Performance of Sectoral Indices and their relationship with NIFTY 50

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Abstract: In this paper we examined the performance of Nifty50 (benchmark index of NSE) and 9 other sectoral indices in NSE namely Nifty Bank, Nifty Auto, Nifty Energy, Nifty Metal, Nifty Realty, Nifty FMCG, Nifty Financial Services, Nifty IT and Nifty Media. Data was collected for the time period from 1st April, 2014 to 31st March, 2024. Daily Closing Index values from NSE website were taken for all the indices. Various statistical tools like descriptive statistics, correlation analysis and percentages are used for analysing the data. The study found that over the period of 10 years, the total sectoral average return has performed better than benchmark index Nifty 50 return in 6 years. During Covid-19 pandemic, all indices were negative and Nifty FMCG was the least effected. Post Covid some sectoral indices showed more than normal return such as Nifty Metal and Nifty Realty. 10years simple average return showed that all the sectoral indices have performed better than Nifty 50 except Nifty FMCG and Nifty Media. The highest gainers were Nifty Realty and Nifty Metal. Descriptive statistics indicate that Nifty Realty was the most volatile and Nifty FMCG was the least volatile. Correlation analysis showed that indices like Nifty Bank, Nifty Financial services, Nifty Auto, Nifty Energy are having more positive correlation with Nifty 50 whereas Nifty Metal, Nifty Realty, Nifty IT, Nifty FMCG and Nifty Media have comparatively less positive correlation with Nifty 50. Therefore, investment managers, portfolio managers and individual investors should focus on the sectoral indices and understand their relationship with major benchmark index for finding the better investment opportunities. This will further help in diversification of their portfolio by minimizing the risk and maximizing the return.

Keywords: Stock Market, NSE, Nifty 50, Index, Sectoral Indices, Return.

INTRODUCTION

A stock market index serves as a dynamic gauge of stock market performance which acts as a barometer of the economy. The Benchmark Index tracks the behavior of the entire market where as sectoral indices represent specific sectors in the market and provide benchmarking data of those sectors. To construct an index, the stocks with similar traits are grouped, based on industry type or total market capitalization or company size. The index value is calculated by collective values of grouped stocks and any alternation seen in stock value will directly impact the index value.

Stock market indices provide a historical perspective of stock market performance, giving investors more insight into their investment decisions. They act as a forecasting tool. Studying the historical performance of the stock market indices, you can forecast trends in the market. Investors who do not have much knowledge about individual stocks to invest they can use indexing as a method of choosing their stock investments and can compare the performance of their individual stock portfolios. Individual investors with professionally managed portfolios can use the indices to determine how well their managers are doing in managing their money.[11]

There are two stock exchanges in India i.e., Bombay Stock Exchange (BSE) and National Stock Exchange (NSE). NSE is the world's largest derivatives exchange and held its position for the 5th consecutive year in 2023. As per the World Federation of Exchanges, NSE is ranked 3rd in the world by number of trades in the equity segment in 2023. The year 2023 has witnessed many milestones such as market capitalisation of listed companies surpassing $4 trillion and SME listed companies crossing the Rs 1 lakh crore mark. The benchmark Nifty50 index has also surpassed the 20,000 level for the first time. This demonstrates the strong capabilities of the Indian capital market ecosystem on the global map. This will help attract new investors as well as fund flows to Indian markets, thereby aiding capital formation," said Sriram Krishnan, chief business development officer, NSE. The number of unique registered investors on the exchange surpassed 8.5 crore at the end of the calendar year. NSE has witnessed growth in the number of clients traded for the 10th year straight in its equity segment. The year also saw record-high turnover on a single day in equity segment of Rs 1.67 lakh crore on November 30, 2023. During the year, many changes were affected when it comes to easing the processes for investors. The equity segment completed its transition for settlement of all securities on T+1 basis. In primary market, the timeline for listing of securities has been shortened to T+3 days. [12]

The market has transformed significantly both in terms of quantity and quality. SEBI and NSE have transformed Indian Stock Market in terms of products, technology, settlement, participants, surveillance, risk management and enforcement comparable with global standards. In this context, traders, investors, portfolio managers, regulators and corporates must understand the dynamics of NSE benchmark index and sectoral indices. [10]

Nifty 50 and 9 sectoral indices of NSE out of 19 sectoral indices have been selected for this study and other indices were not considered due to non-availability of data. The selected sectoral indices are Nifty Bank, Nifty Auto, Nifty Energy, Nifty Metal, Nifty Realty, Nifty FMCG, Nifty Financial Services, Nifty IT, Nifty Media.

NIFTY 50 (Benchmark Index)

NIFTY 50 is a Benchmark stock market index in India which represents the weighted average of top 50 companies listed in National Stock Exchange (NSE). It is owned and managed by NSE Indices which is fully owned subsidiary of NSE Strategic Investment Corporation Ltd. It was launched on 22 April, 1996 and calculated as per free-float market capitalization weighted method.

NIFTY BANK

NIFTY BANK or BANK NIFTY is an index which comprises of the most liquid and large capitalized Indian banking stocks. It provides investor with a sectoral benchmark that captures the capital market performance of Indian bank stocks. The index has 12 stocks from the banking sectors. It was launched in 2003 and like other index it also computed by using free-float market capitalization method.

NIFTY AUTO

NIFTY AUTO is a unique index specially designed to track the performance of publicly listed Automobile companies on NSE of India. It serves as a consolidated measure that provides insights into the overall trends and performance within Indian Automotive Sector. As a sectoral benchmark it offers a platform for evaluation of performance, growth potential and general market sentiment of the companies operating in the automotive sectors. It was launched by NSE on April ,2005 and it comprises 15 leading automobile companies, offering a diverse representation of Indian Automotive sector.

NIFTY ENERGY

NIFTY ENEGY represents a sectoral index with in NSE, which is specially focuses on companies those are operating in Energy sector. The companies in various energy sector related industries are Oil, Gas, Power and Other energy companies. This index serves as a sectoral benchmark, which reflects energy sector performance in Indian Economy. It functions as a benchmark, which measuring performance and trends with in energy industry. It was launched in 1 July, 2005 and comprises of 10 companies and is calculated on the basis of free-float market capitalization method.

NIFTY METAL

NIFTY METAL index is an index in India that tracks the performance of metal related companies listed on NSE. It comprises of 15 tradable companies listed in NSE. It was launched in October 1, 2007. Its primarily focuses on two sub categories: Metal & Mining and Capital goods. It is an essential benchmark sector and helps the investors and trader to know the overall performance and trends in Indian metal industry. It is determined by free-float market capitalization-weighted method.

NIFTY REALTY

NIFTY REALTY is a specialized benchmark sector index represents the vibrant real estate sector with in Indian stock market. It comprises of the prominent real estate companies listed in NSE of India. It offers the investor a holistic measure of performance a trend with in real estate sector. It was launched on September 29, 2017 and comprises of 10 companies. It is determined on the basis of free-float market capitalization weighted method.

NIFTY FMCG

NIFTY FMCG is an index consisting of 15 companies of FMCG sector listed in NSE in India. It tracks the performance and trends of FMCG sector stock listed in Indian stock market. It is primarily engaged in producing and distributing FMCG products. The index comprises of subsectors like: Food and beverages, Personal care products, Household items and Tobacco products. It is determined by using free-float market capitalization- weighted method. It was launched in the year 1999.

NIFTY FINSERVICE

NIFTY FINSERVICE or FIN NIFTY is an index comprising of 20 stocks of financial or service sector companies listed in NSE of India. The purpose of this index is to track performance of financial sector in India and provide investors with sectoral benchmark for sector growth and performance. It was launched on September 7, 2011. It is determined by using free-float market capitalization- weighted method.

NIFTY IT

NIFTY IT index is an integral component of India's financial market, specially made to represents the IT sector with in NSE of India. It helps to measuring performance of companies operating in IT industry, a sector renowned for its dynamic and rapidly evolving in nature. It is determined by using free-float market capitalization- weighted method and comprises of 10 Companies.

NIFTY MEDIA

NIFTY MEDIA is an index which reflects the performance and trends of Media & Entertainment sector in India. It comprises 15 stocks of media & entertainment sectors that are listed in NSE of India. It is determined by using free-float market capitalization- weighted method. It was launched on July 19, 2011.

LITERATURE REVIEW

Richard Paul and Krashika M A (2024) has studied the month of the year impact on sectoral indices. For this they have used monthly closing prices of BSE India from 1 April 2012 to 31 March 2022. They found that among the eight indices, the 'March, April, May, July, October' effect is the month-of-the-year effect. [1]

Kumar, Patel & Garg (2022) examined the short run and long run relationship between Bank Nifty and other sectoral indices of NSE. The study period was 01/01/2016 to 31/12/2020 and they used Descriptive statistics, Unit root test, VAR, Johansen's cointegration test, Beta and VECM for analysis. They found that there is no long-term association between variables, Nifty Pharma is most defensive sector where Nifty bank is most sensitive sector. It was also seen that 3 sectors viz; Nifty Media, Nifty PSU and Nifty Pharma have negative correlation with Nifty index. [2]

Bhanotu & Dora (2021) in their study compared the behavior of various sectoral market indices and market cap indices with SENSEX during the 1st and 2nd wave of the COVID-19 pandemic. Two time periods i.e., from Jan 2020 to Sep 2020 as 1st wave of pandemic and from March 2021 to July 2021 as the 2nd wave of pandemic. They found that the stock market has reacted the same way in both situations i.e., 1st wave and 2nd wave of the pandemic. During 1st wave, health care and FMCG sectors have performed better whereas all other sectoral indices performed adversely. During 2nd wave, all indices performed positively. [3]

Bhuvaneshwari (2021) analyzed the movements of Nifty 50 and the Nifty financial sector indices. They found the direction of causality between indices and there also exists a significant response on the Nifty 50 due to change in the financial sector indices. She has taken the data for the period from April 2019 to March 2021. She used OLS regression model, Granger causality test, Impulsive response function to estimate the changes in the future response of Nifty 50 to changes in the financial sectors in India. [4]

Purohit, Saxena & Malhotra (2020) proved the presence of seasonal anomalies mainly day of week effect and month of year effect in Indian stock market. The study period was from January 2011 to January 2018. They used regression model and descriptive statistics to examine the result They found that none of the four indices i.e., Nifty Auto, Nifty Bank, Nifty Financial services and Nifty 50 have day of week effect. Nifty 50 does not indicate present of month of year effect. April effect is present in Nifty Auto while Nifty Bank shows February and August effect. Nifty fin-service shows February effect. [5]

V. Kumar & Singh (2020) attempted to find out the casual relationship between Nifty 50 and sectoral indices. The study period was from January 2014 to December 2018 and they have used Unit root test and Granger causality test to check the casual relationship between Nifty 50 and sectoral indices. Ten sectoral indices of NSE out of fifteen sectorial indices have been selected for this study. The selected sectoral indices are Nifty-Fifty, Nifty Financial Services, Nifty FMCG, Nifty IT, Nifty Media, Nifty Auto, Nifty Bank, Nifty Metal, Nifty Pharma and Nifty Realty. The study shows that financial services sector performed better and next followed by banking sector while pharma and realty sector under performed in comparison to other sectors. They also found that Nifty 50 has been less volatile in comparison to other sectoral indices and Realty sector indices shown highest volatility. [6]

V. R. Bhanotu & Dora (2020) have attempted to study the effect of the Covid-19 on various sectors of economy of India. The study found that during 1st phase of covid-19 pandemic, performance of all the sectors in the stock market declined drastically except pharma, healthcare and telecom sectors which saw a boost due to the rise in demand. [7]

Sudhakar & Viswanadh (2018) have examined the risk, return and volatility of selected indices of various sectors of Indian stock market. For this they have taken the data for period from April, 2006 to March 2016. They used statistical tools like Descriptive statistics, Augmented Dickey-Fuller test, GARCH model. They found that Auto, Bank and IT sectors have provided better returns whereas Energy Index provided moderate returns during the study period. They also found that negative news has caused more volatility than positive news on the select sectoral indices. [8]

Samanta, Kumar and Pandey (2017) conducted an empirical study on relationship between Nifty 50 and sectoral indices and concluded that there is significant correlation individually and also NSE Nifty has a significance impact on NSE sectoral indices except Realty sector and PSU bank sector. They have taken the data from the year 2011-2015 and used correlation and multiple regress analysis. [9]

Dhanaiah & Prasad (2016) attempted to investigate the performance and volatility of Nifty 50 and 6 other sectoral indices i.e., Nifty Bank, Nifty Metal, Nifty Auto, Nifty Pharma, Nifty IT and Nifty FMCG. Study covers period from April 1, 2004 to 31st March, 2016. Various statistical tools like descriptive statistics, Box-plots, Histograms, Q-Q Plots, Normality tests were utilized to analyze data. Bank sector has highest correlation followed by Auto sector and Metal sector where as the IT sector has least correlation. [10]

Shanmugasundram & Benedict (2013) tried to identify the risk factors in sectoral indices and
CNX Nifty index and also to see the risk relationship in different time intervals. Their study stated that there is a significant difference in the mean scores of various time interval and showed individual investors and portfolio managers how to reduce portfolio risk and enhance their return. The study of various indices was from 01/01/2004 to 30/04/2012. They have used One-way ANOVA and T-test for analysis to identify the risk factor difference across the risk of sectoral indices and Nifty index. [11]

Though there are many studies on this topic done in India and abroad, our study focuses on evaluating volatility and performance of different sectoral indices and their relationship with Nifty 50 based on recent data up to 31st March 2024.

OBJECIVES OF THE STUDY

- To measure returns in Indian stock market indices during the period i.e. 2014-15 to 2023-24.
- To know the relation between different NSE Sectoral Indices and NSE Nifty 50.

$H_{0:}$ There is no relationship between NSE Sectoral Indices and Nifty 50

RESEARCH METHODOLOGY

The present study is purely based on secondary data which has been collected from www.nseindia.com, www.moneycontol.com, www.groww.in, www.angelone.in, and other relevant websites. Other information from journals, articles, books, newspapers were also collected. The data has been taken from NSE historical index website where the closing prices of daily return are used for further analysis. Data was collected for the period of 10 years from 1st April 2014 to 31st March 2024.

Firstly, all the closing values have been converted into daily closing returns by using the formula i.e.,

$$\text{Return} = (P_1 - P_0)/P_0$$

Where, P_1= It is the current day closing value

P_0= It is the previous day closing value

Nifty 50 and 9 sectoral indices of NSE out of 19 sectoral indices have been selected for this study. The selected sectoral indices are Nifty Bank, Nifty Auto, Nifty Energy, Nifty Metal, Nifty Realty, Nifty FMCG, Nifty Financial Services, Nifty IT, Nifty Media and due to non-availability of data other indices were not considered. Statistical techniques like correlation analysis, volatility and return of various sectoral indices were calculated by using MS Excel software.

ANALYSIS AND INTERPRETATION OF DATA

Figure 1 presents the prime objective of the present study which is to examine the annual return of the sectoral indices and Nifty 50 during the period 2014-15 to 2023-24.

Figure:1 Yearly Returns over the period of 10 years from FY 2014-15 to FY 2023-24.

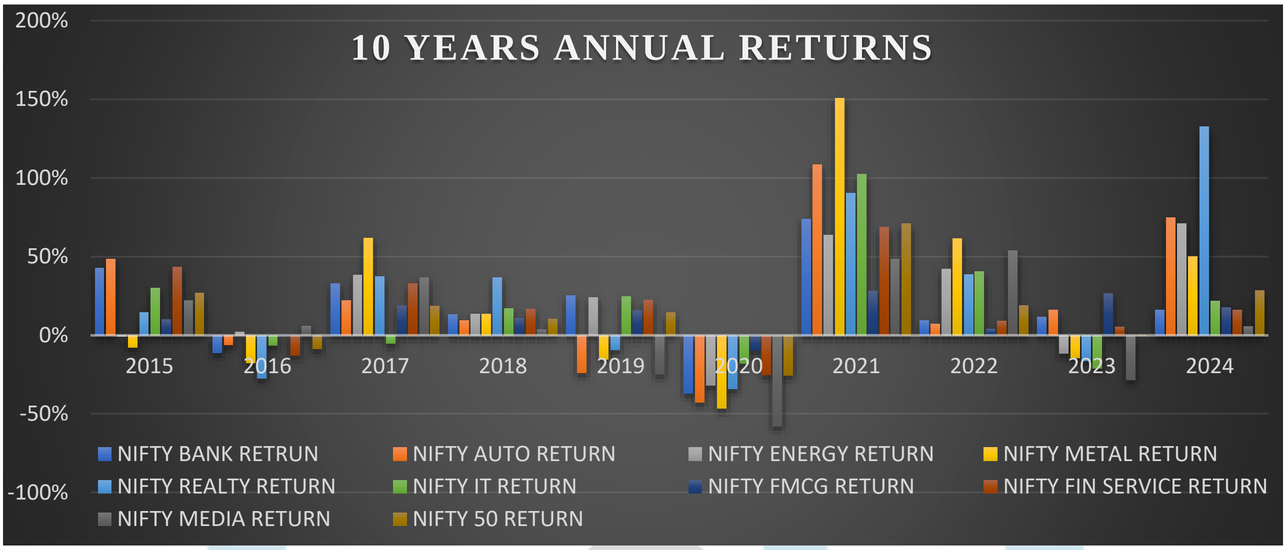


Table:1 Yearly Returns over the period of 10 years from FY 2014-15 to FY 2023-24

Index/Year wise return	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**	**10 year Avg. return**
Nifty Bank	43%	-11%	33%	13%	**25%**	-37%	74%	9%	12%	16%	18%
Nifty Auto	**49%**	-6%	22%	10%	-24%	-43%	108%	7%	16%	75%	21%
Nifty Energy	-1%	2%	38%	13%	24%	-32%	63%	42%	-12%	71%	21%
Nifty Metal	-8%	-18%	**62%**	13%	-15%	-47%	**151%**	**62%**	-14%	50%	24%
Nifty Realty	14%	-28%	37%	**37%**	-9%	-34%	90%	39%	-16%	**133%**	**26%**
Nifty IT	30%	-6%	-5%	17%	24%	-18%	103%	40%	-21%	22%	19%
Nifty FMCG	10%	-1%	19%	11%	16%	**-10%**	28%	4%	**27%**	18%	**12%**
Nifty Fin. services	43%	-13%	33%	17%	22%	-25%	69%	9%	5%	16%	18%
Nifty Media	22%	**6%**	37%	4%	-25%	-58%	49%	54%	-29%	6%	**7%**
Total Sectoral Avg. Return	22%	**-8%**	**31%**	**15%**	4%	-34%	**82%**	**30%**	-4%	**45%**	22%
Nifty 50	27%	-9%	19%	10%	14%	-26%	71%	19%	-1%	29%	15%

Source: Authors own compilation

Table 1 indicates that over the period of 10 years, the total sectoral average return has performed better than benchmark index Nifty 50 return in 6 years i.e.,2015-16, 2016-17, 2017-18, 2020-21, 2021-22 and 2023-24. 10years simple average return showed that all the sectoral indices have performed better than Nifty 50 except Nifty FMCG and Nifty Media. The highest gainers were Nifty Realty and Nifty Metal. During Covid-19 pandemic, all indices were negative and Nifty FMCG was the least effected. Post Covid some sectoral indices showed more than normal return such as Nifty Metal and Nifty Realty.

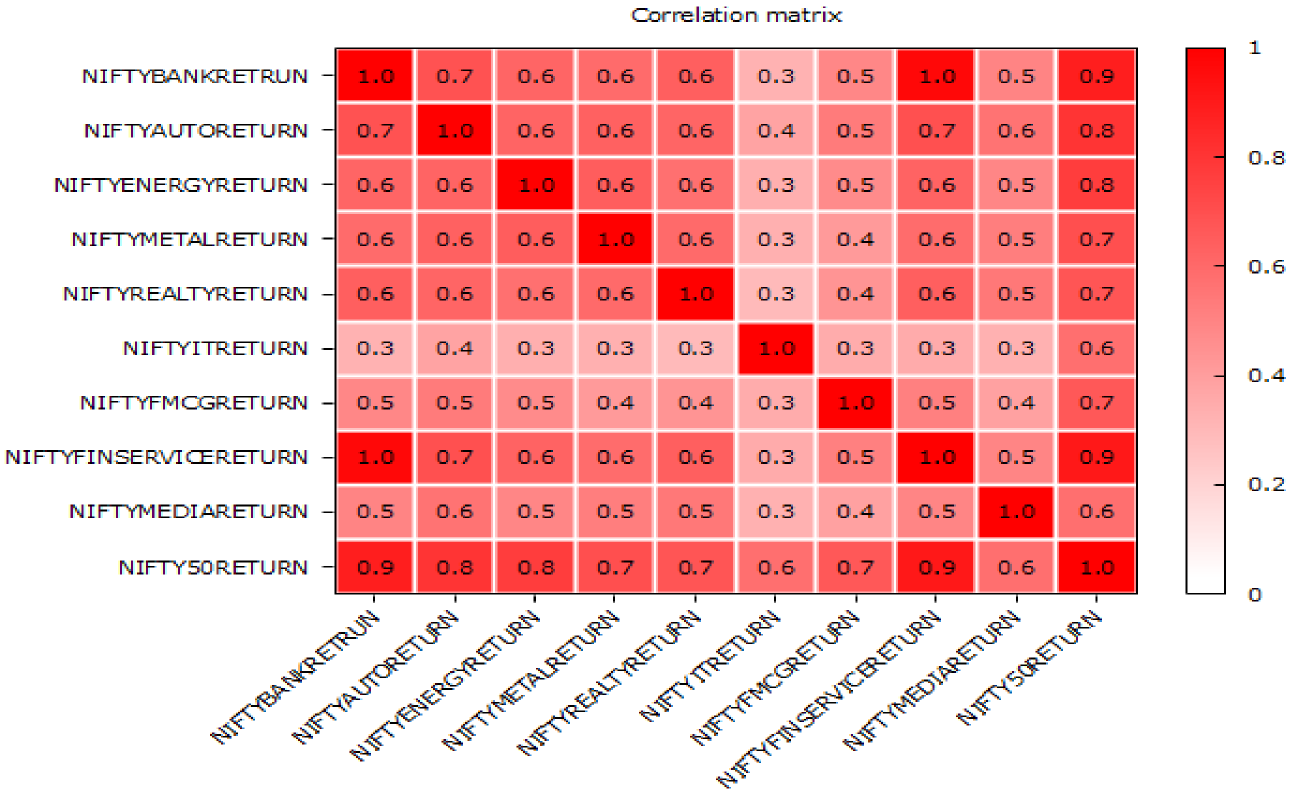
Table:2 Descriptive Statistics of Sectoral indices and Nifty 50

Variable	**Mean**	**Median**	**S.D.**	**Min**	**Max**
NIFTY BANK RETRUN	0.000644	0.000686	0.0149	-0.167	0.105
NIFTY AUTO RETURN	0.000707	0.000997	0.0138	-0.138	0.104

NIFTY ENERGY RETURN	0.000704	0.000947	0.0133	-0.0971	0.0863
NIFTY METAL RETURN	0.000652	0.000991	0.0181	-0.116	0.0984
NIFTY REALTY RETURN	0.000703	0.00142	**0.0200**	-0.116	0.0866
NIFTY IT RETURN	0.000677	0.000595	0.0133	-0.117	0.0903
NIFTY FMCG RETURN	0.000531	0.000605	**0.0108**	-0.106	0.0832
NIFTY FINSERVICE RETURN	0.000659	0.000595	0.0142	-0.159	0.0932
NIFTY MEDIA RETURN	0.000178	0.000681	0.0171	-0.164	0.144
NIFTY 50 RETURN	0.000569	0.000791	0.0106	-0.130	0.0876

The Results of Descriptive statistics of NSE Sectoral indices and Nifty 50 for a period of 10 years from 1st April 2014 to 31st march 2024 are presented in Table 2. This clearly indicates that Nifty Realty was the most volatile and Nifty FMCG was the least volatile.

Figure:2 Correlation Analysis of NSE Sectoral indices and Nifty 50



Karl Pearson coefficient of correlation has been applied to study the relationship of NSE sectoral indices and Nifty 50 and its results are presented in Figure 2. It is evident from Figure 2 that null hypothesis is rejected as there is positive correlation among all indices with Nifty 50 and also within themselves. Nifty Bank, Nifty Financial services, Nifty Auto, Nifty Energy are having more positive correlation with Nifty 50 whereas Nifty Metal, Nifty Realty, Nifty IT, Nifty FMCG and Nifty Media have comparatively less positive correlation with Nifty 50.

FINDINGS

- Over the period of 10 years, the total sectoral average return has performed better than benchmark index Nifty 50 return in 6 years i.e.,2015-16, 2016-17, 2017-18, 2020-21, 2021-22 and 2023-24.
- During Covid-19 pandemic, all indices were negative and Nifty FMCG was the least effected. Post Covid some sectoral indices showed more than normal return such as Nifty Metal and Nifty Realty.

- 10years simple average return showed that all the sectoral indices have performed better than Nifty 50 except Nifty FMCG and Nifty Media. The highest gainers were Nifty Realty and Nifty Metal.
- Descriptive statistics indicate that Nifty Realty was the most volatile and Nifty FMCG was the least volatile.
- Correlation analysis showed that indices like Nifty Bank, Nifty Financial services, Nifty Auto, Nifty Energy are having more positive correlation with Nifty 50 whereas Nifty Metal, Nifty Realty, Nifty IT, Nifty FMCG and Nifty Media have comparatively less positive correlation with Nifty 50.

CONCLUSION

The stock market is growing rapidly in the recent times allowing investors to have a share of the gain. But 9 out of 10 investors are losing money due to lack of proper understanding of the stock market, different indices prevailing in the stock market, risk vs return, diversification strategies, etc. Therefore, investment managers, portfolio managers and individual investors should focus on the sectoral indices and understand their relationship with major benchmark index for finding the better investment opportunities. This will further help in diversification of their portfolio by minimizing the risk and maximizing the return.

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