Import neccessery libraries

In [1]:
```
import pandas as pd
import numpy as np
from scipy import stats
```

Problem

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.

Data description

α = 0.05 (95% Confidence)

Y = Discrete X = Discrete

Since there are more than 2 variable we will perform Chi-Square test

H0 = The defective % does not varies by centre

H1 = The defective % does varies by centre

Import data

In [2]:
```
import os
```

In [3]:
```
os.getcwd()
```

Out[3]:
```
'C:\\Users\\Akarsh\\assignment 3'
```

In [4]:
```
os.chdir('C:\\Users\\Akarsh\\Desktop\\assignments')
```

In [5]:
```
os.getcwd()
```

Out[5]:
```
'C:\\Users\\Akarsh\\Desktop\\assignments'
```

In [7]:
```
pd.read_csv('Costomer+OrderForm.csv')
```

Out[7]:

	Phillippines	Indonesia	Malta	India
0	Error Free	Error Free	Defective	Error Free
1	Error Free	Error Free	Error Free	Defective

	Phillippines	Indonesia	Malta	India
2	Error Free	Defective	Defective	Error Free
3	Error Free	Error Free	Error Free	Error Free
4	Error Free	Error Free	Defective	Error Free
...	...	...	...	...
295	Error Free	Error Free	Error Free	Error Free
296	Error Free	Error Free	Error Free	Error Free
297	Error Free	Error Free	Defective	Error Free
298	Error Free	Error Free	Error Free	Error Free
299	Error Free	Defective	Defective	Error Free

Chi-Square Test

In [8]:
```
df = pd.read_csv('Costomer+OrderForm.csv')
```

In [16]:
```
stats.chi2_contingency([df['Phillippines'].value_counts(), df['Indonesia']
```

Out[16]:
```
(3.8589606858203545,
 0.2771020991233144,
 3,
 array([[271.75,  28.25],
        [271.75,  28.25],
        [271.75,  28.25],
        [271.75,  28.25]]))
```

In [17]:
```
#P value of Chi-Square test == 0.277 > α
```

Thus HO is accepted.The defective % does not varies significantly by centres