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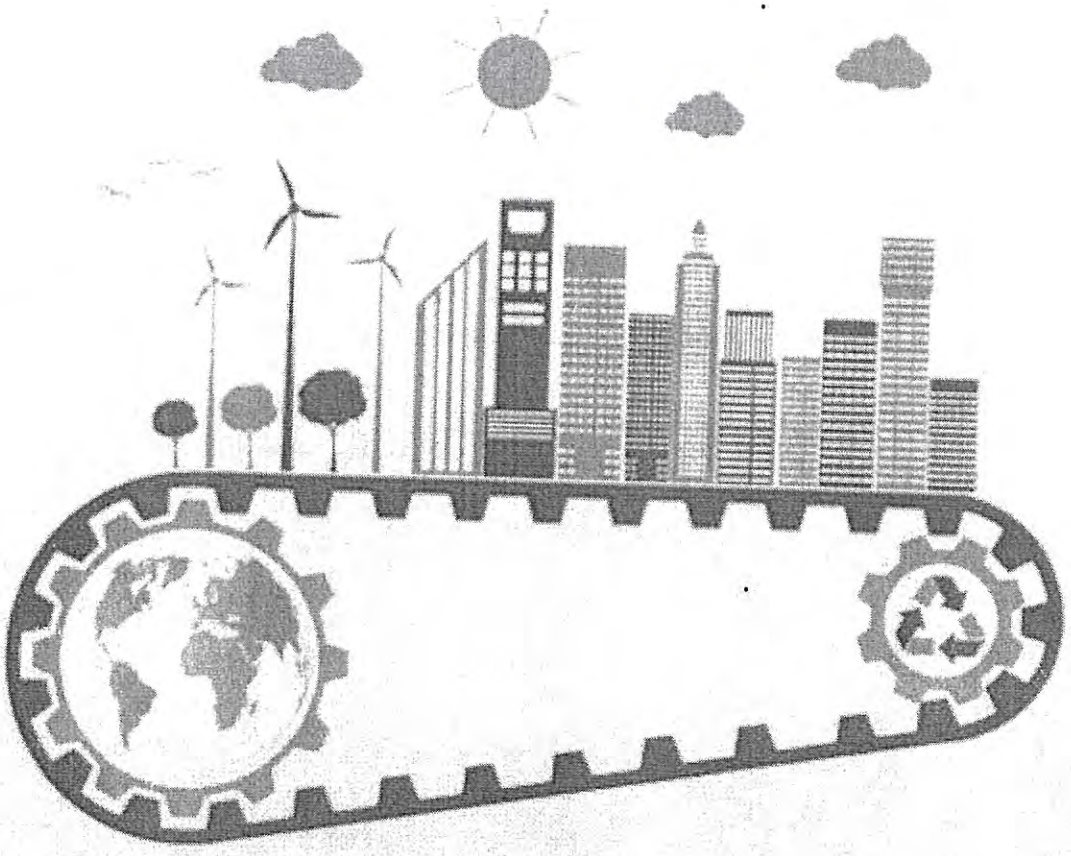

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AN EMPIRICAL ANALYSIS OF SELECT SECTORAL INDICES ON THE SENSEX

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ABSTRACT
Sectoral Index represents a single value of the collective performance of many companies in a particular sector. The current study investigates if the select sectoral indices have an impact on Sensex's movements. The sectors under study are Automobile Index, Consumer Durable Index, Banking Companies Index (Bankex) and Financial Services Index. The study is based on Secondary Data culled from The Bombay Stock Exchange Website which is analysed. Findings will prove to be a guide to investors and portfolio managers on deciding on choosing a sector to invest in based on the Sensex.

Keywords: Sensex, Automobile Index, Consumer Durable Index, Banking Companies Index (Bankex) and Financial Services Index

INTRODUCTION
An index is a subset of the stock market that consists of a certain number of stocks and act as a barometer of the entire stock market. It helps investors understand the general pattern or the direction in which the market moves, while the market indices consist of stocks from various industries and represent the entire market the sectoral indices consist of stocks only from a certain sector and helps us identify the trends in the certain sector. These indices are in fact investment tools in the form of an index fund. This study will probe into the correlation between the movement of the sectoral indices and the market index ie, how the movement of the sectoral index affect the market index. This will help investors understand how the markets correlate to the performance of each sector which will enable them to construct efficient portfolios. This also helps understand how exactly the entire market is affected by the movement in certain sectors by revealing how their movement is interrelated. The primary index of the BSE is the Sensex BSE, its closing from January 2020 – August 2021 is analysed alongside with automobile index, consumer durables index, Bankex and financial services index's closing from the same period.

Conceptual Definitions
Market index acts as a barometer of the entire market and gives us an insight into the general pattern or the trend in which the capital markets move. It also indicates the sentiment of the investors on a stock or a set of stocks.

Sensex, the first Indian Stock Index stands for 'Stock Exchange Sensitive Index is India's first benchmark index created in 1986. BSE Sensex represents 30 well-capitalised stocks in the BSE Exchange

Sectoral Indices
These indices allow the investors to get a summary of the movement of the stocks of industries in a certain sector.

Both BSE and NSE have some good indicators that measure companies falling under one specific sector.

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Automobile Index

The S&P BSE Auto is the index that contains the stocks of S&p 500 that are classified under the BSE industry classification as members of the transportation equipment sector. Auto Index acts as a scale to measure the performance of the automobile sector in the financial market.

Bankex

The BANKEX or the S&P BSE bank is the index that contains the stocks of S&p 500 that are classified under the BSE industry classification as members of the banking sector. An index comprised of stocks that belong to large capitalised Indian banks. It acts as a scale that investors can use to identify trends or the performance of Indian bank stocks.

Consumer Durables Index

The Consumer Durables Index is the index that contains the stocks of S&p 500 that are classified under the BSE industry classification as members of the Consumer Durables sector. An index comprised of stocks that belong to the industries that manufacture consumer durable products. Consumer Durables Index is made as a benchmark to reflect the behaviour and performance of the stocks that belong to the Consumer Durables industry.

Financial Services Index

Financial Services Index is the index that contains the stocks of S&p 500 that are classified under BSE industry classification as members of the financial services sector. Financial Services Index is made as a benchmark to reflect the behaviour and performance of the stocks that belong to financial service companies like insurance providers, housing finance companies, banks, etc.

REVIEW OF LITERATURE

Rashinker (2014), The nationalized bank's stocks were analysed for the market risk that was associated with it. The paper proved that the stock process of a few banks moved upwards during unfavourable conditions when the market was going down. The question here was if market conditions had a similar impact on the stock prices of the companies... Comparative analysis of risk and return for stock of CNX Nifty, studied by Shaini Naveen & T. Mallikarjunappa (2016) concluded that the beta value of all banks was positive and while the stock prices of a few banks moved in the same direction, prices of other bank stocks moved in the reverse direction of the market. The study found that investors Robert P. Schumaker and Nick Maida (2018) following an article on the financial news released by analysing the movement of the stock prices investigated the movement of the stock price using the sharp ration and demonstrated an abnormal return of 1.81. From this, it was concluded that while a few of the news outlets like the wall street journal, Reuters, NYT etc. had a positive return others like Barrons, Forbes, Market Watch, Bloomberg etc. gave negative returns.

S. Baranidharan, A.Alex, N. Dhivya (2019) attempted the study on Integration and Volatility Spillover of Automobile Companies Stock Price on BSE SENSEX and BSE AUTO Index. Since the critical value of 1%, 5% and 10% are lesser than the Augmented dickey fuller test – statistically the study concluded that there was a highly positive relationship exist among the automobile companies such as APOLLO TYRES, ASHOK LAY, BAJAJ AUTO, MARUTISUZU, MOTHER SUMI and MRF on BSE SENSEX and BSE AUTO Index.

Dr.S. Baranidharan & N. Dhivya (August 2019) using e-views Software, Descriptive Statics and Correlation through the data collected from the period 1st April 2013 to 31st March 2019 they analysed the empirical relationship between the Indian and the Japanese stock market based on various macroeconomic variables.

Research of J Cave, K Chaudhuri, SC Kumbhakar (2020) found a -ve relationship between the economic growth and the development in the banking sector, but the impact of the same

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financial sector on the growth of the economy was positive up to a certain period, after which the effect became negative. This raised further questions in the mind of the researcher whether the same findings hold during the recent COVID-19 crisis period.

Ali, Alam, and Rizvi (2020)analysed the impact COIV-19 had on different financial securities from India and compared them to the impact COVID-19 had on the financial securities of china and other countries. Following this, we investigated the different movements of the stock prices in the banking sector during the pandemic.

Rashmi Chaudhary (2020) analysed two composite indices (BSE 500 and BSE Sensex) and eight sectoral indices of Bombay Stock Exchange (BSE) (Auto, Bankex, Consumer Durables, Capital Goods, Fast Moving Consumer Goods, Health Care, Information Technology, and Realty) of India. It was found that the Indian stock market is more volatile, has a higher +ve kurtosis and a higher -ve skewness.

In the light of the above literature studies, the researchers attempt to examine, if there is an impact of the movement in select sectoral indices on the BSE's Sensex.

RESEARCH METHODOLOGY

The present research focuses on analysing if the movement in Sensex is impacted by the movement in Sectoral Indices or not. The research study is based on time series secondary data collected from published sources.

Period of Study: January 2020- August 2021

Tools of Analysis: The data so collected is presented as a graph and described as a part of Descriptive statistical analysis and for the inferential statistical analysis, the Structural equation Model (SEM) has been used to examine the impact of the Sectoral Indices on the BSE Index, the Sensex.

OBJECTIVES OF THE STUDY

1. To investigate the impact of the movement of the Automobile Index on the BSE Sensex
2. To investigate the impact of the movement of the Bank Index (Bankex) on the BSE Sensex
3. To investigate the impact of the movement of the Consumer Durables Index (Bankex) on the BSE Sensex
4. To investigate the impact of the movement of the Financial Services Index (Bankex) on the BSE Sensex

HYPOTHESES

1. There is no significant difference in the movement of the Automobile Index and the BSE Sensex
2. There is no significant difference in the movement of the Bank Index (Bankex) and the BSE Sensex
3. There is no significant difference in the movement of the Consumer Durables Index and the BSE Sensex
4. There is no significant difference in the movement of the Financial Services Index and the BSE Sensex

RESULTS AND DISCUSSION

An attempt has been made by the researchers in examining the impact of the movement select sectoral indices and the extent of the same on the BSE Index using descriptive and analytical statistical tools which were applied to the data collected from authentic published sources like

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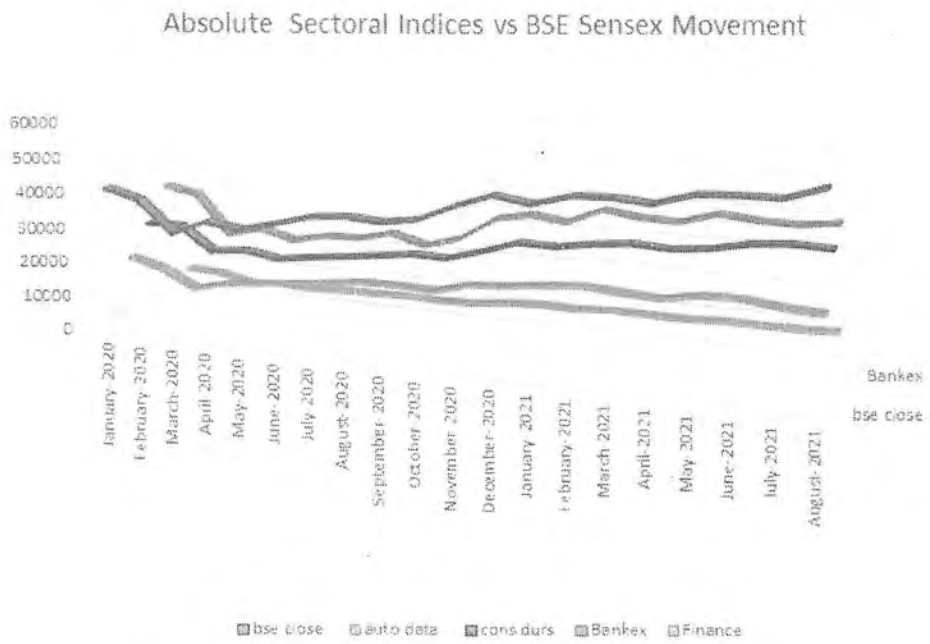
the IMF Data Mapper and the BSE India website. The results are discussed in the forthcoming part of the study.

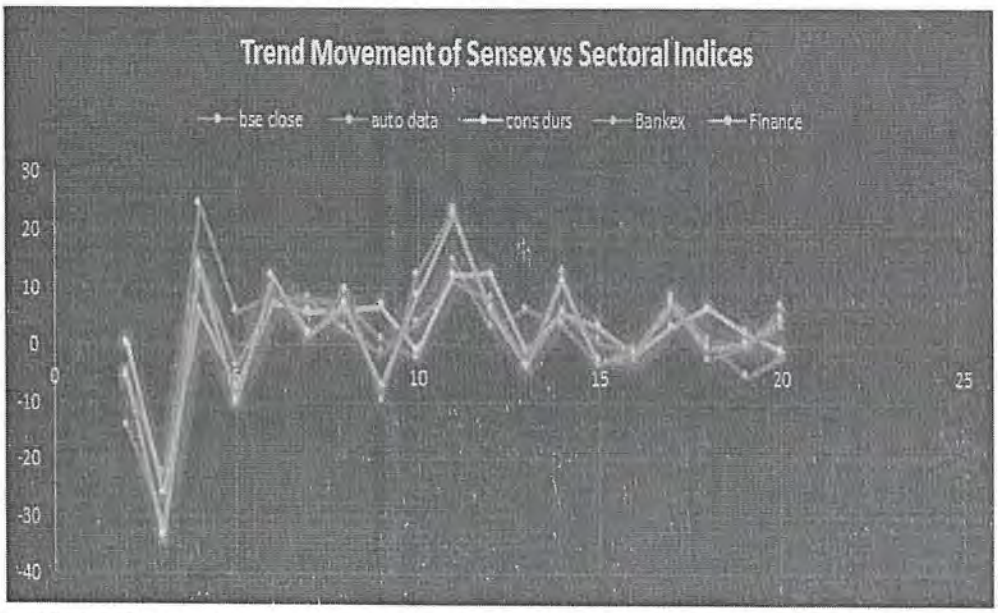
Figure 1: Sensex Vs individual Sectoral Index



Source: Figure based on data collected from BSEIndia.com

Figure1 above depicts that the Closing of all the indices, considered for the study is along in the same direction. They appear to move up or down together.

Figure 2: Trend Movement of Sensex vs Sectoral Indices



Source: Figure based on data collected from IMF Data mapper and BSEIndia.com

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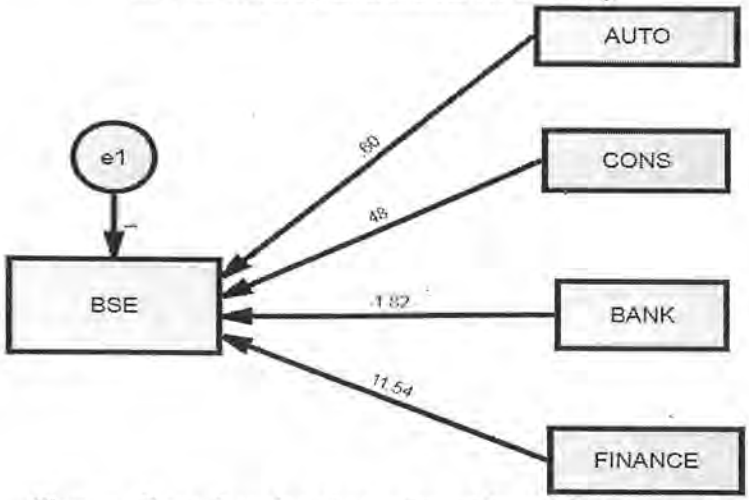
Figure 3: shows a Path model depicting the association between the movements of BSE Sensex and the select sectoral indices for the study



(***Source:*** Figure based on data collected from BSEIndia.com)

Figure 3, above shows the path model – association between the Movements of Sensex and the select sectoral indices, considered for the study viz., Automobile Index, Consumer Durables Index, Bankex and Financial Services Index. The diagram depicts a significant association between the movement in BSE Sensex and the select Sectoral Indices.

Table 1: Regression Analysis

Path Coefficients	Estimate	Standardised Estimate	S.E.	C.R.	P (significance)
BSE<---AUTO	0.604	0.117	0.05	12.174	Significant at 1% Significance level)
BSE<---CONS	0.484	0.146	0.032	15.138	Significant at 1% Significance level)
BSE<---BANK	-1.818	-0.626	0.028	-64.911	Significant at 1% Significance level)
BSE<---FINANCE	11.537	0.756	0.147	78.428	Significant at 1% Significance level)

(***Source:*** Calculations based on data collected from BSEIndia.com)

1. Automobile Index Movement on Sensex showed a positive impact. and is statistically significant and hence the researchers were unable to reject the H0 and conclude that. there is no significant difference in the movement of the Automobile Index Movement and the BSE Sensex and they not only move in the same direction but the ups and downs on this sectoral index impact the BSE Sensex to a very large extent. According to Mukherji, D. (2020), globally the automobile industry is suffering even before the pandemic COVID-19 hits the world, the main reason can be a decrease in GDP growth rate from 2017. Different measures are taken by the authority to improve air quality and safety measures that need to be implemented in automobiles to decrease the fatality rate. The increase in the price of petroleum products, registration costs, insurance, etc is creating a burden on the industry. To control the spreading of COVID-19 authorities implemented lockdown even though it slows down the speed at which COVID-19 was spreading Lockdown affected financial status globally throughout every sector. The recession due to COVID-19 is expected to be more severe than the great recession since it is directly affecting all the countries, By analysing the

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great recession and the severity of COVID-19 it is assumed that economic status will recover by 2023. While, the Sensex, on the other, has been on the rising trend, which could attribute to the negative impact.

2. Consumer Durable Index movement on Sensex movement shows the positive impact and is statistically significant and hence the researchers were unable to reject the H0 and conclude that there is no significant difference in the movement of Consumer Durables Index and the BSE Sensex and they not only move in the same direction but the ups and downs on this sectoral index impacts the BSE Sensex to a considerable extent. As viewed by James N (2021), Post covid-19 set back, due to factors like constrained demand, continued work from home, a spike in summer temperatures — which aid sales of cooling products — as well as vaccination drives, consumer durables players are optimistic, as far as their demand, sales and revenue numbers are concerned and they expect good demand. This could have impacted the positive movement on the Sensex.
3. Bankex Movement on Sensex movement shows a negative impact and is statistically significant and hence the researchers were unable to reject the H0 and conclude that there is no significant difference in the movement of Bank Index and the BSE Sensex and they not only move in the opposite direction but the ups and downs on this sectoral index impact the BSE Sensex significantly. Nikita, KP. Et al(2021), in their study on sectoral indices, found that Auto, Health indices and Bank indices are highly volatile during the period of Covid-19 and an extreme level of the standard deviation of bankex, the health index and auto index presents more variations in prices of these sectoral stocks. This analysis is helpful to understand the sectoral performance and choose the sectors for investment purposes.
4. Financial Services Index movement on Sensex movement shows positive impact is statistically significant and hence the researchers were unable to reject the H0 and conclude that there is no significant difference in the movement of Bank Index and the BSE Sensex and they not only move in the same direction but the ups and downs on this sectoral index impacts the BSE Sensex considerably to a large extent. According to Rajmohan (2021), et al; A large amount of equity being undersold shows the significant impact the Indian financial services sector had experienced. By comparing the financial services index it is recorded that the return on the financial service sector has been low. Hence it is concluded that covid -19 has had a significant impact on the financial services sector during the study period. This is due to the sudden downward trend of the stocks that affected the financial service process. Even then the financial service sector is recovering with its optimal potential.

Table 2: MODEL FIT SUMMARY OF STRUCTURAL EQUATION MODEL

Fit Indices	Results	Suggested values
Chi square in (CMIN)	194.137 (0.000)	≤ 5.00 (Hair et al., 1998)
Comparative fit index (CFI)	1.00	>0.90 (Hu and Bentler, 1999)
Goodness of Fit Index (GFI)	.900	>0.90 (Hair et al. 2006)
Adjusted Goodness of Fit Index (AGFI)	.907	> 0.90 (Daire et al., 2008)
Normated Fit Index (NFI)	1.00	≥ 0.90 (Hu and Bentler, 1999)
Incremental Fit Index (IFI)	1.00	Approaches 1
Root mean square error of Approximation (RMSEA)	.028	< 0.08 (Hair et al., 2006)

(***Source:*** Calculations based on data collected from BSEIndia.com)

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From table 2, the model output demonstrated that cmin was achieved with the probability level of 194.137 which was greater than 0.05 which indicates the perfect fit of the model. Goodness of Fit Index (GFI) value (.900) and Adjusted Goodness of Fit Index (AGFI) value (.907) was greater than 0.9 representing a good fit. The calculated Normated Fit Index (NFI) value (1.00) and Comparative Fit Index (CFI) value (1.00) indicates that it was a perfect fit and also it was found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) value was0.028 which was less than 0.08 which indicate a perfect fit. Thus, the Goodness of fit indices support the model fit and these indices indicate the acceptability of the structural model.

SUMMARY AND CONCLUSION

Summarising the findings of the study on the impact of Sectoral indices on the Sensex,

1. Automobile Index Movement on Sensex showed a positive impact and hence the researchers were unable to reject the H0 and concluded that. there is no significant difference in the movement of the Automobile Index Movement and the BSE Sensex and they not only move in the same direction and the ups and downs on this sectoral index impacted the BSE Sensex to a very large extent.
2. Consumer Durable Index movement on Sensex movement showed the positive impact and hence the researchers were unable to reject the H0 and conclude that there is no significant difference in the movement of the Consumer Durables Index and the BSE Sensex and they not only move in the same direction but the ups and downs on this sectoral index impacted the BSE Sensex to a considerable extent.
3. The Bank Index of the BSE Exchange, Bankex Movement on Sensex movement showed a negative impact, hence the researchers were unable to reject the H0 and conclude that there is no significant difference in the movement of Bank Index and the BSE Sensex and they not only move in the opposite direction but the ups and downs on this sectoral index impact the BSE Sensex significantly.
4. Financial Services Index movement on Sensex movement shows positive impact There is no significant difference in the movement of Bank Index and the BSE Sensex and they not only move in the same direction but the ups and downs on this sectoral index impacts the BSE Sensex considerably to a large extent.

To conclude, it may be inferred that Sectoral Indices' movements have a significant impact on the movement of the Sensex.

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