

**CAPSTONE PROJECT**

**IMPACT OF VARIOUS FINANCIAL PARAMETERS ON STOCK PRICE**

**GROWTH**

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**REG NO: 202301601**

**SYMOISIS CENTER FOR DISTANCE LEARNING**

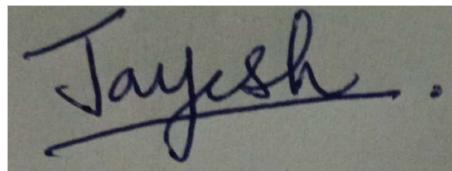
**2023-25**

### **DECLARATION BY THE LEARNER**

This is to declare that I have carried out this project work myself in part fulfillment of the PGCBA Program of SCDL.

The work is original, has not been copied from anywhere else and has not been submitted to any other University/Institute for an award of any degree/diploma.

Name: Jayesh Manoj Mendse

A handwritten signature in black ink on a white background. The signature reads "Jayesh Mendse". A horizontal line is drawn through the end of the signature, and a small dot is placed at the end of the line.

Signature:

Place: Pune

Date: 24.02.25

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## **Chapter 1**

### **1.1) Introduction:**

This project is related to stock market where there is a continuous growth in investors participation particularly retail investors and high net worth investors (HNI). In addition, there are FII (Financial Institution Investors) and DII (Domestic Institution Investors). FII and DII are equipped with good financial and technical analytical tools.

All the above-mentioned investors have a common goal, that the stock in which they are invested should give good returns on price in short term and long term.

There are mainly two methods of analyzing the stock before doing any investment. First is Technical Analysis and second is Financial Analysis.

In this project, the focus is on Financial Analysis.

### **1.2) Objectives:**

- Descriptive analytics on past five years data.
- Understand effect of various financial parameters on stock price growth.
- Understanding the correlation of various parameters.
- Hands on experience of using R Programming and Tableau.
- The key insights drawn from the analysis will help proper stock selection.

### **1.3) Scope and Background:**

There are two major stock exchanges in India, NSE and BSE. There are around more than 5500 stocks listed. These stocks are categorized as Large Cap, Mid Cap and Small Cap.

Classification based on Market Cap in crores INR:

- Small Cap < 500
- Mid Cap > 500 < 7000
- Large Cap > 7000

The scope of this project is on top 150 companies by market cap in Large Cap and Mid Cap.

The required data is collected from various websites like NSE, Screener and copied on excel sheet as a raw data. Previous 5 years data was collected on 23.01.2025.

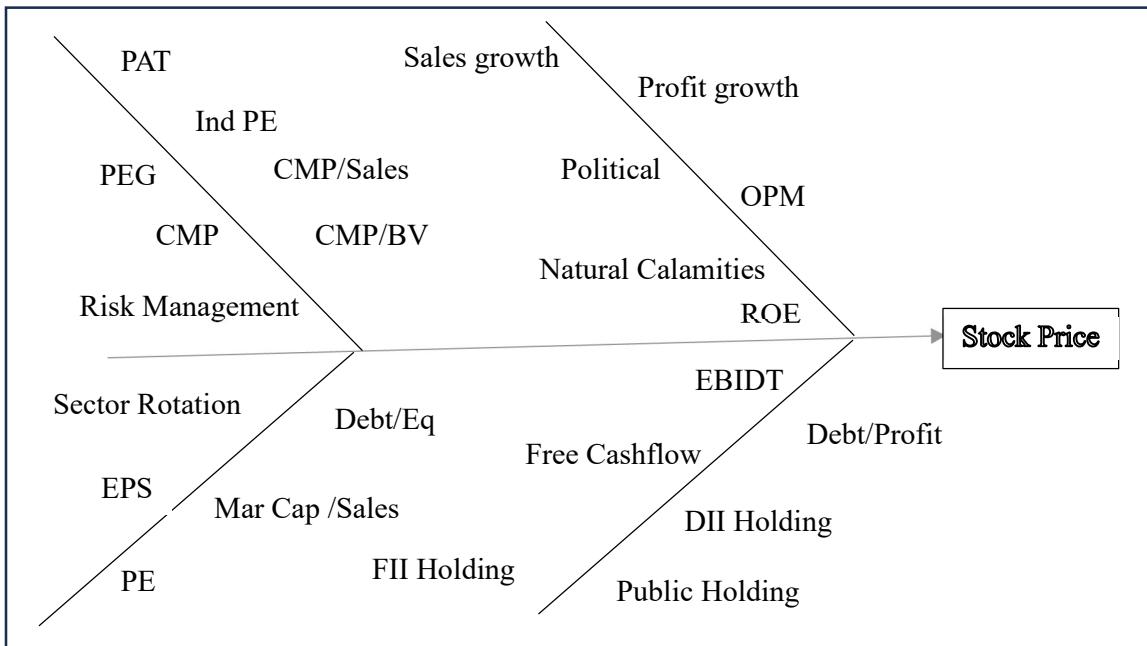
#### **1.4) User Requirements:**

- In R Studio, all packages and library should be available.
- In this project, free version of Tableau is being used. Expect that maximum tools and techniques are available.

## Chapter 2

### 2.1) Planning:

Before stepping into collection and analysis of data, it is important to understand which financial parameters are related to stock price fluctuations (Growth and Fall). This could be understood with the help of Cause-and-Effect diagram (Fishbone Diagram). Apart from financial parameters, there are other causes like Political Status, Natural

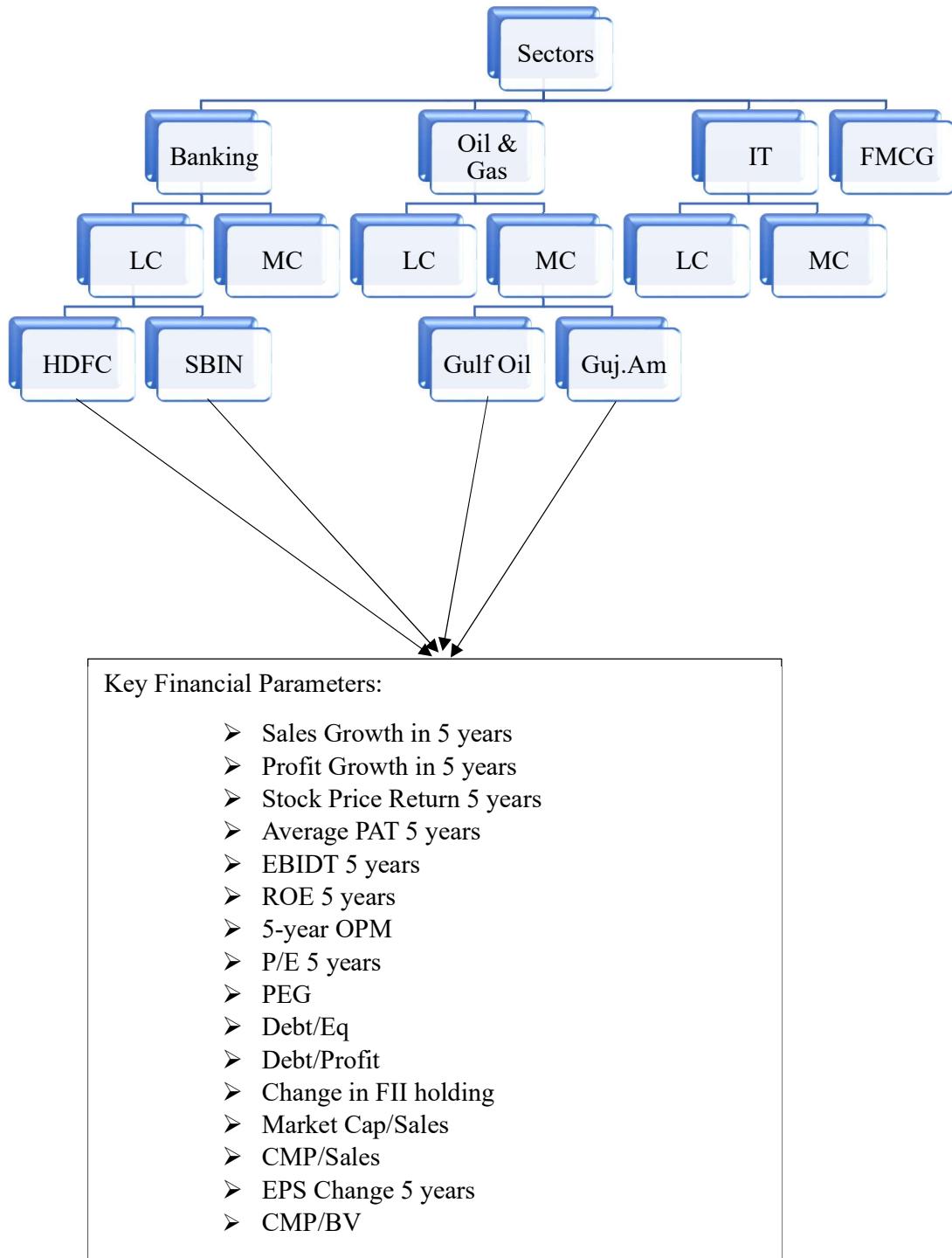


Calamities etc. However, these other parameters are not considered in this project.

There are many causes which affects the stock price. However, for this project study and analysis following few parameters are considered.

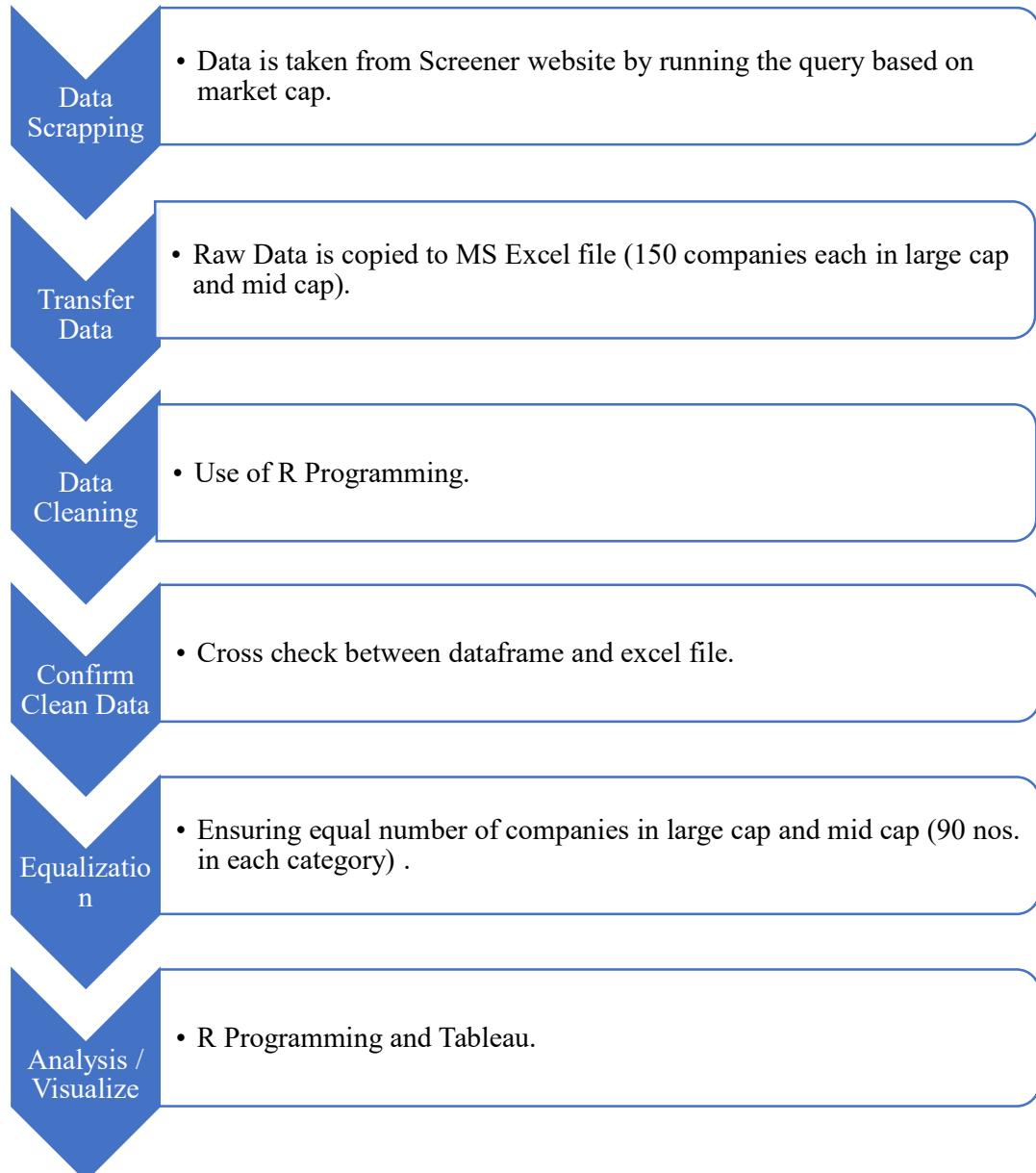
- Sales growth in 5 years
- Profit growth in 5 years
- ROE in 5 years
- EPS growth in 5years
- EBIDT in 5 years
- Average PAT in 5 years
- OPM in 5 years
- PE in 5 years
- FII holding

## 2.2) Data Model:



The above hierarchical model explains that stock market consists of number of sectors to which companies are classified. Based on market cap companies are further classified into Large Cap (LC) and Mid Cap (MC). Each company has its own financial performance indicator derived from Profit and Loss account + Balance sheet.

### **2.3) Steps in Data Set Preparation and Visualization:**



## 2.4) Fetching data from excel file in R Studio:

Raw data from excel file is read in data frame named “dfraw”.

### R Programming Code:

```
library(readxl)

dfraw<-read_xlsx("C:/PGCBA project/Market Data.xlsx",sheet="Combo")

dfraw

head(dfraw)

tail(dfraw)
```

### Output:

```
dfraw

# A tibble: 266 × 30
  S.No. Name      LCMC Sector  CMP MarketCap Sales `CMP/Sales` OPM_Percent `P/E`
  Ind_PE

  <dbl> <chr>    <chr> <chr> <dbl>   <dbl> <dbl>   <dbl> <dbl> <dbl> <dbl>
  1 1 Reliance In... LC  Oil &... 1264. 1709750. 9.40e5    1.82    17.5  24.7  20.7
  2 2 TCS       LC  IT    4145. 1500799. 2.52e5    5.95    26.8  30.8  32.8
  3 3 HDFC Bank  LC  Banki... 1665. 1274133. 3.29e5    3.87    37.4  18.3  10.4
  4 4 Bharti Airt... LC  Telec... 1636. 979577. 1.55e5    6.3     51.9  69.1  43.4
  5 5 ICICI Bank  LC  Banki... 1202. 848552. 1.74e5    4.87    32.8  17.9  10.4
  6 6 Infosys    LC  IT    1865. 774522. 1.60e5    4.84    23.8  28.0  32.8
  7 7 St Bk of In... LC  Banki... 746. 665864. 4.70e5    1.42    47.9  8.7   8.7
  8 8 ITC        LC  FMCG  440. 550702. 7.51e4    7.33    35.5  26.8  25.3
  9 9 Hind. Unile... LC  FMCG  2322. 545505. 6.27e4    8.71    23.6  52.7  60.7
 10 10 Life Insura... LC  Banki... 837. 529528. 8.96e5    0.59    2.88  12.8  48.2

# i 256 more rows
```

```
head(dfraw)

# A tibble: 6 × 30
  S.No. Name      LCMC Sector  CMP MarketCap Sales `CMP/Sales` OPM_Percent `P/E`
  Ind_PE

  <dbl> <chr>    <chr> <chr> <dbl>   <dbl> <dbl>   <dbl> <dbl> <dbl> <dbl>
```

```

<dbl> <chr>      <chr> <chr> <dbl>   <dbl> <dbl>      <dbl>   <dbl> <dbl> <dbl>
1 1 Reliance Ind... LC Oil &... 1264. 1709750. 9.40e5     1.82    17.5 24.7 20.7
2 2 TCS         LC IT 4145. 1500799. 2.52e5     5.95    26.8 30.8 32.8
3 3 HDFC Bank   LC Banki... 1665. 1274133. 3.29e5     3.87    37.4 18.3 10.4
4 4 Bharti Airtel LC Telec... 1636. 979577. 1.55e5     6.3     51.9 69.1 43.4
5 5 ICICI Bank   LC Banki... 1202. 848552. 1.74e5     4.87    32.8 17.9 10.4
6 6 Infosys     LC IT 1865. 774522. 1.60e5     4.84    23.8 28.0 32.8

```

tail(dfraw)

# A tibble: 6 × 30

S.No.	Name	LCMC	Sector	CMP	MarketCap	Sales	'CMP/Sales'	OPM_Percent	'P/E'	Ind_PE
1	264 Borosil	MC	Consu...	378.	4522.	1022.	4.42	14.2	64.6	35.2
2	265 Nirlon	MC	Chemi...	500.	4503.	622.	7.24	78.8	21.5	22.8
3	266 Team Lease S...	MC	Consu...	2683.	4501.	10254.	0.44	1.25	45.4	30.8
4	267 Kitex Garmen...	MC	Texti...	226.	4485.	744.	6.03	21.8	45.7	41.2
5	268 Epack Durable	MC	Consu...	466.	4464.	1956.	2.28	7.09	93.7	91.9
6	269 EMS	MC	Engin...	804.	4461.	885.	5.04	26.4	26.0	22.8

str(dfraw)

tibble [266 × 30] (S3: tbl\_df/tbl/data.frame)

```

$ S.No.          : num [1:266] 1 2 3 4 5 6 7 8 9 10 ...
$ Name           : chr [1:266] "Reliance Industr" "TCS" "HDFC Bank" "Bharti Airtel" ...
$ LCMC           : chr [1:266] "LC" "LC" "LC" "LC" ...
$ Sector         : chr [1:266] "Oil & Gas" "IT" "Banking & Finance" "Telecommunication" ...
$ CMP            : num [1:266] 1264 4145 1665 1636 1202 ...
$ MarketCap      : num [1:266] 1709750 1500799 1274133 979577 848552 ...
$ Sales          : num [1:266] 939838 252082 329022 155478 174379 ...
$ 'CMP/Sales'    : num [1:266] 1.82 5.95 3.87 6.3 4.87 4.84 1.42 7.33 8.71 0.59 ...
$ OPM_Percent    : num [1:266] 17.5 26.8 37.4 51.9 32.8 ...
$ 'P/E'           : num [1:266] 24.7 30.8 18.3 69.1 17.9 ...
$ Ind_PE         : num [1:266] 20.7 32.8 10.4 43.4 10.4 ...

```

```

$ CMP/BV      : num [1:266] 2.09 14.78 2.77 10.69 3.29 ...
$ Debt/Eq     : num [1:266] 0.44 0.09 6.81 2.59 6.45 ...
$ EPS         : num [1:266] 51.1 134.8 91.3 21.6 67.4 ...
$ PEG          : num [1:266] 2.06 3.75 0.78 0.56 0.3 2.49 0.09 2.67 4.97 0.17 ...
$ Sales_Growth_5yrs : num [1:266] 9.61 10.46 21.95 13.17 17.25 ...
$ Profit_Growth_5yrs  : num [1:266] 11.98 8.21 23.42 122.47 59.73 ...
$ ROE_5Yr       : num [1:266] 8.73 43.77 16.85 12.36 15.23 ...
$ Stock_Price_Return_5yrs: num [1:266] 12.82 13.68 5.99 26.03 17.62 ...
$ EBIDT_5yrs    : num [1:266] 14.05 9.45 21.23 24.56 23.48 ...
$ EPS_Change_5yrs   : num [1:266] 12 9 15.5 121.2 57 ...
$ Avg_PAT_5yrs   : num [1:266] 56477 38527 41373 8821 26261 ...
$ Free_Cash_Flow_5yrs : num [1:266] -39148 182519 40406 125475 418149 ...
$ CF_Opr_5Yrs    : num [1:266] 506309 197423 53531 265573 429205 ...
$ BV_5yrs_back   : num [1:266] 332 224 322 132 190 ...
$ 5Yr_OPM_Percent : num [1:266] 16.5 27.1 53.4 48.7 19.1 ...
$ PE_5yrs        : num [1:266] 26.4 31.1 20.3 65.6 21.3 ...
$ Chg_in_FII_Hold_3Yr : num [1:266] -5.59 -2.3 11.74 4.9 0.4 ...
$ M.Cap/Sales    : num [1:266] 1.82 5.95 3.87 6.3 4.87 4.84 1.42 7.33 8.71 0.59 ...
$ Debt/Profit    : num [1:266] 4.52 0.2 47.48 26.35 35.83 ...

```

*Observations:*

- There is total 269 rows and 30 columns.
- Data type is character for dimension and numeric for measures.
- Data also includes blank cells / no data in some rows.

## 2.5) Display of column names from data frame

*R Programming Code:*

```

library(dplyr)
names(dfraw) # displays name of column from dataframe
colnames(dfraw)

```

*Output:*

```
names(dfraw) # displays name of column from dataframe
```

```

[1] "S.No."
[4] "Sector"
[7] "Sales"
[10] "P/E"
[13] "Debt/Eq"
[16] "Sales_Growth_5yrs"
[19] "Stock_Price_Return_5yrs"
[22] "Avg_PAT_5yrs"
[25] "BV_5yrs_back"
[28] "Chg_in_FII_Hold_3Yr"
"Name"
"CMP"
"CMP/Sales"
"Ind_PE"
"EPS"
"Profit_Growth_5yrs"
"EBIDT_5yrs"
"Free_Cash_Flow_5yrs"
"5Yr_OPM_Percent"
"M.Cap/Sales"
"LCMC"
"MarketCap"
"OPM_Percent"
"CMP/BV"
"PEG"
"ROE_5Yr"
"EPS_Change_5yrs"
"CF_Opr_5Yrs"
"PE_5yrs"
"Debt/Profit"

```

## 2.6) Data cleaning

### 2.6.1) Removing rows from data frame (dfraw) where there is no value

*R Programming Code:*

```
dfraw<-dfraw[complete.cases(dfraw),]
```

dfraw

*Output:*

```

dfraw
# A tibble: 180 × 30
  S.No. Name   LCMC Sector  CMP MarketCap Sales `CMP/Sal
es` OPM_Percent `P/E` Ind_PE
<dbl> <chr>    <chr> <chr> <dbl> <dbl> <dbl> <dbl>
1     1 Reliance In... LC Oil &... 1264. 1709750. 9.40e5
2     2 TCS       LC IT      4145. 1500799. 2.52e5
3     3 HDFC Bank LC Banki... 1665. 1274133. 3.29e5
4     4 Bharti Airt... LC Telec... 1636   979577. 1.55e5
5     5 ICICI Bank LC Banki... 1202   848552. 1.74e5
6     6 Infosys    LC IT      1865. 774522. 1.60e5
7     7 St Bk of In... LC Banki... 746.  665864. 4.70e5
8     8 ITC        LC FMCG    440.  550702. 7.51e4
9     9 Hind. Unile... LC FMCG    2322. 545505. 6.27e4
10    11 HCL Technol... LC IT      1807  490440. 1.15e5
25    170 more rows
# i 170 more rows

```

*Observations:*

- After removing blank cells / no data the number of rows reduced to 180 from 269.
- So, this command has cleaned the unwanted / missing data.

## 2.6.2) Exporting clean data from data frame (dfraw) to a new excel file

*R Programming Code:*

```
install.packages("writexl")
library(writexl)
write_xlsx(dfraw,"C:/PGCBA project/Testing file.xlsx")
```

*Output:*

A new file name as “Testing file” is generated in the working directory.

*Observations:*

- Now, clean data is available for further project working.
- Note: Equal number of rows for large cap and mid cap is done by manually deleting excess data for large cap.
- Now, there are 90 companies each in large cap and mid cap.

## 2.6.3) Fetching data from excel file (Clean data from Testing file)

*R Programming Code:*

```
library(readxl)
dfclean<-read_xlsx("C:/PGCBA project/Testing file.xlsx")
dfclean
```

*Output:*

```
dfclean
# A tibble: 180 × 30
  S.No. Name     OPM_Percent `P/E` LCMC_Sector Ind_PE CMP MarketCap Sales `CMP/Sal
  <dbl> <chr>    <dbl> <dbl> <chr> <dbl> <dbl> <dbl> <dbl> <dbl>
1 1 Reliance In... 17.5 24.7 LC Oil &... 1264. 1709750. 9.40e5 1
2 2 TCS            26.8 30.8 LC IT      4145. 1500799. 2.52e5 5
3 3 HDFC Bank      37.4 18.3 LC Banki... 1665. 1274133. 3.29e5 3
4 4 Bharti Airt... 51.9 69.1 LC Telec... 1636   979577. 1.55e5 6
5 5 ICICI Bank     32.8 17.9 LC Banki... 1202   848552. 1.74e5 4
6 6 Infosys         23.8 28.0 LC IT      1865   774522. 1.60e5 4
7 7 St Bk of In... 47.9  8.7  LC Banki... 746    665864. 4.70e5 1
8 8 ITC             35.5 26.8 LC FMCG    440    550702. 7.51e4 7
9 9 Hind. Unile... 23.6  52.7 LC FMCG    2322   545505. 6.27e4 8
10 11 HCL Technol... 21.8  28.7 LC IT      1807   490440. 1.15e5 4
11 12 Nestle India 20.0  32.8 LC FMCG    1650   4500000. 1.00e5 10
12 13 Wipro          22.0 28.0 LC IT      1500   4000000. 1.00e5 10
13 14 Bharti AXA   20.0  32.8 LC FMCG    1400   3500000. 1.00e5 10
14 15 Reliance Power 20.0 28.0 LC FMCG    1300   3000000. 1.00e5 10
15 16 Adani Ports & SEZ 20.0 28.0 LC FMCG    1200   2500000. 1.00e5 10
16 17 Adani Total Q 20.0 28.0 LC FMCG    1100   2000000. 1.00e5 10
17 18 Bharti AXA   20.0 28.0 LC FMCG    1000   1500000. 1.00e5 10
18 19 Adani Wilmar 20.0 28.0 LC FMCG    900    1000000. 1.00e5 10
19 20 Adani Green P 20.0 28.0 LC FMCG    800    800000. 1.00e5 10
20 21 Adani Wilmar 20.0 28.0 LC FMCG    700    600000. 1.00e5 10
21 22 Adani Wilmar 20.0 28.0 LC FMCG    600    400000. 1.00e5 10
22 23 Adani Wilmar 20.0 28.0 LC FMCG    500    200000. 1.00e5 10
23 24 Adani Wilmar 20.0 28.0 LC FMCG    400    100000. 1.00e5 10
24 25 Adani Wilmar 20.0 28.0 LC FMCG    300    500000. 1.00e5 10
25 26 Adani Wilmar 20.0 28.0 LC FMCG    200    200000. 1.00e5 10
26 27 Adani Wilmar 20.0 28.0 LC FMCG    100    100000. 1.00e5 10
27 28 Adani Wilmar 20.0 28.0 LC FMCG    50     500000. 1.00e5 10
28 29 Adani Wilmar 20.0 28.0 LC FMCG    40     200000. 1.00e5 10
29 30 Adani Wilmar 20.0 28.0 LC FMCG    30     100000. 1.00e5 10
30 31 Adani Wilmar 20.0 28.0 LC FMCG    20     500000. 1.00e5 10
31 32 Adani Wilmar 20.0 28.0 LC FMCG    10     200000. 1.00e5 10
32 33 Adani Wilmar 20.0 28.0 LC FMCG    5      100000. 1.00e5 10
33 34 Adani Wilmar 20.0 28.0 LC FMCG    4      500000. 1.00e5 10
34 35 Adani Wilmar 20.0 28.0 LC FMCG    3      200000. 1.00e5 10
35 36 Adani Wilmar 20.0 28.0 LC FMCG    2      100000. 1.00e5 10
36 37 Adani Wilmar 20.0 28.0 LC FMCG    1      500000. 1.00e5 10
37 38 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
38 39 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
39 40 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
40 41 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
41 42 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
42 43 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
43 44 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
44 45 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
45 46 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
46 47 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
47 48 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
48 49 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
49 50 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
50 51 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
51 52 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
52 53 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
53 54 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
54 55 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
55 56 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
56 57 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
57 58 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
58 59 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
59 60 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
60 61 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
61 62 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
62 63 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
63 64 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
64 65 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
65 66 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
66 67 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
67 68 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
68 69 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
69 70 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
70 71 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
71 72 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
72 73 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
73 74 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
74 75 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
75 76 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
76 77 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
77 78 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
78 79 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
79 80 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
80 81 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
81 82 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
82 83 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
83 84 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
84 85 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
85 86 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
86 87 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
87 88 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
88 89 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
89 90 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
90 91 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
91 92 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
92 93 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
93 94 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
94 95 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
95 96 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
96 97 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
97 98 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
98 99 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
99 100 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
100 101 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
101 102 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
102 103 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
103 104 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
104 105 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
105 106 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
106 107 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
107 108 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
108 109 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
109 110 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
110 111 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
111 112 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
112 113 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
113 114 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
114 115 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
115 116 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
116 117 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
117 118 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
118 119 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
119 120 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
120 121 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
121 122 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
122 123 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
123 124 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
124 125 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
125 126 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
126 127 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
127 128 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
128 129 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
129 130 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
130 131 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
131 132 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
132 133 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
133 134 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
134 135 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
135 136 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
136 137 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
137 138 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
138 139 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
139 140 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
140 141 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
141 142 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
142 143 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
143 144 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
144 145 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
145 146 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
146 147 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
147 148 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
148 149 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
149 150 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
150 151 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
151 152 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
152 153 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
153 154 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
154 155 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
155 156 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
156 157 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
157 158 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
158 159 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
159 160 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
160 161 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
161 162 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
162 163 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
163 164 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
164 165 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
165 166 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
166 167 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
167 168 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
168 169 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
169 170 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
170 171 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
171 172 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
172 173 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
173 174 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
174 175 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
175 176 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
176 177 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
177 178 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
178 179 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
179 180 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
180 181 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
181 182 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
182 183 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
183 184 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
184 185 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
185 186 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
186 187 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
187 188 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
188 189 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
189 190 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
190 191 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
191 192 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
192 193 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
193 194 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
194 195 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
195 196 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
196 197 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
197 198 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
198 199 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
199 200 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
200 201 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
201 202 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
202 203 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
203 204 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
204 205 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
205 206 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
206 207 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
207 208 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
208 209 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
209 210 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
210 211 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
211 212 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
212 213 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
213 214 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
214 215 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
215 216 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
216 217 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
217 218 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
218 219 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
219 220 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10
220 221 Adani Wilmar 20.0 28.0 LC FMCG    0.5    200000. 1.00e5 10
221 222 Adani Wilmar 20.0 28.0 LC FMCG    0.5    100000. 1.00e5 10
222 223 Adani Wilmar 20.0 28.0 LC FMCG    0.5    500000. 1.00e5 10

```

```
# i 170 more rows
```

***Observations:***

- A new data frame (dfclean) created which reads and stores data from clean file.
- Total number of rows are 180.

#### **2.6.4) Sorting large cap (LC) data showing name of companies and sector**

***R Programming Code:***

```
df_large<-dfclean[dfclean$LCMC == "LC",c("Name","Sector")]
```

```
df_large
```

***Output:***

```
df_large
# A tibble: 90 × 2
  Name      Sector
  <chr>    <chr>
1 Reliance Industr Oil & Gas
2 TCS        IT
3 HDFC Bank Banking & Finance
4 Bharti Airtel Telecommunication
5 ICICI Bank Banking & Finance
6 Infosys    IT
7 St Bk of India Banking & Finance
8 ITC        FMCG
9 Hind. unilever FMCG
10 HCL Technologies IT
# i 80 more rows
```

***Observations:***

- Now, there are only 90 companies belonging to large cap.

#### **# Bar Plot for large cap companies and its market cap**

***R Programming Code:***

```
df_marcap<-dfclean[dfclean$LCMC == "LC",c("Name","MarketCap")]
```

```
df_marcap
```

```
head(df_marcap,10)
```

```
tail(df_marcap,10)
```

```
library(ggplot2)
```

```

plot<-
ggplot(df_marcap,aes(Name,MarketCap))+geom_bar(stat="identity",color='steelblue4',fill='steelblue4')

```

```
plot
```

Output:

```

df_marcap
# A tibble: 90 × 2
  Name      MarketCap
  <chr>    <dbl>
1 Reliance Industr 1709750.
2 TCS        1500799.
3 HDFC Bank   1274133.
4 Bharti Airtel  979577.
5 ICICI Bank    848552.
6 Infosys     774522.
7 St Bk of India  665864.
8 ITC         550702.
9 Hind. Unilever  545505.
10 HCL Technologies 490440.
# i 80 more rows

```

```

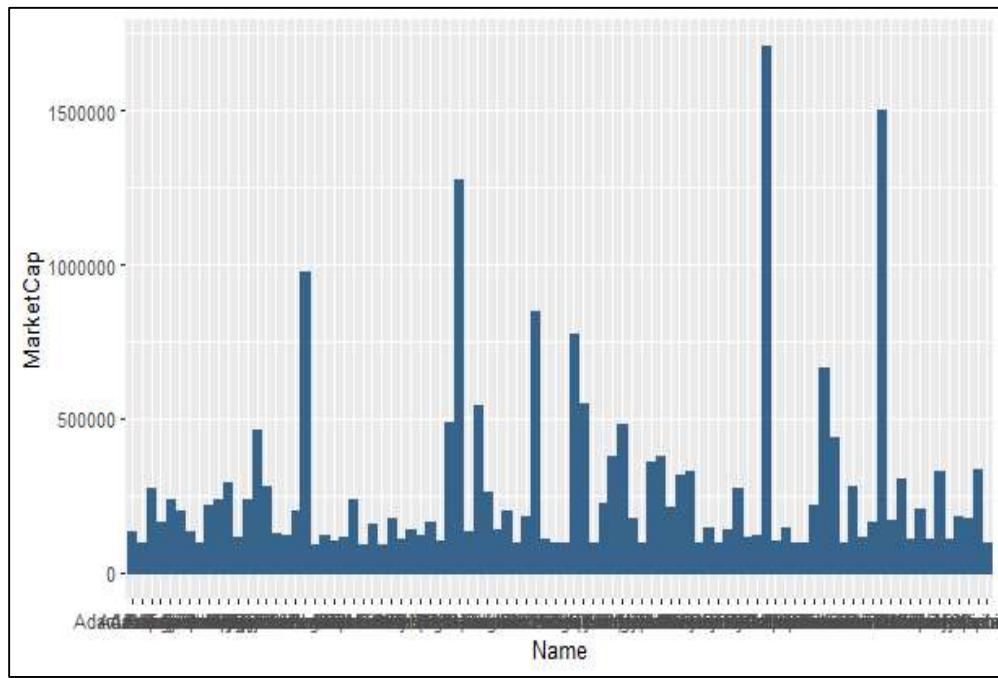
head(df_marcap,10)
# A tibble: 10 × 2
  Name      MarketCap
  <chr>    <dbl>
1 Reliance Industr 1709750.
2 TCS        1500799.
3 HDFC Bank   1274133.
4 Bharti Airtel  979577.
5 ICICI Bank    848552.
6 Infosys     774522.
7 St Bk of India  665864.
8 ITC         550702.
9 Hind. Unilever  545505.
10 HCL Technologies 490440

```

```

tail(df_marcap,10)
# A tibble: 10 × 2
  Name      MarketCap
  <chr>    <dbl>
1 Info Edg.(India)  97641.
2 Adani Energy Sol  97360.
3 Tata Consumer     97272.
4 JSW Energy        96503.
5 I O B            95817.
6 Polycab India    94182.
7 Shree Cement      93595.
8 Dixon Technolog.  92942.
9 Dabur India       92922.
10 Bosch           91365.

```



*Observations:*

- Range of market cap is from 91,365 crore to 17,09,750 crore.
- Highest market cap company is Reliance Industries in oil & gas sector.

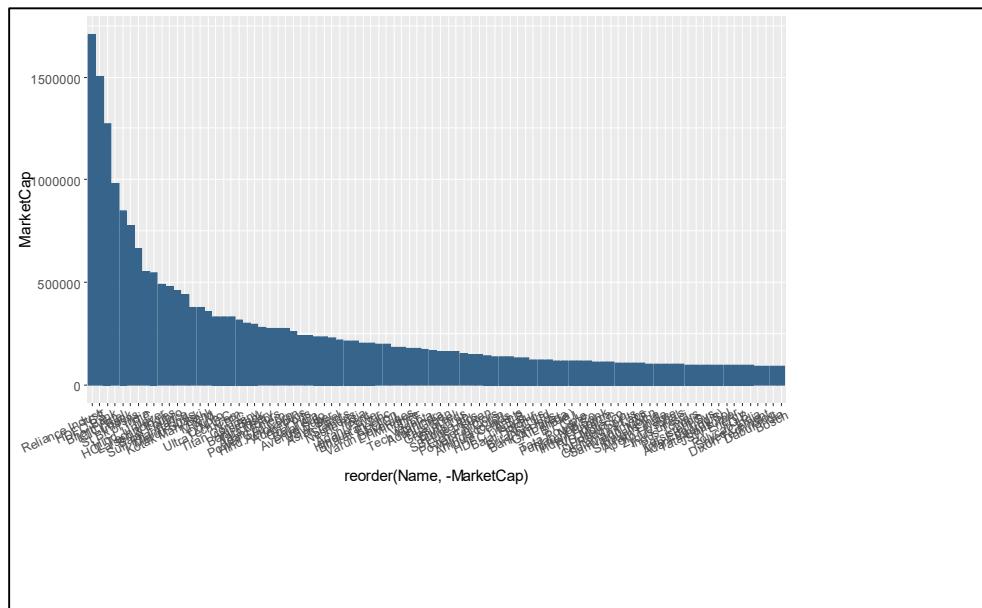
**# Arranging graph in descending order for large cap companies**

*R Programming Code:*

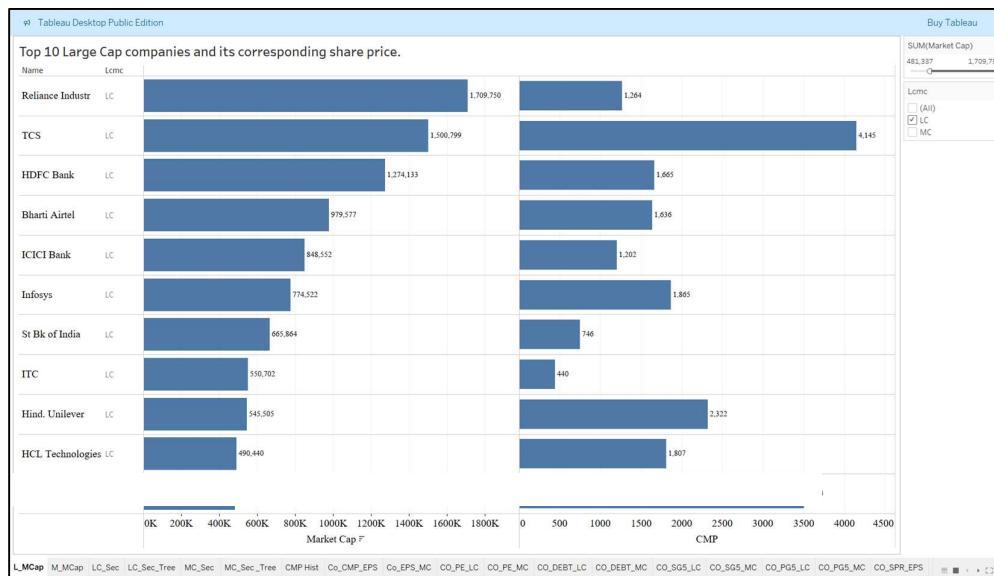
```
library(ggplot2)

plot<-ggplot(df_marcap,aes(x=reorder(Name,-MarketCap),y=MarketCap))
plot<-plot+geom_bar(stat="identity",color="steelblue4",fill="steelblue4")
plot<-plot+theme(axis.text.x=element_text(angle=25,hjust=0.9))
plot
```

Output:



# Graph of Top 10 Large Cap companies and its current market price (CMP) using Tableau



## 2.6.5) Sorting Mid cap (MC) data showing name of companies and sector

*R Programming Code:*

```
df_mid_marcap<-dfclean[dfclean$LCMC == "MC",c("Name","MarketCap")]

df_mid_marcap

head(df_mid_marcap,10)

tail(df_mid_marcap,10)

library(ggplot2)

plot<-
ggplot(df_mid_marcap,aes(Name,MarketCap))+geom_bar(stat="identity",color="steelblue4",fill="steelblue4")

plot
```

*Output:*

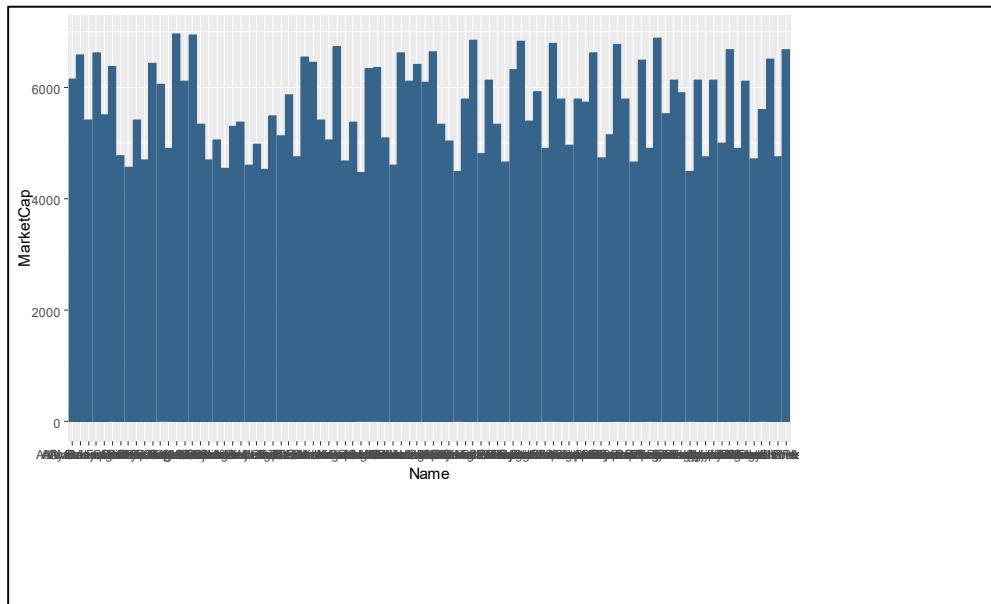
```
df_mid_marcap
# A tibble: 90 × 2
  Name      MarketCap
  <chr>     <dbl>
1 E2E Networks    6960.
2 GHCL            6951.
3 Sunteck Realty   6883.
4 Orient Cement    6858.
5 Puravankara     6832.
6 Sandur Manganese 6802.
7 South Ind.Bank   6771.
8 JK Paper          6738.
9 Ujjivan Small     6686.
10 WPIL             6681.

# i 80 more rows
```

```
head(df_mid_marcap,10)
# A tibble: 10 × 2
  Name      MarketCap
  <chr>     <dbl>
1 E2E Networks    6960.
2 GHCL            6951.
3 Sunteck Realty   6883.
4 Orient Cement    6858.
5 Puravankara     6832.
6 Sandur Manganese 6802.
7 South Ind.Bank   6771.
8 JK Paper          6738.
9 Ujjivan Small     6686.
10 WPIL             6681.
```

```
tail(df_mid_marcap,10)
# A tibble: 10 × 2
  Name      MarketCap
  <chr>     <dbl>
1 Pitti Engg.       4667.
```

2	Styrenix Perfor.	4659.
3	Hawkins Cookers	4602.
4	Magellanic Cloud	4599.
5	Cigniti Tech.	4572.
6	Grauer & Weil	4552.
7	Hikal	4531.
8	Nirlon	4503.
9	Team Lease Serv.	4501.
10	Kitex Garments	4485.



### *Observations:*

- Range of market cap is from 4485 crore to 6960 crore.
  - Highest market cap company is E2E Networks in IT sector.

# Arranging graph in descending order for mid cap companies

## *R Programming Code:*

```
# Descending order of having bar plot having horizontal bars

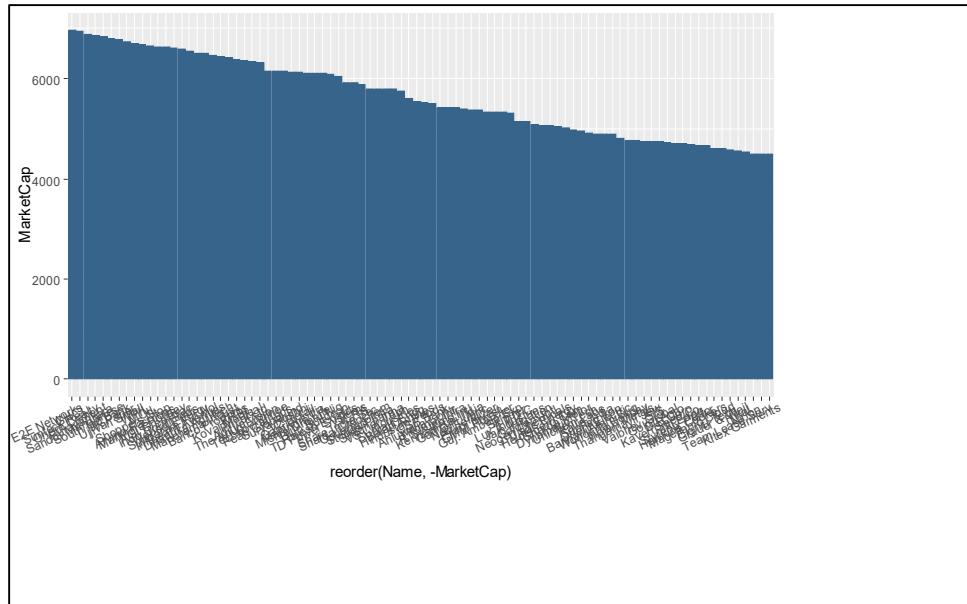
plot<-ggplot(df_mid_marcap,aes(x=reorder(Name,-MarketCap),y=MarketCap))

plot<-plot+geom_bar(stat="identity",color='steelblue4',fill='steelblue4')

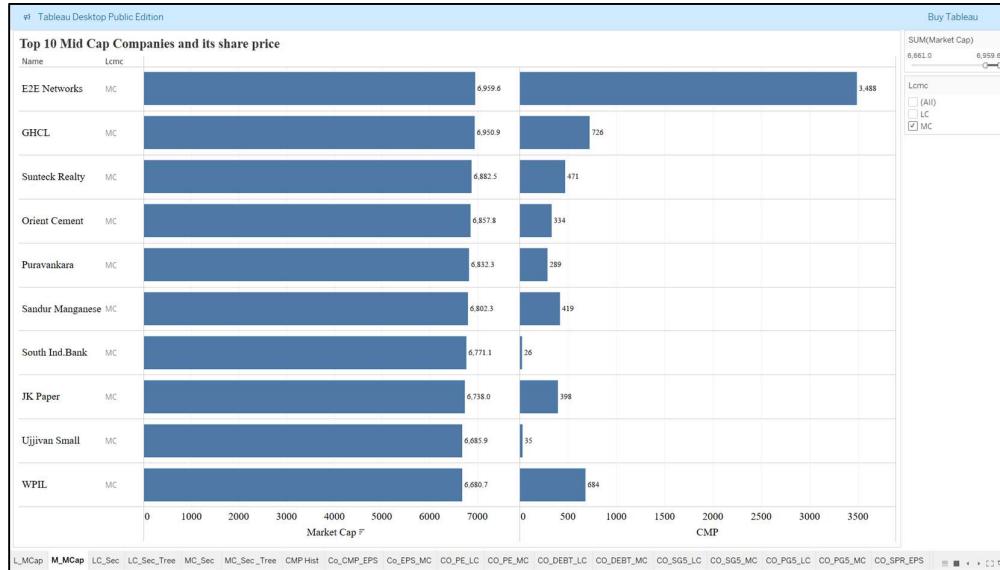
plot<-plot+theme(axis.text.x=element_text(angle=25,hjust=0.9))

plot
```

Output:

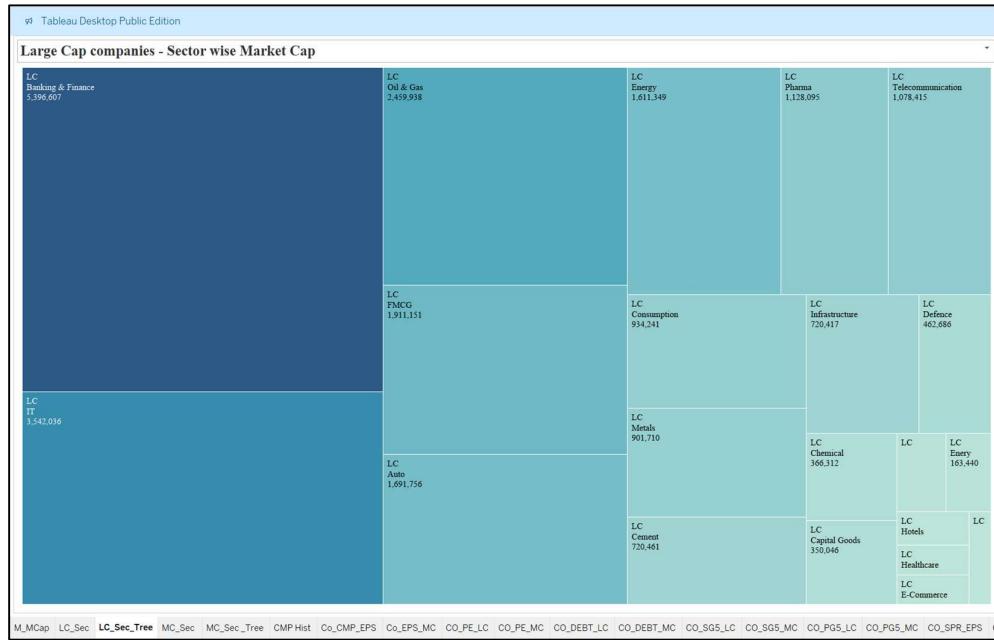


# Graph of Top 10 Mid Cap companies and its current market price (CMP) using Tableau



## 2.6.6) Sorting of sectors based on Market cap

# Tree map for Sectors having Large Cap companies using Tableau

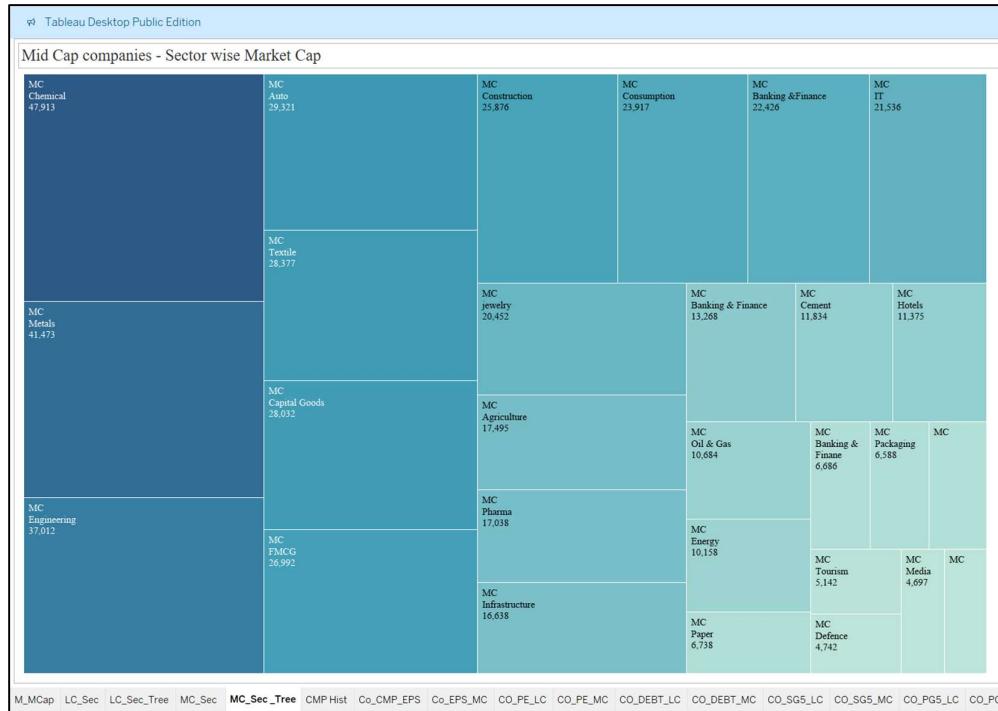


*Observations:*

Top 5 Sectors of Large Cap:

- Banking & Finance
- IT
- Oil & Gas
- FMCG
- Auto

## # Tree map for Sectors having Mid Cap companies using Tableau

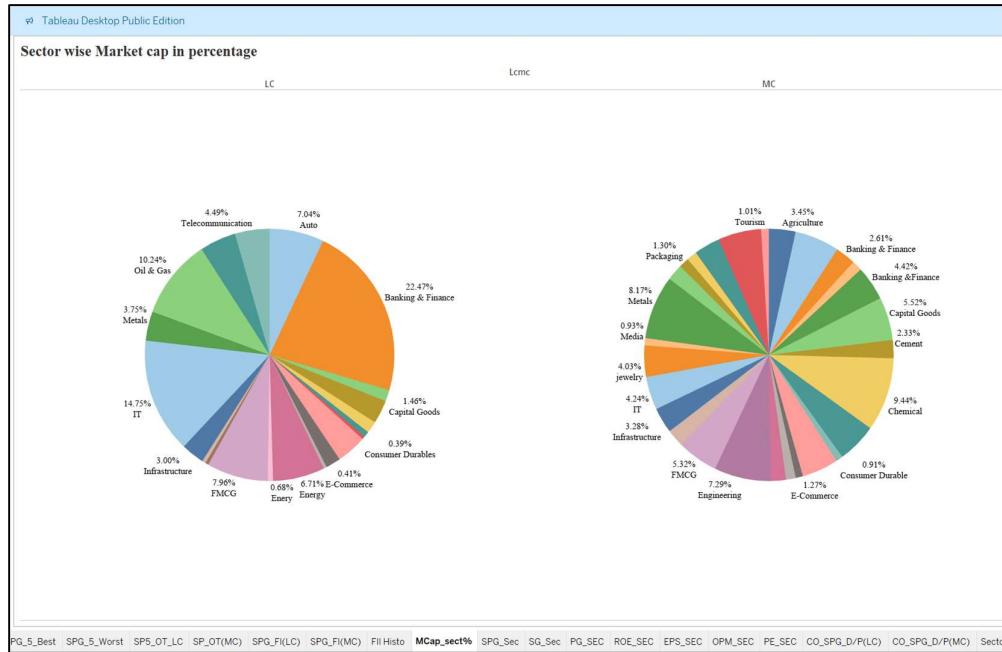


### Observations:

#### Top 5 Sectors of Mid Cap:

- Chemical
- Metals
- Engineering
- Auto
- Textile

## # Sector wise Market cap in percentage using Tableau



### *Observations:*

Market cap of Large Cap Sectors in percentage:

- Banking & Finance = 22.47%
- IT = 14.75%
- Oil & Gas = 10.24%
- FMCG = 7.96%
- Auto = 7.04%

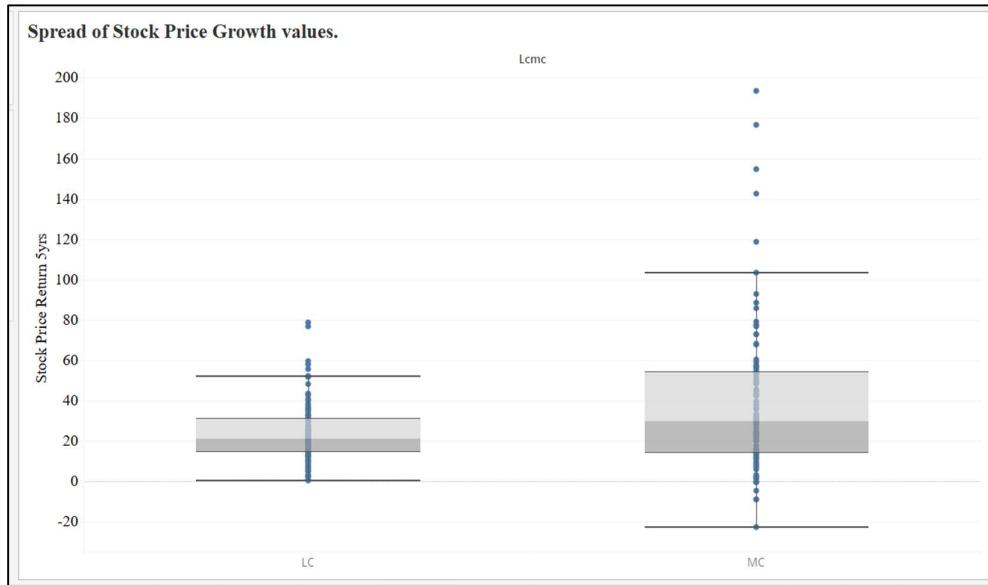
### *Observations:*

Market cap of Mid Cap Sectors in percentage:

- Chemical = 9.44%
- Metals = 8.17%
- Engineering = 7.29%
- Auto = 5.78%
- Textile = 5.59%

## 2.7) Visualization of spread of data using Tableau.

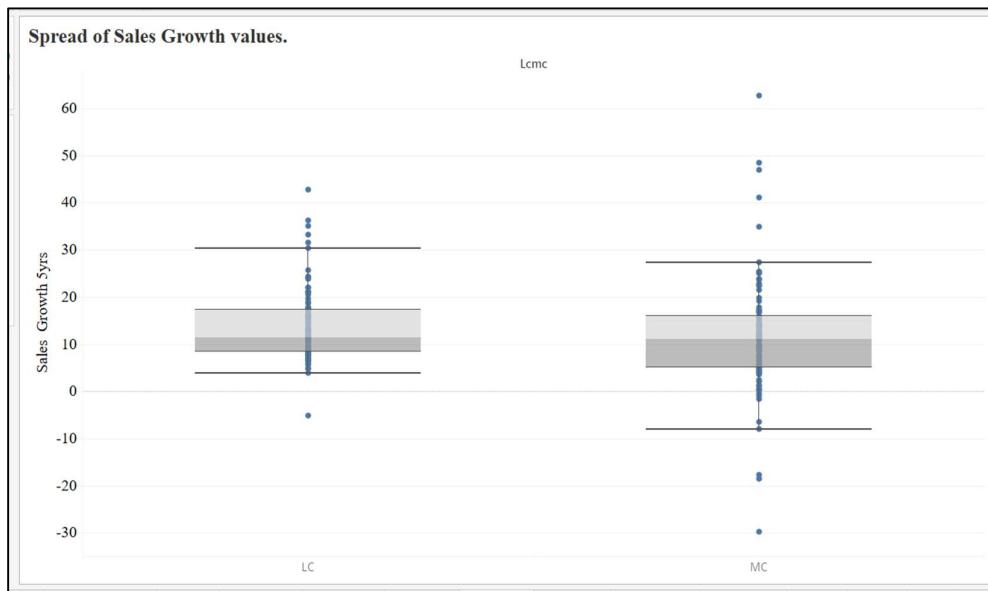
### 2.7.1) Spread of Stock Price Growth values



#### *Observations:*

- In large cap, there is no negative value in stock price growth.
- In mid cap, there is negative value in stock price growth.
- In large cap, minimum value is 1.0 and maximum value is 78.9, whereas in mid cap, minimum value is – 22.5 and maximum value is 193.4.

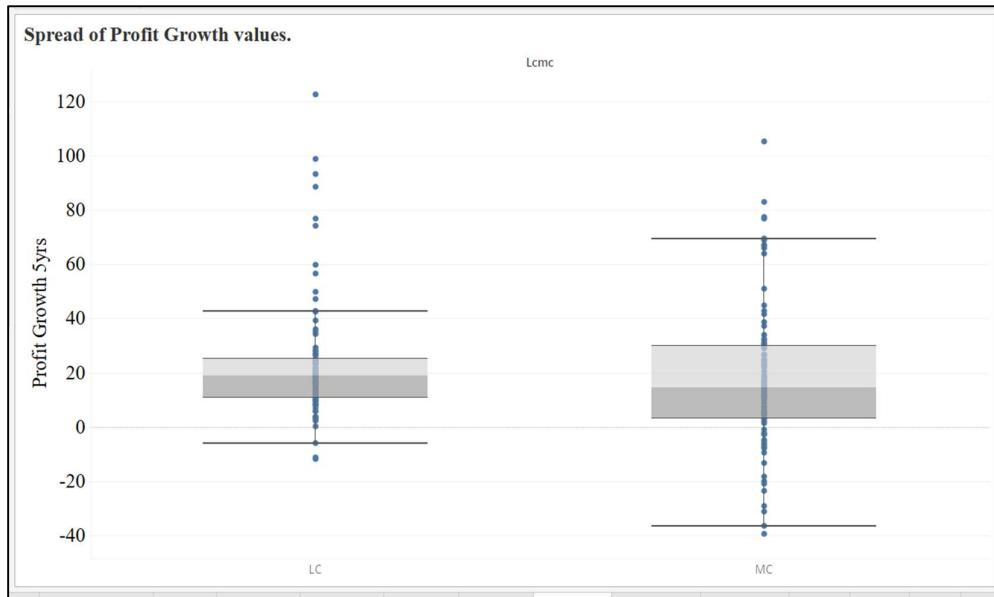
### 2.7.2) Spread of Sales Growth values



*Observations:*

- In large cap and mid cap, there is negative value in sales growth.
- In large cap , minimum value is -5.14 and maximum value is 42.75, whereas in mid cap, minimum value is -29.73 and maximum value is 62.63.

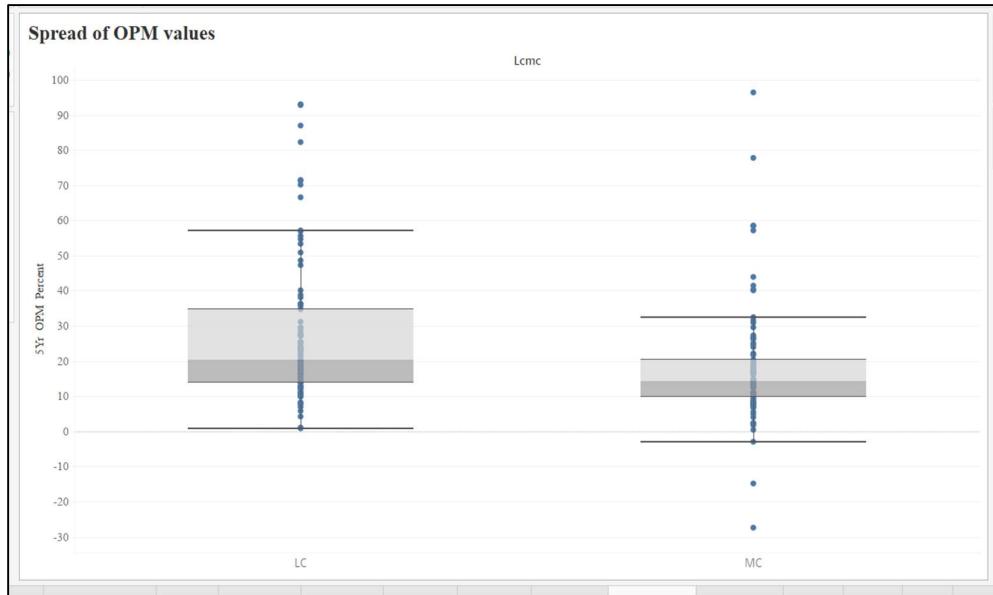
### 2.7.3) Spread of Profit Growth Values



*Observations:*

- In large cap and mid cap, there is negative value in profit growth.
- In large cap, minimum value is -11.2 and maximum value is 122.5, whereas, in mid cap, minimum value is -39.3 and maximum value is 105.4.

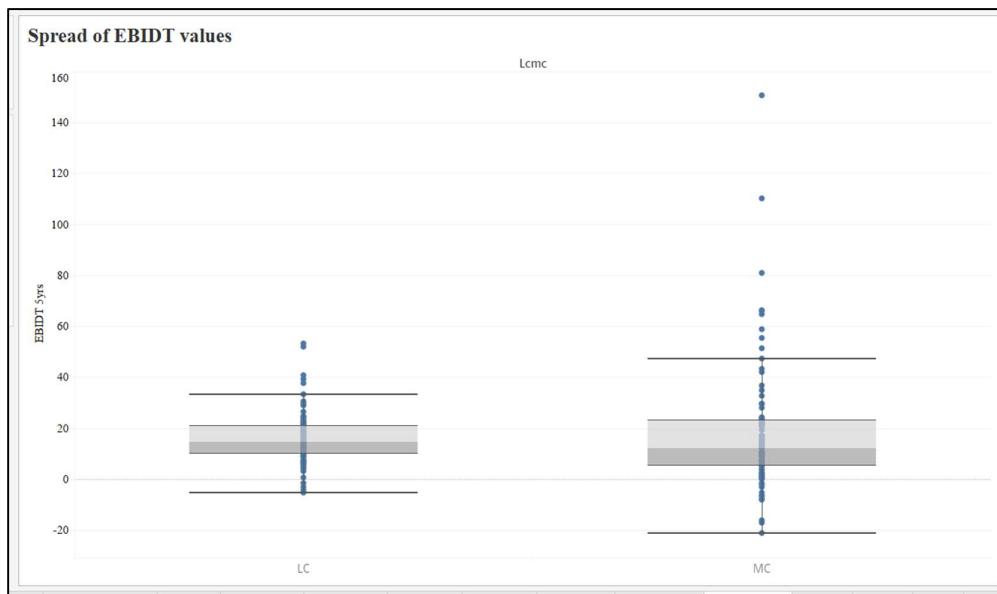
#### 2.7.4) Spread of OPM values



*Observations:*

- In large cap, there is no negative value in OPM.
- In mid cap, there is negative value in OPM.
- In large cap, minimum value is 1.1 and maximum value is 92.9, whereas, in mid cap, minimum value is -27.3 and maximum value is 96.3.

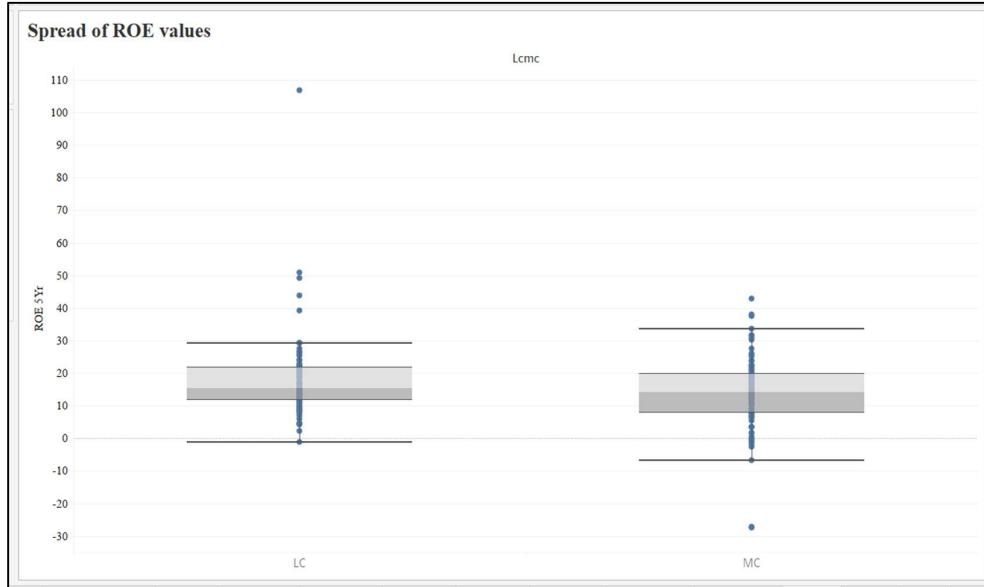
#### 2.7.5) Spread of EBIDT values



*Observations:*

- In large cap and mid cap, there is negative value in EBIDT.
- In large cap, minimum value is -5.3 and maximum value is 53.1, whereas, in mid cap, minimum value is -21.1 and maximum value is 150.5.

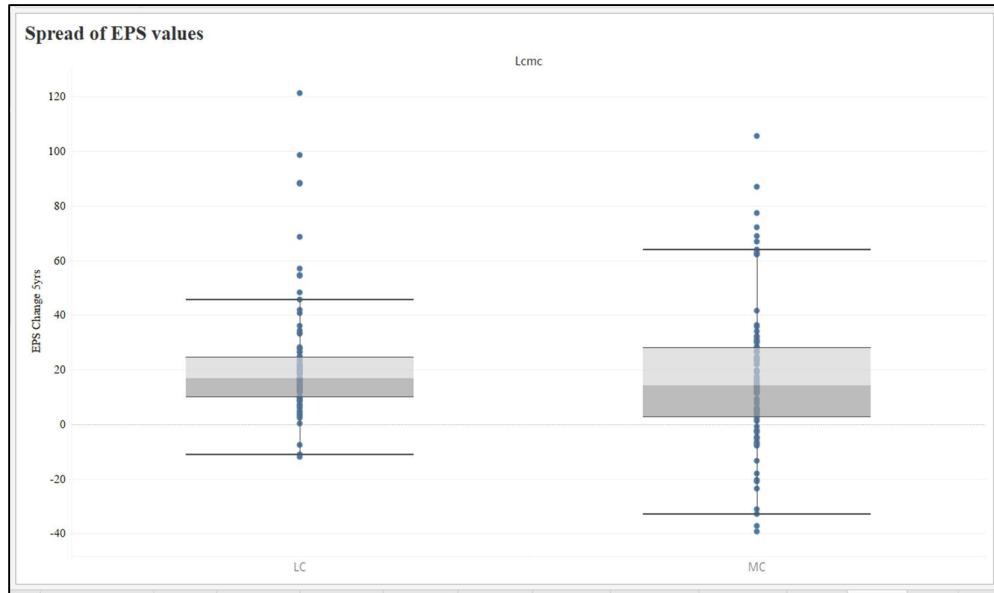
### 2.7.6) Spread of ROE values



*Observations:*

- In large cap and mid cap, there is negative value in ROE.
- In large cap, minimum value is -1.2 and maximum value is 106.8, whereas, in mid cap, minimum value is -27.1 and maximum value is 42.8.

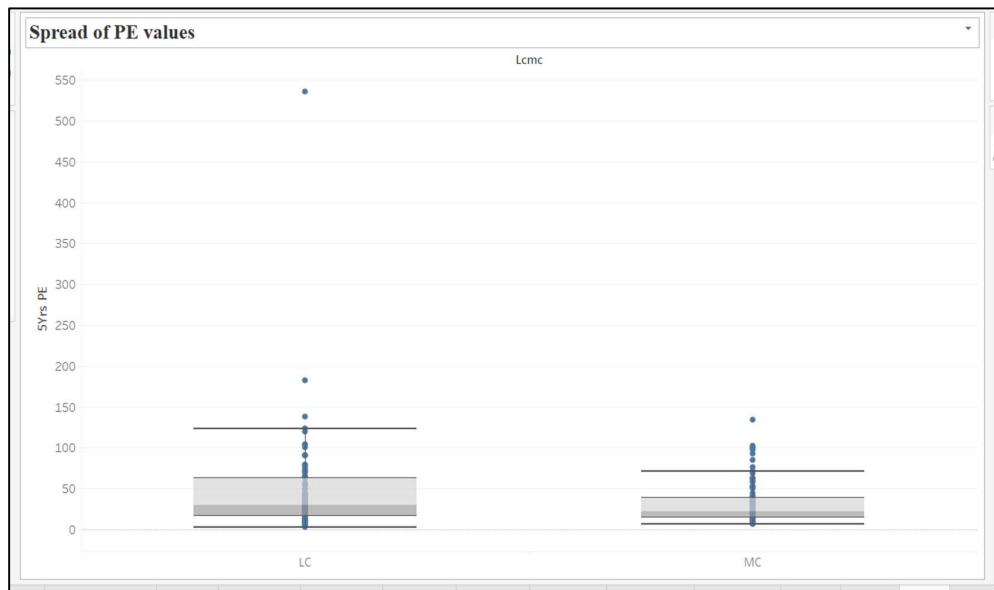
### 2.7.7) Spread of EPS values



#### Observations:

- In large cap and mid cap, there is negative value in EPS.
- In large cap, minimum value is -11.9 and maximum value is 121.2, whereas, in mid cap, minimum value is -39.3 and maximum value is 105.5.

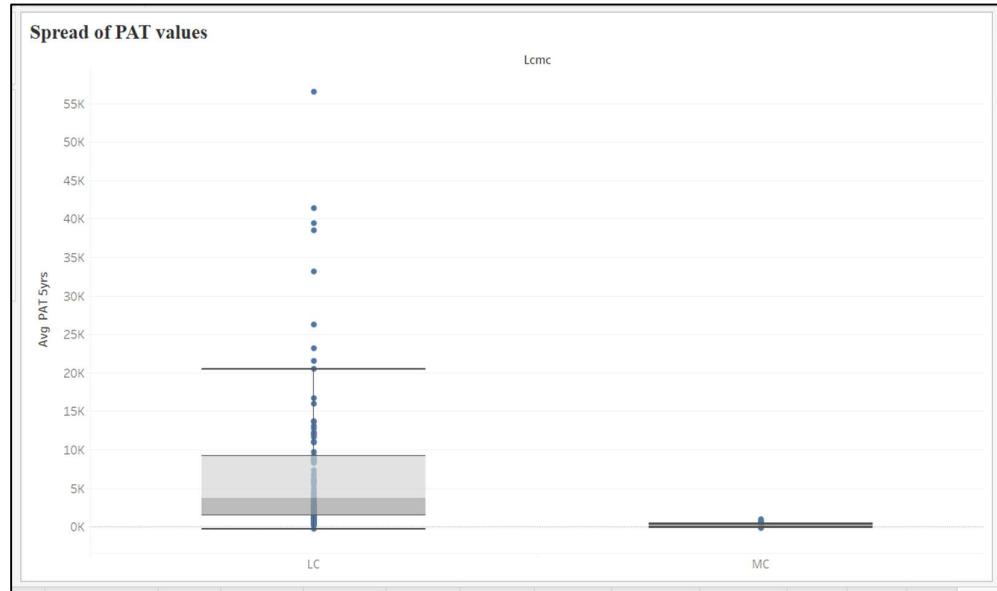
### 2.7.8) Spread of PE values



*Observations:*

- In large cap and mid cap, there is no negative value in PE.
- In large cap, minimum value is 3.1 and maximum value is 535.5, whereas, in mid cap, minimum value is 10 and maximum value is 134.3.

### 2.7.9) Spread of PAT values



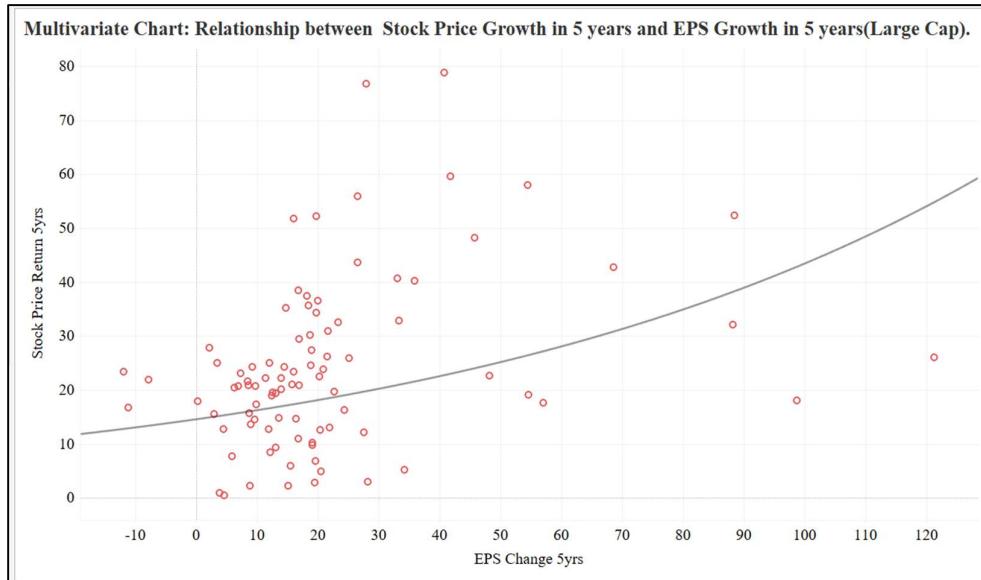
*Observations:*

- In large cap and mid cap, there is negative value in PAT.
- In large cap, minimum value is -249 crores and maximum value is 56,477 crores, whereas in mid cap, minimum value is -210 crores and maximum value is 966 crores.
- Spread of PAT for Mid Cap companies is in narrow range.

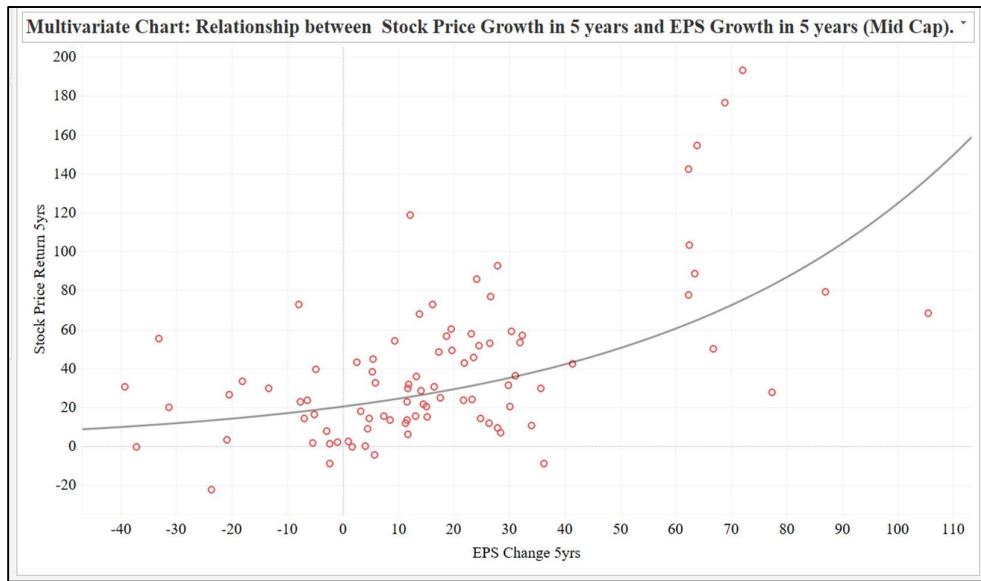
## **2.8) Correlation of Stock Price Growth in 5 years with key financial indicators for 5 years.**

### **2.8.1) Stock Price Growth in 5 years and EPS Growth in 5 years**

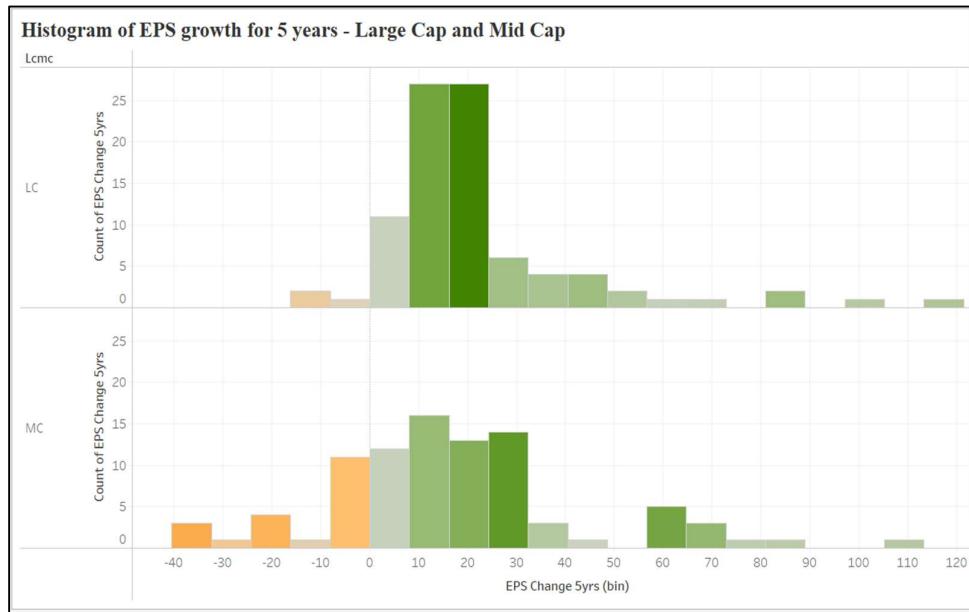
# Large Cap



# Mid Cap.



# Histogram showing maximum stock price growth for earning per share growth range.



#### *Observations:*

- In Large Cap, there are around 50 companies which has EPS growth in the range of 10% to 20%.
- In Mid Cap, there are around 45 companies which has EPS growth in the range of 10% to 30%.
- In Large Cap, EPS growth looks to be stable in the range of 10% to 20%, whereas in Mid Cap, range is 10% to 30%.

### 2.8.2) Stock price growth in 5 years and sales growth in 5 years

# Large Cap

#### *R Programming Code:*

```
sp_sg<-dfclean[dfclean$LCMC == "LC",c("Stock_Price_Return_5yrs","Sales_Growth_5yrs")]

sp_sg

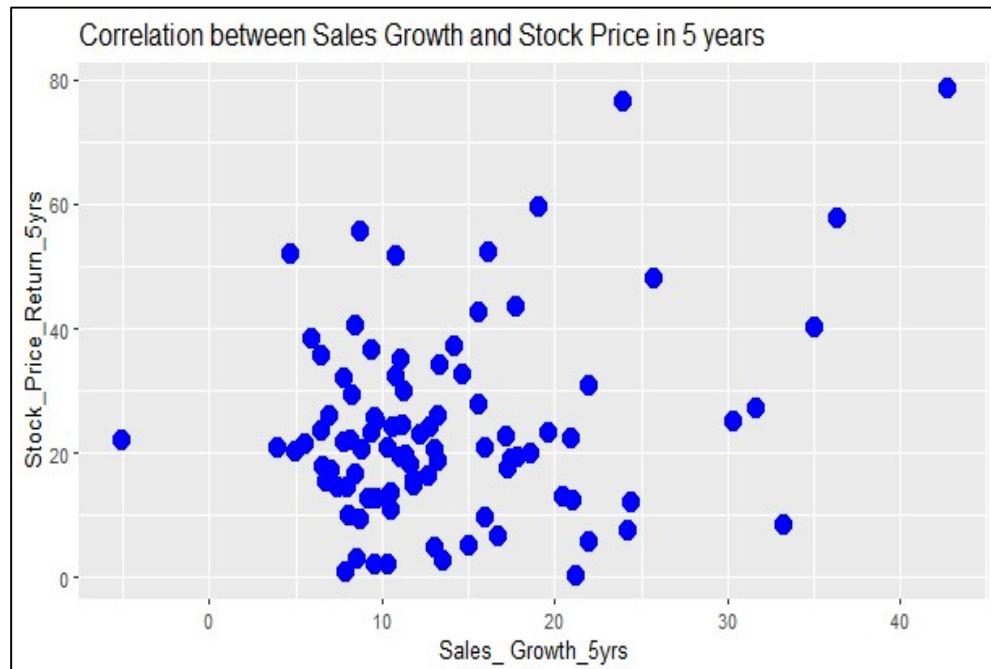
library(ggplot2)

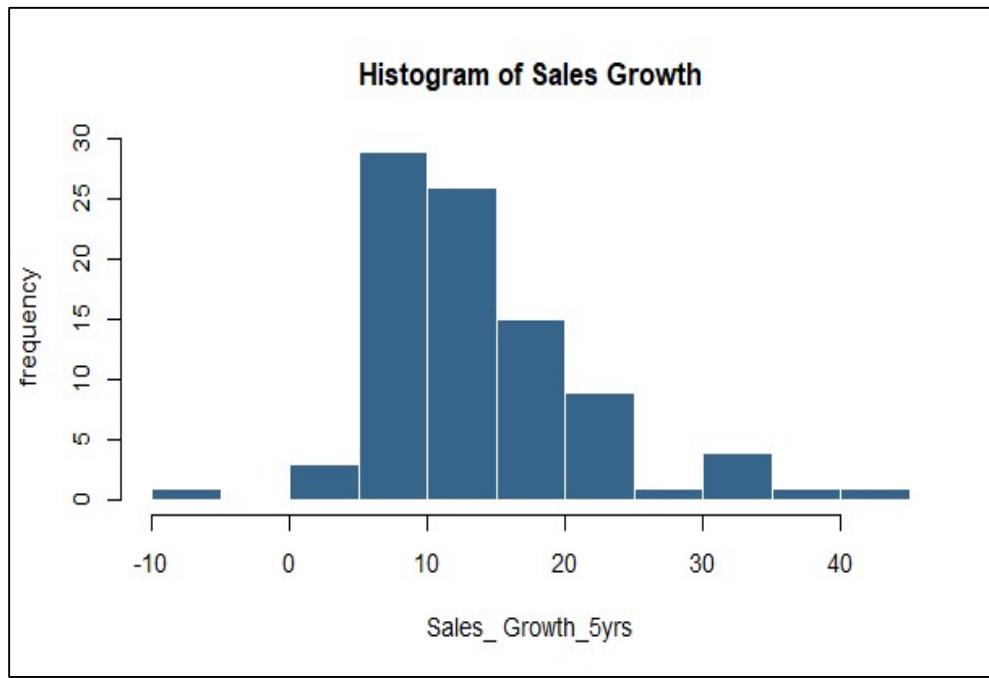
ggplot(sp_sg)+geom_point(aes(x=`Sales_Growth_5yrs`,y=Stock_Price_Return_5yrs),size=4,color='blue')+
  ggtitle("Correlation between Sales Growth and Stock Price in 5 years")+
  xlab("Sales_Growth_5yrs")+ylab("Stock_Price_Return_5yrs")
```

```
hist(sp_sg$`Sales_Growth_5yrs`,xlab="Sales_Growth_5yrs",ylab="frequency",main="Histogram of Sales Growth",col='steelblue4',border='white')
```

Output:

```
sp_sg
# A tibble: 90 × 2
  Stock_Price_Return_5yrs `sales_Growth_5yrs`
  <dbl> <dbl>
1 12.8   9.61
2 13.7   10.5
3 5.99    22.0
4 26.0   13.2
5 17.6   17.2
6 19.0   13.2
7 18.1   11.6
8 14.5    7.95
9 2.29    9.5
10 24.4   12.7
# i 80 more rows
```





### 2.8.3) Stock price growth and sales price growth

# Mid Cap

*R Programming Code:*

```
sp_sg<-dfclean[dfclean$LCMC == "MC",c("Stock_Price_Return_5yrs","Sales_Growth_5yrs")]

sp_sg
library(ggplot2)

ggplot(sp_sg)+geom_point(aes(x='Sales_Growth_5yrs',y=Stock_Price_Return_5yrs),size=4,color='blue')+
  ggtitle("Correlation between Sales Growth and Stock Price in 5 years")+
  xlab("Sales_Growth_5yrs")+ylab("Stock_Price_Return_5yrs")

hist(sp_sg$`Sales_Growth_5yrs`,xlab="Sales_Growth_5yrs",ylab="frequency",main="Histogram of Sales Growth",col='steelblue4',border='white')
```

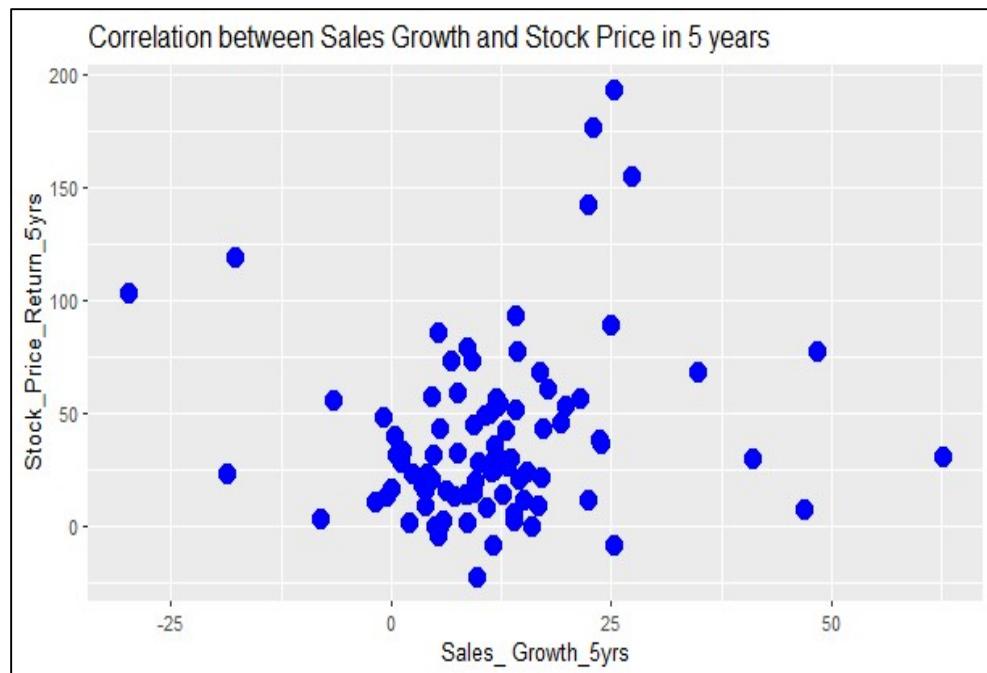
*Output:*

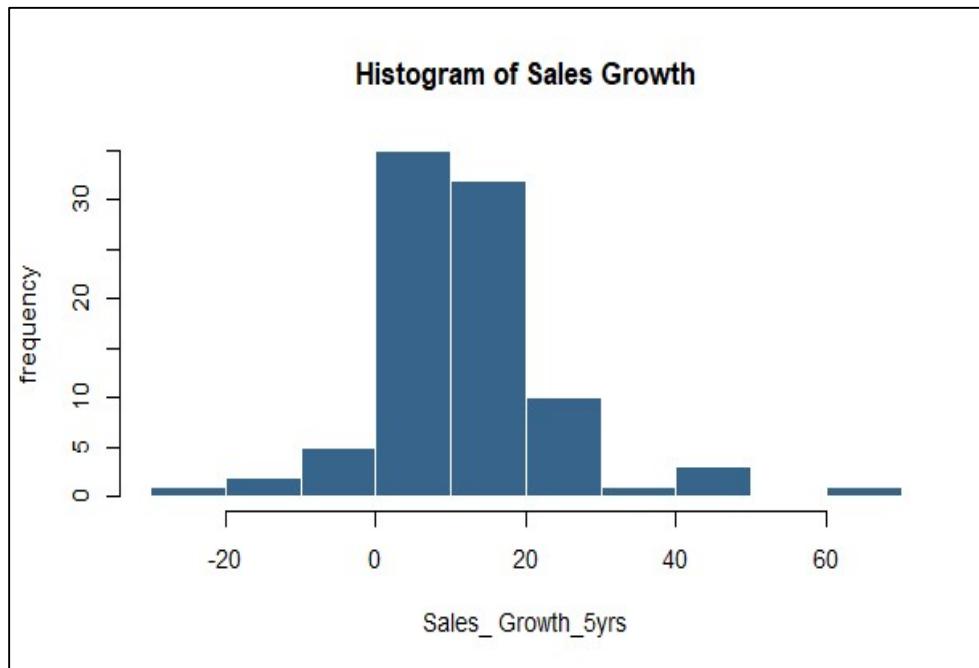
```
sp_sg
# A tibble: 90 × 2
  Stock_Price_Return_5yrs `sales_Growth_5yrs` 
  <dbl>                <dbl>
1 177.                 22.9
2 31.8                  0.62
```

```

3          3.41
4          31.5
5          33.4
6          54.2
7          20.3
8          23.8
9          -8.81
10         59.0
          -7.99
          4.78
          1.28
          12.3
          4.61
          15.4
          25.4
          7.55
# i 80 more rows

```

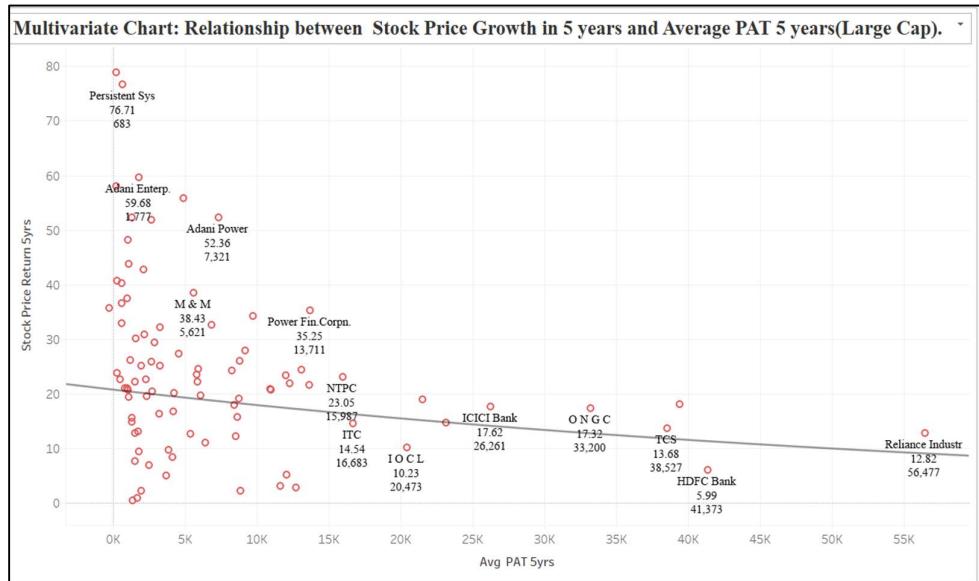




*Observations:*

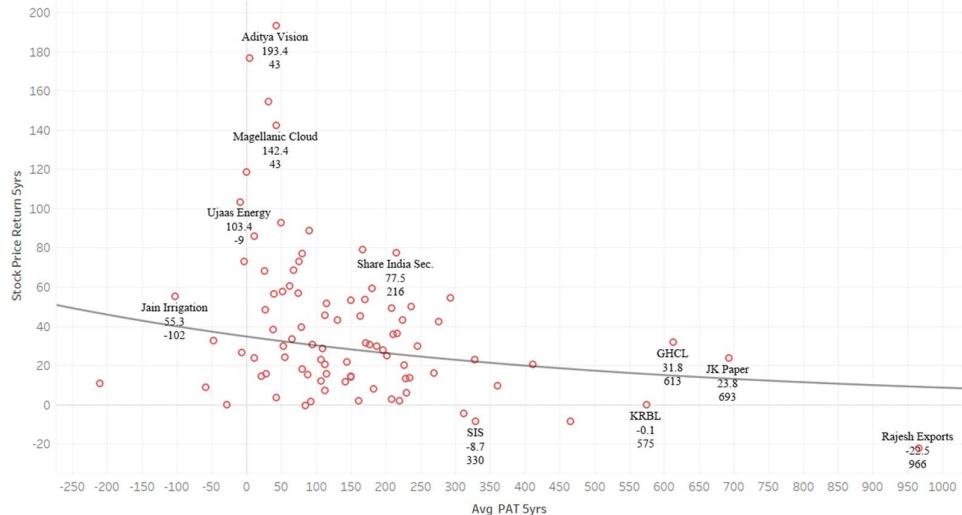
- In Large Cap, there are around 60 companies which has Sales growth in the range of 5% to 20%.
- In Mid Cap, there are around 55 companies which has Sales growth in the range of 0% to 20%.
- In Large Cap, Sales growth looks to be stable in the range of 5% to 20%, whereas in Mid Cap, range is 0% to 20%.

#### 2.8.4) Stock Price Growth in 5 years and Average PAT 5 years (Large Cap)



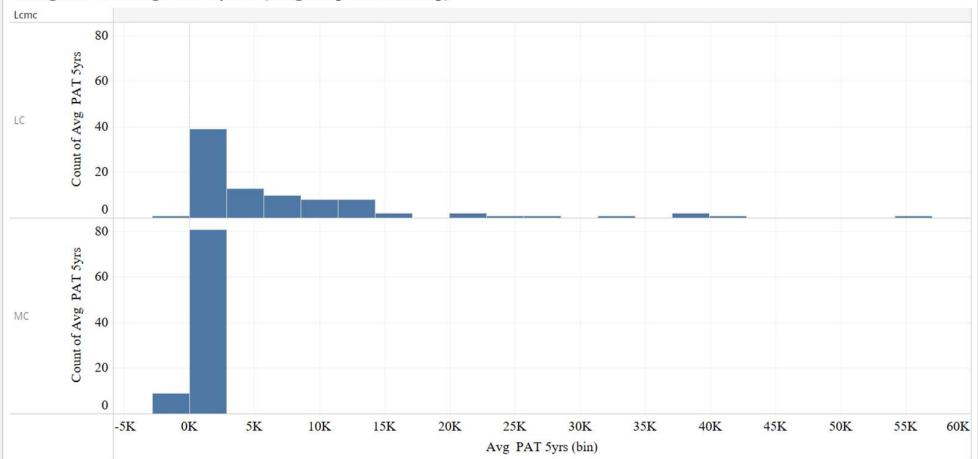
## # Stock Price Growth in 5 years and Average PAT 5 years (Mid Cap)

Multivariate Chart: Relationship between Stock Price Growth in 5 years and Average PAT 5 years(Mid Cap).



## # Histogram of Average PAT 5 years (Large Cap and Mid Cap)

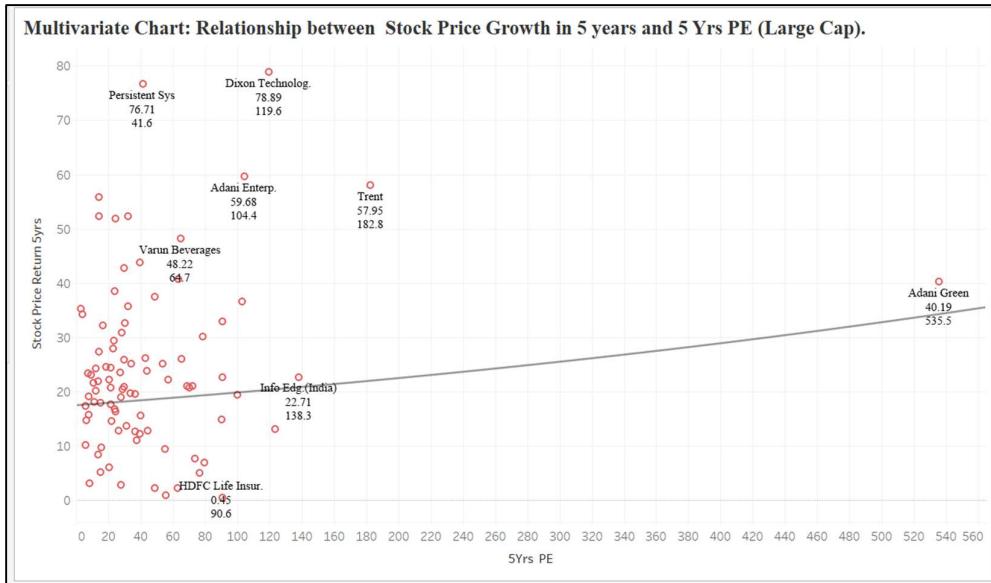
Histogram of Average PAT 5 years (Large Cap and Mid Cap)



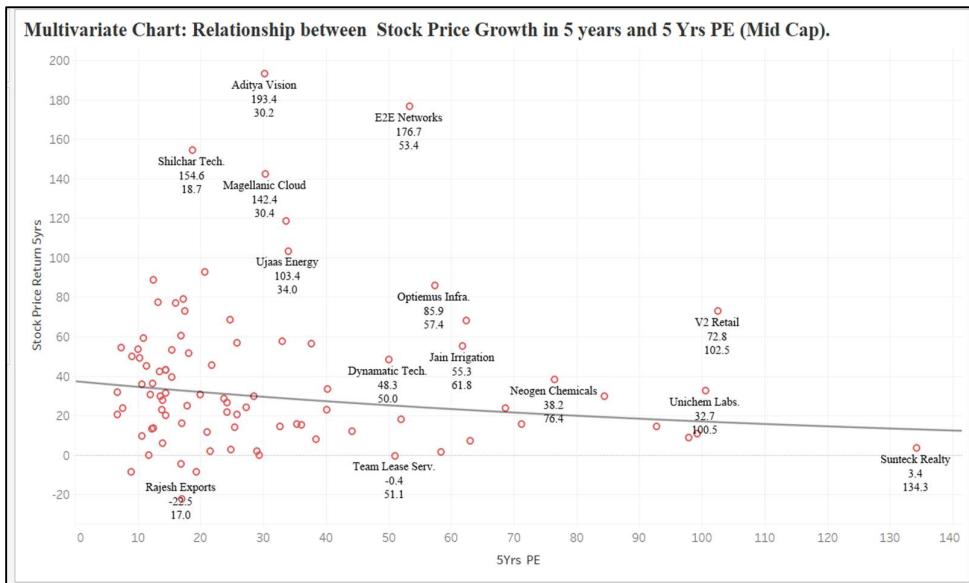
### *Observations:*

- In Large Cap, there are around 39 companies which has Average PAT growth around 2500 crore.
- In Mid Cap, there are around 81 companies which has Average PAT growth around 2500 crore.
- Large Cap have more potential to generate profit beyond 2500 crore and up to 50,000 crores.

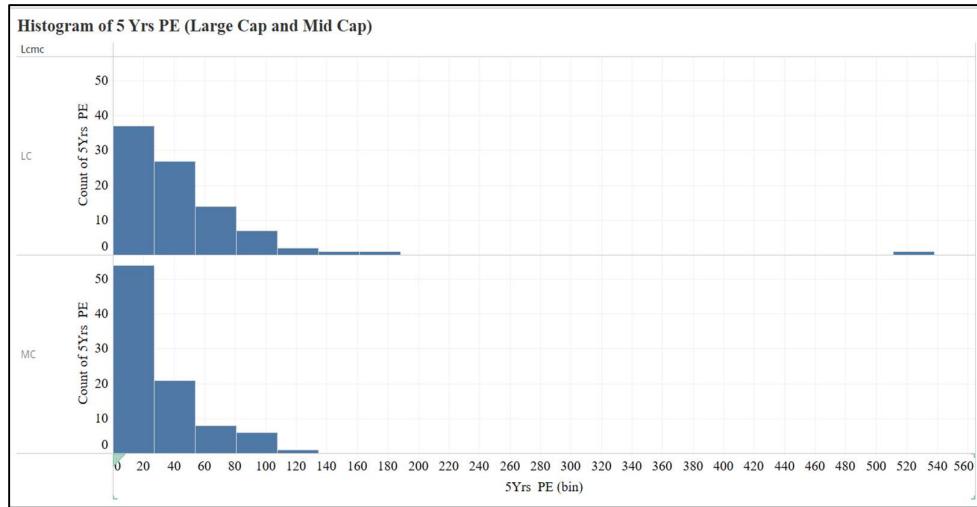
### 2.8.5) Stock Price Growth in 5 years and 5 yrs PE (Large Cap)



### # Stock Price Growth in 5 years and 5 yrs PE (Mid Cap)



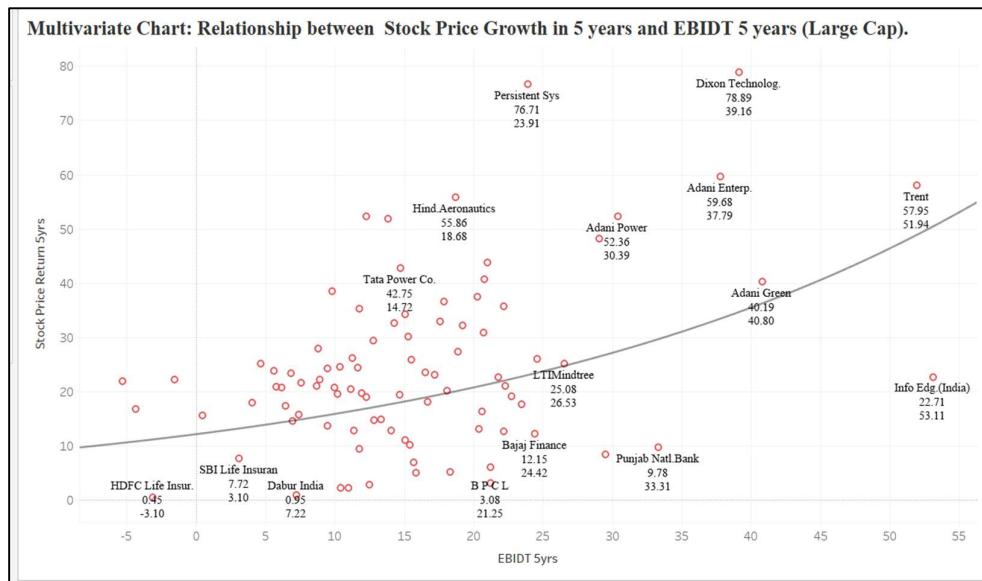
## # Histogram of 5Yrs PE (Large Cap and Mid Cap)



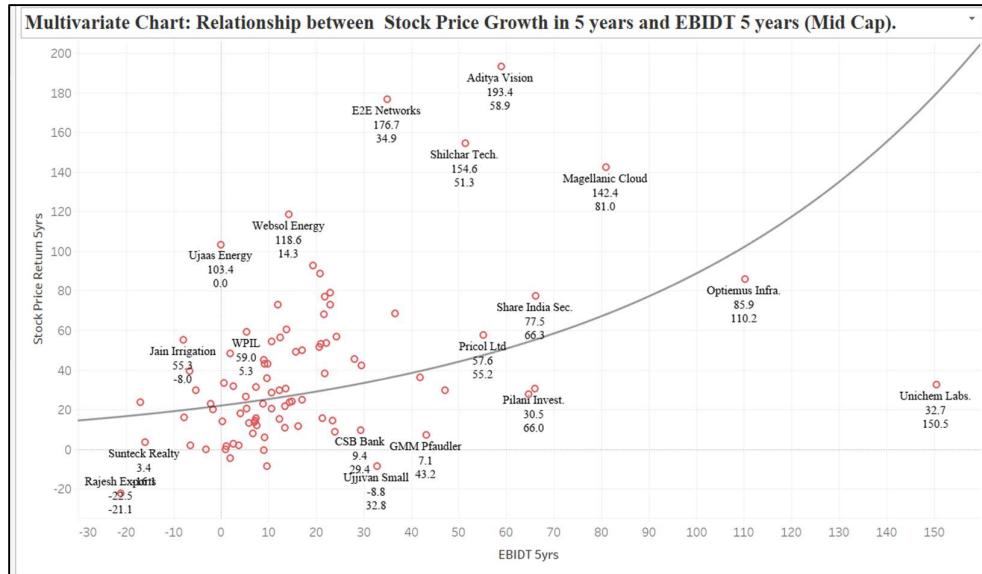
### *Observations:*

- In Large Cap, there are around 37 companies which has PE around 0 to 20.
- In Mid Cap, there are around 54 companies which has PE around 0 to 20.
- In Large Cap, one company who has abnormal PE ratio of 511.

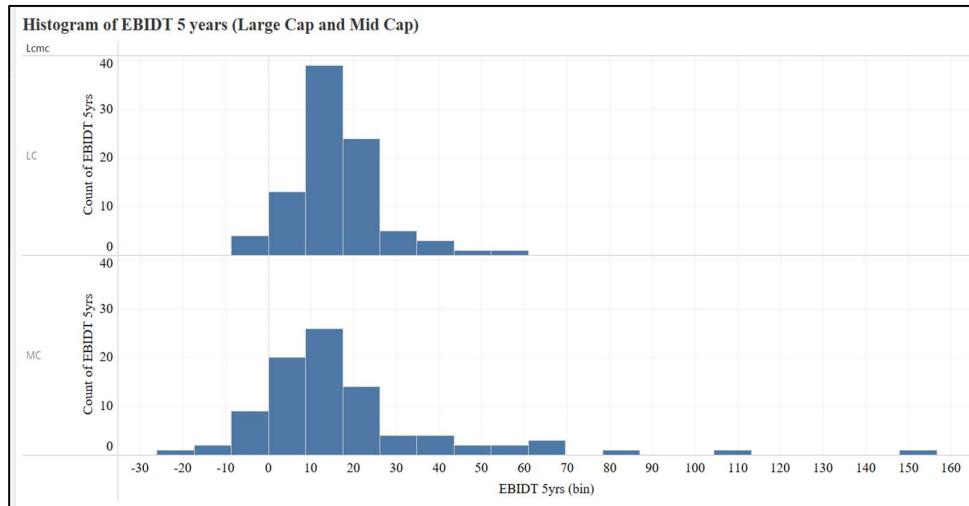
## 2.8.6) Stock Price Growth in 5years and EBIDT 5 years (Large Cap)



## # Stock Price Growth in 5years and EBIDT 5 years (Mid Cap)



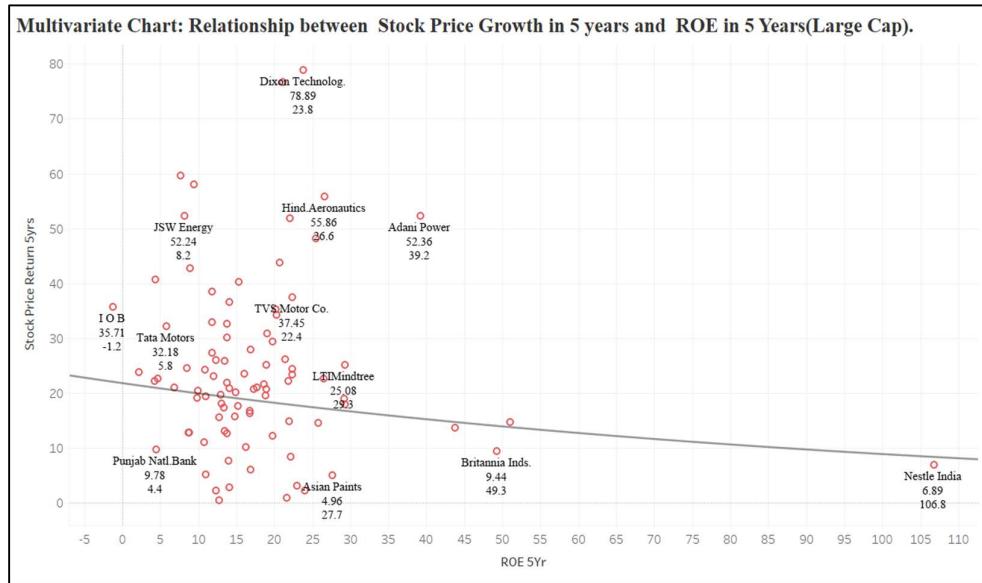
## # Histogram of EBIDT 5 years (Large Cap and Mid Cap)



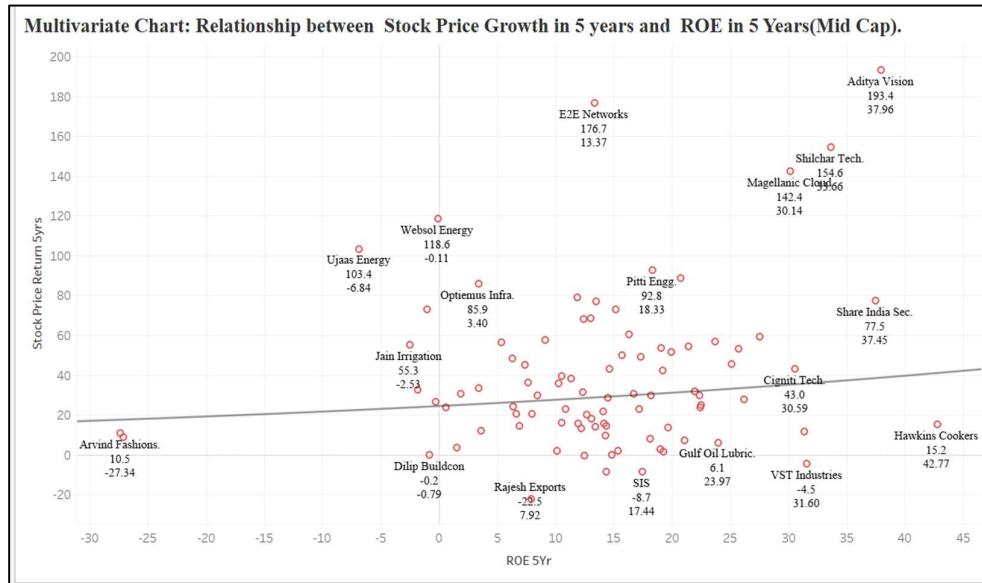
### Observations:

- In Large Cap, there are around 39 companies which has EBIDT in 5 years around 10% to 20%.
- In Mid Cap, there are around 26 companies which has EBIDT in 5 years around 10% to 20%.
- In Mid Cap, one company who has EBIDT of 148.
-

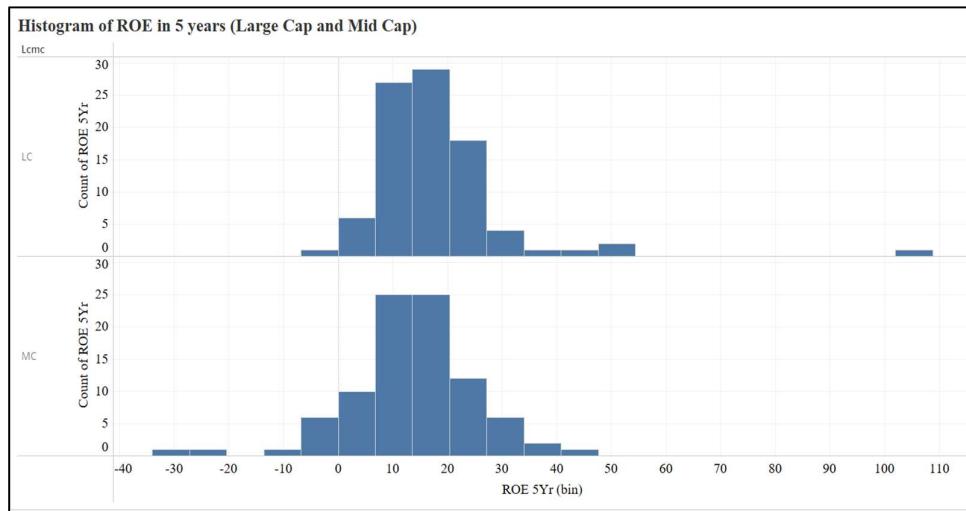
### 2.8.7) Stock Price Growth in 5 years and ROE in 5 years (Large Cap)



### # Stock Price Growth in 5 years and ROE in 5 years (Mid Cap)



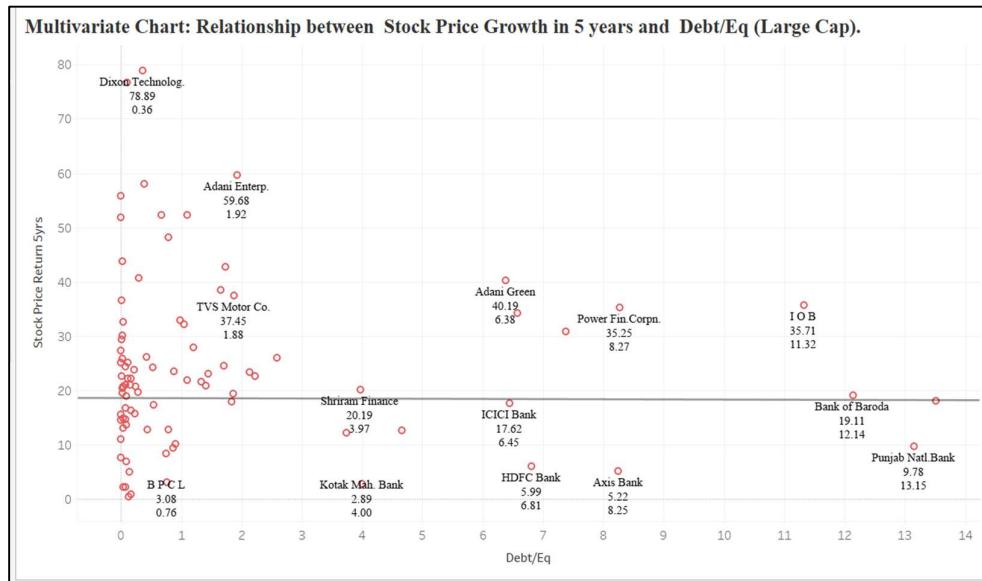
## # Histogram of ROE in 5 years (Large Cap and Mid Cap)



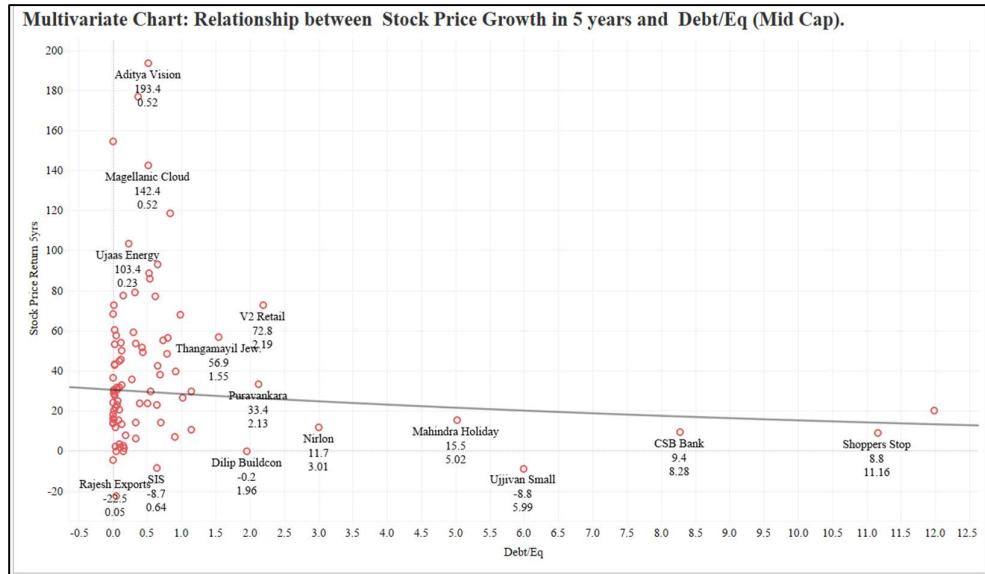
### Observations:

- In Large Cap, there are around 56 companies which has ROE in 5 years around 10% to 20%. Whereas, in 20% to 30% there are 18 companies.
- In Mid Cap, there are around 50 companies which has ROE in 5 years around 10% to 20%. Whereas, in 20% to 30% there are 12 companies.
- In Large Cap, one company who has ROE of 102.

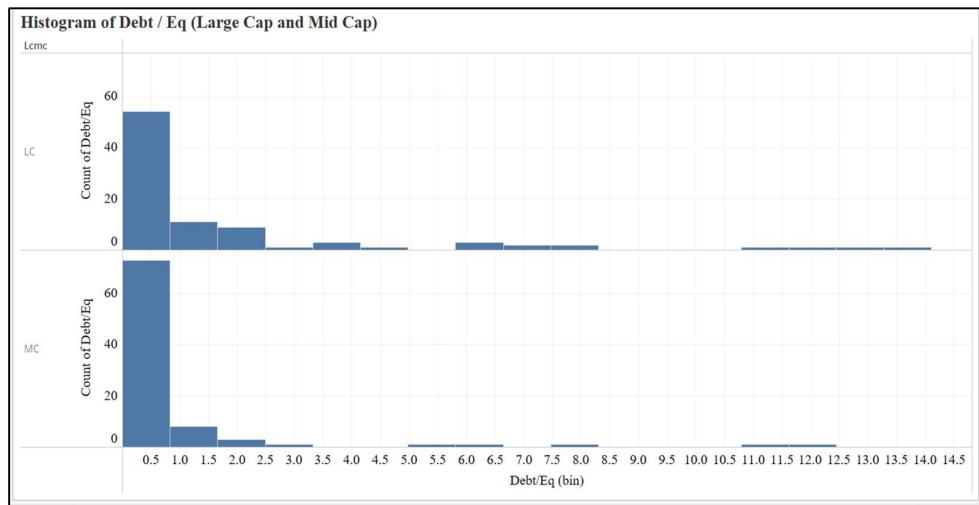
## 2.8.8) Stock Price Growth in 5 years and Debt / Eq (Large Cap)



## # Stock Price Growth in 5 years and Debt / Eq (Mid Cap)



## # Histogram of Debt / Eq (Large Cap and Mid Cap)

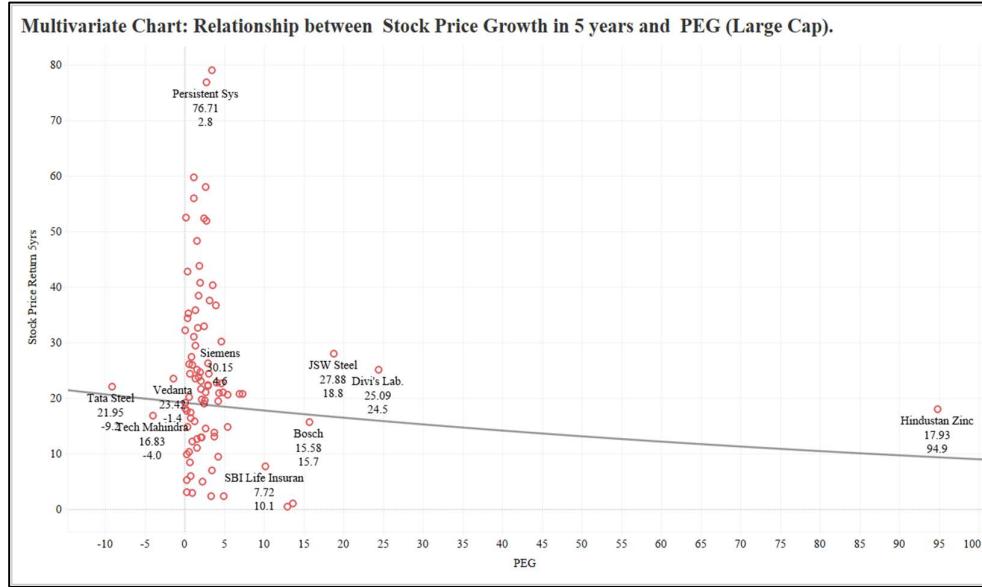


### *Observations:*

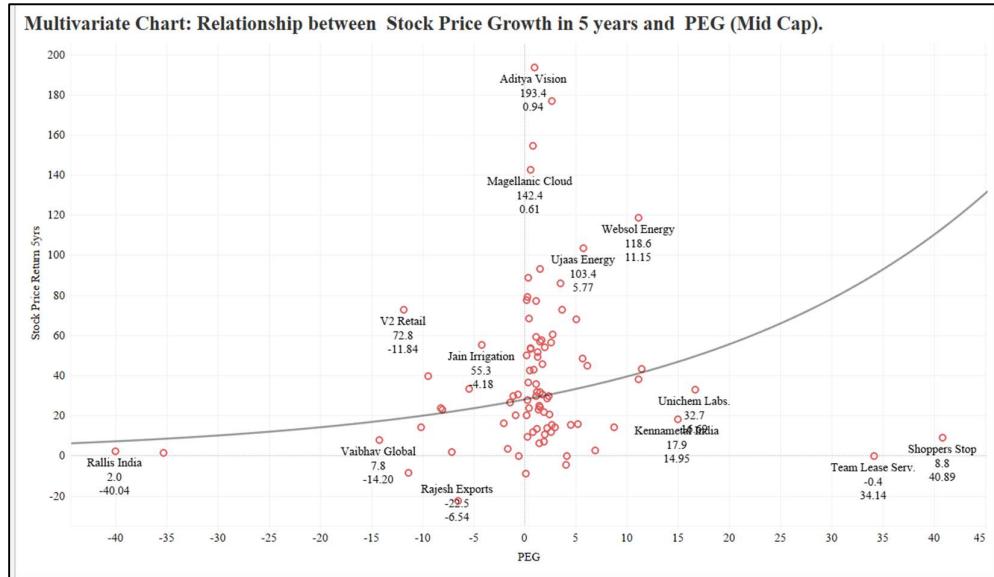
- In Large Cap, there are around 54 companies which has Debt to Equity ratio from the 0 to 1.
- In Mid Cap, there are around 73 companies which has Debt to Equity ratio from 0 to 1.
- In Large Cap, one company who has Debt to Equity ratio of 13.3.
- In Mid Cap, one company who has Debt to Equity ratio of 11.6.

- It is observed that lower the Debt / Equity ratio ( $< 1$ ), the share price growth is higher compared to the companies which has higher Debt / Equity ratio.

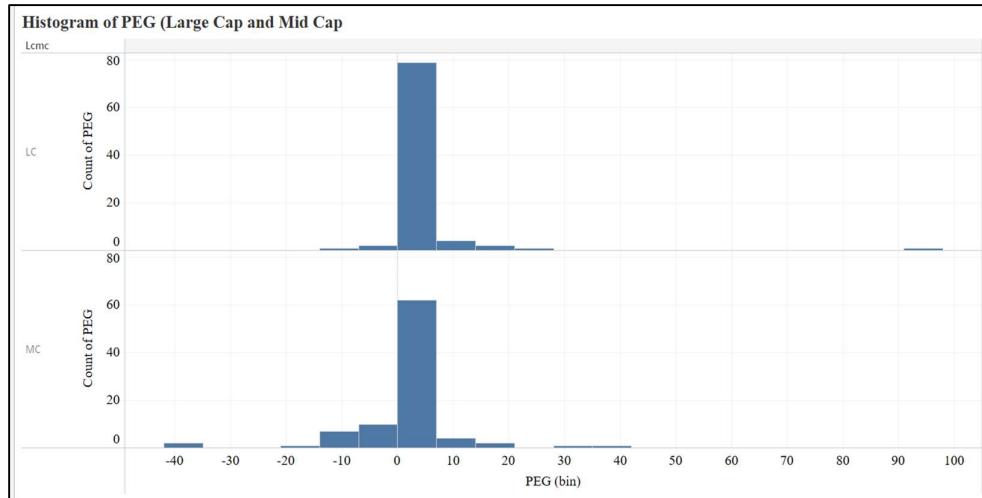
### 2.8.9) Stock Price Growth in 5 years and PEG (Large Cap)



### # Stock Price Growth in 5 years and PEG (Mid Cap)



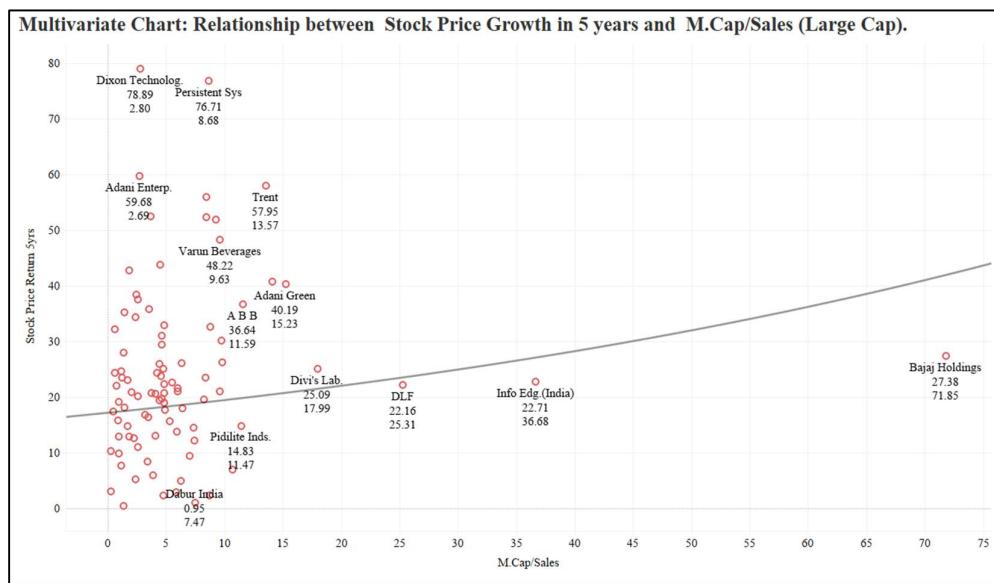
## # Histogram of PEG (Large Cap and Mid Cap)



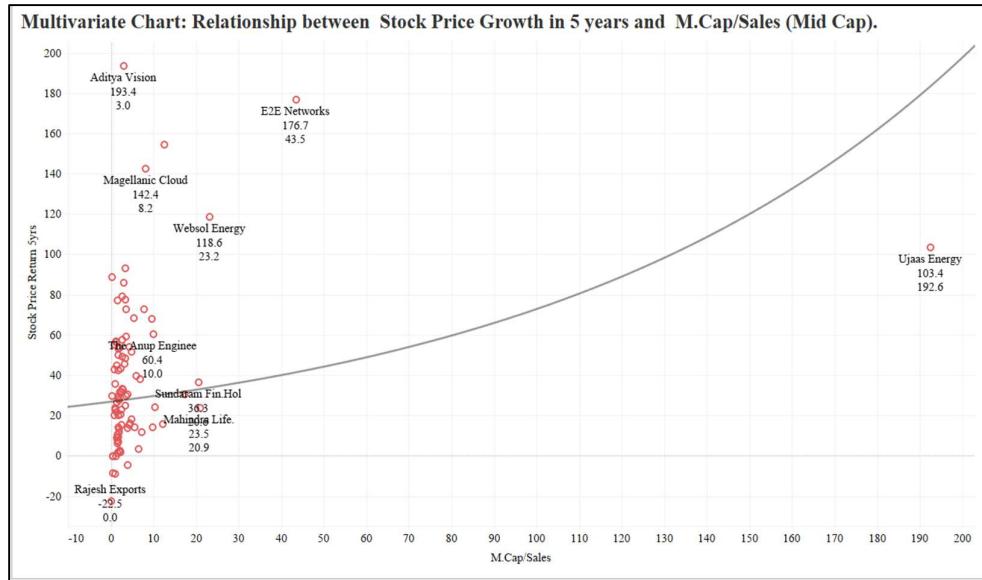
### *Observations:*

- In Large Cap, there are around 79 companies which has PEG ratio from the 0 to 5.
- In Mid Cap, there are around 62 companies which has PEG ratio from 0 to 5.
- In Large Cap, one company who has PEG ratio of 91.
- It is observed that lower the PEG ratio better stock price growth.

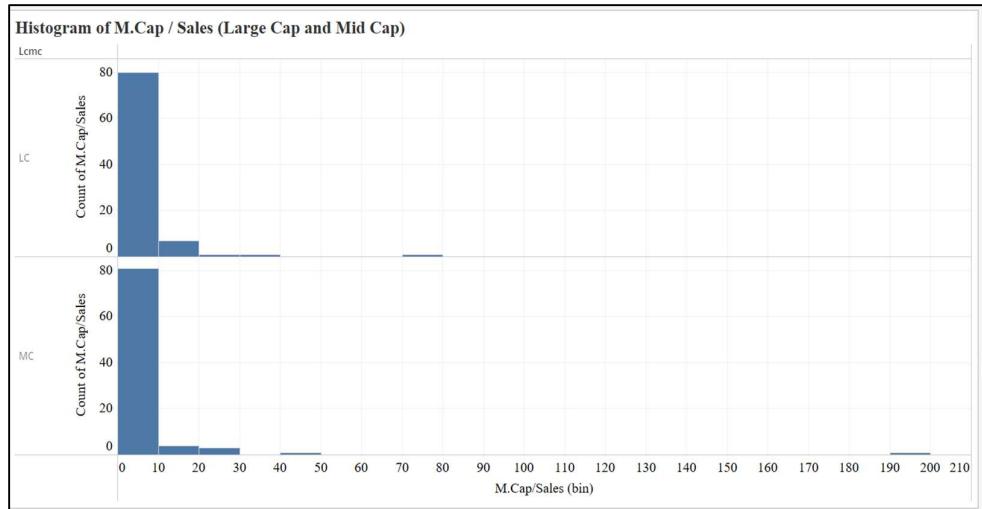
### 2.8.10) Stock Price Growth in 5 years and M.Cap / Sales (Large Cap)



## # Stock Price Growth in 5 years and M.Cap / Sales (Mid Cap)



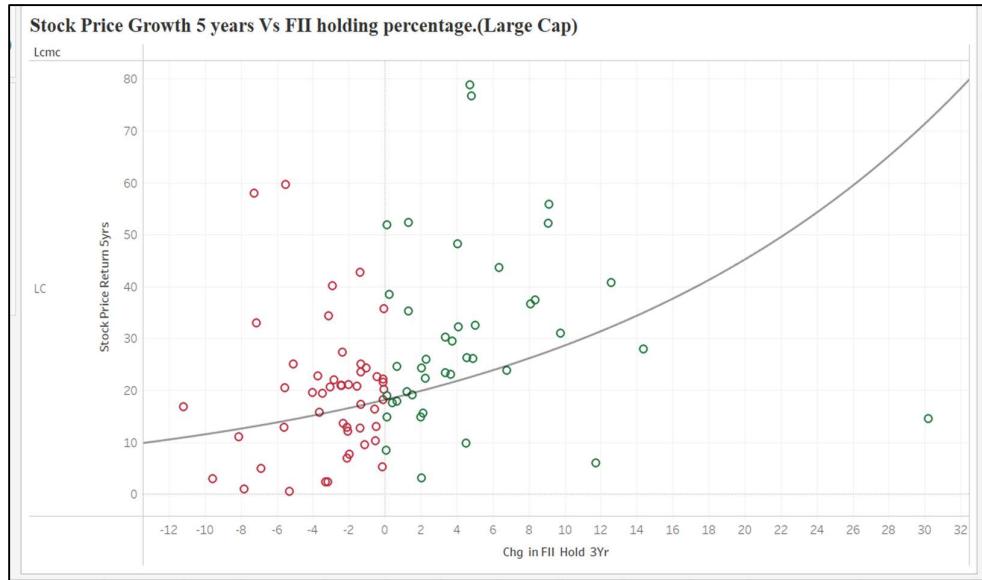
## # Histogram of M.Cap / Sales (Large Cap and Mid Cap)



### Observations:

- In Large Cap, there are around 80 companies which has Market to Sales ratio from the 0 to 10.
- In Mid Cap, there are around 81 companies which has Market to Sales ratio from 0 to 10.
- In Mid Cap, one company who has Market to Sales ratio of 190.

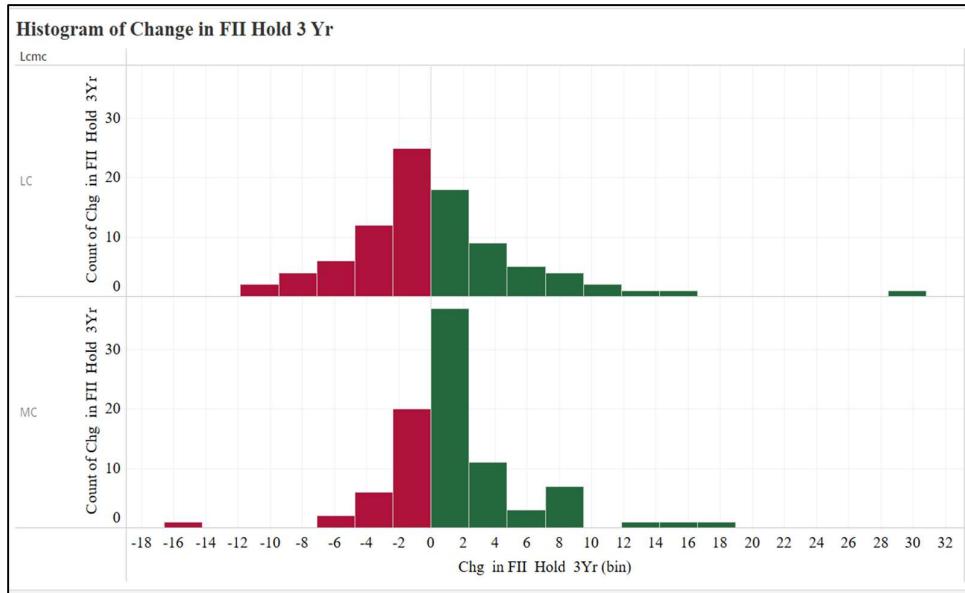
### 2.8.11) Stock Price Growth 5 years Vs FII holding percentage (Large Cap)



### # Stock Price Growth 5 years Vs FII holding percentage (Mid Cap)



## # Histogram of Change in FII Holdings 3 Yr



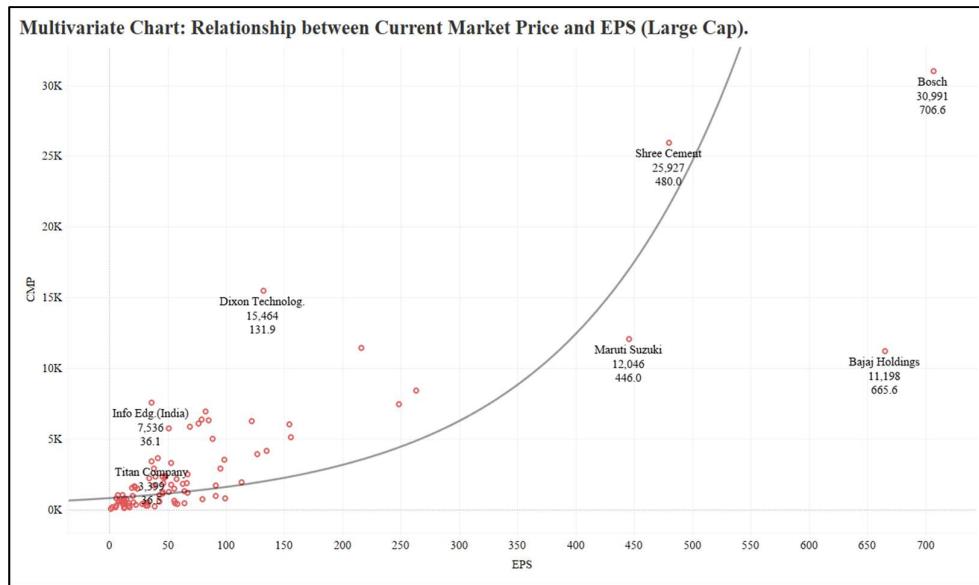
### *Observations:*

- In Large Cap, there are 25 companies which has FII holding for 3 years around -2 % to 0%. Whereas, in 0% to 2% there are 18 companies.
- In Mid Cap, there are 37 companies which has FII holding for 3 years around 0% to 2%. Whereas, in -2% to 0% there are 20 companies.
- In Large Cap, one company has FII holding of 28.
- In Large Cap as well as in Mid Cap, as FII increase their investment in the company, stock price also increases.

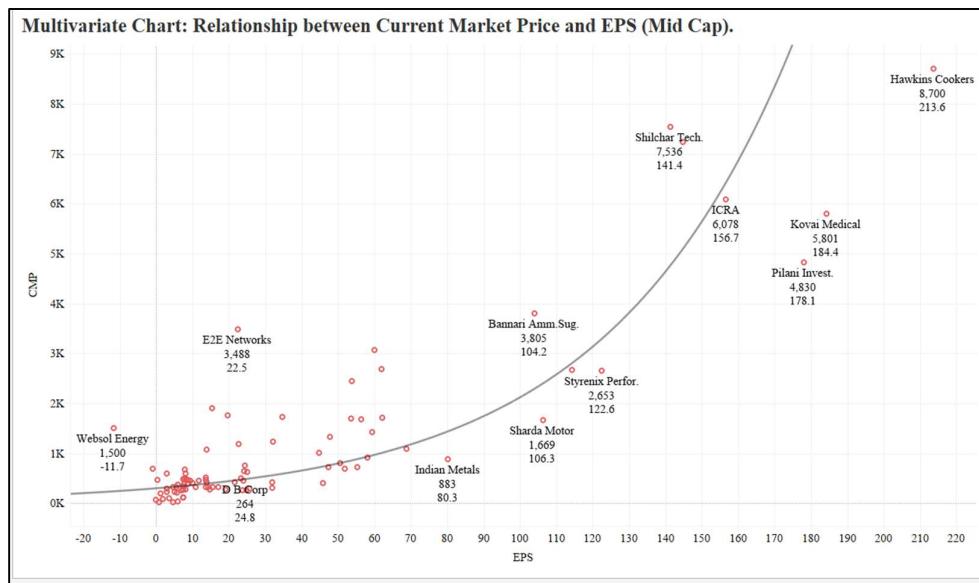
## 2.9) Corelation of Current Market Price (CMP) of a share with various financial indicators

### 2.9.1) Current Market Price and EPS

# Large Cap



# Mid Cap

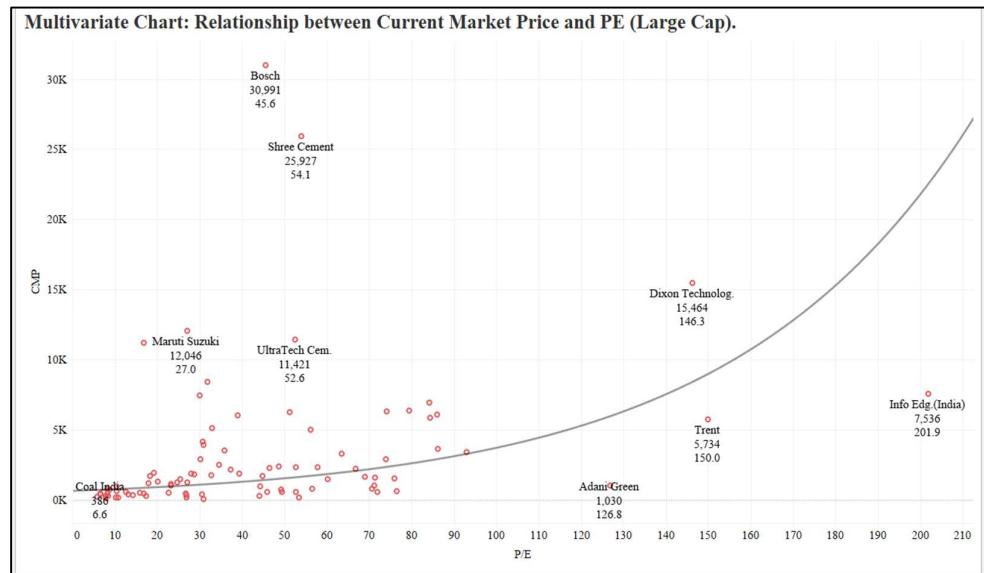


*Observations:*

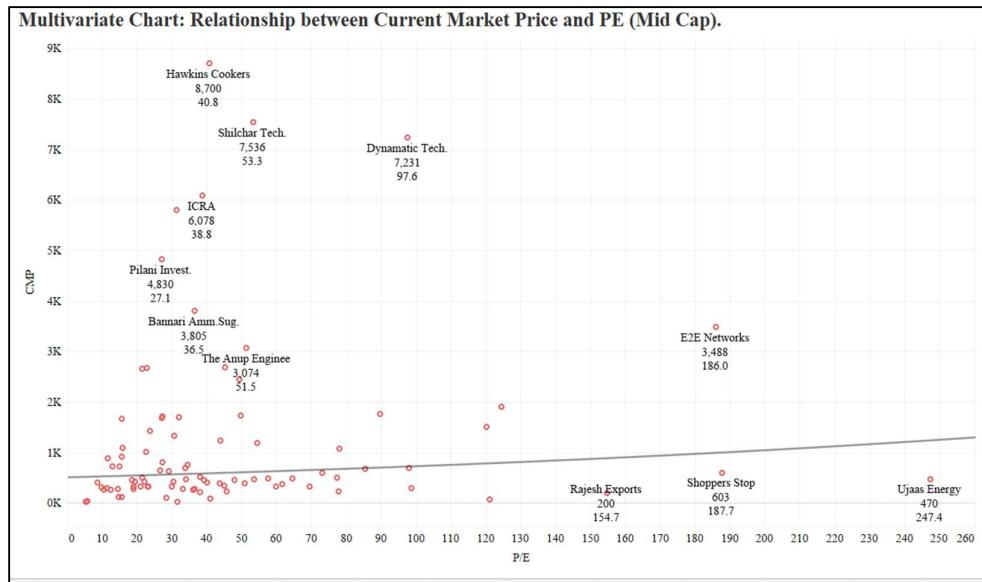
- In Large Cap, as the EPS of the company increases, the CMP of the company also increases.
- Maximum number of companies having EPS is in the range of 0 to 50 and CMP is less than Rs 1500.
- For example, Bosch EPS is 706.6 and CMP is 30,991, whereas Titan company EPS is 36.5 and CMP is 3,399.
  
- In Mid Cap, as the EPS of the company increases, the CMP of the company also increases.
- Maximum number of companies having EPS is in the range of 0 to 10 and CMP is less than Rs 1500.
- For example, Hawkin's cookers EPS is 213.6 and CMP is 8700, whereas Websol Energy EPS is -11.7 and CMP is 1500.

### 2.9.2) Current Market Price and PE

# Large Cap



## # Mid Cap



### Observations:

- In Large Cap, as the PE of the company increases, the CMP of the company increases.
- Maximum number of companies having PE is in the range of 20 to 30 and CMP is less than Rs 1500.
- For example, Bosch PE is 45.6 and CMP is 30,991, whereas Info Edge (India) PE is 201.9 and CMP is 7,536.
- In Mid Cap, as the PE of the company increases, the CMP of the company increases.
- Maximum number of companies having PE is in the range of 10 to 20 and CMP is less than Rs 1500.
- For example, Hawkin's cookers PE is 40.8 and CMP is 8700, whereas E2E Networks PE is 186 and CMP is 3,488.

### 2.9.3) Current Market Price and Debt / Equity Ratio

# Large Cap

*R Programming Code:*

```
cm_de<-dfclean[dfclean$LCMC == "LC",c("CMP","Debt/Eq")]

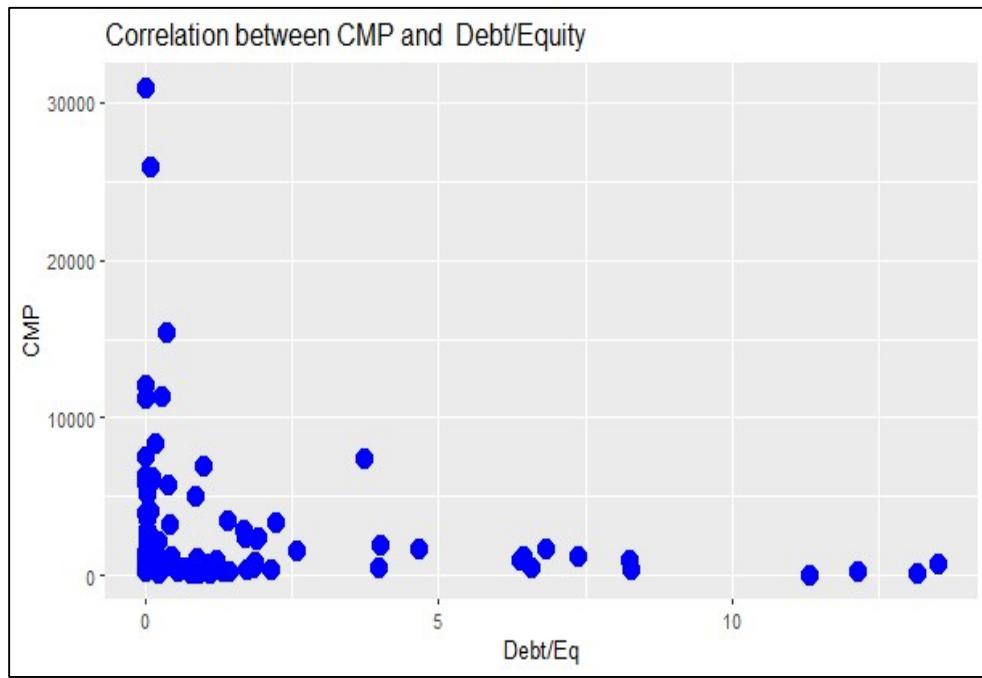
cm_de

library(ggplot2)

ggplot(cm_de)+geom_point(aes(x='Debt/Eq',y= CMP),size=4,color='blue')+
  ggtitle("Correlation between CMP and Debt/Equity")+
  xlab("Debt/Eq") +ylab("CMP")
```

*Output:*

```
cm_de
# A tibble: 90 x 2
  CMP `Debt/Eq`<dbl><dbl>
1 1264.    0.44
2 4145.    0.09
3 1665.    6.81
4 1636     2.59
5 1202.    6.45
6 1865.    0.09
7 746.     13.5
8 440.     0
9 2322.    0.03
10 1807    0.08
# i 80 more rows
```



# Mid Cap

R Programming Code:

```
cm_de<-dfclean[dfclean$LCMC == "MC",c("CMP","Debt/Eq")]

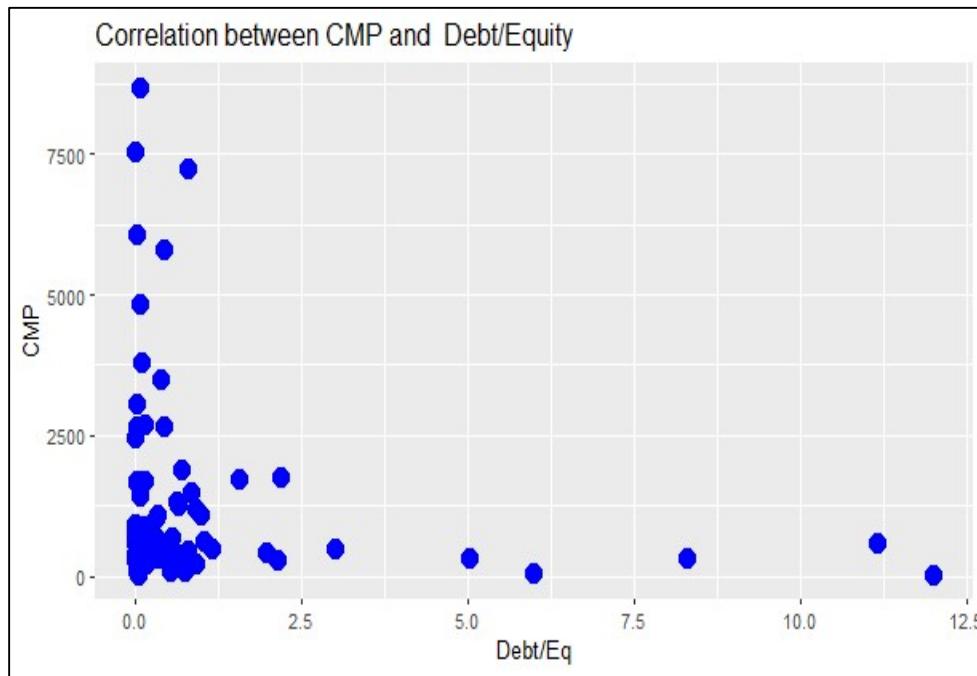
cm_de

ggplot(cm_de) +geom_point(aes(x='Debt/Eq',y= CMP),size=4,color='blue')+
  ggtitle("Correlation between CMP and Debt/Equity")+
  xlab("Debt/Eq") +ylab("CMP")
```

Output:

```
cm_de
# A tibble: 90 × 2
  CMP `Debt/Eq` 
  <dbl>    <dbl>
1 3488.    0.37
2 726.     0.06
3 471.     0.09
4 334.     0.1 
5 289.     2.13
6 419.     0.12
7 25.9     12.0 
8 398.     0.39
9 34.6     5.99
10 684.    0.3
```

# i 80 more rows



## 2.10) Model Evaluation

### 2.10.1) Stock Price Return 5 years and Sales growth 5 years with p values, adjusted R-square and regression equation on ggplot

# Large Cap

*R Programming Code:*

```
sps<-dfclean[dfclean$LCMC == "LC",c("Stock_Price_Return_5yrs","Sales_Growth_5yrs")]

sps

lmod=lm(Stock_Price_Return_5yrs~`Sales_Growth_5yrs`,sps)

summary(lmod)

library(ggplot2)

ggplot(sps,aes(`Sales_Growth_5yrs`,Stock_Price_Return_5yrs))+

  geom_point()+
  
  geom_smooth(method="lm",se=0)+

  theme_classic()+
  
  annotate("text",x=c(20,20),y=c(70,65),label=c(" p-value: 0.0082",
                                                 "Adjusted R-squared: 0.06627"))
```

*Output:*

```
sps
# A tibble: 90 × 2
  Stock_Price_Return_5yrs `sales_Growth_5yrs`
  <dbl>           <dbl>
1     12.8            9.61
2     13.7           10.5 
3      5.99           22.0 
4     26.0            13.2 
5     17.6            17.2 
6     19.0            13.2 
7     18.1            11.6 
8     14.5            7.95 
9      2.29            9.5 
10    24.4           12.7 
# i 80 more rows

summary(lmod)

Call:
lm(formula = Stock_Price_Return_5yrs ~ `Sales_Growth_5yrs`,
    data = sps)

Residuals:
    Min     1Q Median     3Q    Max
   -1.15  -0.55  -0.15  0.35  1.15
```

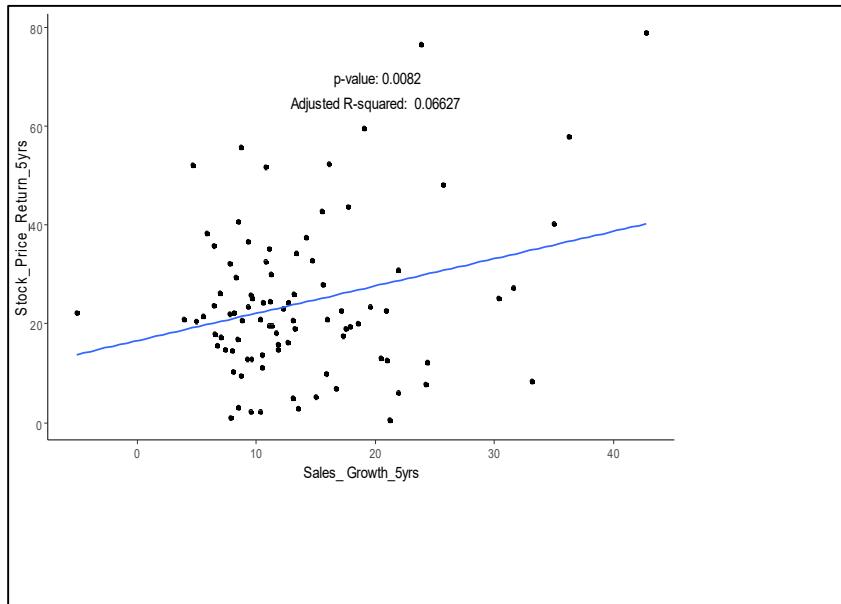
```

-27.866 -8.478 -2.703 7.983 46.896

Coefficients:
Estimate Std. Error t value Pr(>|t|)
(Intercept) 16.6112    3.2397   5.127 1.73e-06 ***
Sales_Growth_5yrs 0.5529    0.2044   2.705 0.0082 **
---
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 15.16 on 88 degrees of freedom
Multiple R-squared: 0.07677, Adjusted R-squared: 0.06627
F-statistic: 7.317 on 1 and 88 DF, p-value: 0.0082

```



### 2.10.2) Stock Price growth 5 years and sales growth 5 years with p values, adjusted R-square and regression equation on ggplot

# Mid Cap

*R Programming Code:*

```

sps<-dfclean[dfclean$LCMC == "MC",c("Stock_Price_Return_5yrs","Sales_Growth_5yrs")]

sps

lmod=lm(Stock_Price_Return_5yrs~`Sales_Growth_5yrs`,sps)

summary(lmod)

library(ggplot2)

ggplot(sps,aes(`Sales_Growth_5yrs`,Stock_Price_Return_5yrs))+
  geom_point()+

```

```

geom_smooth(method="lm",se=0)+  

theme_classic() +  

annotate("text",x=c(25,25),y=c(185,175),label=c(" p-value: 0.0082",  

"Adjusted R-squared: 0.06627"))

```

Output:

```

sps  

# A tibble: 90 × 2  

  Stock_Price_Return_5yrs `Sales_Growth_5yrs`  

  <dbl>           <dbl>  

1 177.            22.9  

2 31.8             0.62  

3 3.41             -7.99  

4 31.5             4.78  

5 33.4             1.28  

6 54.2             12.3  

7 20.3              4.61  

8 23.8              15.4  

9 -8.81             25.4  

10 59.0              7.55  

# i 80 more rows  

summary(lmod)  

Call:  

lm(formula = Stock_Price_Return_5yrs ~ `Sales_Growth_5yrs`,  

  data = sps)  

Residuals:  

    Min      1Q      Median      3Q      Max  

-60.930 -23.822   -9.166   14.134  148.794  

Coefficients:  

            Estimate Std. Error t value Pr(>|t|)  

(Intercept) 34.6236    5.5023   6.293 1.18e-08 ***  

`Sales_Growth_5yrs` 0.3921    0.3195   1.227    0.223  

---  

Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1  

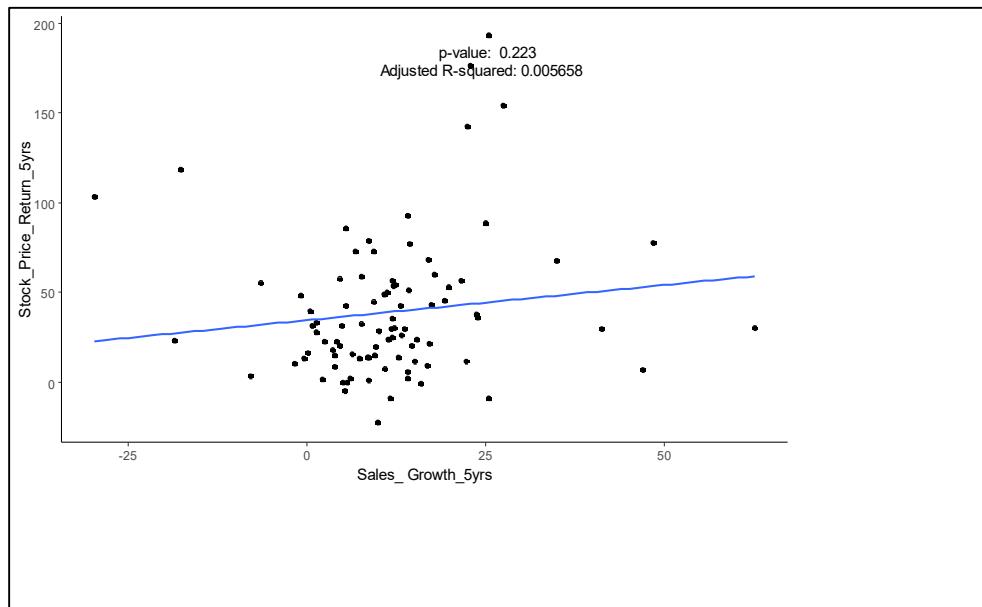
  

Residual standard error: 38.84 on 88 degrees of freedom  

Multiple R-squared:  0.01683, Adjusted R-squared:  0.005658  

F-statistic: 1.506 on 1 and 88 DF,  p-value: 0.223

```



### 2.10.3) Stock Price Growth in 5 years and EPS Growth in 5 years with p values and adjusted R-square on ggplot.

# Large Cap

*R Programming Code:*

```
sp_ep<-dfclean[dfclean$LCMC ==
"LC",c("Stock_Price_Return_5yrs","EPS_Change_5yrs")]

sp_ep

lmod=lm(Stock_Price_Return_5yrs~EPS_Change_5yrs,sp_ep)

summary(lmod)

library(ggplot2)

ggplot(sp_ep,aes(EPS_Change_5yrs,Stock_Price_Return_5yrs))+

geom_point()+
geom_smooth(method="lm",se=0)+

theme_classic()+
annotate("text",x=c(40,40),y=c(75,80),label=c(" p-value: 0.001352","Adjusted R-
squared: 0.1006 "))


```

*Output:*

```
sp_ep
# A tibble: 90 × 2
  Stock_Price_Return_5yrs    EPS_Change_5yrs
              <dbl>            <dbl>
1                12.8             12.0
```

```

2          13.7      9
3          5.99      15.5
4          26.0      121.
5          17.6      57.0
6          19.0      12.4
7          18.1      98.7
8          14.5      9.64
9          2.29      8.8
10         24.4      9.27
# i 80 more rows

```

**summary(lmod)**

```

Call:
lm(formula = Stock_Price_Return_5yrs ~ EPS_Change_5yrs, data = sp_
ep)

```

**Residuals:**

Min	1Q	Median	3Q	Max
-24.441	-10.623	-0.388	6.779	51.078

**Coefficients:**

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	18.95910	2.23582	8.48	4.83e-13 ***
EPS_Change_5yrs	0.23926	0.07228	3.31	0.00135 **

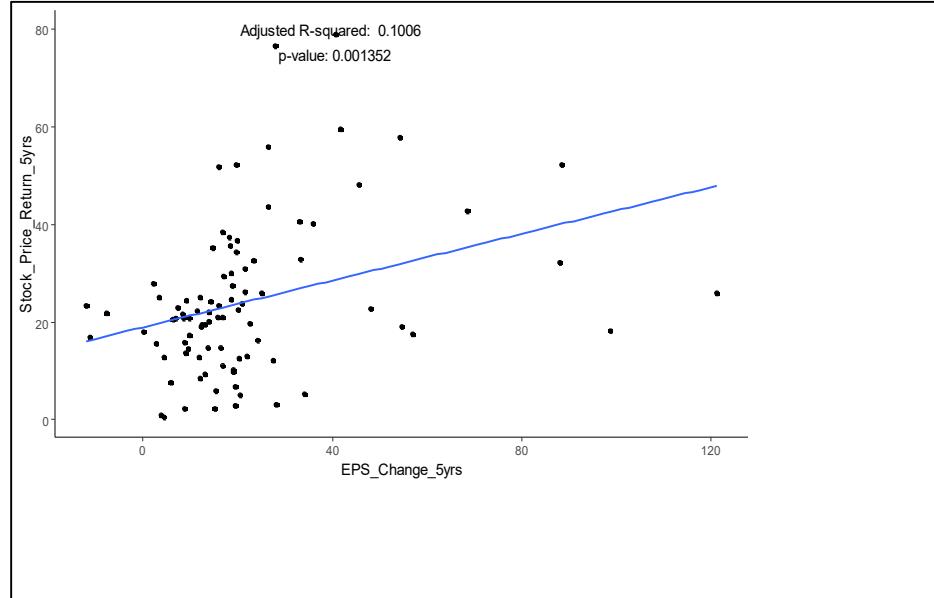
---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 14.88 on 88 degrees of freedom

Multiple R-squared: 0.1107, Adjusted R-squared: 0.1006

F-statistic: 10.96 on 1 and 88 DF, p-value: 0.001352



## 2.10.4) Stock Price Growth in 5 years and EPS Growth in 5 years with p values and adjusted R-square on ggplot.

# Mid Cap

*R Programming Code:*

```
sp_ep<-dfclean[dfclean$LCMC ==
"MC",c("Stock_Price_Return_5yrs","EPS_Change_5yrs")]
```

```
sp_ep
```

```
lmod=lm(Stock_Price_Return_5yrs~EPS_Change_5yrs,sp_ep)
```

```
summary(lmod)
```

```
library(ggplot2)
```

```
ggplot(sp_ep,aes(EPS_Change_5yrs,Stock_Price_Return_5yrs))+
```

```
geom_point()+
```

```
geom_smooth(method="lm",se=0)+
```

```
theme_classic()+
```

```
annotate("text",x=c(50,50),y=c(185,200),label=c(" p-value: 3.193e-09","Adjusted R-squared: 0.1006"))
```

*Output:*

**sp\_ep**

```
# A tibble: 90 × 2
  Stock_Price_Return_5yrs   EPS_Change_5yrs
                <dbl>            <dbl>
1           177.             68.9
2            31.8            11.9
3             3.41           -20.9
4            31.5            29.8
5            33.4           -18.1
6            54.2             9.39
7            20.3            30.2
8            23.8            21.8
9           -8.81            36.3
10           59.0            30.4
# i 80 more rows
```

**summary(lmod)**

**Call:**

```
lm(formula = Stock_Price_Return_5yrs ~ EPS_Change_5yrs, data = sp_
ep)
```

**Residuals:**

Min	1Q	Median	3Q	Max
-63.745	-20.568	-4.495	16.092	108.630

**Coefficients:**

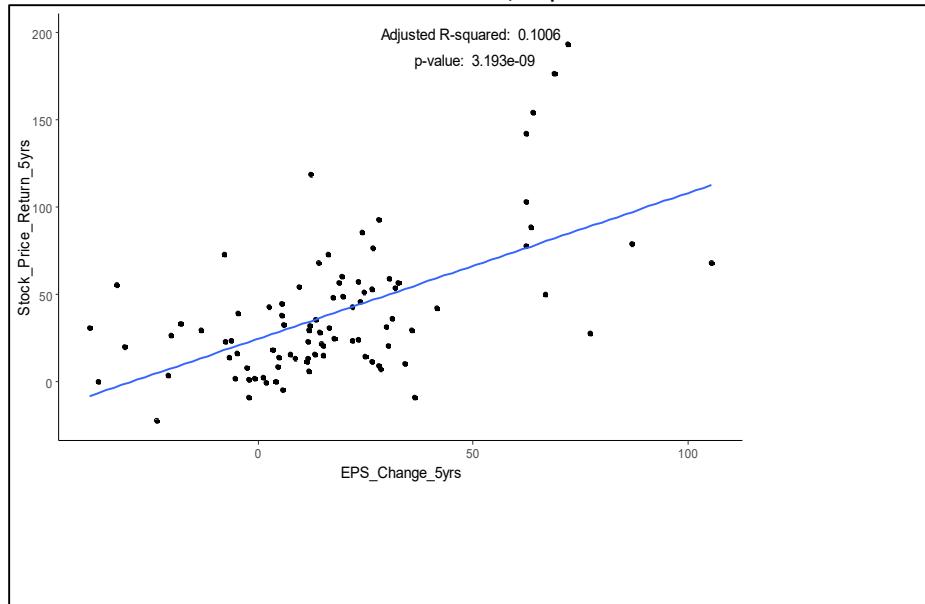
	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	24.6495	4.0325	6.113	2.62e-08 ***

```

EPS_Change_5yrs    0.8341      0.1267    6.585 3.19e-09 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 32.06 on 88 degrees of freedom
Multiple R-squared:  0.3301, Adjusted R-squared:  0.3225
F-statistic: 43.36 on 1 and 88 DF,  p-value: 3.193e-09

```



## 2.10.5 Stock Price Growth in 5 years and Average PAT 5 years with p values and adjusted R-square on ggplot.

```
# Large Cap
```

*R Programming Code:*

```

sp_ap<-dfclean[dfclean$LCMC == "LC",c("Stock_Price_Return_5yrs","Avg
_PAT_5yrs")]

sp_ap

lmod=lm(Stock_Price_Return_5yrs~`Avg_PAT_5yrs`,sp_ap)

summary(lmod)

ggplot(sp_ap,aes(`Avg_PAT_5yrs`,Stock_Price_Return_5yrs))+

geom_point()+
geom_smooth(method="lm",se=0)+

theme_classic()+
annotate("text",x=c(20000,20000),y=c(75,80),label=c("p-value: 0.005366",
"Adjusted R-squared: 0.07438 "))

```

Output:

```
sp_ap
# A tibble: 90 × 2
  Stock_Price_Return_5yrs `Avg _PAT_5yrs`  

  <dbl>           <dbl>  

1      12.8          56477.  

2      13.7          38527.  

3      5.99          41373.  

4      26.0          8821.  

5      17.6          26261.  

6      19.0          21550.  

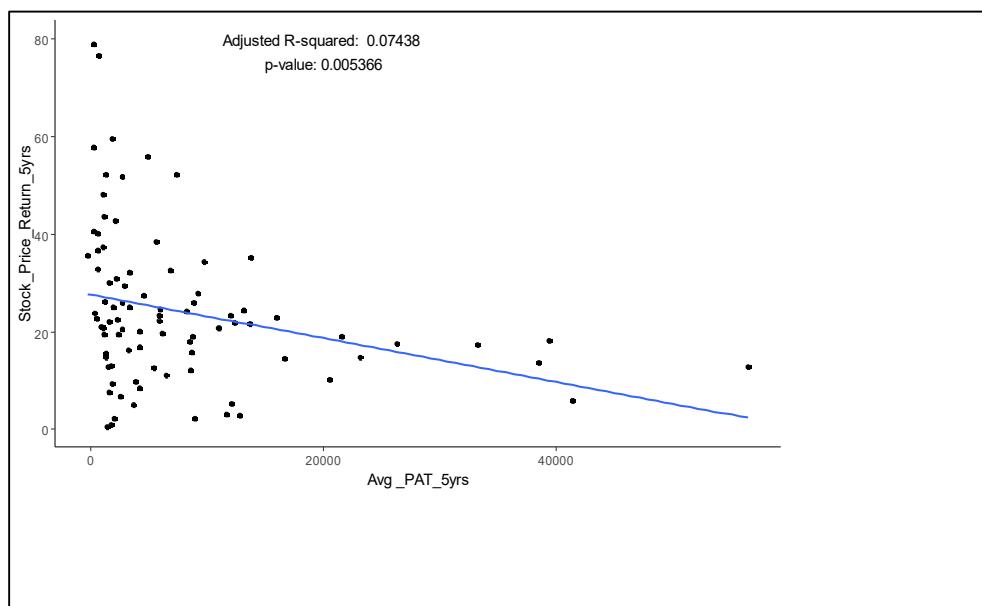
7      18.1          39414.  

8      14.5          16683.  

9      2.29          8883.  

10     24.4          13115.  

# i 80 more rows  
  
summary(lmod)  
  
Call:  
lm(formula = Stock_Price_Return_5yrs ~ `Avg _PAT_5yrs`, data = sp_ap)  
  
Residuals:  
    Min     1Q   Median     3Q    Max  
-26.581 -8.190 -1.629  5.875 51.337  
  
Coefficients:  
            Estimate Std. Error t value Pr(>|t|)  
(Intercept) 27.6509254 1.9907902 13.889 < 2e-16 ***  
 `Avg _PAT_5yrs` -0.0004475 0.0001568 -2.855 0.00537 **  
---  
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1  
  
Residual standard error: 15.09 on 88 degrees of freedom  
Multiple R-squared:  0.08478, Adjusted R-squared:  0.07438  
F-statistic: 8.151 on 1 and 88 DF,  p-value: 0.005366
```



## 2.10.6) Stock Price Growth in 5 years and Average PAT 5 years with p values and adjusted R-square on ggplot.

# Mid Cap

*R Programming Code:*

```
sp_ap<-dfclean[dfclean$LCMC == "MC",c("Stock_Price_Return_5yrs","Avg_PAT_5yrs")]

sp_ap

lmod=lm(Stock_Price_Return_5yrs~`Avg_PAT_5yrs`,sp_ap)

summary(lmod)

ggplot(sp_ap,aes(`Avg_PAT_5yrs`,Stock_Price_Return_5yrs))+
  geom_point()+
  geom_smooth(method="lm",se=0)+
  theme_classic()+
  annotate("text",x=c(250,250),y=c(185,200),label=c("p-value: 0.0005515",
  ",,"Adjusted R-squared: 0.1176 "))


```

*Output:*

```
sp_ap
# A tibble: 90 × 2
  Stock_Price_Return_5yrs `Avg_PAT_5yrs`
  <dbl>          <dbl>
1    177.            5.13
2     31.8           613.
3      3.41          43.4
4     31.5           172.
5     33.4           65.8
6     54.2           293.
7     20.3           411.
8     23.8           693.
9     -8.81          466.
10    59.0           180.

# i 80 more rows

summary(lmod)

Call:
lm(formula = Stock_Price_Return_5yrs ~ `Avg_PAT_5yrs`, data = sp_ap)

Residuals:
    Min      1Q  Median      3Q     Max 
-58.626 -25.644 - 6.166  14.477 145.145 

Coefficients:

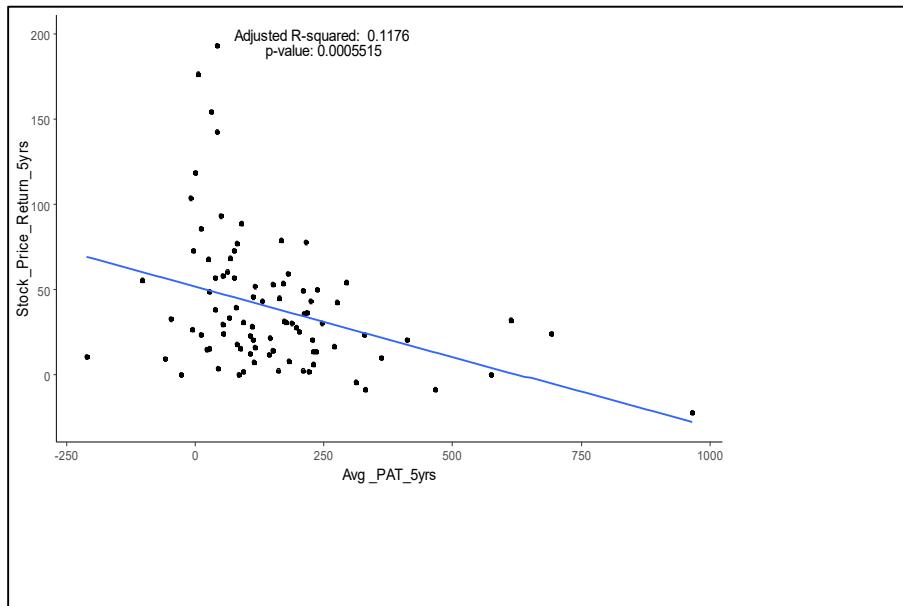
```

```

            Estimate Std. Error t value Pr(>|t|)
(Intercept) 51.73203   5.21724  9.916 5.36e-16 ***
Avg_PAT_5yrs -0.08292   0.02313 -3.586 0.000551 ***
---
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 36.59 on 88 degrees of freedom
Multiple R-squared: 0.1275, Adjusted R-squared: 0.1176
F-statistic: 12.86 on 1 and 88 DF, p-value: 0.0005515

```



### 2.10.7) Stock Price Growth in 5 years and 5 yrs PE with p values and adjusted R-square on ggplot.

# Large Cap

*R Programming Code:*

```

sp_pe<-dfclean[dfclean$LCMC ==
"LC",c("Stock_Price_Return_5yrs","PE_5yrs")]

sp_pe

lmod=lm(Stock_Price_Return_5yrs~PE_5yrs,sp_pe)

summary(lmod)

library(ggplot2)

ggplot(sp_pe,aes(PE_5yrs,Stock_Price_Return_5yrs))+

geom_point()+
geom_smooth(method="lm",se=0)+
```

```

theme_classic()+
annotate("text",x=c(200,200),y=c(75,80),label=c("p-value: 0.06418","Adjusted
R-squared: 0.02747"))

```

Output:

sp\_pe

```

# A tibble: 90 × 2
  Stock_Price_Return_5yrs PE_5yrs
              <dbl>    <dbl>
1                12.8     26.4
2                13.7     31.1
3                 5.99    20.3
4                26.0     65.6
5                17.6     21.3
6                19.0     27.8
7                18.1     11.2
8                14.5     22.0
9                 2.29    63.0
10               24.4     21.7
# i 80 more rows

```

> summary(lmod)

Call:

lm(formula = Stock\_Price\_Return\_5yrs ~ PE\_5yrs, data = sp\_pe)

Residuals:

Min	1Q	Median	3Q	Max
-25.931	-9.431	-2.684	6.005	52.757

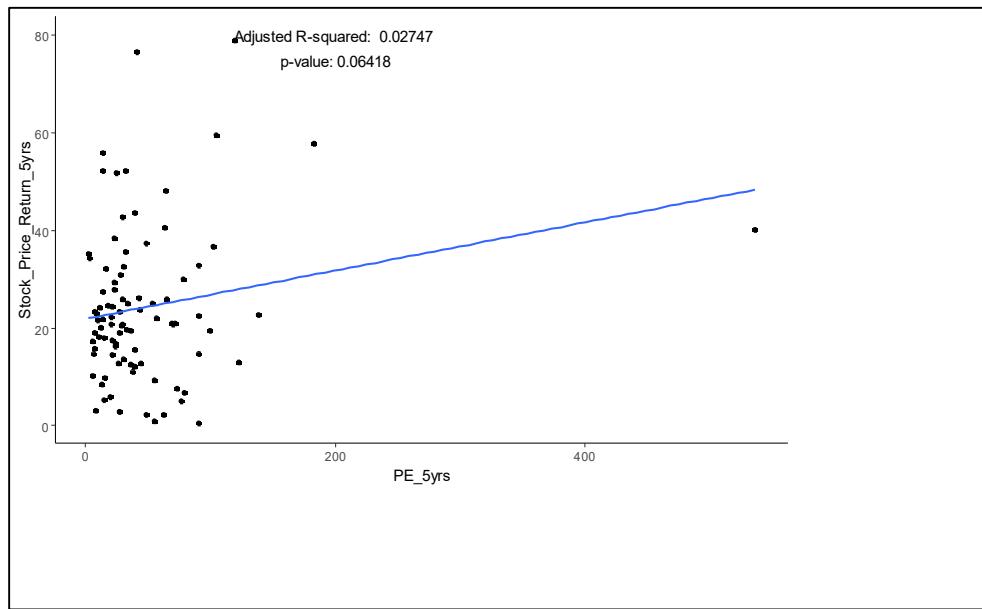
Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	21.89853	2.05236	10.670	<2e-16 ***
PE_5yrs	0.04945	0.02638	1.875	0.0642 .

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 15.47 on 88 degrees of freedom  
Multiple R-squared: 0.0384, Adjusted R-squared: 0.02747  
F-statistic: 3.514 on 1 and 88 DF, p-value: 0.06418



### 2.10.8) Stock Price Growth in 5 years and 5 yrs PE with p values and adjusted R-square on ggplot.

# Mid Cap

*R Programming Code:*

```
sp_pe<-dfclean[dfclean$LCMC ==  
"MC",c("Stock_Price_Return_5yrs","PE_5yrs")]  
  
sp_pe  
lmod=lm(Stock_Price_Return_5yrs~PE_5yrs,sp_pe)  
summary(lmod)  
ggplot(sp_pe,aes(PE_5yrs,Stock_Price_Return_5yrs))+  
  geom_point() +  
  geom_smooth(method="lm",se=0) +  
  theme_classic() +  
  annotate("text",x=c(50,50),y=c(185,200),label=c(" p-value: 0.6191","Adjusted R-  
squared: -0.008512 "))
```

*Output:*

```
sp_pe  
# A tibble: 90 × 2  
  Stock_Price_Return_5yrs PE_5yrs  
  <dbl>    <dbl>
```

```

1          177.      53.4
2          31.8      6.68
3          3.41     134.
4          31.5      14.4
5          33.4      40.2
6          54.2      7.36
7          20.3      6.71
8          23.8      7.54
9          -8.81     8.9
10         59.0      11.0
# i 80 more rows

```

```
summary(lmod)
```

```

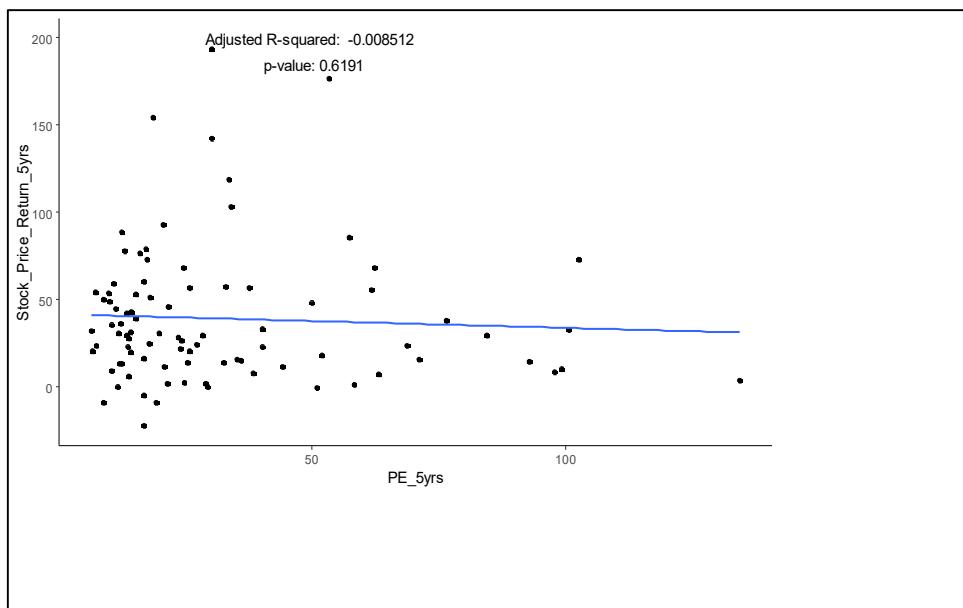
Call:
lm(formula = Stock_Price_Return_5yrs ~ PE_5yrs, data = sp_pe)

Residuals:
    Min      1Q   Median      3Q      Max 
-62.759 -24.665 - 9.894 12.993 154.087 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept) 41.62967   6.48133  6.423 6.61e-09 ***
PE_5yrs     -0.07827   0.15689 -0.499  0.619    
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 39.12 on 88 degrees of freedom
Multiple R-squared:  0.00282, Adjusted R-squared:  -0.008512 
F-statistic: 0.2489 on 1 and 88 DF,  p-value: 0.6191

```



## 2.10.9) Stock Price Growth in 5 years and EBIDT 5years with p values and adjusted R-square on ggplot.

# Large Cap

*R Programming Code:*

```
sp_eb<-dfclean[dfclean$LCMC ==
"LC",c("Stock_Price_Return_5yrs","EBIDT_5yrs")]

sp_eb

lmod=lm(Stock_Price_Return_5yrs~EBIDT_5yrs,sp_eb)

summary(lmod)

ggplot(sp_eb,aes(EBIDT_5yrs,Stock_Price_Return_5yrs))+
  geom_point()+
  geom_smooth(method="lm",se=0)+
  theme_classic()+
  annotate("text",x=c(20,20),y=c(75,80),label=c(" p-value: 3.569e-05","Adjusted
R-squared: 0.168"))
```

*Output:*

```
sp_eb
# A tibble: 90 × 2
  Stock_Price_Return_5yrs EBIDT_5yrs
  <dbl>      <dbl>
1 12.8        14.0
2 13.7        9.45
3 5.99       21.2
4 26.0       24.6
5 17.6       23.5
6 19.0       12.3
7 18.1       16.7
8 14.5        6.95
9 2.29        10.4
10 24.4       11.7
# i 80 more rows

summary(lmod)

Call:
lm(formula = Stock_Price_Return_5yrs ~ EBIDT_5yrs, data = sp_eb)

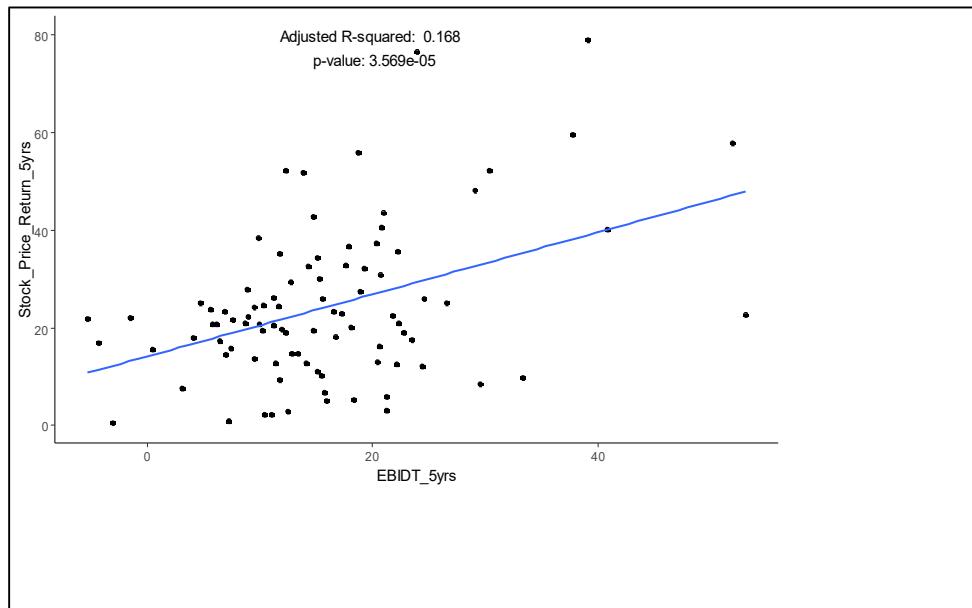
Residuals:
    Min     1Q   Median     3Q    Max 
-25.557 -9.268   0.137   7.538  47.347 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept) 14.1651    2.7601   5.132 1.70e-06 ***
```

```

EBIDT_5yrs      0.6356      0.1459     4.356 3.57e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Residual standard error: 14.31 on 88 degrees of freedom
Multiple R-squared:  0.1774, Adjusted R-squared:  0.168
F-statistic: 18.98 on 1 and 88 DF,  p-value: 3.569e-05

```



### 2.10.10) Stock Price Growth in 5 years and EBIDT 5years with p values and adjusted R-square on ggplot.

# Mid Cap

*R Programming Code:*

```

sp_eb<-dfclean[dfclean$LCMC ==
"MC",c("Stock_Price_Return_5yrs","EBIDT_5yrs")]

sp_eb

lmod=lm(Stock_Price_Return_5yrs~EBIDT_5yrs,sp_eb)

summary(lmod)

ggplot(sp_eb,aes(EBIDT_5yrs,Stock_Price_Return_5yrs))+

geom_point()+
geom_smooth(method="lm",se=0)+

theme_classic()+
annotate("text",x=c(50,50),y=c(185,200),label=c("p-value: 6.976e-05 ","Adjusted
R-squared: 0.1559 "))

```

Output:

```
sp_eb
# A tibble: 90 × 2
  Stock_Price_Return_5yrs EBIDT_5yrs
  <dbl>        <dbl>
1 177.          34.9
2 31.8          2.52
3 3.41          -16.0
4 31.5          7.36
5 33.4          0.6
6 54.2          10.6
7 20.3          5.39
8 23.8          14.4
9 -8.81         32.8
10 59.0          5.33
# i 80 more rows
```

```
summary(lmod)
```

Call:  
lm(formula = Stock\_Price\_Return\_5yrs ~ EBIDT\_5yrs, data = sp\_eb)

Residuals:

Min	1Q	Median	3Q	Max
-88.456	-23.657	-5.817	12.167	128.999

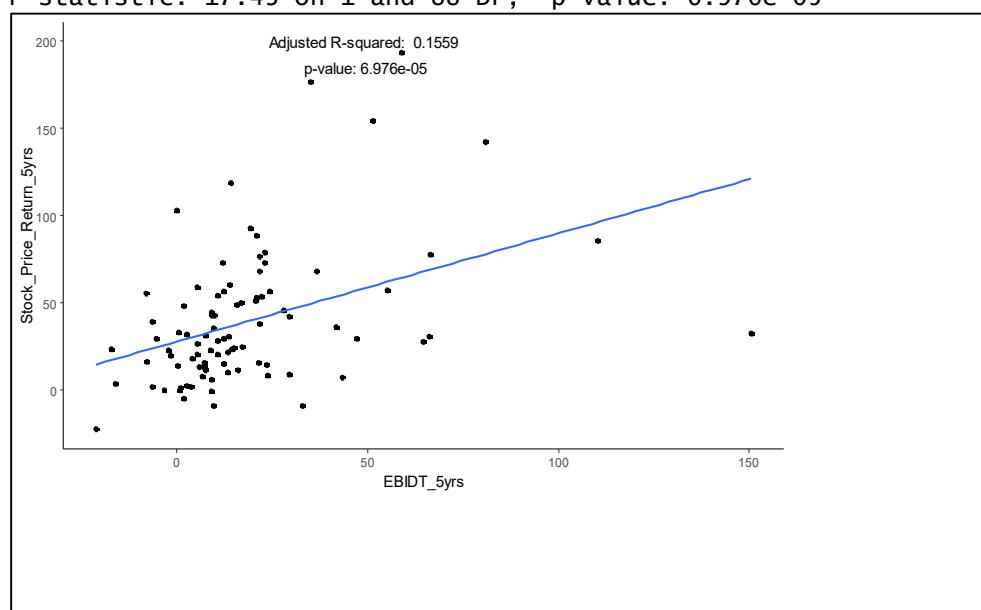
Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	27.8161	4.6455	5.988	4.53e-08 ***
EBIDT_5yrs	0.6202	0.1485	4.175	6.98e-05 ***

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 35.79 on 88 degrees of freedom  
Multiple R-squared: 0.1654, Adjusted R-squared: 0.1559  
F-statistic: 17.43 on 1 and 88 DF, p-value: 6.976e-05



## 2.10.11) Stock Price Growth in 5 years and ROE in 5 years with p values and adjusted R-square on ggplot.

# Large Cap

*R Programming Code:*

```
sp_roe<-dfclean[dfclean$LCMC == "LC",c("Stock_Price_Return_5yrs",
"ROE_5Yrs")]

sp_roe

lmod=lm( Stock_Price_Return_5yrs~ ROE_5Yrs,sp_roe)

summary(lmod)

library(ggplot2)

ggplot(sp_roe,aes(ROE_5Yrs,Stock_Price_Return_5yrs))+
  geom_point()+
  geom_smooth(method="lm",se=0)+
  theme_classic()+
  annotate("text",x=c(30,30),y=c(75,80),label=c("p-value: 0.3083","Adjusted R-
squared: 0.0005622"))
```

*Output:*

```
sp_roe
# A tibble: 90 × 2
  Stock_Price_Return_5yrs ROE_5Yrs
                <dbl>     <dbl>
1                 12.8      8.73
2                 13.7     43.8
3                  5.99     16.8
4                 26.0     12.4
5                 17.6     15.2
6                 19.0     29.2
7                 18.1      13
8                 14.5     25.7
9                  2.29     24.0
10                24.4     22.4
# i 80 more rows

summary(lmod)

Call:
lm(formula = Stock_Price_Return_5yrs ~ ROE_5Yrs, data = sp_roe)

Residuals:
    Min     1Q   Median     3Q    Max 
-24.464 -8.819 -3.339  6.131 55.415 

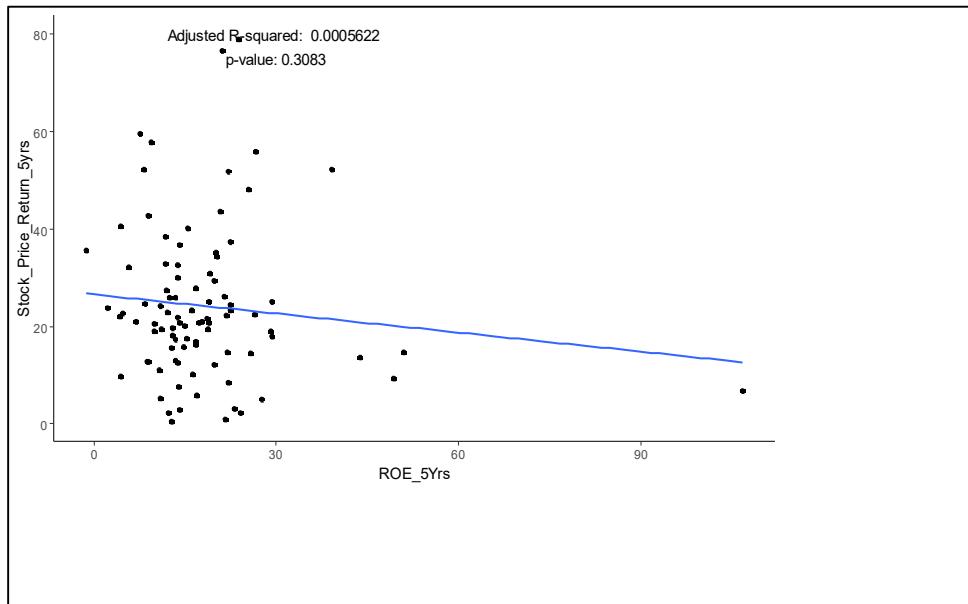
Coefficients:
```

```

Estimate Std. Error t value Pr(>|t|)
(Intercept) 26.5797    2.8234   9.414 5.76e-15 ***
ROE_5Yrs    -0.1303    0.1272  -1.025   0.308
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 15.68 on 88 degrees of freedom
Multiple R-squared:  0.01179, Adjusted R-squared:  0.0005622
F-statistic:  1.05 on 1 and 88 DF,  p-value: 0.3083

```



### 2.10.12) Stock Price Growth in 5 years and ROE in 5 years with p values and adjusted R-square on ggplot.

# Mid Cap

*R Programming Code:*

```

sp_roe<-dfclean[dfclean$LCMC == "MC",c("Stock_Price_Return_5yrs",
"ROE_5Yrs")]

sp_roe
lmod=lm( Stock_Price_Return_5yrs~ ROE_5Yrs,sp_roe)
summary(lmod)
library(ggplot2)
ggplot(sp_roe,aes(ROE_5Yrs,Stock_Price_Return_5yrs))+
  geom_point()

```

```

geom_smooth(method="lm",se=0)+  

theme_classic() +  

annotate("text",x=c(0,0),y=c(185,200),label=c(" p-value: 0.06499","Adjusted R-  

squared: 0.02724"))

```

Output:

```

sp_roe  

# A tibble: 90 × 2  

  Stock_Price_Return_5yrs ROE_5Yrs  

          <dbl>      <dbl>  

1           177.       13.4  

2            31.8      21.9  

3             3.41     1.54  

4            31.5      12.4  

5            33.4      3.39  

6            54.2      21.4  

7            20.3      6.66  

8            23.8      22.4  

9            -8.81     14.4  

10           59.0      27.5  

# i 80 more rows  
  

summary(lmod)  
  

Call:  

lm(formula = Stock_Price_Return_5yrs ~ ROE_5Yrs, data = sp_roe)  
  

Residuals:  

    Min      1Q   Median      3Q      Max  

-57.687 -23.374 -6.762  10.810 138.094  
  

Coefficients:  

            Estimate Std. Error t value Pr(>|t|)      

(Intercept) 29.9463    6.3701   4.701 9.51e-06 ***  

ROE_5Yrs    0.6667    0.3568   1.869   0.065 .  

---  

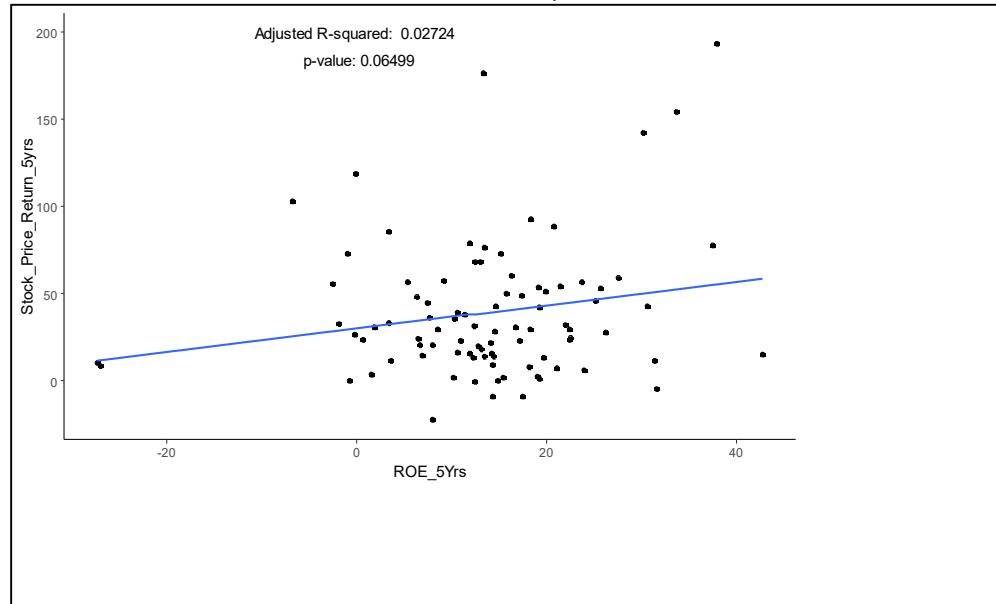
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1  
  

Residual standard error: 38.42 on 88 degrees of freedom  

Multiple R-squared:  0.03817, Adjusted R-squared:  0.02724

```

F-statistic: 3.492 on 1 and 88 DF, p-value: 0.06499



### 2.10.13) Stock Price Growth in 5 years and Debt / Eq with p values and adjusted R-square on ggplot.

# Large Cap

*R Programming Code:*

```
sp_de<-dfclean[dfclean$LCMC ==  
"LC",c("Stock_Price_Return_5yrs","Debt/Eq")]  
  
sp_de  
  
lmod=lm(Stock_Price_Return_5yrs~`Debt/Eq`,sp_de)  
  
summary(lmod)  
  
ggplot(sp_de,aes(`Debt/Eq`,Stock_Price_Return_5yrs))+  
  geom_point() +  
  geom_smooth(method="lm",se=0)+  
  theme_classic()  
  
annotate("text",x=c(5,5),y=c(75,80),label=c("p-value: 0.5613","Adjusted R-  
squared: -0.00747"))
```

*Output:*

```
sp_de  
# A tibble: 90 × 2  
  Stock_Price_Return_5yrs `Debt/Eq`
```

```

1 <db1> <db1>
2 12.8 0.44
3 13.7 0.09
4 5.99 6.81
5 26.0 2.59
6 17.6 6.45
7 19.0 0.09
8 18.1 13.5
9 14.5 0
10 2.29 0.03
11 24.4 0.08
# i 80 more rows

```

```
summary(lmod)
```

```

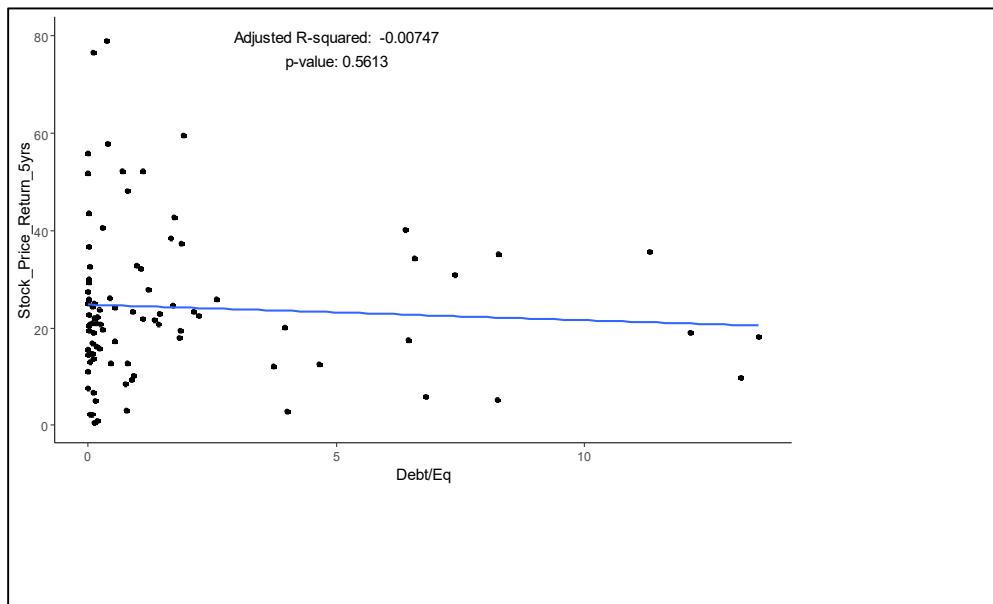
Call:
lm(formula = Stock_Price_Return_5yrs ~ `Debt/Eq`, data = sp_de)

Residuals:
    Min      1Q   Median      3Q     Max 
-24.303 -10.193 -2.545  7.132 54.213 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept) 24.7914    1.9151 12.946 <2e-16 ***
`Debt/Eq`   -0.3167    0.5431 -0.583  0.561    
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 15.75 on 88 degrees of freedom
Multiple R-squared:  0.003849, Adjusted R-squared:  -0.00747 
F-statistic: 0.3401 on 1 and 88 DF,  p-value: 0.5613

```



## 2.10.14) Stock Price Growth in 5 years and Debt / Eq with p values and adjusted R-square on ggplot.

# Mid Cap

*R Programming Code:*

```
sp_de<-dfclean[dfclean$LCMC ==
"MC",c("Stock_Price_Return_5yrs","Debt/Eq")]

sp_de

lmod=lm(Stock_Price_Return_5yrs~`Debt/Eq`,sp_de)

summary(lmod)

ggplot(sp_de,aes(`Debt/Eq`,Stock_Price_Return_5yrs))+

geom_point()+
geom_smooth(method="lm",se=0)+

theme_classic()

annotate("text",x=c(5.0,5.0),y=c(185,200),label=c("p-value: 0.1688","Adjusted R-
squared: 0.01028"))
```

*Output:*

```
sp_de
# A tibble: 90 × 2
  Stock_Price_Return_5yrs `Debt/Eq`
                <dbl>     <dbl>
1             177.      0.37
2              31.8     0.06
3               3.41     0.09
4              31.5     0.1
5              33.4     2.13
6              54.2     0.12
7              20.3     12.0
8              23.8     0.39
9              -8.81    5.99
10             59.0     0.3
# i 80 more rows

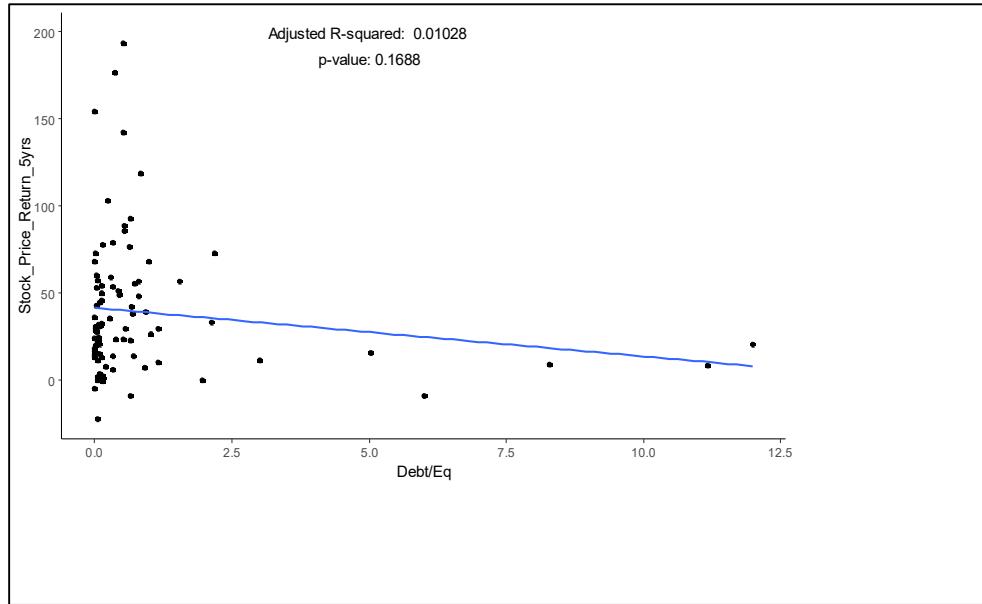
summary(lmod)

Call:
lm(formula = Stock_Price_Return_5yrs ~ `Debt/Eq`, data = sp_de)

Residuals:
    Min     1Q     Median     3Q     Max 
-63.835 -25.655  -9.626   12.962  153.285 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept) 41.514     4.430   9.371 7.07e-15 ***
`Debt/Eq`   -2.787     2.009  -1.387   0.169    
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Residual standard error: 38.75 on 88 degrees of freedom  
 Multiple R-squared: 0.02141, Adjusted R-squared: 0.01028  
 F-statistic: 1.925 on 1 and 88 DF, p-value: 0.1688



### 2.10.15) Stock Price Growth in 5 years and PEG with p values and adjusted R-square on ggplot.

# Large Cap

*R Programming Code:*

```

sp_peg<-dfclean[dfclean$LCMC == "LC",c("Stock_Price_Return_5yrs","PEG")]
sp_peg
lmod=lm(Stock_Price_Return_5yrs~PEG,sp_peg)
summary(lmod)

ggplot(sp_peg,aes(PEG,Stock_Price_Return_5yrs))+ 
  geom_point()+
  geom_smooth(method="lm",se=0)+ 
  theme_classic()+
  annotate("text",x=c(25,25),y=c(75,80),label=c("p-value: 0.432","Adjusted R-
squared: -0.004253"))
  
```

*Output:*

sp\_peg

```

# A tibble: 90 × 2
  Stock_Price_Return_5yrs    PEG
              <dbl>   <dbl>
1             12.8   2.06
2             13.7   3.75
3              5.99  0.78
4              26.0   0.56
5              17.6   0.3
6              19.0   2.49
7              18.1   0.09
8              14.5   2.67
9              2.29   4.97
10             24.4   3.1
# i 80 more rows

summary(lmod)

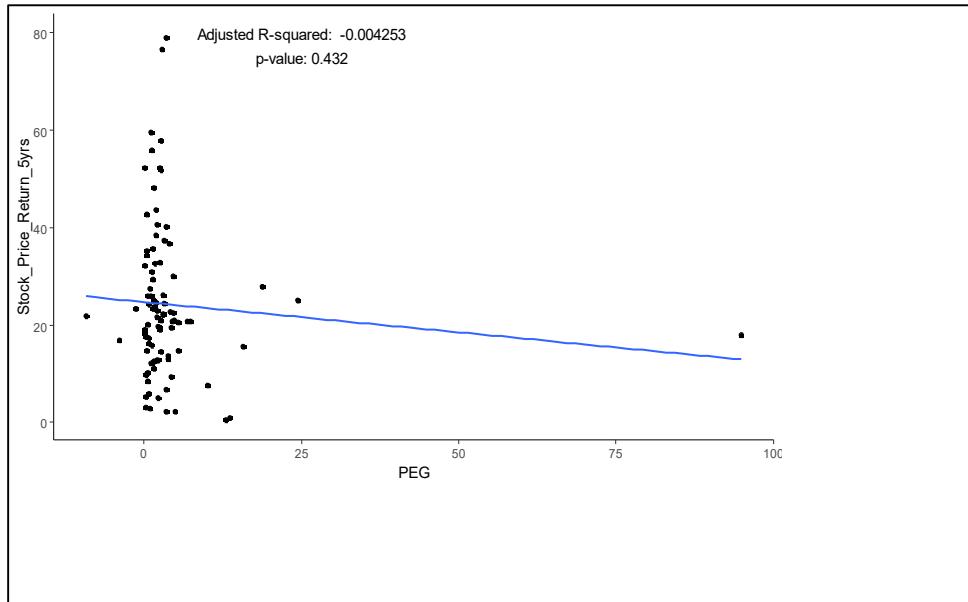
Call:
lm(formula = Stock_Price_Return_5yrs ~ PEG, data = sp_peg)

Residuals:
    Min      1Q Median      3Q     Max 
-22.664 -9.903 -2.988  6.265 54.598 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept) 24.7209   1.7681 13.982 <2e-16 ***
PEG        -0.1243   0.1574 -0.789  0.432    
Signif. Codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 15.72 on 88 degrees of freedom
Multiple R-squared:  0.007031, Adjusted R-squared:  -0.004253 
F-statistic: 0.6231 on 1 and 88 DF,  p-value: 0.432

```



## 2.10.16) Stock Price Growth in 5 years and PEG with p values and adjusted R-square on ggplot.

# Mid Cap

*R Programming Code:*

```
sp_peg<-dfclean[dfclean$LCMC == "MC",c("Stock_Price_Return_5yrs","PEG")]

sp_peg

lmod=lm(Stock_Price_Return_5yrs~PEG,sp_peg)

summary(lmod)

ggplot(sp_peg,aes(PEG,Stock_Price_Return_5yrs))+

  geom_point()+
  geom_smooth(method="lm",se=0)+

  theme_classic()+
  annotate("text",x=c(0,0),y=c(185,200),label=c("p-value: 0.411","Adjusted R-squared: -0.00358"))
```

*Output:*

```
sp_peg
# A tibble: 90 × 2
  Stock_Price_Return_5yrs     PEG
                <dbl>    <dbl>
1            177.     2.68
2             31.8    1.16
3              3.41   -1.64
4              31.5    1.51
5              33.4   -5.45
6              54.2    1.94
7              20.3    0.16
8              23.8    0.42
9             -8.81   0.13
10             59.0    1.11
# i 80 more rows

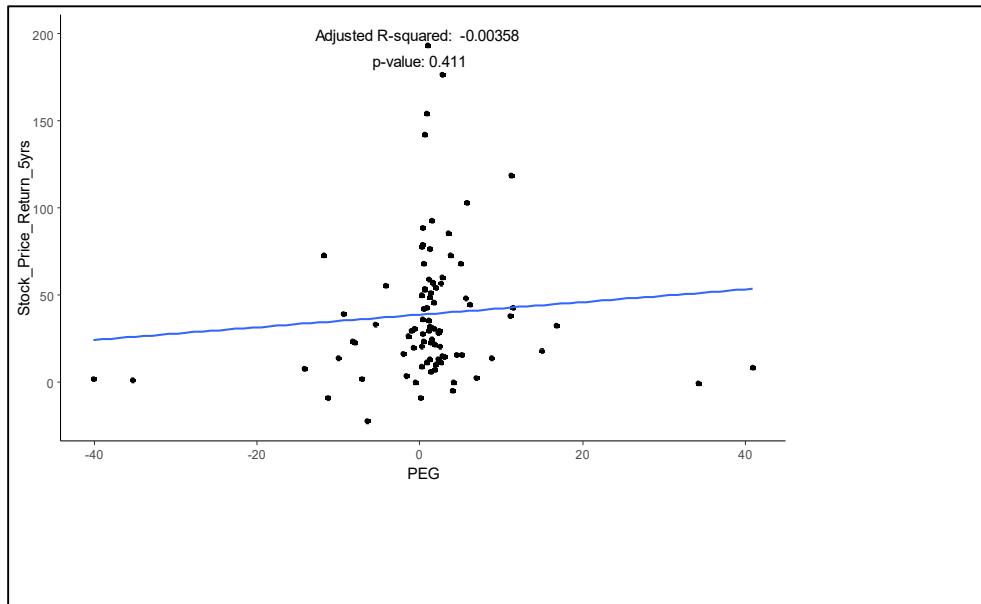
summary(lmod)

Call:
lm(formula = Stock_Price_Return_5yrs ~ PEG, data = sp_peg)

Residuals:
    Min      1Q      Median      3Q      Max 
-58.862 -25.395 - 9.719  14.642 154.236 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept) 38.7730   4.1367  9.373   7e-15 ***  
PEG          0.3626   0.4389  0.826   0.411    
Signif. Codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Residual standard error: 39.02 on 88 degrees of freedom  
 Multiple R-squared: 0.007696, Adjusted R-squared: -0.00358  
 F-statistic: 0.6825 on 1 and 88 DF, p-value: 0.411



### 2.10.17) Stock Price Growth in 5 years and M.Cap / Sales with p values and adjusted R-square on ggplot.

# Large Cap

*R Programming Code:*

```

sp_mcap<-dfclean[dfclean$LCMC ==
“LC”,c(“Stock_Price_Return_5yrs”,”M.Cap/Sales”)]  
  

sp_mcap  
  

lmod=lm(Stock_Price_Return_5yrs~`M.Cap/Sales`,sp_mcap)  

summary(lmod)  
  

library(ggplot2)  
  

ggplot(sp_mcap,aes(`M.Cap/Sales`,Stock_Price_Return_5yrs))+  

  geom_point()+
  geom_smooth(method=”lm”,se=0)+  

  theme_classic()+
  annotate(“text”,x=c(20,20),y=c(75,80),label=c(“p-value: 0.2973”,”Adjusted R-
squared: 0.001115 ”))
  
```

Output:

```
sp_mcap
# A tibble: 90 × 2
  Stock_Price_Return_5yrs `M.Cap/Sales`
                <dbl>            <dbl>
1                  12.8           1.82
2                  13.7           5.95
3                  5.99          3.87
4                  26.0           6.3 
5                  17.6           4.87
6                  19.0           4.84
7                  18.1           1.42
8                  14.5           7.33
9                  2.29          8.71
10                 24.4           4.25
# i 80 more rows

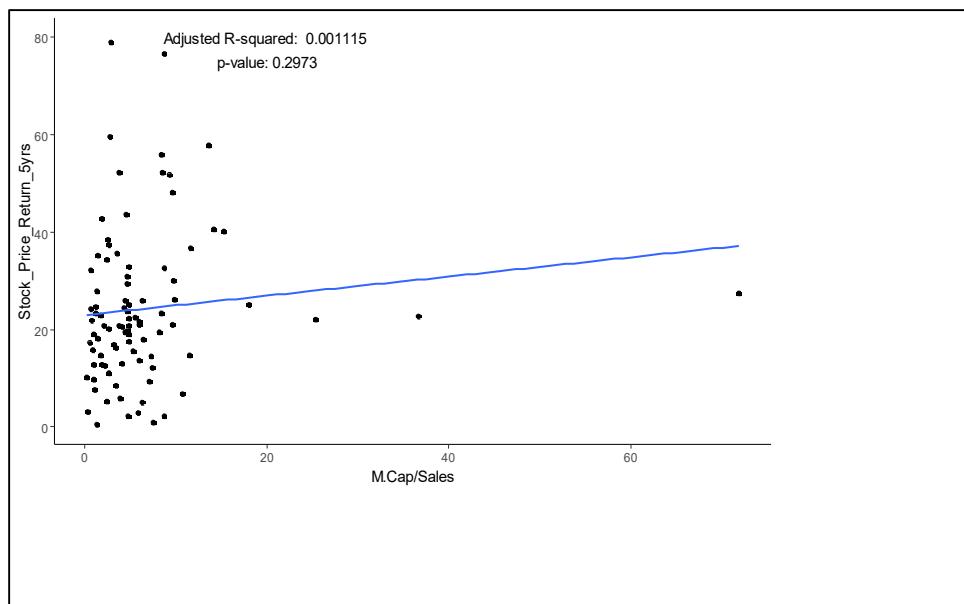
summary(lmod)

Call:
lm(formula = Stock_Price_Return_5yrs ~ `M.Cap/Sales`, data = sp_mc
ap)

Residuals:
    Min      1Q      Median      3Q      Max  
-23.511 -10.219  -3.222   6.658  55.353 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept) 22.9832   2.0385 11.275 <2e-16 ***  
`M.Cap/Sales` 0.1978   0.1886  1.048  0.297    
Signif. Codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 15.68 on 88 degrees of freedom
Multiple R-squared:  0.01234, Adjusted R-squared:  0.001115 
F-statistic: 1.099 on 1 and 88 DF,  p-value: 0.2973
```



## 2.10.18) Stock Price Growth in 5 years and M.Cap / Sales with p values and adjusted R-square on ggplot.

# Mid Cap

*R Programming Code:*

```
sp_mcap<-dfclean[dfclean$LCMC ==
“MC”,c(“Stock_Price_Return_5yrs”,”M.Cap/Sales”)]  
  
sp_mcap  
  
lmod=lm(Stock_Price_Return_5yrs~`M.Cap/Sales`,sp_mcap)  
  
summary(lmod)  
  
library(ggplot2)  
  
ggplot(sp_mcap,aes(`M.Cap/Sales`,Stock_Price_Return_5yrs))+  
  geom_point() +  
  geom_smooth(method="lm",se=0)+  
  theme_classic() +  
  annotate("text",x=c(100,100),y=c(185,200),label=c("p-value:  
0.004515","Adjusted R-squared: 0.07767 "))
```

*Output:*

```
sp_mcap  
# A tibble: 90 × 2  
  Stock_Price_Return_5yrs `M.Cap/Sales`  
  <dbl> <dbl>  
1 177.    43.5  
2 31.8     2.14  
3 3.41     6.41  
4 31.5     2.38  
5 33.4     2.58  
6 54.2     4.34  
7 20.3     0.73  
8 23.8     0.99  
9 -8.81    1.06  
10 59.0     3.56  
# i 80 more rows  
  
summary(lmod)  
  
Call:  
lm(formula = Stock_Price_Return_5yrs ~ `M.Cap/Sales`, data = sp_mc  
ap)  
  
Residuals:  
    Min      1Q   Median      3Q      Max  
-57.977 -24.698 -8.381  16.481 156.173  
  
Coefficients:  
            Estimate Std. Error t value Pr(>|t|)  
(Intercept) 35.5063    4.1352   8.586 2.91e-13 ***
```

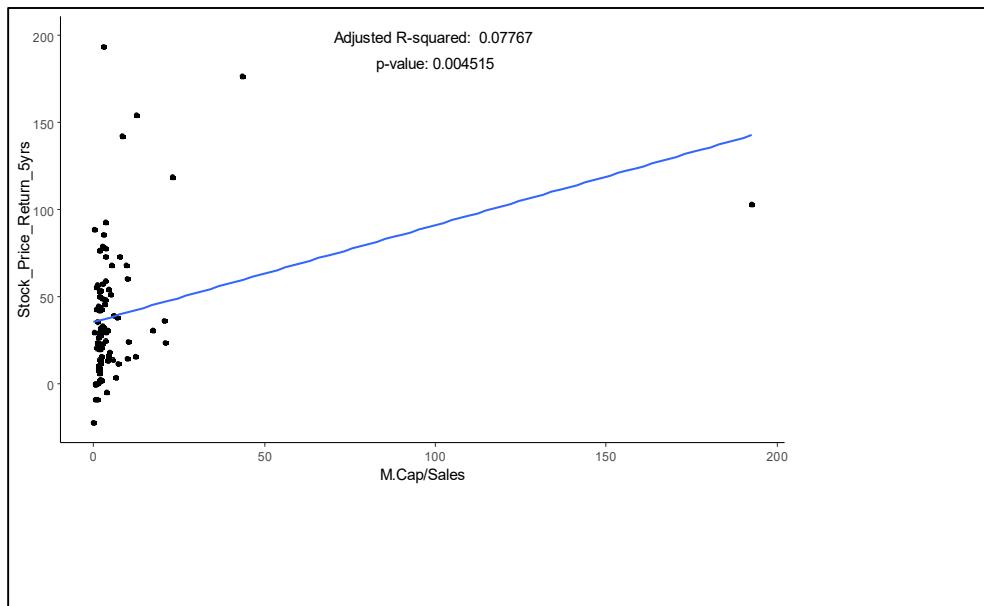
```

`M.Cap/Sales` 0.5568      0.1910    2.915  0.00452 **  

Signif. Codes: 0 *** 0.001 ** 0.01 * 0.05 . 0.1 ' 1

```

Residual standard error: 37.41 on 88 degrees of freedom  
 Multiple R-squared: 0.08804, Adjusted R-squared: 0.07767  
 F-statistic: 8.495 on 1 and 88 DF, p-value: 0.004515



*Observations:*

	Large Cap		Mid Cap	
Stock price growth 5 yrs. and	p-value	Adjusted R-square	p-value	Adjusted R-square
Sales Growth 5 years	0.0082	0.066	0.223	0.005658
EPS Growth in 5 years	0.001352	0.1006	3.193e-09	0.3225
Average PAT 5 years	0.005366	0.07438	0.0005515	0.1176
5 years PE	0.06418	0.02747	0.6191	-0.008512
EBIDT 5 years	3.569e-05	0.168	6.976e-05	0.1559
ROE 5 years	0.3083	0.0005622	0.06499	0.02724
Debt / Equity	0.5613	-0.00747	0.1688	0.01028
PEG	0.432	-0.004253	0.411	-0.00358
M.Cap / Sales	0.2973	0.001115	0.004515	0.07767

P < 0.05, Rejects null hypothesis. It means results have a probability of less than 5% chance of being random.

A negative adjusted R squared value indicates that the model has no predictive value.

## Chapter 3

### Learning experiences on Business / Technology

- Stock Market is a very complex business which is driven by many factors like performance of the companies, number of sectors, geopolitical risks, fundamental and technical analysis, investors sentiment etc. Stocks are classified in Large Cap, Mid Cap and Small Cap.

Selecting stocks for this project was a challenge as the intention was not to conventionally select a particular classified stock. So, decision was taken to study top 150 stocks by Market Cap from Large and Mid-Cap.

So, scrapping data from various websites gave a good learning experience of how to write queries to get required set of data.

This also helped to learn creating a unique dataset for the project.

- Understanding the various financial parameters like EPS, PE, Profit after Tax, Sales Growth, Profit Growth etc. from the dataset and understanding various problems and selecting one problem for this project.
- Root and Cause Diagram (Fishbone Diagram)  
Project problem definition is “Stock price growth in 5 years”. There are many causes which has an effect on stock price growth.  
So, Fishbone Diagram is an excellent tool to visualize various causes which has an effect or relation with the problem.
- There are mainly four types of Business Analytics. The decision was made to use Descriptive, Diagnostic and Prescriptive Analytics.
- Hierarchical Flow Chart: This chart helped to understand the correlation of data and how to have top-down approach. This also helped to group and filter data during analysis.
- This project gave an opportunity to learn more about MS Excel tools.
- Risk Management: Project related data (R programming, Tableau, MS Word and MS Excel) files are copied on pen drive as a backup.

### Learnings in R Programming:

- Fetch raw data from MS Excel file and creating a data frame.
- Learn how to code and visualize description of data in data frame. For example, Number of rows and columns, data types (character, number and integer).
- Clean data from data sets: Write code to identify and delete rows where there was no data. This was done to ensure that all selected companies have data for last five years and FIIs data for last three years.
- Experience of writing code using ggplot. For Multivariate Analysis, we have used Scatter plot and Bar chart. For Univariate Analysis, we have used Histogram.
- Understood the use of libraries like readxl, writexl, dplyr and ggplot2.

### **Learning in Tableau:**

- It is a simple tool which uses drag and drop method to visualize the data in various forms like Bar chart, Line chart, Tree map etc.
- There is no need of writing code as compared to R Programming.
- It auto converts datatype.
- With this tool, we can create interactive presentation using dashboard.
- Learnt how to present data using Pie chart, Histogram, Scatter plot and Box plot.
- Box plot shows spread of data which helps to identify maximum, minimum and average value. It also shows outlier in dataset.

## Chapter 4

### Conclusion

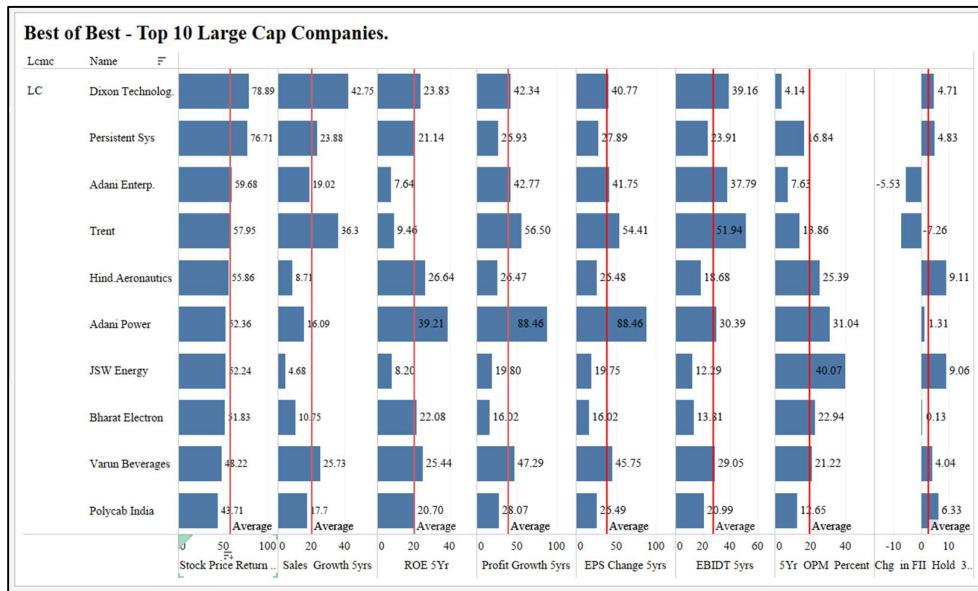
There are many parameters which has an impact on stock price growth. However, in this project evaluation is done with limited key parameters like Sales Growth, Profit Growth, EPS Growth etc.

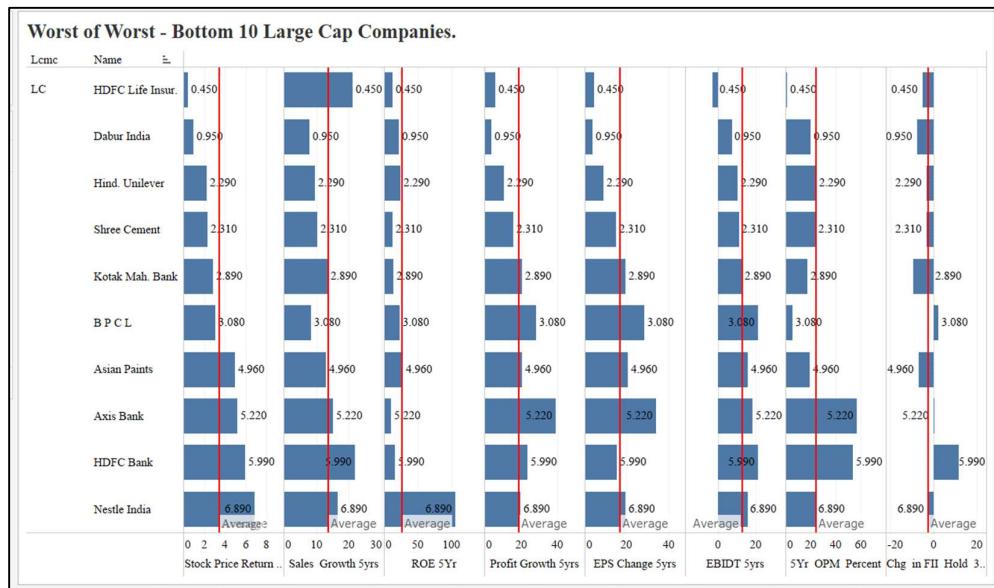
After doing Multivariate Analysis and Univariate Analysis it is observed that each parameter has independent effect on Stock Price Growth. But all these parameters together contribute to the decision-making process of an Investor.

For further understanding and evaluation, Comparative method is used. It means comparing “Best of Best” top 10 companies whose Stock Price Growth is in highest order. Similarly, comparing “Worst of Worst” bottom 10 companies whose stock price growth is minimum.

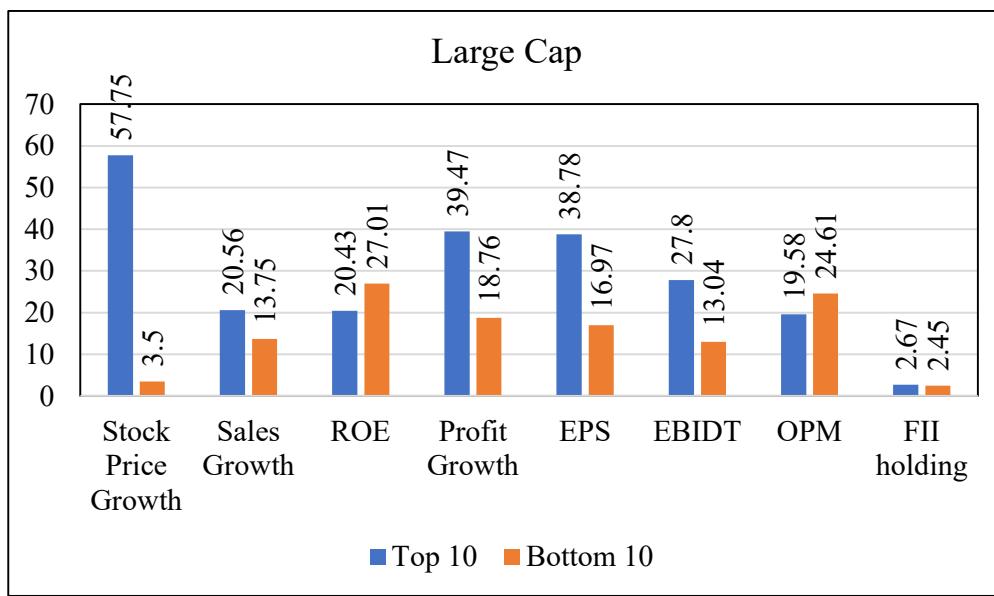
#### 4.1) Large Cap Stocks – “Best of Best” Vs “Worst of Worst”

##### (Top 10 and Bottom 10)





Large Cap		
	Top 10	Bottom 10
Stock Price Growth	57.75	3.50
Sales Growth	20.56	13.75
ROE	20.43	27.01
Profit Growth	39.47	18.76
EPS	38.78	16.97
EBIDT	27.80	13.04
OPM	19.58	24.61
FII holding	2.67	2.45

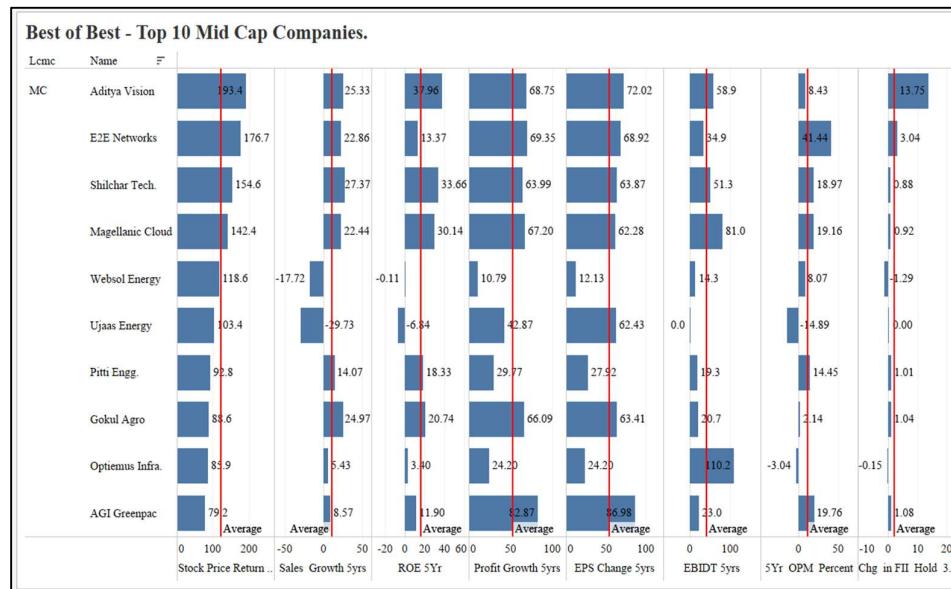


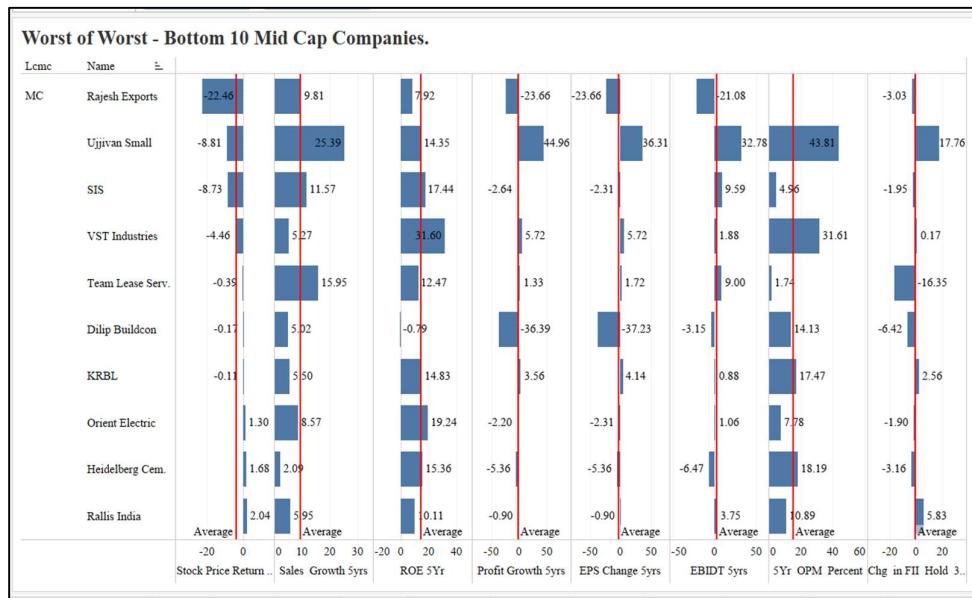
#### *Observations:*

- Top 10 best companies have Stock Price Growth of 16.5 times of bottom 10 worst companies.
- Sales Growth, Profit Growth, EPS and EBITD are much better for top 10 companies. It means these four parameters has a huge impact compared to other two parameters i.e. ROE and OPM.
- FIIs holding is stable for both the categories.

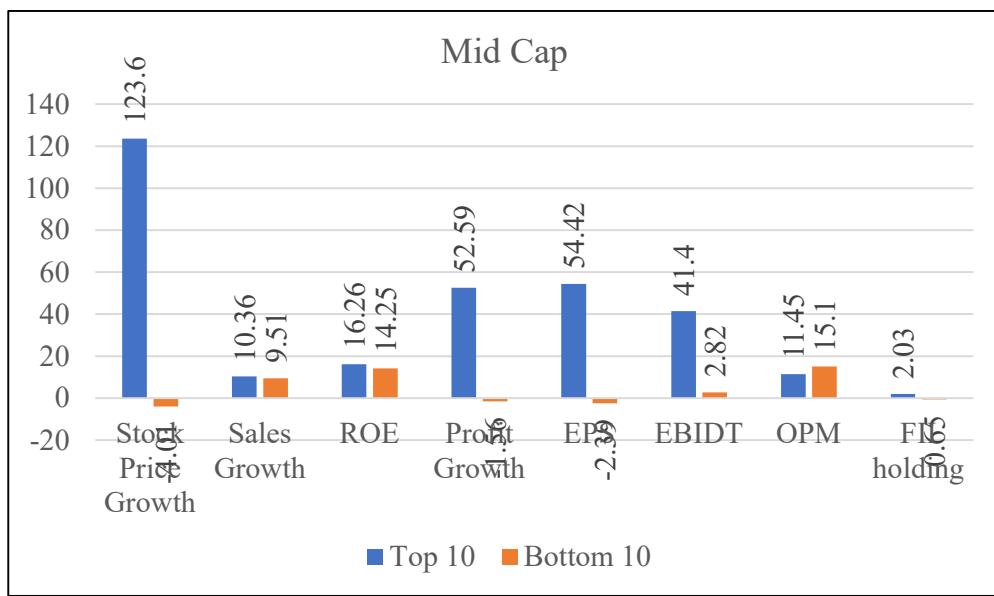
#### 4.2) Mid Cap Stocks – “Best of Best” Vs “Worst of Worst”

##### (Top 10 and Bottom 10)





Mid Cap		
	Top 10	Bottom 10
Stock Price Growth	123.6	-4.01
Sales Growth	10.36	9.51
ROE	16.26	14.25
Profit Growth	52.59	-1.56
EPS	54.42	-2.39
EBIDT	41.4	2.82
OPM	11.45	15.10
FII holding	2.03	-0.65

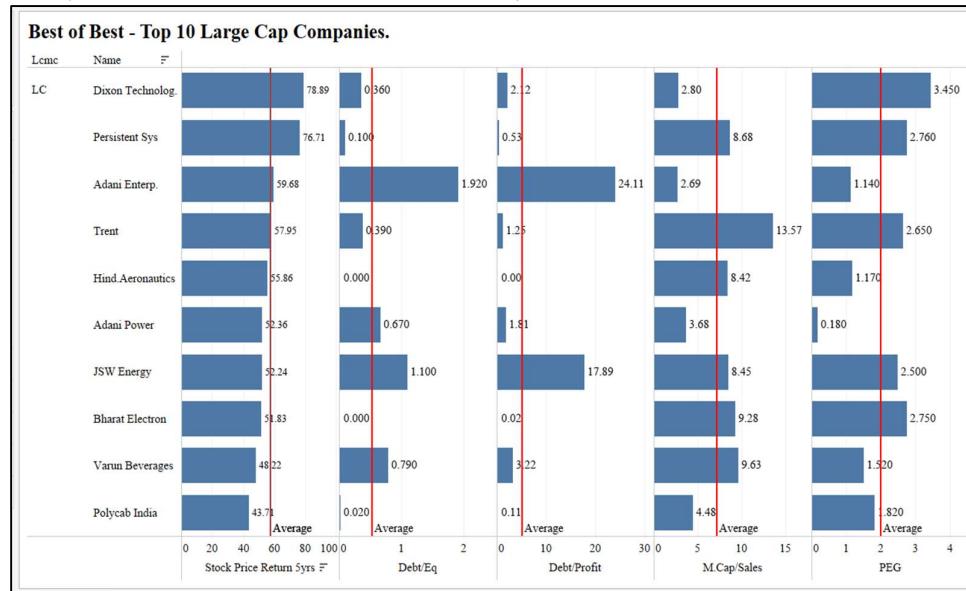


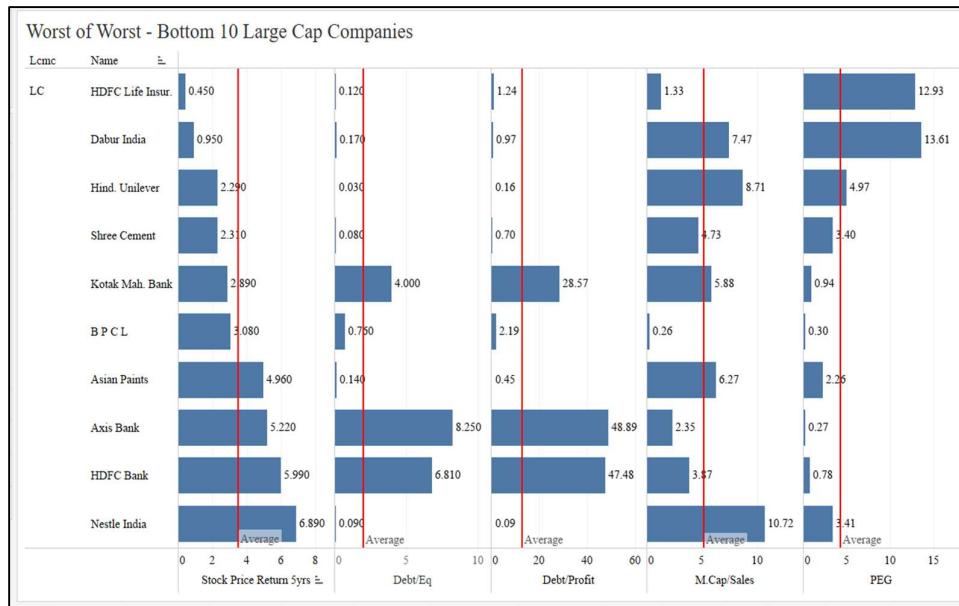
*Observations:*

- In top 10 companies, Stock Price Growth is 123.6, whereas, in bottom 10 companies, Stock Price Growth is -4.01.
- Sales Growth, ROE, Profit Growth, EPS and EBIDT is greater than bottom 10 companies.
- Surprisingly, Stock Price Growth, Profit Growth, EPS and FII holding is negative in bottom 10 companies.
- Negative FII indicate that foreign investors are exiting from the stocks.

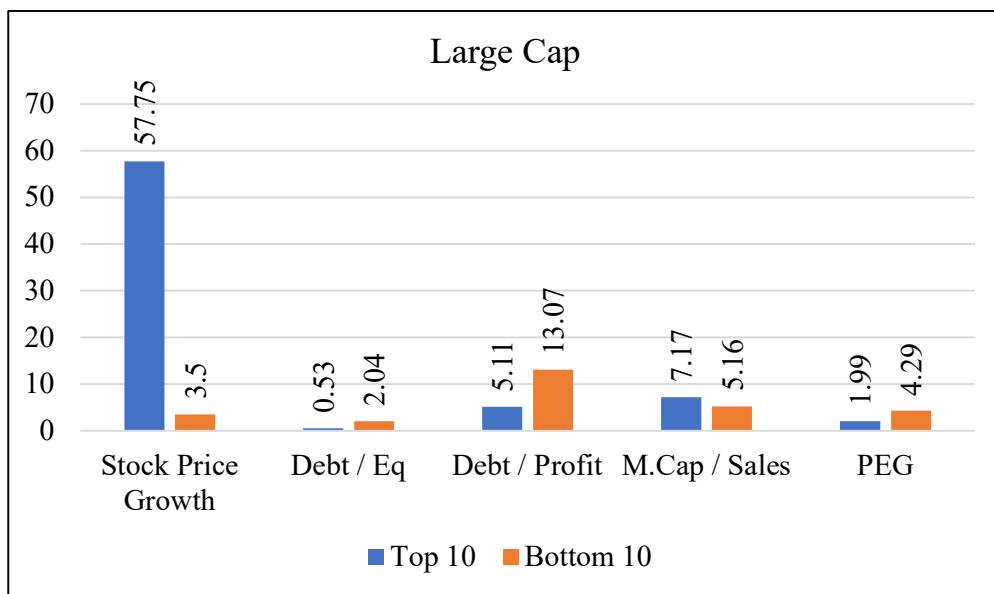
#### 4.3) Top 10 Large cap companies and their corresponding key ratios

(“Best of Best” and “Worst of Worst”)





Large Cap		
	Top 10	Bottom 10
Stock Price Growth	57.75	3.50
Debt / Eq	0.53	2.04
Debt / Profit	5.11	13.07
M.Cap / Sales	7.17	5.16
PEG	1.99	4.29

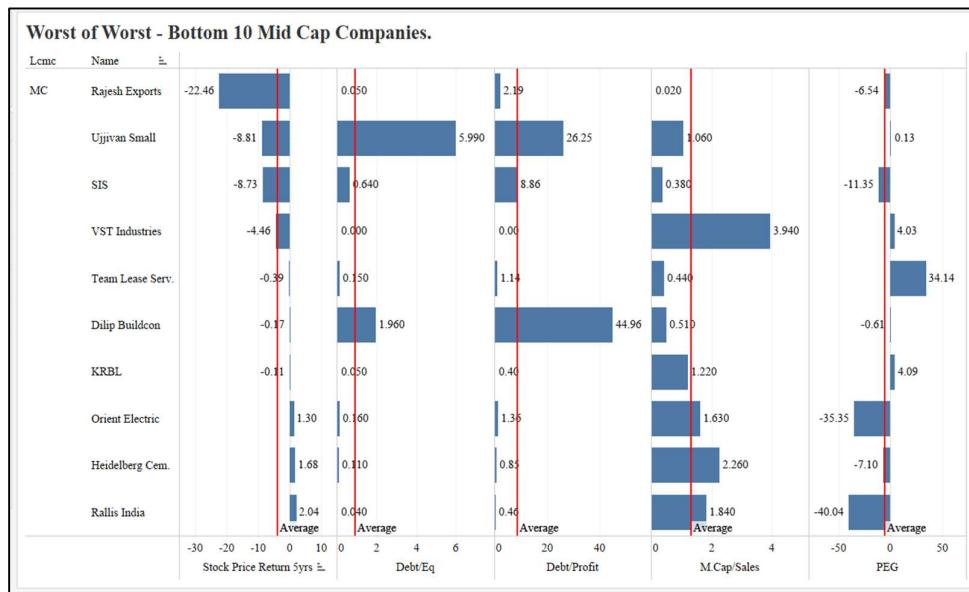
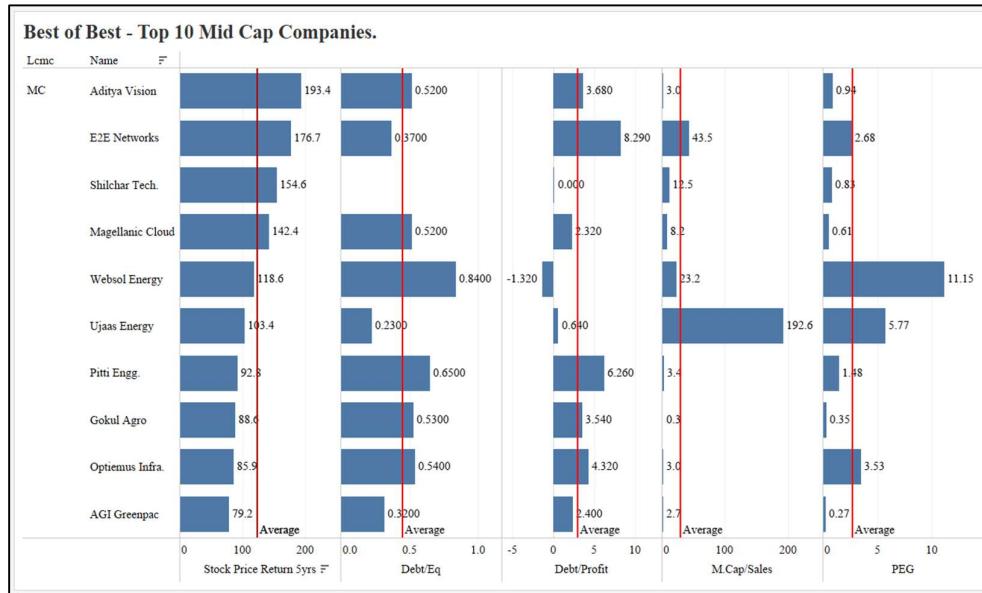


*Observations:*

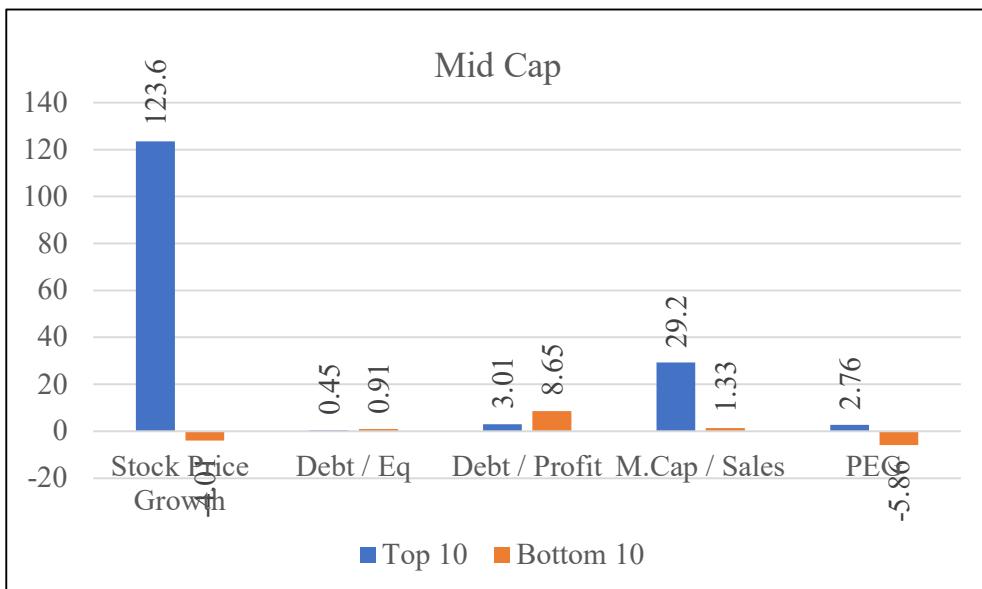
- Debt to Equity ratio for bottom 10 companies is 3.85 times higher than top 10 companies. This indicates that worst performing companies have higher debt. A high debt ratio indicates that the company is more dependent on debt and likely to default on debt repayment.
- Debt to Profit ratio for bottom companies is 2.56 times higher than top 10 companies. Higher debt to profit indicates that company is at risk of defaulting on debts.
- For top 10 companies, Market Cap to Sales ratio is slightly higher compared to bottom 10 companies. So, top 10 companies are slightly overvalued.
- PEG ratio of top 10 companies indicates that they are undervalued related to its growth potential.

#### 4.4) Top 10 Mid cap companies and their corresponding key ratios

(“Best of Best” and “Worst of Worst”)



Mid Cap		
	Top 10	Bottom 10
Stock Price Growth	123.6	-4.01
Debt / Eq	0.45	0.91
Debt / Profit	3.01	8.65
M.Cap / Sales	29.2	1.33
PEG	2.76	-5.86



#### *Observations:*

- Debt to Equity ratio for bottom 10 companies is 2.02 times higher than top 10 companies. This indicates that worst performing companies have higher debt. A high debt ratio indicates that the company is more dependent on debt and likely to default on debt repayment.
- Debt to Profit ratio for bottom companies is 2.87 times higher than top 10 companies. Higher debt to profit indicates that company is at risk of defaulting on debts.
- For top 10 companies, Market Cap to Sales ratio is slightly higher compared to bottom 10 companies. So, top 10 companies are slightly overvalued.
- PEG ratio of top 10 companies indicates that they are overvalued related to its growth potential.
-

#### **4.5) Recommendations:**

- After doing the analysis, recommendation is to have a diversified portfolio by investing in top Large Cap and Mid Cap Companies.
- Suggestion is to scan Large and Mid-Cap companies with the following parameters.

	Large Cap	Mid Cap
Market Cap	> 59000 crores	> 4450 crores
Sales Growth in 5 years	> 20.60	> 10.40
Profit Growth in 5 years	> 39.50	> 52.60
EPS Growth in 5 years	> 38.80	> 54.40
EBIDT Growth in 5 years	> 27.80	> 41.40
FII holding	> 2.65	> 2.00
Debt / Equity	< 0.55	< 0.50
Debt / Profit	< 5.15	< 3.00
PEG	< 2	< 2.75

- Considering the above-mentioned parameters screening of stocks is done in Screener.in website (Date-22.02.25). Following companies are screened in Mid Cap categories. Stock Price Growth in 5 years is still positive even though Nifty is down approximately by 12% from its peak value.
- Similarly, Max Healthcare is from Large Cap category.

Company Name	Stock Price Growth in %
Neuland Labs	90.61
Lloyds Engineering	173.89
Titagarh Rail	77.10
KPI Green Energy	150.50
Patanjali Foods	105.19

- Next project to be done for all companies by categorizing them in Large Cap, Mid Cap and Small Cap. This will also ensure large datasets for analysis and more accurate screening parameters.

## **Chapter 5**

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