ANALYSIS OF PREDICTIVE ANALYTICS

Suppose firm had collected random sample of monthly sales information presented in thousands of dollars. What a firm wants to know is, given a fixed budget of $350,000 for promoting the service product, when it is offered again, how best should the company allocate budget dollars in hopes maximising the future estimated month's product Sale.

Before the firm makes any allocation of budget there's need to understand

how to estimate future product Sales. This requires understanding the behaviour of product and Sales relative to Sales promotion efforts using radio, paper, TV and point - of - Sale (POS) ads.

	Case Number	Sales	radio	paper	TV	POS
1	1	1125	63	42	31	1.3
2	2	1126	73	52	41	1.4
3	3	1127	42	62	51	1.5
4	4	1128	68	72	61	1.6
5	5	1129	77	82	71	1.7
6	6	1130	87	52	81	1.8
7	7	1131	97	42	91	1.9
8	8	1132	67	62	92	2.0
9	9	1133	57	72	93	2.1

Fig) Planning the data for Marketing

Although radio and TV commercials are most promising, a more in-depth Predictive analytics analysis is called for to accurately measure and document the degree of relationship that may exist in the variables to determine the best predictors of product Sales.

An ideal multiple of variable modeling aproach that is used as Situation to explore variable importance in this case study and eventually lead to the development of a predictive model for product sales in correlation and multiple regression. Marketers

will use SAS's statistical package to compute the statistics in this step of BA process.

First the marketer must consider the four independent variables — radio, TV, newspaper, pos — before developing the model. One way to see the statistical direction of the relationship is to compute the pearson correlation coefficient r between each of the independent variable —

Given the illogic of such a relationship, it's potential use as an

independent variable in a model is questionable. Also this negative correlation poses several questions that should be considered

(1). Was the data set correctly collected ?

(2). Is the data set accurate ?

(3). Was the Sample large enough to have included enough data for Variable to show a positive relationship

(4). Should it be included for further analysis.

Although it is possible that a negative relationship can statistically

show up like this, it does not make sense in this case. Based on this reasoning and the fact that the correlation is not satistically Significant this Variable (newspaper ads) will be removed from further consideration in this exploratory analysis to develop a predictive model.

At this point there is a dependent Variable (product Sales) and three candidate independent Variables (POS, TV, and Radio) in which to establish a predictive model that can Show the relationship between product Sales and those independent Variables

Marketers will use multiple regressions which can incorporate any of the multiple independent variables, to establish a relational model for product sales in this case study.

1) Backward Step-wise Regression

The backward Step-wise regression Starts with all the independent Variables placed in the model, and Step-wise process removes them one at a time based on worst predictors first until a statistically Significant model emerges.

2). Forward Step-wise Regression

The Forward Step-wise

regresion Starts with the best related Variable and then Step-wise adds other variables until adding more will no longer improve the accuracy of the model.