

CASE STUDY 2

Discriminant Analysis*

The Problem

The manager of the Raymond's showroom in Bangalore proposes to his head office that as the sales have touched the target, they should promote further sales by showing some special gratitude to their loyal customers by providing them with 'First Citizen Club Card'. With this card the customer will get points on every purchase that they make and after a certain number of points they will be benefited with 'Gift Hampers' and 'Free Purchases' based on the total number of points accrued.

To facilitate the head office, the branch manager provides a discriminant analysis and sets up a system to screen the customers and classify them as either 'loyal' or 'unloyal' based on the following three independent variables:

1. Freq : frequency of purchase in a year
2. Avgpurc : average purchase by customer in a year
3. Years : no. of years since the customer has been purchasing from the Raymond showroom

Now we perform the discriminant analysis and advise Raymonds Bangalore division on how to set up its system to screen its potential 'loyal' customer from its 'unloyal' customers. We shall build a discriminant function and find out:

1. the percentage of customers that it is able to classify correctly.
2. statistical significance of the discriminant function.
3. which of the independent variable are relatively better in discriminating between 'loyal' and 'unloyal' customers.
4. how to classify a new customer into one of those two groups—loyal/unloyal.

Input Data

The dependent variable is loyalty of customer.

Loyal = 1

Disloyal = 2

S. No.	Loyalty	Freq	Avgpurc	Years
1	1	15	24765	3
2	1	17	18654	4
3	1	29	20320	1
4	2	25	41230	7
5	2	29	31462	5
6	1	41	7232	6
7	1	14	45352	4
8	2	27	45320	5
9	2	32	51500	5
10	2	29	45782	7
11	2	40	59990	9
12	1	13	8920	3
13	2	33	23250	5
14	1	3	35000	6
15	1	18	14235	2
16	1	21	25550	3
17	2	39	33330	7
18	2	31	31654	4

Independent variables are

Freq : frequency of purchase in a year

Avgpurc : average purchase by customer in a year

Years : no. of years since the customer has been purchasing from the Raymond showroom

Interpretation of Computer Output

Means (muk.sta)				
	FREQ	AVGPURC	YEARS	Valid N
G_1:1	19	22225.33398	3.5555556	9
G_2:2	31.66667	40390.89063	6	9
All Grps	25.33333	31308.11133	4.7777777	18

Standard Deviations (muk.sta)

	FREQ	AVGPURC	YEARS	Valid N
G_1:1	10.75872	12235.19629	1.6666666	9
G_2:2	5.074446	11518.06348	1.5811388	9
All Grps	10.44312	14840.06836	2.0162737	18