

## **STUDY OF RISK AND RETURN OF MUTUAL FUNDS**

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## 1. INTRODUCTION

There are many avenues in monetary market. An Investor can invest in Bank deposit, corporate debenture and bonds which has law hazard with low return. An investor may also additionally Investor in stock of enterprise which has excessive risk with high return. Investors look for safer investment avenues and favor to maximize their returns in according to their risk. Whereas some people also tries to make investments cash as early as feasible so that such invested amount would grow into a huge sum.

Selecting an accurate investing alternative is very fundamental because a stability is required to be maintained between the risk that is there in an investment and returns concerned in investment. Return is inspiring force and principal reward in the funding process. One of the essential, cause due to which one wants to invest accurately is to meet the cost of inflation. Inflation is the percentage at which the cost of residing increases at that time.

A mutual fund is an expertly overseen business enterprise of collective investments that gathers or collects money from several buyers and invests it in stocks, bonds, monetary money market instruments, as nicely as distinct securities. Mutual money is rising as beneficial instrument for a large scope of speculators, from human beings searching to put some safe amount aside for retirement to delicate socialites centered on defending their assets and to business people who wants to make wealth. Mutual Fund is a believe that pools the reserve cash of more than a few consumers who share a normal financial objective.

Anyone with an investible overflow of as little as two or three thousand rupees can put sources into mutual fund devices as indicated via capacity of their expressed goal and strategy.

Mutual Fund Company swimming pools money from a gathering of humans with everyday speculation aims to purchase securities, for example, stocks, bonds, cash market instruments, a mixture of these instruments, or considerably unique property so as to collect the reward of enhancement and expertly oversaw container of protections at a fairly ease. In a mutual fund, the fund manager, who is likewise amazing as the portfolio manager, trades the cash underlying securities, acknowledging capital profit factors or losses, and gathers the dividend or interest income.

The profits that are earned are passed to the investors. The charge of a share of the mutual fund, acknowledged as the net asset value (NAV), which is decided on day through day base, in terms of absolute estimation by subtracting any possible liabilities from the current value of mutual fund's assets and once this is done then the value is divided by the total number of units outstanding.

## 2. REVIEW LITERATURE

1. 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.

## **4. FOUR WAYS TO MEASURE MUTUAL FUND RISK**

There are 4 fundamental warning signs that can be used to assess the risk that an investment possess. These fundamental indicators are applied to do an analysis and evaluation of stocks, bonds, different mutual funds and portfolios. They are beta, popular ratio, treynor ratio and sharpe ratio. These statistical measures are the historical forecasters of investment risk/volatility and are all main factors of modern portfolio theory. The modern portfolio theory may additionally be a standard financial benchmark and academic methodology used to assess the overall performance of equity, fixed-income and mutual fund investments by way of comparing them to benchmarks of the market. All of these risk dimension tools are mean to help 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.

#### **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.

#### **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.

#### 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.

#### 4.5 Jensen'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

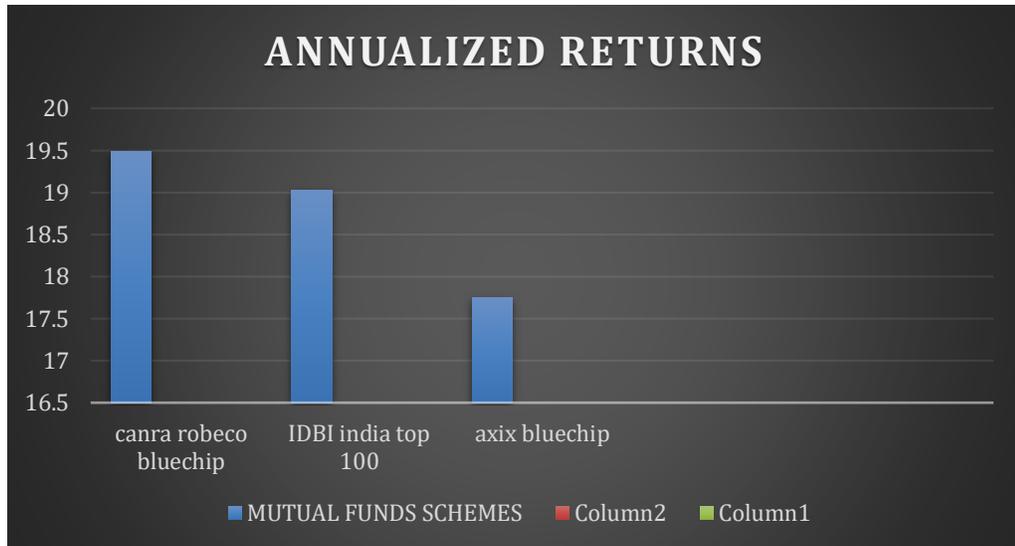
### 5. TYPES OF FUNDS TAKEN FOR ANALYSIS

#### 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 proposition because such funds are widely researched and information available. One among the advantages 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 funds away from the volatility of the markets.

#### Top performer under this category-

- 1) Canara Robeco Bluechip 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%

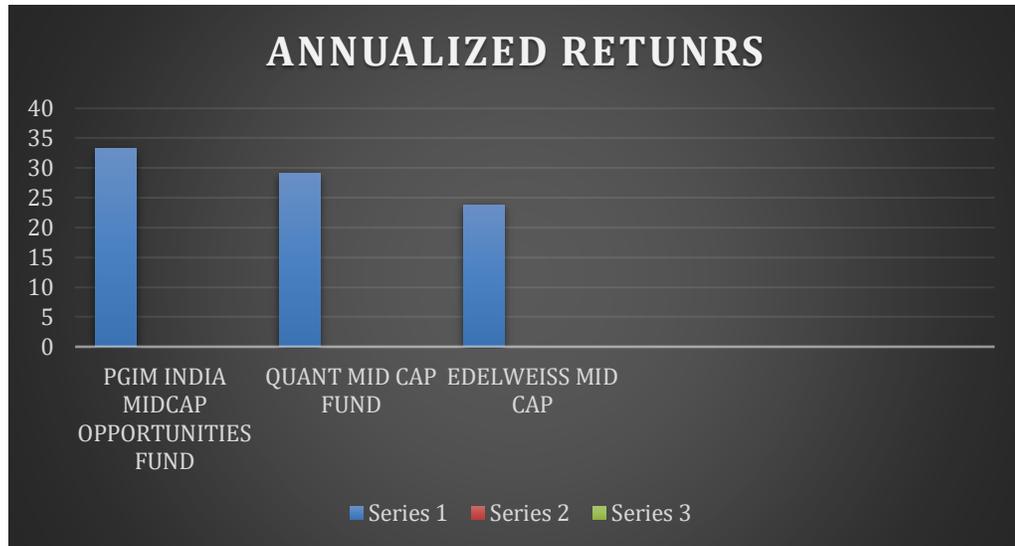


### 5.2 Mid-caps funds:

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%

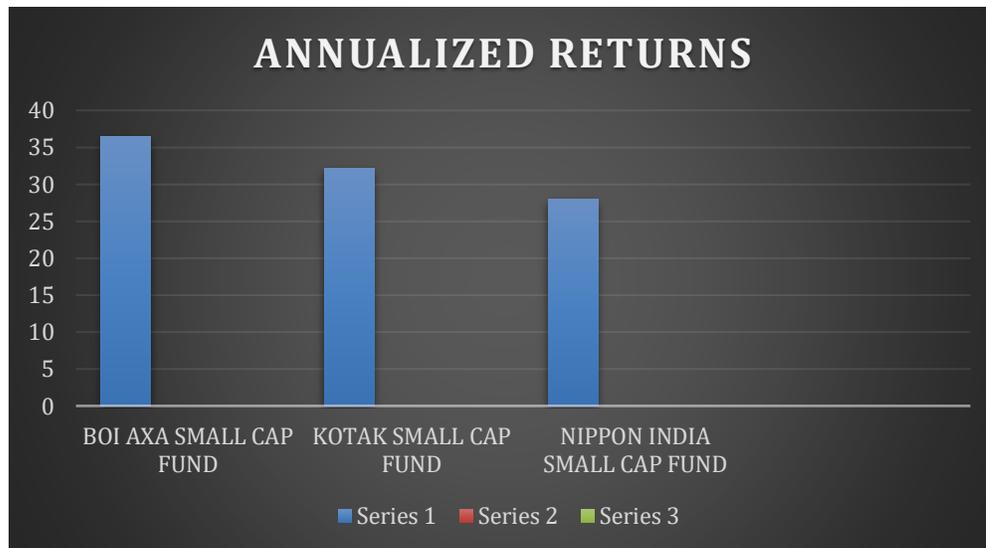


### 5.3 Small-cap funds:

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 %

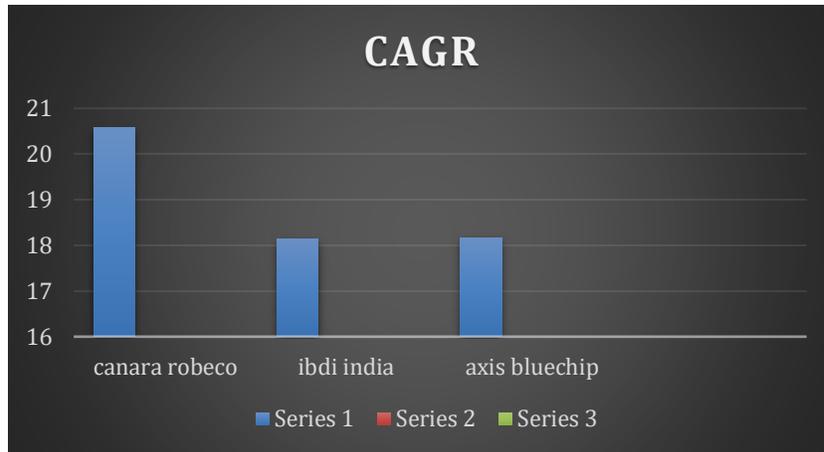


## 6. STATISTICAL TOOLS

### 6.1 Large Cap Mutual Funds

#### 6.1.1 Compounded annual growth rate of Large Cap Mutual Funds

- Canara RobecoBluechip Equity Fund - Direct Plan – Growth- Its CAGR based on the NAV of last 3 year is 20.57%
- Canara RobecoBluechip Equity Fund - Direct Plan – Growth- Its CAGR based on the NAV of last 3 year is 18.13%
- 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) IDBI India top 100 equity fund-direct-growth- Its 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

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



### 6.1.3 Beta of Large Cap Mutual Funds

- a) Canara Robeco Bluechip Equity Funds-Direct Plan-Growth- Its beta for the last 3 year is 0.9
- b) IDBI India 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

The average beta for these category of mutual funds is 0.86.



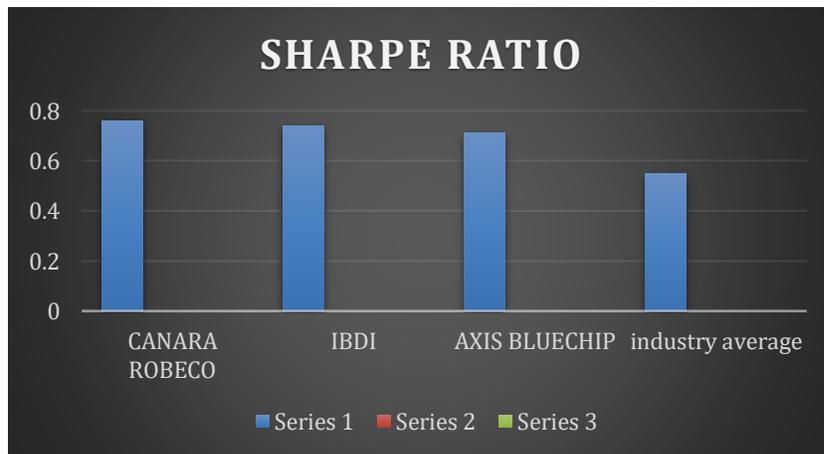
#### 6.1.4 Sharpe Ratio

a) Canara Robeco Bluechip Equity Funds-Direct Plan-Growth - Its sharpe ratio for the last 3 year is 0.76.

b) IDBI India 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

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 Funds-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

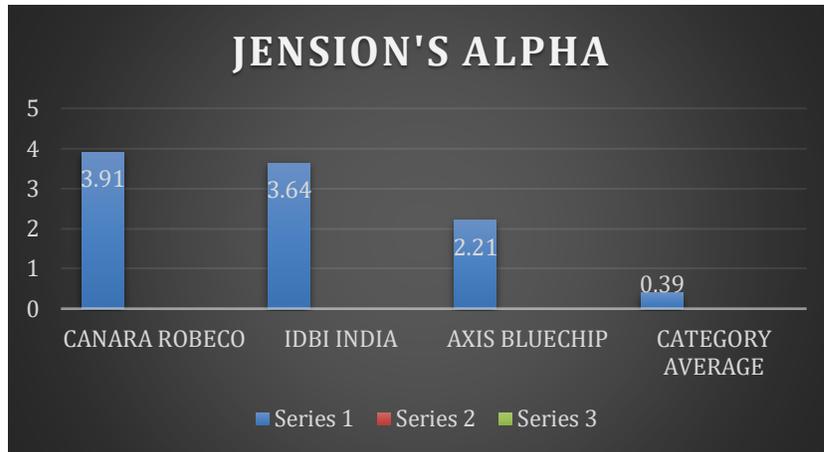
The category average treynor ratio for the last 3 year is 0.13



### 6.1.6 Jenson's Alpha Ratio Of Large Cap Mutual Funds

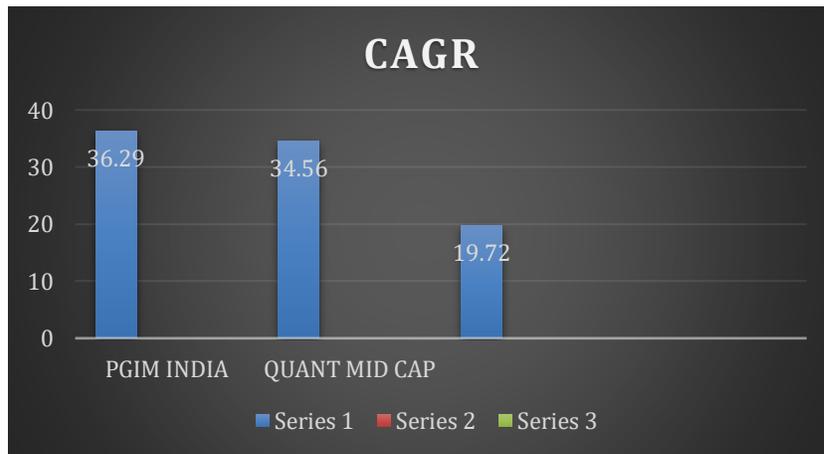
- a) Canara Robeco Bluechip Equity Funds-Direct Plan-Growth - Its jenson's alpha ratio for the last 3 year is 3.91
- b) IDBI India top 100 equity fund-direct-growth -its jenson's alpha ratio for the last 3 year is 3.64
- c) Axis Bluechip Fund - Direct Plan - Growth - Its jenson's alpha ratio for the last 3 year is 2.21

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 %

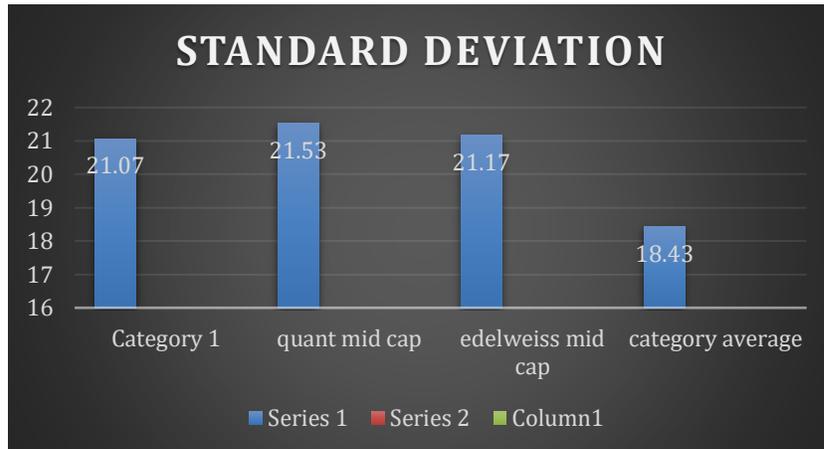


### 6.2.2 Standard Deviation of Mid Cap Mutual Funds

- 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

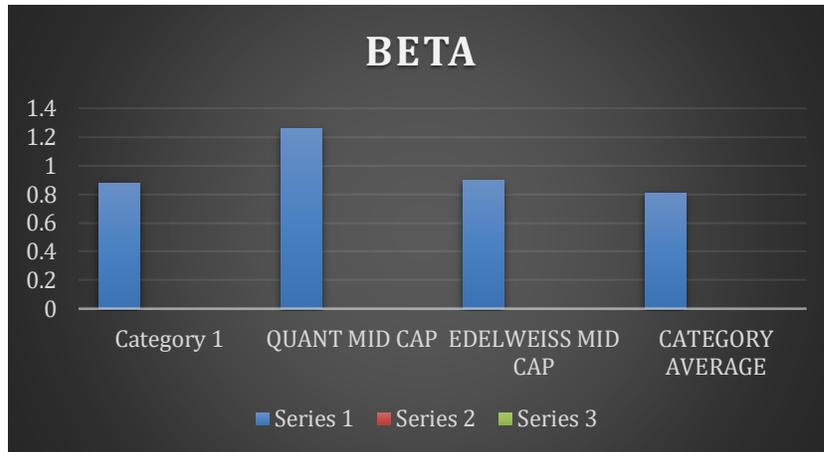
The average beta for these kind of mutual funds is 18.43



### 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

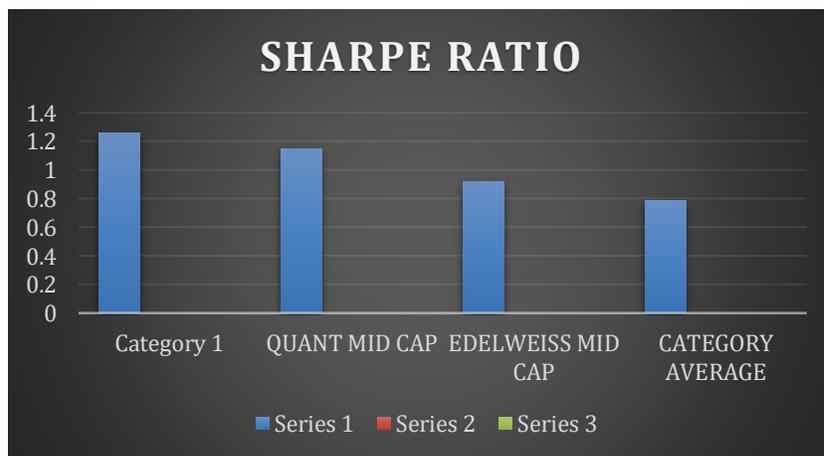
The average beta for these category for these mutual fund is 0.81



### 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

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

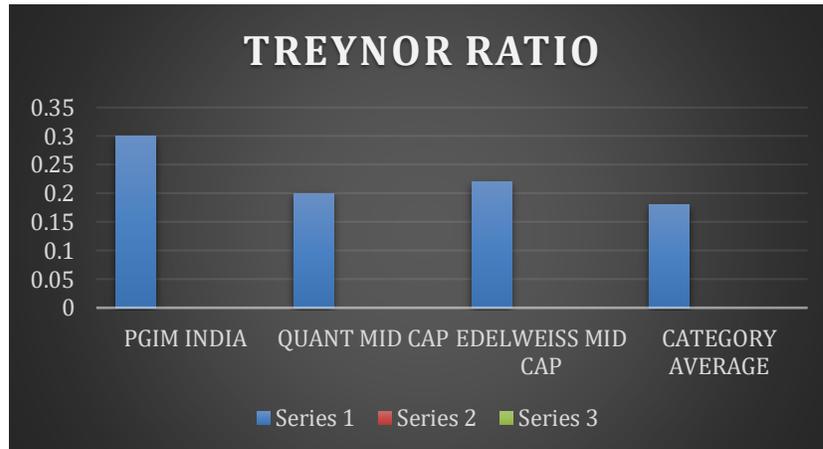


### 6.2.5 Treynor Ratio of Mid Cap Mutual Funds

- 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

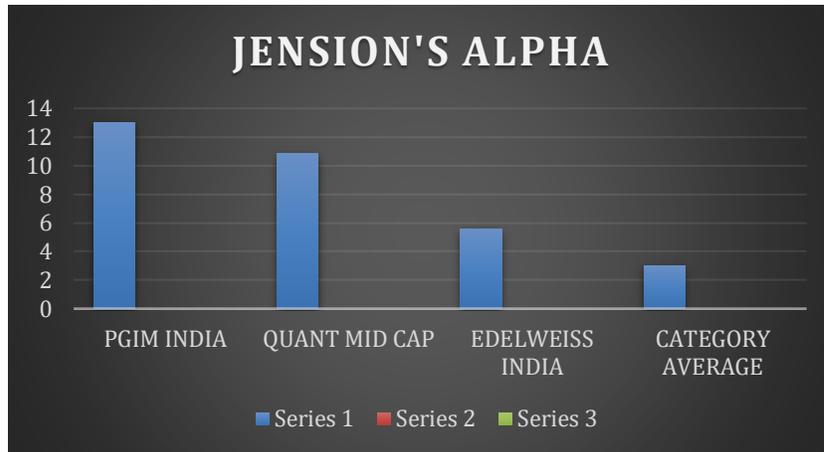
The average treynor ratio for these category of mutual fund is 0.18



### 6.2.6 Jension’s Alpha for Mid Cap Mutual Funds

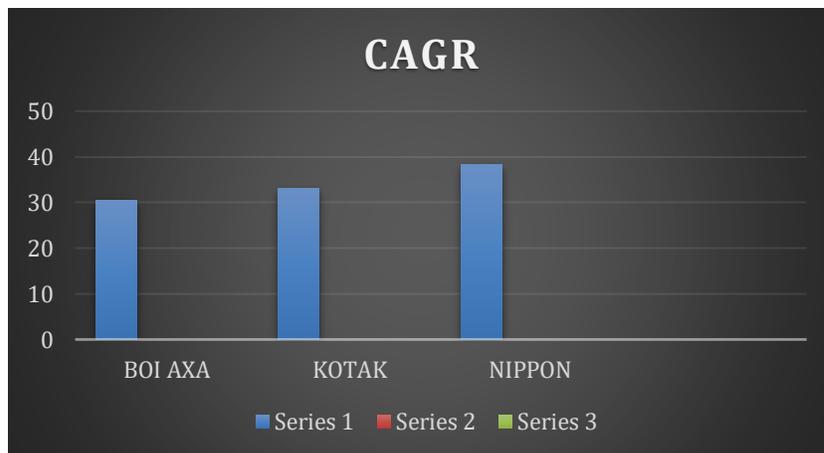
- a) PGIM India Midcap Opportunities Fund Direct-Plan-Growth- Its jension’s alpha based on the daily returns for the last three year is 13.03
- b) Quant Mid-Cap Fund Direct-Plan-Growth- Its jension’s alpha based on daily returns for the last three year is 10.88
- c) Edelweiss Mid-Cap Fund Direct-Plan-Growth- Its jension’s alpha based on daily returns for the last three year is 5.58

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%

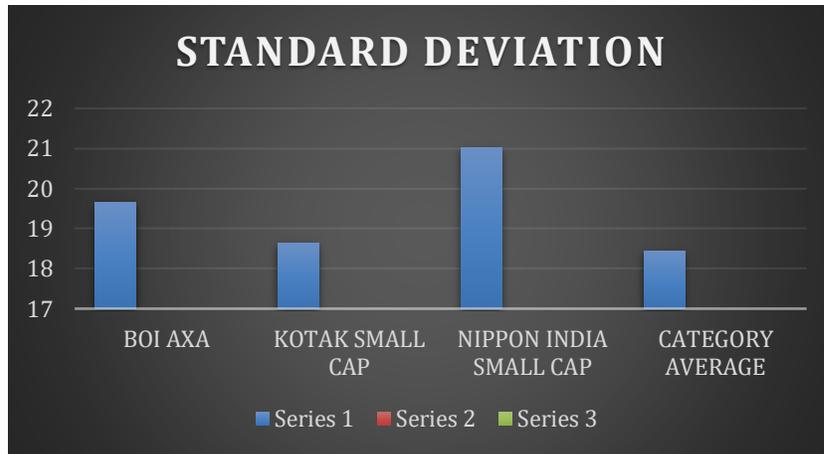


### 6.3.2 Standard Deviation for Small Cap Mutual Funds-

- 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

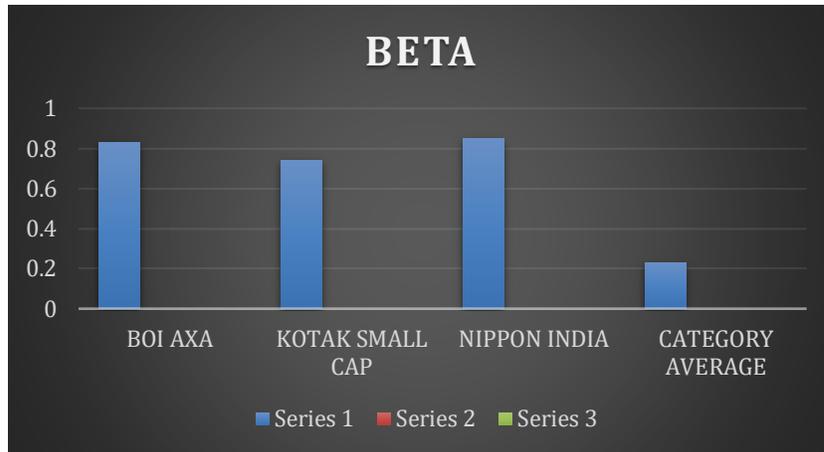
The average standard deviation for these kind of mutual funds is 18.44



### 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

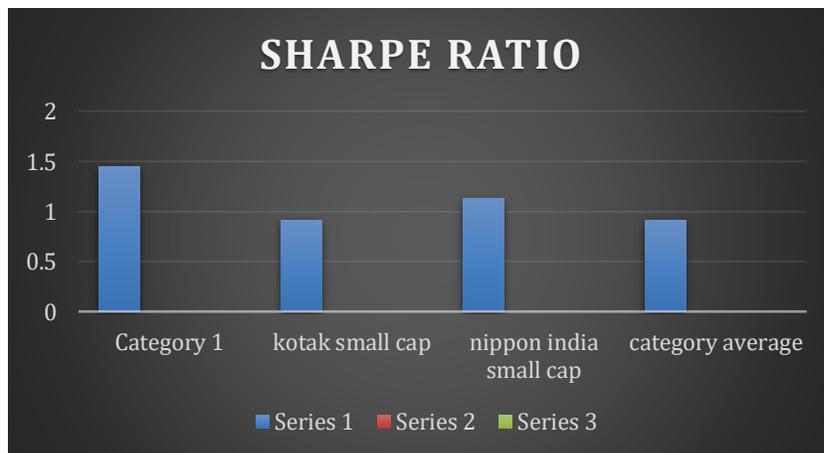
The average beta of these category of mutual funds is 0.76



### 6.3.4 Sharpe Ratio of Small Cap Mutual Funds

- a) BOI-AXA Small-cap Fund Direct-Plan-Growth- Its sharpe 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

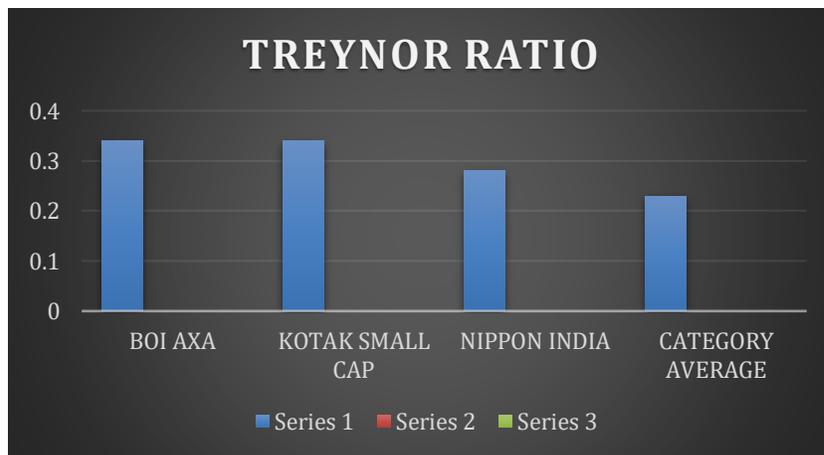
The average sharpe ratio for these category of mutual fund is 0.91



### 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

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



### 7.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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