

# **IBM- Descriptive Analysis Project**

## **(Stock Analysis)**

A project by:

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### **Introduction:**

Stock market includes daily activities like Sensex calculation, exchange of shares etc. Many consider stock markets to be uncertain, erratic and unpredictable. However there are signs and patterns that may help us try to predict the changes in stocks. The main goal of this project was to develop or implement an algorithmic trade which can help us make buy/sell calls by looking at several numbers in the market at that moment of time and thus try to make maximum profit of our investments in the equities.

In the following project our aim was to invest in stocks which according to our knowledge and analysis were the most profitable. We had multiple stocks from multiple Sectors but we chose a small portion of them to implement and checkout our algorithmic trade, we decided upon 3 sectors i.e., Banking, Chemical and Software. In all 3 sectors we took 3 companies each and did our analysis over the course of 5 years from 2017 to 2021. We did a separate analysis as to how much profit we gained from these 3 companies in the course of 2 months i.e., when we would have hypothetically bought the shares. We have done all of these analyses on the software TABLEAU. In the following report we will explain our analysis sheet by sheet.

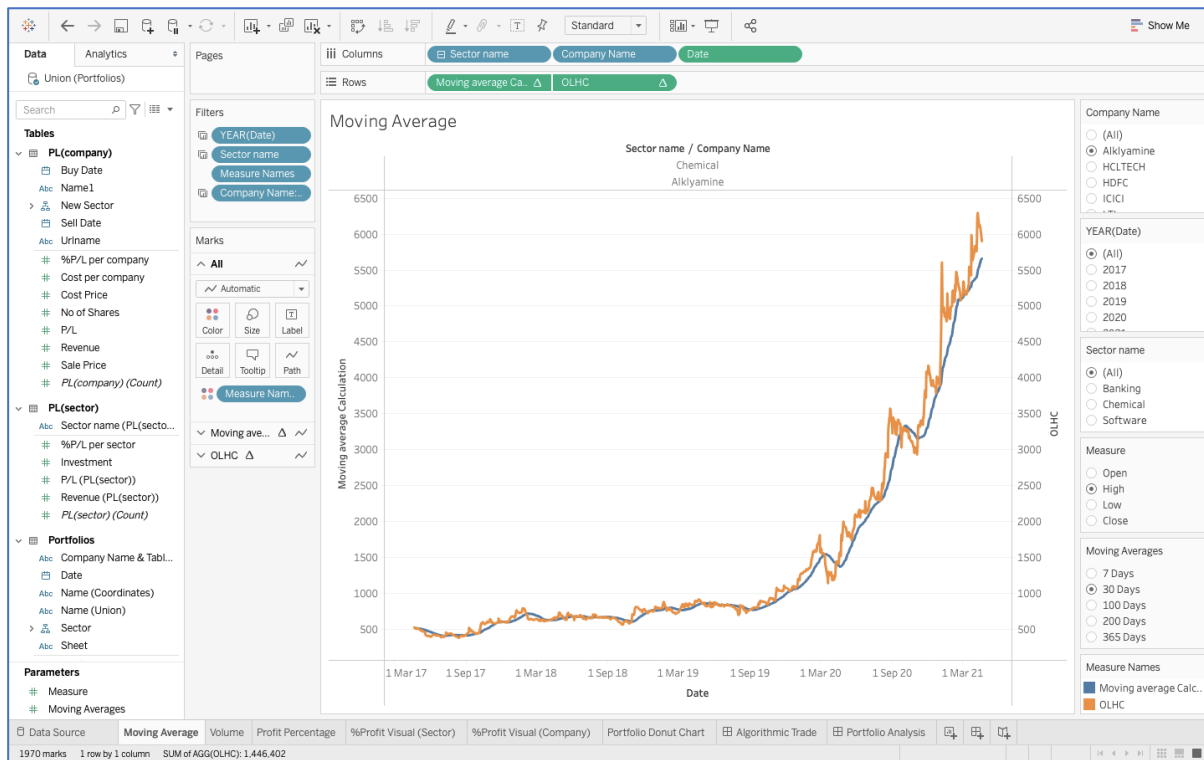
The data for our analysis has been procured by us from Yahoo Finance. It is the daily data for 5 years of each stock that includes open, high, low, close, adj close prices and volumes.

As a group of 3, we decided to invest a sum of up to 10000 rupees each in the stocks we picked for a period of 3 months and then calculate the net profit or loss made by our investments and decide on the buy/sell calls for the same.

This project gave us valuable insights in the functioning of share markets and how trading in equities, mutual funds work. As of now, the returns on bank investments and PPFs are not sufficient to balance the rising inflation and thus investing in the stock market, which has comparatively high potential returns and diverse scope for investment is a very simple, flexible and profitable option if done thoughtfully and smartly.

# Visualizations:

## Moving Averages



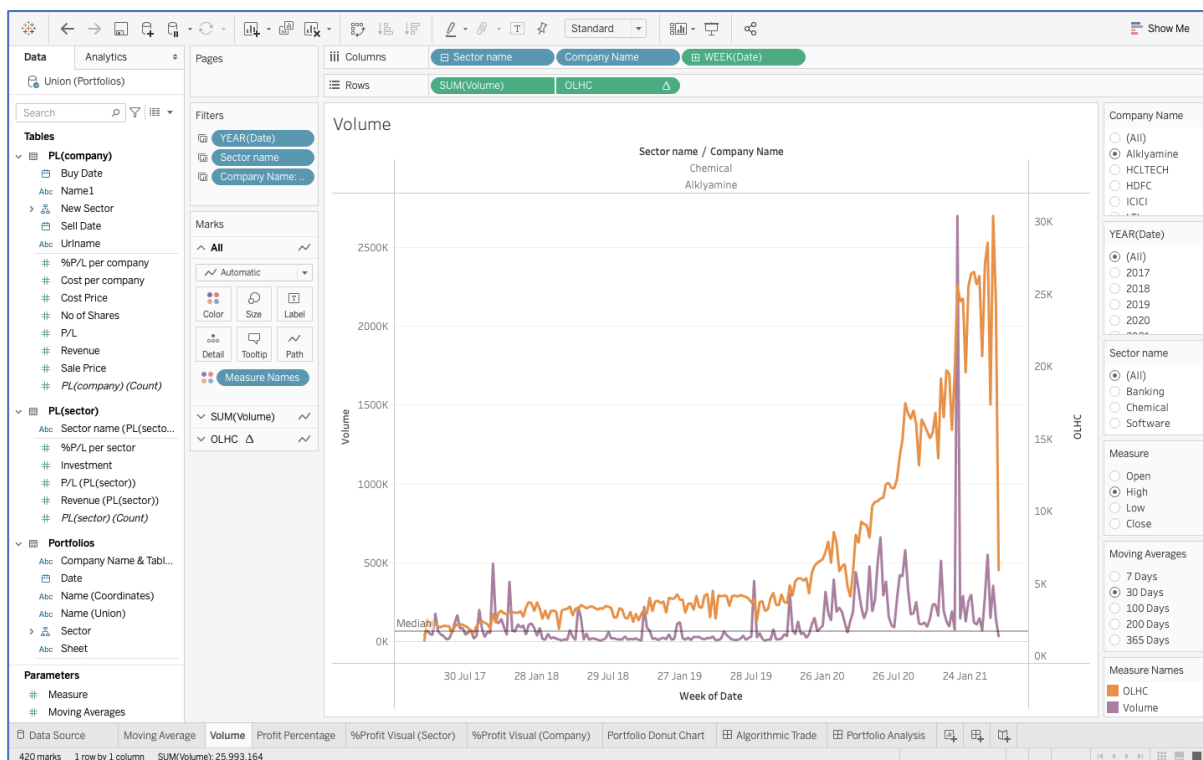
In the above visualization we have calculated the Moving Average of the price of the stock. The Blue line signifies the Moving Average, which can be checked for 7 days, 30 days, 100 days, 200 days or 365 days. The Orange line signifies the actual price, so here we compare the Moving Average along with the actual price. Now through this graph we can get a general idea whether we should buy the particular share or not.

Our understanding through the above graph is that the Moving Average helps us understand the trend of the particular share, according to the previous data (therefore we ask for 7-day, 30 day, etc. moving average taking into consideration the number of days before hand).

Now if we look at the graph then if the price is BELOW the Moving Average i.e., the Orange line is BELOW the Blue Line then it is a good time to buy that particular share. Why is that? It is because that means according to the moving average the price is below the average price and there is a chance the prices will increase in the future. Thus, if the shares are bought at lower price and sold at a higher price and get profits.

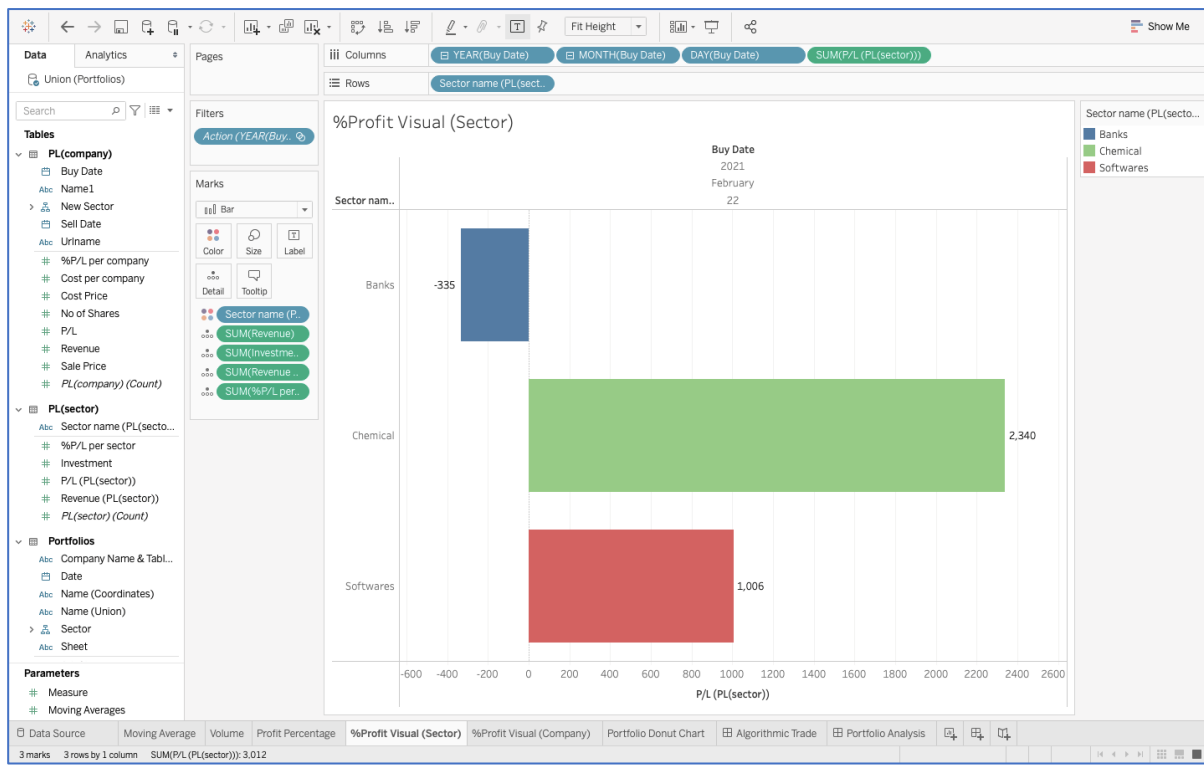
In the similar way, if the price is ABOVE the Moving Average i.e., the Orange line is ABOVE the Blue line, then it is a better time to sell off the share, because it is above the average price it should be at. Obviously, you can wait and check if the price is going to rise according to the Moving Average and check the price you originally bought it and if you are getting a profit.

# Volumes

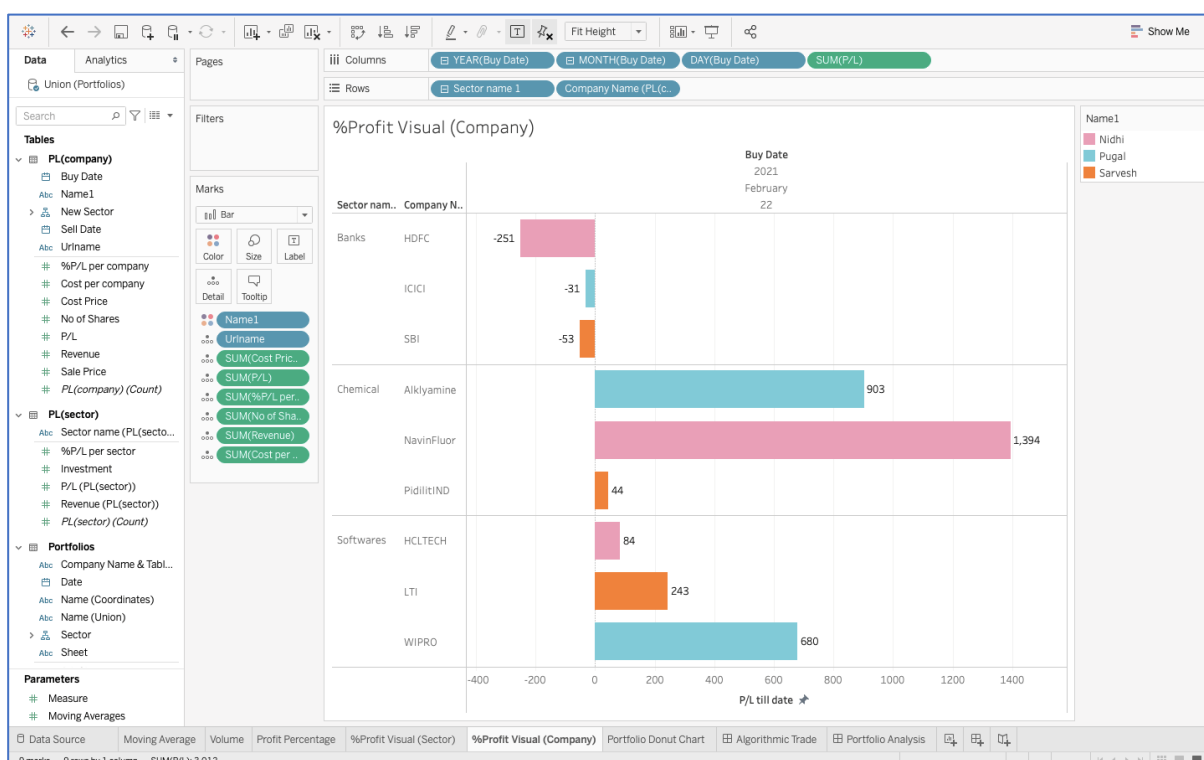


In the above visualization we have shown a graph between the Volume and the price of the particular stock. Here as we see, the purple line indicates the volume of the stock which is basically the number of transactions that have happened on the certain day for that particular stock. If there is hike in the volumes graph on a particular day that means either those shares have been bought or sold a lot on that day. And the Orange line indicates the price of the stock daily. A rising market should see rising volume. Buyers require increasing numbers and increasing enthusiasm to keep pushing prices higher. But if the market is rising and volumes are decreasing, then it might suggest a reversal in the trend, i.e., people have lost confidence in the stock, reduced trading in it and soon its price will start falling. A decreasing market with decreasing volumes might suggest that people have reduced their transactions with a belief that the stock is about to rise soon and a decreasing market with increasing volume might indicate that people are buying the stock as it might rise again soon or are getting rid of it before it crashes more. Thus, volume analysis along with moving averages of prices, SWOT analysis and may help us make the buy or sell calls.

## Profit Percentage

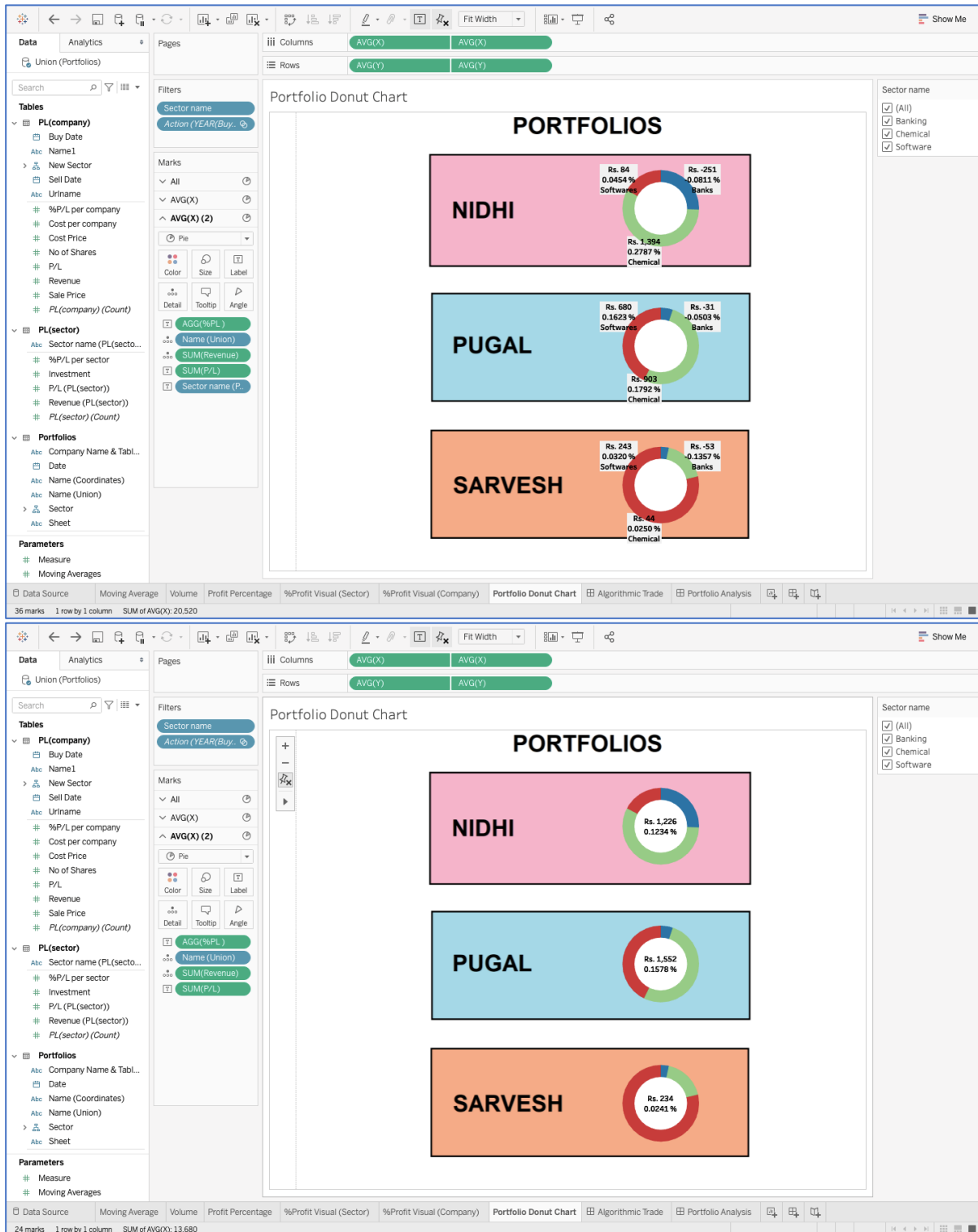


Through the above graph we get to know how much profit or loss the stocks or rather the sectors that we have selected have gained or incurred. This data is from the 22<sup>nd</sup> February, 2021, that is when we hypothetically bought the shares, to 22<sup>nd</sup> April 2021, the end date when this analysis was recorded. Now as you can see in 2021 the Banking sector suffered a huge blow and hence, we have incurred a loss, whereas the Chemical and Software sector were doing good. We have received good profit from the Chemical sector as can be seen from the graph above.



Above we have shown a more granular version of the sector wise profit/loss graph by showing the company wise profit and hence we can see in particular which of our companies performed well and gained us maximum profit out of our total returns on investments.

## Donut Chart



For this project all 3 members of the group had selected one company stock per selected sector, thus here through the above chart we have tried to portray the amount of profits that each person has gained by each company in the shape of a donut. Hence the name Donut Chart. This chart shows the percentage of revenue generated by the sector to which our selected stock belongs as a

slice of donut, profit per stock in rupees, profit percentage per company stock in our portfolio, our net profit and net profit percentage. In short, this is the chart one should have a look at to find out what have any one of us earned during our investment period. The donut chart and chart showing %profit per company have links to the respective company's YAHOO FINANCE page embedded in them for the ease of viewer in case he wants to browse current or past trends of the stock.

All the charts in our project were dynamic and parameterized, meaning, the viewer could select the year, sector, company, price (open, close, high, low), duration of moving averages just by one click which makes it easier for him to manoeuvre between different conditions and make suitable calls.

## **Conclusion:**

All in all, we made a total investment of 29491.15 rupees and got a return of rupees 32502.90 for a period of 2 months, from 21/2/2021 to 22/4/21 generating a profit of 3011.75 rupees and percentage profit of 10.2%. On a more particular level, we made a loss of around 8% on our investments in banking sector but made a profit of approximately 20% on investments in chemical and 7.5% on investments in software sector, respectively.

## **Appendix:**



Portfolios.xlsx



PL.xlsx