

FINANCial and DATA SCIENCE integration FOR buidling an asset allocation model

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# **PROBLEM STATEMENT:**

The investment for retirement and during retirement has become more important. So, build the Efficient financial model using their historical data such as Tax rate as per the net income, Discounted percentage of rate, Perpetual growth rate, Transaction date, Fiscal year end, Current price, Share fluctuations data, Debit, Cash flow, Capex also the other statements that gives the financial information about the companies that we are planning to the investments to get the best returns to the people who are in between 50 – 70 years as their retirement pensions by considering their age, need, country and economic conditions.

# **METHODOLOGY FOR ADDRESSING THE PROBLEM STATEMENT:**

Based on the problem statement “**Financial model**” is the only way that we can achieve the best way to allocate the assets in various investment fields so that we can get the best returns. By investing in the private sector such as startup companies, Industries this leads to economic growth of the country. Because by the investments on the startup companies, industries. Overall economic status of the country increases with lot of employment opportunities and high tax income to the Government. On the other hands due to growth in the companies value and the investors are going to get benefited by the increase in stock rate, bond rate of those companies.

# **METHODOLOGY FOR SOLVING THE PROBLEM STATEMENT:**

According to my research on financial investments, the people in between 20-45 years are investing less from their income and 45+ age peoples savings and investments are high.

## **3.1) DIFFERENT FIELDS FOR INVESTING ASSETS**

Usually people invest in Investment Retirement Accounts (IRA’s) such as:

1. Social Security Retirement plan.
2. 401K Retirement plan (for profitable, corporate private company employees)
3. 403B Retirement plan (for Non-profitable, Government employees)

There are many other ways for investing assets such as:

1. Bonds
2. Stocks
3. Mutual investments
4. Private company shares
5. Government company shares
6. Investment banks
7. Government Assets and so on.

Since there are many ways for allocating the assets,

**There are some common and significant factors need to be considered for building the Efficient Financial Model that give the best returns.**

# **STEPS TO FOLLOW FOR BUILDING THE FINANCIAL MODEL**

## **3.2) STEP – 1 (QUICK ESTIMATION OF THE COMPANY(X) FOR INVESTING)**

In this we need to consider three values such as

**MULTIPLES**

**EARNINGS (P/E)**

**(Price of Share/Earnings)**

**ASSETS (P/B)**

**(Price of Share/Book)**

**SALES (P/S)**

**(Price of Share/Price of Sales)**

Based on these three values such as Earnings, Sales and Assets we can understand the company’s value and share value of that company.

## **3.3) STEP – 2 (LOOKING AT THE COMPANIES BALANCE SHEETS):**

This is the place where we can get the most of the company’s financial information such as

1. Company Owns
   1. Fixed amount (+ve)
   2. Current amount (+ve)
2. Company Owes

2.1) Greater than a yearly (-ve)

2.2) Less than a year (-ve)

1. Net Assets and Income of the Company which is sum of all the above values.

regularly company’s CEO’s update their Balance sheets every year.

Once these two steps is completed on all the companies thoroughly where we need to invest then we can build the financial model for those companies(private or public sectors).

## **3.4) STEP – 3 ( FINANCIAL MODEL):**

To combine accounting, Finance and business metrics to create an abstract representation of a company and forecasting the future.

## **3.5) LIFE CYCLE OF BUILDING THE FINANCIAL MODEL:**

1. By taking the historical data and visualizing the data in possible ways to acquire the best and most out of it.
2. By adding few assumptions to the ratio’s, metrics, percentage of risk, percentage of return based on the companies past and present progress.
3. After adding the assumption values to the features then forecasting that data for the next couple of years to see the performance
4. Validating the forecasted graphs using Discounted Cash Flow (DCF) Analysis
5. Considering extra features such as Sensitivity, economic conditions, Need, Risk, Charts, Graphs and redoing the cycle again.

Assuming few factors based on company’s progress in every aspect then Fine tuning and building the Margins and Metrics again

1)Margins

2) Growth rates

3) Asset Turnover

4) Inventory Changes

Based on

1)Sensitivity

2)Scenarios

3)Chart and Graphs

4) Dashboards

**Historical Data**

**Forecasting**

**Historical Ratio’s & Metrics**

**Additional Analysis**

**Validation**

**Assumptions**

Most Important step

Discounted Cash Flow (DCF) Analysis and

3-Statement Model

After fine tuning plotting the past data to predict the future

## **3.6) STEP – 4 (VALIDATION):**

This is the most important step where we will be considering most of the features that are considered for finding the accuracy of forecasted values. This involves two methods

**Validation**

**3-Statement Model**

**For analysis**

**Discounted Cash Flow (DCF) for analysis**

**Terminal Value**

**Market Values Vs**

**Intrinsic values**

**Cash Flows**

**Income Statement**

**Cash flow statements**

**Balance sheet**

**Income Statement**

**DCF(discounted cash flow) Tables**

# **The above all the diagrams gives the detailed financial understanding for investing**

1. How to choose the company and on what components are to be considered.
2. What and all features to be considered and methods need to be followed to assess the company?
3. Life Cycle of Build a Financial Model and detailed explanation for each step
4. Assumptions are made based on company’s progress for the past couple of years for forecasting the data.
5. How Validation can be made, and the significant features need to be considered.

# **STEP - 5 (DATA REQUIRED FOR BUILDING THE EFFICIENT FINANCIAL MACHINE LEARNING MODEL):**

1. Tax rate as per the net income
2. Discounted percentage of rate
3. Perpetual growth rate
4. Transaction date
5. Fiscal year end
6. Current price
7. Share fluctuations data
8. Debit
9. Cash flow
10. Capex
11. Inflation rate per year
12. Risk percentage
13. Profit probability
14. Margins
15. Growth rates per month and annual.
16. Asset turnover
17. Inventory changes
18. Assumed values
19. Forecasting accuracy
20. Company’s annual profits and so on.

**We can build a Deep Learning model that will be trained on every validation step and on these features to produce quick valuation of the company and accurate forecasting the future stock trend based on past data which can give the outstanding benefit for the investors**

# **SUMMARY**

These are significant features data that is required for analysis and by scraping the data from the companies Balance sheets and other financial statements for building the complete data set. We can finalize the companies and their value from their financial information and then building the Efficient financial model by integrating data science techniques by considering risk factor, sensitivity factors, urgency, amount of investments e.t.c. so that the model gives the best returns for our investments.