

THE COMPARATIVE ANALYSIS OF SECTORIAL INDICES WITH NSE NIFTY 50

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ABSTRACT

This study explores the correlation between the NIFTY 50 index and sectoral indices like NIFTY Bank, NIFTY Auto, NIFTY Energy, and NIFTY IT on the NSE. Using statistical methods such as Pearson's correlation, regression analysis, and ANOVA, the findings reveal a strong correlation between the NIFTY 50 and sectors like banking, auto, and energy, with the IT sector showing a moderate relationship. The results provide insights for investors on sectoral diversification and optimizing portfolio performance.

KEYWORDS; NSE NIFTY 50, NIFTY Auto, NIFTY Bank

INTRODUCTION:

The National Stock Exchange of India (NSE) is one of the leading stock exchanges in Asia and plays an important role in the growth of India's financial markets. It was set up in 1992 and changed the way trading was done in India by introducing electronic trading, making the process more transparent and efficient. One of the most well-known indexes on the NSE is the NIFTY 50. This index tracks the performance of the 50 largest and most active companies listed on the exchange and is often used to measure how well the overall Indian stock market is doing.

Besides the NIFTY 50, the NSE also offers several sector-specific indices. These indices focus on particular parts of the economy, like NIFTY Bank, NIFTY IT, NIFTY Pharma, NIFTY FMCG, NIFTY Auto, and others. Sector-specific indices are useful because they let investors look at how individual industries are doing, helping them understand trends and factors that might not be clear from the overall market performance. The performance of these indices can vary a lot based on things like government policies, global economic changes, new technologies, and shifts in consumer habits. For instance, the NIFTY IT index might be mostly affected by the global demand for tech and digital services, while the NIFTY Bank index could depend on things like interest rates, the growth of credit, and banking rules in India. Each sector has its own factors that influence it, and understanding these can help investors make more informed decisions.

While the NIFTY 50 index gives a general idea of how the market is performing, looking at how it connects with sector-specific indices can provide more detailed insights into what's driving the market. To understand this, we can use correlation analysis, which helps us see how the NIFTY 50 moves in relation to other sector indices. Correlation shows how two things (in this case, the NIFTY 50 and a sector index) move together. If they have a positive correlation, it means they both tend to move in the same direction—when the NIFTY 50 goes up, the sector index goes up too. If the correlation is negative, they move in opposite directions. A zero or nearly zero correlation means there's no real relationship between their movements. Knowing these correlations helps investors make smarter choices about diversifying and managing risk. For example, if a sector index and the NIFTY 50 are highly correlated, an investor might decide to spread their investments across different sectors to lower risk. If some sectors have low or negative correlation with the overall market, they might be safer to invest in during market declines. In India, sectors like IT, pharmaceuticals, and FMCG often show strong links with the broader market, while others, like energy and utilities, might show more unpredictable movements. This project aims to analyse the correlation between different sector indices on the NSE and the NIFTY 50 to understand how movements in specific sectors affect the broader market and what this means for investors.

This study will look at data from [insert date range], using publicly available market data for the NIFTY 50 index and relevant sector indices. It will focus on important sectors like Information Technology, Banking, Pharmaceuticals, Consumer Goods, Energy, and Automobiles, giving a wide view of different areas of the Indian economy. The study will use statistical methods, such as Pearson's correlation coefficient, to analyse how the various indices are related to each other.

REVIEW OF LITERATURE:

Narasimhan (2016) research analysed the relationship between the NIFTY 50 and sectorial indices in industries like consumer goods, pharmaceuticals, and automobiles. It found that sectors with high export reliance, like IT, had a stronger correlation with the NIFTY 50, while sectors focused on domestic demand, like consumer goods, showed weaker or more fluctuating correlations.

Singh and Yadav (2018) The study examined the relationship between the NIFTY Bank index and the NIFTY 50, highlighting that the banking sector is closely tied to interest rates, inflation, and credit growth. It found that during periods of economic growth or decline, the banking sector often leads broader market trends. This results in a strong correlation between the NIFTY Bank index and the NIFTY 50.

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Bose and Ray (2013) The analysis explored the correlation between the NIFTY 50 and sector indices like banking, IT, and energy, revealing sector-specific movements that affect the overall market. It found that while sector indices generally align with the NIFTY 50, sectors like IT and banking showed stronger correlations with market trends. In contrast, sectors like energy and utilities had weaker correlations.

STATEMENT OF THE PROBLEM :

The performance of the Nifty 50 index, a key indicator of the Indian stock market, is influenced not only by the performance of its constituent companies but also by the dynamics of sectoral indices such as Nifty IT, Nifty Bank, and Nifty FMCG. However, the exact correlation between the Nifty 50 and these sectoral indices remains underexplored. This project aims to quantify the relationship between the Nifty 50 and sectoral indices, analyze how sector-specific movements impact the broader market, and forecast future trends. The insights will help investors optimize their portfolios, especially in terms of sectoral diversification and risk management.

OBJECTIVES OF THE STUDY:

- ❖ To Understand the Performance of Nifty 50 and Sectoral Indices
- ❖ To Analyze the relation between Nifty 50 and Sectoral Indices
- ❖ To Examine the Impact of Sectoral Indices on Nifty 50 Movements

RESEARCH METHODOLOGY:

DATA ANALYSIS

This section discusses the preliminary analysis, which includes descriptive statistic test, correlation model, regression model, Anova model. The data used are secondary data and collected from <https://www.nseindia.com/reports-indices-historical-index-data>

DESCRIPTIVE ANALYSIS

Table 1 - Descriptive Statistics

	NIFTY 50 PRICE	NIFTY AUTO PRICE	NIFTY ENERGY	NIFTY BANK	NIFTY IT
Mean	16563.53	12051.64	23227.32	36578.58	28597.18
Standard Deviation	3191.33	3577.73	6177.64	7681.06	6137.54
Sample Variance	10184577.42	12800170.53	38163280.33	58998673.94	37669377.44
Kurtosis	-0.12	0.37	0.49	-0.18	0.23
Skewness	-0.51	0.70	0.55	-0.73	-0.77
Minimum	9580.30	5901.40	0.49	19297.25	14010.50
Maximum	22326.90	21419.10	0.55	48292.25	38701.05
Sum	795049.40	578478.95	1114911.50	1755771.95	1372664.65

INTERPRETATION

The average price of the NIFTY 50 index is 16,563.53, with sector indices ranging from 12,051.64 (NIFTY Auto) to 28,597.18 (NIFTY IT), indicating higher average prices in NIFTY IT. NIFTY Bank's high standard deviation (7,681.06) reflects greater volatility, while NIFTY Auto's lower standard deviation (3,577.73) shows less fluctuation. Kurtosis values near zero for NIFTY 50 and NIFTY Bank suggest normal distributions, while NIFTY Auto and NIFTY IT exhibit positive kurtosis, indicating occasional outliers. Skewness shows negative values for NIFTY 50, NIFTY Bank, and NIFTY IT, suggesting larger price drops, while NIFTY Auto and NIFTY Energy have positive skewness, pointing to bigger price increases.

CORRELATION ANALYSIS

Table 2 – Correlation Analysis

	NIFTY 50 PRICE	NIFTY AUTO PRICE	NIFTY ENERGY	NIFTY BANK	NIFTY IT
NIFTY 50 PRICE	1.0000				
NIFTY AUTO PRICE	0.9296	1.0000			
NIFTY ENERGY	0.9232	0.9277	1.0000		
NIFTY BANK	0.9750	0.8995	0.8516	1.0000	
NIFTY IT	0.8719	0.6844	0.7680	0.7969	1.0000

INTERPRETATION

The NIFTY 50 index is strongly correlated with the NIFTY Bank index (97.50%), indicating that the banking sector closely tracks the overall market movements. NIFTY Auto and NIFTY Energy have strong correlations with NIFTY 50, with correlations of 92.95% and 92.32%, respectively. NIFTY IT, while still showing a positive correlation with NIFTY 50 (87.19%), has a weaker relationship compared to sectors like banking, auto, and energy. Overall, NIFTY Bank shows the strongest correlation with NIFTY 50, followed by NIFTY Auto and NIFTY Energy, while NIFTY IT shows a moderate relationship.

REGRESSION ANALYSIS

Table 3 – Regression Analysis

<i>Regression Statistics</i>	
Multiple R	0.9986
R Square	0.9972
Adjusted R Square	0.9969
Standard Error	174.8530
Observations	48

INTERPRETATION

The regression model has a very strong fit, with a high correlation (Multiple R = 99.86%) and a very high R Square (99.73%), indicating that nearly all of the variance in the dependent variable is explained by the independent

variable(s). The model is reliable, as indicated by the adjusted R Square of 99.70%, and the standard error of 174.853 suggests that the predicted values are very close to the actual values. This makes the model very accurate for prediction purposes.

ANOVA ANALYSIS

Table 4 – Anova Analysis

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	4	477360474.5	119340118.6	3903.372706	1.92612E-54
Residual	43	1314664.391	30573.59048		
Total	47	478675138.8			

INTERPRETATION

The ANOVA results show that the regression model explains most of the variability in the dependent variable, with a very high F-statistic (3903.37) and an extremely small p-value (1.93E-54). This strongly suggests that the model is statistically significant and that the independent variables in the model have a significant relationship with the dependent variable. The residual sum of squares is very small compared to the regression sum of squares, indicating a good fit of the model to the data.

CO EFFICIENT ANALYSIS

Table 5 – Coefficient Analysis

	<i>Coefficients</i>
Intercept	1780.0366
NIFTY AUTO	0.1721
NIFTY ENERGY	0.0753
NIFTY BANK	0.2014
NIFTY IT	0.1257

INTERPRETATION

$NIFTY\ 50 = 1080.1780.037 + 0.172\ Nifty\ Auto + 0.075\ Nifty\ Energy + 0.202\ Nifty\ Bank + 0.126\ Nifty\ IT$

SCOPE OF THE STUDY :

This study on the comparative analysis of sectorial indices with the NIFTY 50 provides a detailed exploration of the relationships between the overall market and various sectorial indices in India. The scope of this research extends across several dimensions, offering valuable insights for investors, analysts, policymakers, and researchers. Helps stakeholders make more informed decisions and formulate more effective strategies based on sector-specific trends and their correlation with the broader market.

LIMITATIONS :

- This study is only based on the past 5 years data.
- The study focuses only on specific sectorial indices such as NIFTY Bank, NIFTY Auto, NIFTY Energy, and NIFTY IT.

FINDINGS :

- Strong Correlation Between NIFTY 50 and NIFTY Bank.
- Significant Correlation with NIFTY Auto and NIFTY Energy.
- Moderate Correlation with NIFTY IT.
- Descriptive Analysis of Sectoral Performance.

SUGGESTIONS :

- The government can focus on improving other sectors in the market.
- The investors can invest on the basis of the research for better returns
- The investors can reduce their risk by not investing in highly volatile sector.

CONCLUSION

This study highlights the strong correlation between the NIFTY 50 index and various sectoral indices, such as NIFTY Bank, NIFTY Auto, NIFTY Energy, and NIFTY IT. The regression and correlation analysis reveal that sectors like banking, auto, and energy are closely aligned with the overall market trends, while the IT sector exhibits a more moderate relationship. The findings provide valuable insights for investors, helping them make informed decisions on sectoral diversification and risk management. Overall, the study emphasizes the importance of sector-specific movements in shaping the broader market performance, guiding investment strategies effectively.

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