## PRACTICAL FOUR: ANALYSIS TOOLPAKOF MICROSOFT EXCEL (III)

1. Generate two-sample problems and corresponding data (paired and independent samples)
2. Set the hypothesis for the problems
3. Give a step by step procedures for running the analyses with Analysis Toolpak of Microsoft Excel
4. Give the Analysis Toolpak of Microsoft Excel data structures for the analyses, run the Analyses and give the outputs
5. Give the decision rules and conclusion based on the output of your analyses.

SOLUTION

TWO PAIRED SAMPLE TEST

Female student are weightier than Men. To ascertain this claim a random sample of 12 student weight was generated.

|  |  |  |
| --- | --- | --- |
| SUBJECT | Weight of Female student | Weight of Male student |
| 1 | 65.8 | 67.98 |
| 2 | 56.9 | 78.09 |
| 3 | 55.9 | 66.98 |
| 4 | 78.77 | 77.01 |
| 5 | 56.09 | 65.97 |
| 6 | 65.9 | 36.98 |
| 7 | 77.08 | 45.78 |
| 8 | 80.09 | 54.03 |
| 9 | 66.67 | 67.81 |
| 10 | 45.8 | 79.09 |
| 11 | 67.54 | 64.34 |
| 12 | 59.95 | 61.09 |

Null Hypothesis, HO: “**Female student are weightier than Male student**”.

Alternative Hypothesis, Hi: “**Female student are not weightier than Male student**”.

After inputting your details into the Microsoft excel analysis. You follow the following procedures to do the analysis:

* From the menus, select

Data > Data Analysis > t-Test: Paired Two Samples for Means

* It then brings a dialog box where you input the range of variables (variable 1 Range: $B$1:$B$13 and variable 2 Range: $C$1:$C$13).
* Choose your Hypothesized Mean Difference as zero (0)
* Select Labels and make your Alpha value to be 0.05
* Select the output Range as Sheet 2 where you want the solution to be displayed
* Click OK.

|  |  |  |
| --- | --- | --- |
| t-Test: Paired Two Sample for Means | |  |
|  |  |  |
|  | *Weight of Female student* | *Weight of Male student* |
| Mean | 64.7075 | 63.7625 |
| Variance | 108.6238023 | 164.3609659 |
| Observations | 12 | 12 |
| Pearson Correlation | -0.435417199 |  |
| Hypothesized Mean Difference | 0 |  |
| df | 11 |  |
| t Stat | 0.165903749 |  |
| P(T<=t) one-tail | 0.435621331 |  |
| t Critical one-tail | 1.795884819 |  |
| P(T<=t) two-tail | 0.871242661 |  |
| t Critical two-tail | 2.20098516 |  |

Since, the t statistic is less than the t Critical two-tail and the P(T<=t) two-tail is more than P(T<=t) one-tail. So, we therefore accept the Null Hypothesis, Ho: “**Female student are weightier than Male student**”.

TWO INDEPENDENT SAMPLE TEST

East side has more local government than the West side. To ascertain this claim a random sample of 10 states of a country was generated.

|  |  |
| --- | --- |
| EAST SIDE | WEST SIDE |
| 12 | 12 |
| 24 | 7 |
| 4 | 19 |
| 0 | 8 |
| 5 | 4 |
| 8 | 5 |
| 9 | 1 |
| 3 | 10 |
| 1 | 3 |
| 6 | 15 |

Null Hypothesis, Ho: “**East side has more local government area than the West side**”.

Alternative Hypothesis, Hi: “**East side has less local government area than the West side**”.

After inputting your details into the Microsoft excel analysis. You follow the following procedures to do the analysis:

* From the menus, select

Data > Data Analysis > t-Test: Two-Sample Assuming Unequal Variances

* It then brings a dialog box where you input the range of variables (variable 1 Range: $A$1:$A$13 and variable 2 Range: $B$1:$B$13).
* Choose your Hypothesized Mean Difference to be null (unfilled)
* Select Labels and make your Alpha value to be 0.05
* Select the output Range as Sheet 2 where you want the solution to be displayed
* Click OK.

|  |  |  |
| --- | --- | --- |
| t-Test: Two-Sample Assuming Unequal Variances | | |
|  |  |  |
|  | *EAST SIDE* | *WEST SIDE* |
| Mean | 7.2 | 8.4 |
| Variance | 48.177778 | 32.044444 |
| Observations | 10 | 10 |
| Hypothesized Mean Difference | 0 |  |
| df | 17 |  |
| t Stat | -0.423676 |  |
| P(T<=t) one-tail | 0.3385571 |  |
| t Critical one-tail | 1.7396067 |  |
| P(T<=t) two-tail | 0.6771142 |  |
| t Critical two-tail | 2.1098156 |  |

Since, the t statistic is less than the t Critical two-tail and the P (T<=t) two-tail is more than P (T<=t) one-tail. So, we therefore accept the Null Hypothesis, Ho: “**East side has more local government area than the West side**”.