18.63

c) nippon-india-small-cap-fund-growth- its standard deviation based on the daily returns of the last 3 year is 21.01

d) The average standard deviation for these kind of mutual funds is 18.44



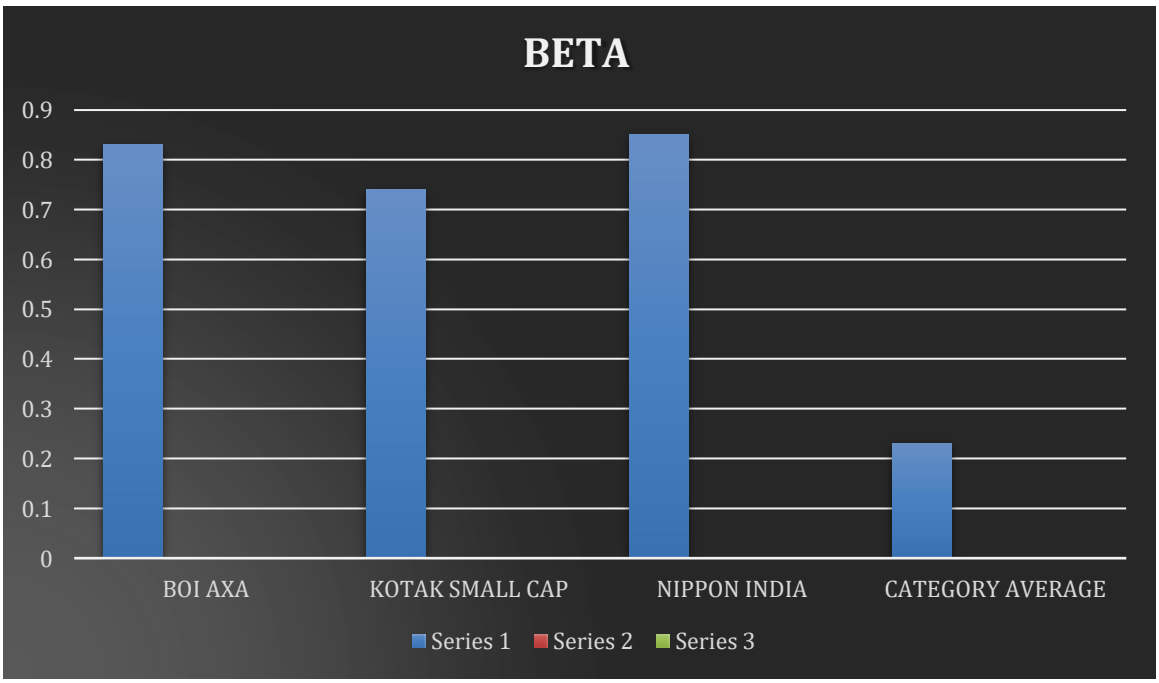
6.3.3 BETA OF SMALL CAP MUTUAL FUNDS

a) boi-axa-small-cap-fund-direct-plan-growth- its beta based on the daily returns of the last 3 year is 0.83

b) kotak-small-cap-fund-regular-plan- its beta based on the daily returns of the last 3 year is 0.74

c) nippon-india-small-cap-fund-growth- its beta based on the daily returns of the last 3 year is 0.76

d) the average beta of these category of mutual funds is 0.76



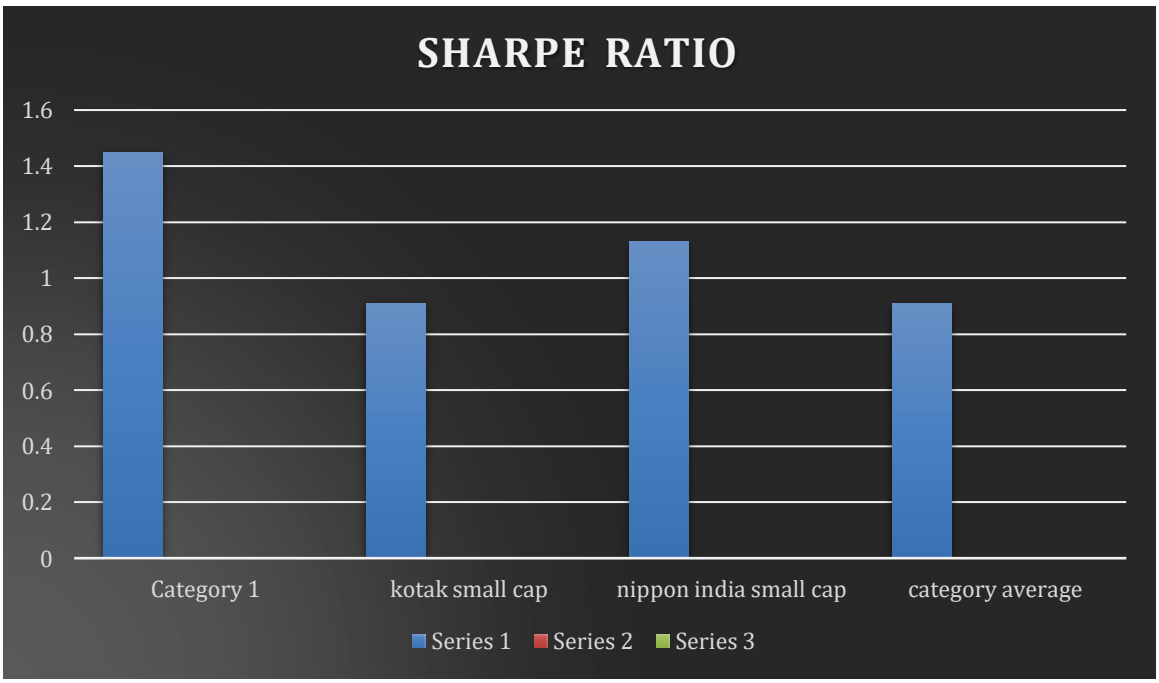
6.3.4 SHARPE RATIO OF SMALL CAP MUTUAL FUNDS

a) boi-axa-small-cap-fund-direct-plan-growth- its shrape ratio based on the daily returns of the last 3 year is is 1.45

b) kotak-small-cap-fund-regular-plan- its sharpe ratio based on the daily returns of the last 3 year is 0.91

c) nippon-india-small-cap-fund-growth- its sharpe ratio based on the daily returns of the last 3 year is 1.13

d) The average sharpe ratio for these category of mutual fund is 0.91



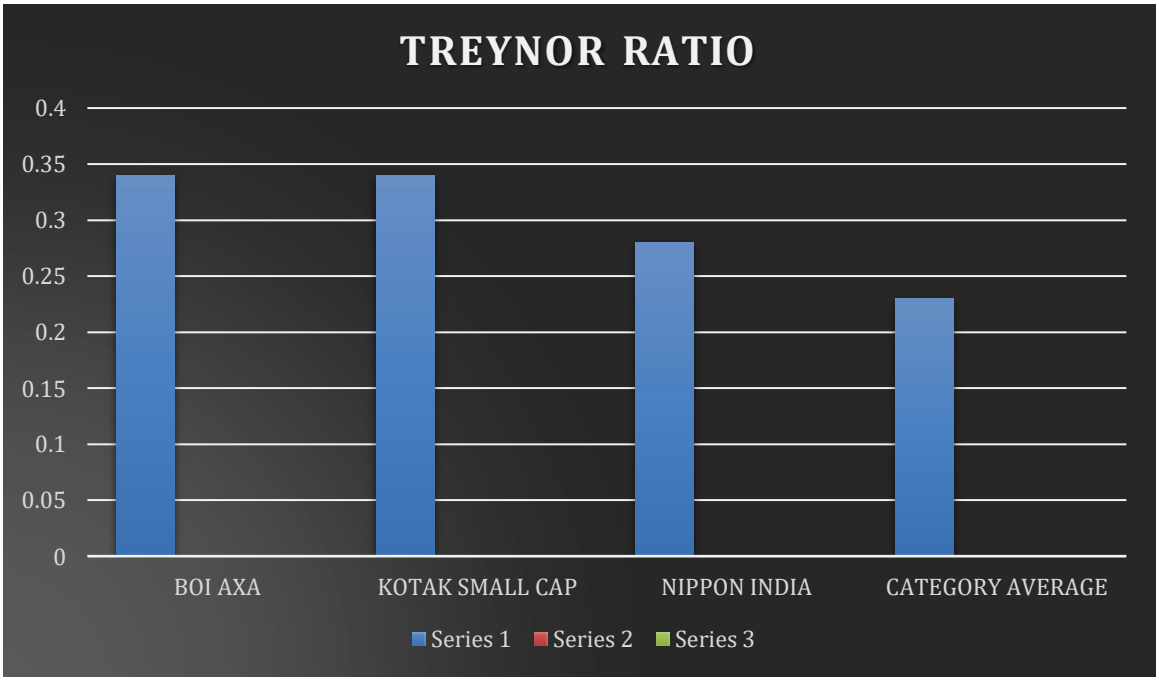
6.3.5 TREYNOR RATIO OF SMALL CAP MUTUAL FUNDS-

a)boi-axa-small-cap-fund-direct-plan-growth- its treynor ratio based on daily return of last 3 year is 0.34

b) kotak-small-cap-fund-regular-plan- its treynor ratio based on daily return of last 3 year is 0.34

c) nippon-india-small-cap-fund-growth- its treynor ratio based on daily return of last 3 year is 0.28

d) The average treynor ratio for these category of mutual fund is 0.23



CONCLUSION

The results showed that the returns of large cap mutual fund has been around 17 to 20% from the last 3 years. The above average beta and standard deviation of large cap mutual fund shows that they have high volatility and when it comes to the risk adjusted returns, the large cap mutual funds have show much better risk adjusted returns. The result shows that it is much better to invest in large cap mutual funds for a longer period of time.

In the mid cap mutual there is no define pattern that is being shown by the mutual funds. Each of the mutual fund has shown different volatility and risk adjusted returns, although the results have shown that even in mid cap mutual funds it is much more beneficial to invest for a longer period of time because there the average cagr for mid cap mutual funds is coming around 29.66 which would only provide profit to the investor if the money is invested for a longer period of time.

In small cap mutual funds the risk volatility is low and they have shown a much better risk adjusted returns. The annualized returns of small cap mutual funds have shown that the money in these funds can be invested for a shorter period of time.

At last it has been find out that the unawareness of the investment factors of the Mutual Fund in the different time perspective the investor can invest for wrong period and the opportunity to earn return cannot be achieved. This research is vital to help those investors who want to invest in mutual funds rather than directly in instruments i.e. equity shares and debentures.

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