1. We have Dove customers buying in target given total customers buying dove. We need to find targets customers buying dove given total customers buying from target. We shall construct marginal table as below that will also include conditional probability for each cell between Dove brand and not versus target customers and not. And then apply Bayes theorem to divide target customers buying dove by total target customers to arrive at % of target customers buying personal care products that would actually end up buying Dove from Target store.

|  |  |  |  |
| --- | --- | --- | --- |
| **Store==>** | **Target** | **Non Target** | **Marginal total(Brand)** |
| Brand below |  |  |  |
| Dove | 2.400% | 5.600% | 8% |
| Non dove | 22.600% | 69.400% | 92% |
| Marginal total(Store) | 25% | 75.000% | 1 |

Accordingly based on above yellow highlighted conditional probability for target customers buying dove (2.4%) can be divided by total target customers to arrive at the answer.

% of target customers buying personal care products that would actually end up buying Dove from Target store = 2.4/25% = 9.6%

Hence the brand manager shall not go ahead with the sampling program in Target for the new brand on the face wash.

1. Given that we have population mean we could go for Z test

H0 (Null hypothesis) : Mu = 18

H1(Alternate hypothesis): Mu <> 18

It’s a two tailed test as we are testing for inequality of mean.

Alpha = 0.05% (Confidence = 95%) . Since its two tailed we could get the absolute Z critical value for 97.5% (i.e 1.959964) on one side and then compare that with the Z statistic based on its sign.

Sample mean = 16.8

Population standard deviation = 3

Z statistic = (sample mean – population mean)/(population stand deviation/sq root(sample size))

= (16.8-18)/(3/square root(80))

= -3.57771

Z statistic of -3.58 is lesser than the Z critical for the left tail which is -1.96.

Also p value is 0.000173 which is lower than the alpha of 0.05.

Hence the sample does not indicate the right sample population to go with if indeed the population mean is supposed to be 18 km/litre.