

# Case Study: Business Analytical Problems

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**Abstract**— Now days with ever increasing size of the data and ever increasing method of the data collection, the amount of data is growing exponentially. With the downpour of such a huge amount of data from various sources, the use of automated systems and computer platforms is inevitable. The Humans are living in an information age, where the capabilities of the manual data manipulations have long been surpassed. Business Analytics aims to address such issues which are directly related to the interests of the Business. There are different types of problems, and for which there exist different solutions to tackle the specific problems.. This paper will help to understand the existing problem by Case Study.

**Index Terms**— Business Analytics, Machine Learning, Artificial Intelligence, Data Mining.

## I. INTRODUCTION

Business Analytics is a very fast growing and important field of study which is built upon the several disciplines such as Statistics, Machine Learning, Artificial Intelligence, Finance and Computer Science. Business Analytics tends to use the Data generated and Gathered by the business processes and provides the insights into the Business Processes and Strategy. Business Analytics is becoming more and more indispensable tool for the Managers and senior level Management in order to drive the business and maximize the profitability and to ensure the long term survival of the organization [1]. It also provides the companies with the strategies to meet the competition and outperform the rivals. This Paper will help to understand the issues related Big Data Analytics.

This paper is divided into 3 Sections:

1. Introduction
2. Objective
3. Purpose
4. Case Study

## II. OBJECTIVE

The Objective of this paper is to investigate the Business Analytics problems. To understand the problems faced by almost every company. This paper aims to understand the Statistical Analysis and Machine Learning. The Analytics problems are data driven. A lot of thought is to be given on the two ends- namely Business Problem and Solution. Generally Analytics projects are headed by the experienced professionals from both ends. Since a Manager or a Business expert lacks the knowledge of the Analytical and Statistical methods and their intricacies. Hence he alone cannot tackle the problem by himself. There are various ways to solve a

same problem with their merits and demerits, so an expert advice is also required.

## III. PURPOSE

This paper will help to gain insight into the Data analysis and Data mining application in Business Analytics. In order to fulfill the purpose and get the desired results the most important techniques and frequently used problems in the Business Analytics are addressed and solved. Case study is done on the real business problems from the real data. In order to make a comprehensive detail of the problem solving the Case study is presented in this paper which directly address the real world problem of Customer Attrition, Up selling and Cross selling is undertaken for study and solving. These are the prime problems which are faced by the companies regardless of their size in almost all spheres of businesses. The approach is data driven and employs the Supervised learning solutions. The Regression is one of the most versatile statistical techniques. There are thousands of different types of regressions which exist today to address different types of problems in various fields. But essentially the core idea remains the same. In this paper the two most important type of Regressions are used namely, Linear Regression and Logistic Regression. While linear regression is used in the predictive modeling with the continuous variables, the Logistic regression is used to deal with the Qualitative data.

## IV. CASE STUDY

### Case Study 1: Attrition Rate

**Statement of the Problem:** Business Objective: John is the Customer Services and Relations head for a Multi brand retail store. He analyzed a couple of reports and got worried about losing his customers overtime. He thought over the different customer segments presented in the report and concluded that not all customers were worth retention. He identified the loyal and profitable customer segment and planned to develop a churn model to gauge the propensity of attrition of this customer segment. He had plans to revise promotions and schemes for these customers based on the significant factors contributing to their attrition. John will use Churn model primarily to identify the customers next in line to attrite. He will then plan the promotions and strategies to retain them.

**Basic Assumptions:** John model preparation will start with identification of responders and non-responders for his model. He will pull past customer's data from his CRM and set a timeline to classify customers in two groups.

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## Case Study: Business Analytical Problems

**Group1:** Customers, associated with the company for more than 36 months but haven't done any transaction in past 12 months[2].

**Group2:** Customers, associated with the company for more than 36 months but have done transaction in past 12 months.[3]

The assumption is that the loyal customers who have not done transaction in past 12 months are a case of churn and those who are still our customers are case of the retention. Since we are trying to identify the propensity of the customers who might leave, we will tag them as our responders (Case 1) and the retained customers as our non responders (Case 0). The historical observation is that we lose close to 40% of the customers every year and we will use this information to keep the proportion of the responders and non-responders in our data sample.

The model should identify the important aspects of churn, known as the "Drivers of the churn" and give the propensity of churn for the customers. Find as much attributes in CRM data as we can, and make a dataset of those attributes. The data should capture demographic details, transaction details, customer satisfaction, customer experience and other information if available.

**List of attributes considered for this case:** The attributes have been denoted by a Label for ease of programming and reference in future.

**Data Audit:** The data audit report is the initial report that we prepared to understand the data well. This report will consist of descriptive statistics for all the variables in the dataset and also will help in identifying the missing value and levels of categorical predictive variables. This data Audit report serves as base for assessing the quality of the data we extracted and obtained from the client. Based on this report we can request for additional data which we seem to be important for our analysis and it will also help in dropping some insignificant variable.

**Data Profiling:-** Variate profiling assist in finding the frequency of each categorical variable with respect to the response variable. This would facilitate in binding/ grouping the categories which have same response rate so that the effect of that particular category can be captured in the model.

**Data Treatment:** The first stage of any statistical modeling consists of data treatment activities. Approximately 80% of the entire modeling time is consumed by the data treatment techniques. Here we check the hygiene factor of our independent variables and try to make the data as exploitable as possible.

## V. CONCLUSION

The case study is used to predict the response rate for a set of new data is taken from a different time frame to test the validity of the rules suggested by the model. The model will be applicable to the profiles similar to the once already present in the sample data used for model development.

## REFERENCES

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## AUTHOR PROFILE

**Dr. Laxmi Shankar Awasthi** is working as Dean Academics in Luck now Public College of Professional Studies and strives to write more research papers on Big Data Analytics.