**TeleCall uses 4 centers around the globe to process customer order forms. They audit a certain % of the customer order forms. Any error in order form renders it defective and has to be reworked before processing. The manager wants to check whether the defective % varies by centre. Please analyze the data at *5%* significance level and help the manager draw appropriate inferences**

**Minitab File: CustomerOrderForm.mtw**

**#import csv files**

Customer<-read.csv(file.choose(),header = T)

View(Customer)

|  |
| --- |
| head(Customer)  Phillippines Indonesia Malta India  1 Error Free Error Free Defective Error Free  2 Error Free Error Free Error Free Defective  3 Error Free Defective Defective Error Free  4 Error Free Error Free Error Free Error Free  5 Error Free Error Free Defective Error Free  6 Error Free Error Free Error Free Error Free |
|  |
| |  | | --- | | > | |

**#convert data set into a stacked data**

stacked\_datas<-stack(Customer)

View(stacked\_datas)

head(stacked\_datas,10)

|  |
| --- |
| head(stacked\_datas,10)  values ind  1 Error Free Phillippines  2 Error Free Phillippines  3 Error Free Phillippines  4 Error Free Phillippines  5 Error Free Phillippines  6 Error Free Phillippines  7 Error Free Phillippines  8 Error Free Phillippines  9 Error Free Phillippines  10 Error Free Phillippines |
|  |
| |  | | --- | | > | |

attach(stacked\_datas)

**# in our data set both x and y are discrete**

**# data set contains four proportions**

**# so we have to perform chisquare test**

cust\_table<-table(stacked\_datas$ind,stacked\_datas$values)

View(cust\_table)

|  | **Var1** | **Var2** | **Freq** |
| --- | --- | --- | --- |
|  |  |  |  |
| **1** | Phillippines | Defective | 29 |
| **2** | Indonesia | Defective | 33 |
| **3** | Malta | Defective | 31 |
| **4** | India | Defective | 20 |
| **5** | Phillippines | Error Free | 271 |
| **6** | Indonesia | Error Free | 267 |
| **7** | Malta | Error Free | 269 |
| **8** | India | Error Free | 280 |

Showing 1 to 8 of 8 entries, 3 total columns

**#perform chi-square test**

**# set hypothesis**

**#H0: defective % not varies by centre => p- value>0.05**

**#H1: defective % varies by centre => p-value<0.05**

chisq.test(cust\_table)

|  |
| --- |
| chisq.test(cust\_table)  Pearson's Chi-squared test  data: cust\_table  X-squared = 3.859, df = 3, p-value = 0.2771 |
|  |
| |  | | --- | | > | |

**# here we got p-value =0.2771 >0.005 => accept null hypothesis**

**# so we have conclude that defective % not varies by centre**