

# Data Driven Decision Making: Application in Finance

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**Abstract-** *The data, unless processed may not reveal its story. It is the job of data analyst to process the raw data for some meaningful purpose so that it can be used for the decision making. Every dataset has its own story to tell. However, it is the science and art (both at the same time) of the data analysis to use the dataset effectively for the benefit of all the stakeholders of the corporate world. The application of data analysis in finance functional area is equally important. Financial data analysis (FDA) may differ from the marketing-based data analysis because of dominance of secondary data and time series data. However, the basic tenets of the data analysis prevail even for FDA as well.*

**Index Terms-** *Cross-sectional data; Time-series Data; Panel Data; Volatility; Decision.*

## I. INTRODUCTION

Decision of any kind in a business is somewhere in between two extremes: hunch-based and well-informed decision making. It is a reality that neither of the two extremes are used in practice [4]. The actual decisions are always in the middle of these two extremes. A decision solely based on hunch is a completely uncertain. Similarly, a decision totally based on only information may not be a very great decision [3]. Blind use of machine learning (ML) and artificial intelligence (AI) at times create more problem than providing a solution. Best example may be the use of google map. If the google map is used without using the common sense, it may put traveler on the road in an awkward situation than helping him to navigate easily.

The best example of limitation of extreme use of informed decision making is witnessed in equity research or in the stock market [33]-[31]-[29]-[7]. There are three popular ways by which equity pricing can be determined: 1) intrinsic valuation (discounted cash flow valuation; DCF); 2) relative valuation (RV); and technical analysis (TA). Despite such a huge gamut of tools for determining the equity pricing in the

future, it is just next to impossible to determine the price of the equity asset with certainty. All the prevailing models (my use ML or AL) have limited success. The legendary and one of the most successful investors, Warren Buffet including his mentor Benjamin Graham never prescribed any model to forecast stock prices. Rather, it is always a combination of the two extreme which has made Warren Buffet such a success in the investment world. As we look at the theoretical explanation of such a scenario where no model can reflect the prices correctly, we find answer in again a very famous theory, EMH (efficient market hypothesis) [45]-[32]-[27]-[9]. Even adaptive market efficiency (AMH) also endorses the limitation of use of modelling in determining the price of the equity assets in the future [14]-[15]-[16]-[6].

Therefore, it is pertinent to make this statement that information is required but decision making cannot be solely based on any information-based model. It is more appropriate to say that informed decision making is the best solution than uninformed decision making. Here is the catch that information (processed information) should be available to the decision maker and that should be enough for anyone to take the decision. Such decision, may be combination of hunch and information, can be called as informed decision making. This is the reasons to give importance to informed investors more than the uninformed investors in securities market [41]. This does not mean; informed investor uses some exclusive model-based tool to take their decisions. Rather, they take their decision using a combination of the two extremes, but they are fully aware of the information regarding the asset and market.

Informed decision making is the cornerstone of almost all the decisions made in finance. Some areas or some situations demand more tools of financial data analysis (FDA). Such areas or situation cannot be handled well

in finance unless a special training in the FDA is some by the people. As a reality, it depends on the person too. A few people are more interested in using the processed information only and another set of people may lay more emphasis to knowing the process of information. Knowing the process is always good than to be unaware of the process especially when one is bound to use such processed information. It is like people want to do business administration course but do not want put efforts to understand even basic accounting. They remained incomplete for rest of their corporate life and somehow survive. Between two people, one who has the working knowledge of book keeping is always ahead of the other fellow who does not. The same analogy applies to knowing the FDA despite the fact that lots of processed information can be outsourced.

The main areas where FDA's involvement is more than normal are: Corporate Finance, Risk, Asset Pricing, Valuation, Derivatives, Forecasting and Equity Risk etc. The list may not be exhaustive, provide a reasonably good idea about the application of FDA in finance.

## II. LITERATURE REVIEW

### A. Type of Financial Data

There are several ways in which data can be classified. One of the popular ways of classifying financial data is classifying them into three types namely cross-sectional, time series and panel data.

### B. Cross-sectional data and application in finance

There are several decisions in finance where cross-sectional data is of use. Application in relative valuation, asset pricing decisions, dividend distribution decisions and corporate structure decisions. Even, identification of appropriate cost-driver for a cost object can also be done using [38]-[13]. Even determining of determinant for even simply profitability can also be done using cross-sectional data. This includes dividend decisions [17]-[18]-[19] and optimum capital structure decisions [33]-[27].

### C. Time Series Data and Application in finance

Time-series data has maximum application in finance and economic issues. Time series data starts with findings the systematic risk using beta to asset pricing

decisions which includes CAPM and APT (arbitrage pricing theory). One of the most important use of time-series data is in determining the volatility of the share price [20]-[35]-[30]-[24]-[25]. The application of volatility is strongly found in the areas of derivative market as well because options valuation models depends upon the determination of futuristic volatility of the underlying assets (which includes volatility of indices and share prices) [38]-[34]-[44]-[42]-[28]-[26].

### D. Panel Data and application in finance

Among the three types of the data, panel data (or longitudinal data) reveals maximum insights as compared to the other two types of datasets. Panel data is frequently used to assess the impact of newer concepts in finance which includes shareholder activism [46]-[47]-[48], corporate governance [18]-[50], disclosures [43]-[37]-[22] and banks [49]-[12]. FDA is also found its role even on the data analysis of primary data. The role of primary data-based FDA has gone up due to behavioral finance [10]-[11]-[36]-[1] and inclusive growth [34]-[39]-[23]-[8].

## III. ISSUES TO BE SOLVES

- a) Type of data with their real-life example.
- b) Identify the real-life corporate situation where cross-sectional FDA may be of use for decision making.
- c) Identify the real-life corporate situation where time-series data-based FDA may be of use for decision making.
- d) Identify the real-life corporate situation where panel data-based FDA may be of use for decision making.

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