**Data Warehousing and Data Mining**

*Case Study (Summary)*

**Problem Statement**: To establish a system where a bank can target only specific customers to provide credit card facility so that defaulters count can decrease and bank can avoid losses.

**Data Collection:** Data is being collected to determine the client to whom credit facility can be given, customer retention, customer attrition, fraud detection, payment or default analysis and to understand market segmentation.

Details of 200 customers were taken from Nationalized bank with details pertaining to occupation, residential addresses, gross and net incomes, outstanding amount and months pending. Transactions pertaining to last 3 years were also obtained for the customer profit given. The complete data was stored in MS Access and it was assumed that the difference between the income figure and expenses would indicate savings.

**Analysis:** The whole data was imported to an application session of Pattern Recognition Workbench (PRW), a powerful datamining tool developed by Unica Technologies, Lincoln.

The following is the brief summary of important findings/observations in the work done:

* The individuals with lower income group were found to be customers of more value as well as less defaulting in nature.
* Some customers were found consistently fail to pay the credit card outstanding balance even the amount is small; if the data on payments dates and amounts is incorporated into the dataset, analysis can show a consistent pattern of payment behavior for customers.
* Among other factors noticed was that some data like the occupation listed, did not match with the income or spending pattern of the customer, calling attention to capture and appraising customer credit worthiness.
* Customers are spending more amount that their average savings in a month
* In most of the cases, the outstanding amount is very high that the actual utilization amount.

Above results are tentative and indicative but not of absolute nature.

**Conclusion:**

The whole case study was done to get a clear view for banks as to whom credit card facility should be given so that defaults in payments can be reduced and bank can prevent itself from getting into losses. Data like income details, personal details, etc., of 200 customers were taken into consideration and was given as input to a session of Pattern Recognition Workbench (PWR), a data mining tool. This tool combines machine learning, neural networks and statistical algorithms for building general patterns recognition and discovers various kinds of knowledge using multi-algorithmic from large relational databases.

This tool took the data and identified patterns in the data using measurable features or attributes. Customers were first divided into clusters based on similarities. This helped banks to assess the risk involved in credit card transactions and to identify loyal customers and defaulters. After the complete analysis, amazing results came into picture which helped bank in achieving their aim of identifying the pattern and defaulters to allot credit facilities to loyal customers.