Q.1

Problem statement:-Does the diameter differs significantly?

Y1 – diameter of cutlets of unit 1

Y2 – diameter of cutlets of unit 2

X – 2 samples –from unit 1 and 2

By the reference of the flow cH1rt

1. Normality test

Ho – No action, if Y1 and Y2 are normal.

H1 – take action, if Y1 or Y2 are not normal.

Both data are assume to be normal as the p-value of both is high i.e. p-high Null fly.

Here, the external condition are not same so we will go for the variance test.

Ho – variance are equal

H1 – variance are not equal

p-high Null fly i.e. accept Ho

Go for 2 sample T-test for equal variance.

Case 1:- check equality

H0 – Mean of diameters of the cutlets of 2 units are equal

H1 - Mean of diameters of the cutlets of 2 units are not equal

p-high null fly i.e. accept Ho

Means the mean of diameters are equal hence there is no significant difference in the diameter of the cutlets of the from 2 Units.

Coding: Attached

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Q.2

Problem statement:-Are the average TAT of 4 libraries are same?

Y1 – TATs of Lab-1

Y2 - TATs of Lab-2

Y3 - TATs of Lab-3

Y4 - TATs of Lab-4

X – No.of Labs – 4

By the reference of the flow cH1rt

1. Normality test

Ho – No action, if Y1,Y2,Y3 and Y4 are normal.

H1 – take action, if Y1 or Y2 are not normal.

All data assume to be normal as the p-value of both is high i.e. p-high Null fly.

So we will go for variance test

Ho – variance are equal

H1 – variance are not equal

p-low Null go accept H1

Will use 2 sample T test using different combinations of the laboratories

Equality Tests:-

Case 1-Lab1 and Lab2

Ho – Average of TAT is equal

H1 – Average of TAT is not equal

p-high null fly, accept Ho

TAT averages of laboratory1 and laboratory2 are Equal

Case 2-Lab1 and Lab3

Ho – Average of TAT is equal

H1 – Average of TAT is not equal

p-low Null Go, accept H1

TAT averages of laboratory1 and laboratory3 are not Equal

Case 3-Lab1 and Lab4

Ho – Average of TAT is equal

H1 – Average of TAT is not equal

p-low Null Go, accept H1

TAT averages of laboratory1 and laboratory3 are not Equal

Case 4-Lab2 and Lab3

Ho – Average of TAT is equal

H1 – Average of TAT is not equal

p-low Null Go, accept H1

TAT averages of laboratory1 and laboratory3 are not Equal

Case 5-Lab2 and Lab4

Ho – Average of TAT is equal

H1 – Average of TAT is not equal

p-low Null Go, accept H1

TAT averages of laboratory1 and laboratory3 are not Equal

Case 6-Lab3 and Lab4

Ho – Average of TAT is equal

H1 – Average of TAT is not equal

p-low Null Go, accept H1

TAT averages of laboratory1 and laboratory3 are not Equal

From above data we can determine tH1t the average value of only laboratory-1 and laboratory-2 are equal.

While all the average TAT of other laboratories are not same i.e. they differ from each other significantly.

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Q3:-

Problem statement:- Is the ratio of the male-female buyers same?

Y1 – ratio of east region

Y2 - ratio of west region

Y3 - ratio of north region

Y4 - ratio of south region

X – No.ofregions - 4

By the reference of the flow cH1rt

The X and Y both are discrete so we will use chi-square test for multiple Y’s to test the proportion equality.

Ho – All proportions are equal

H1 – Not all proportions are equal

We got p-value > 0.05

Hence p-high Null fly, accept Ho hypothesis.

Hence all the proportions of buyer ratio across 4 region are similar.

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Q4.

Problem statement:- is the defective % varies from centre to centre?

Y1 – defective forms from Phillippines

Y2 - defective forms from Indonesia

Y3 - defective forms from Malta

Y4 - defective forms from India

X – No.of countries - 4

By the reference of the flow cH1rt

The X and Y both are discrete so we will use chi-square test for multiple Y’s to test the proportion equality.

Ho – All proportions are equal, Defective % does not varies.

H1 – Not all proportions are equal, Defective % varies.

We got p-value > 0.05

Hence p-high Null fly, accept Ho hypothesis.

Hence all the proportions are equal % defects does not varies from region to region

**NOTE: Question number 3 is getting properly so attached as its get resulted**