**UAEU Faculty Satisfaction Survey**

**UAEU Faculty Satisfaction Survey**

**(CASE STUDY PROJECT)**

**1. For testing hypothesis**

* State the null and alternative hypotheses

Hypothesis (Independent Sample T-Test)

Null (H0): (“the difference of the means is equal to zero”)

Alternative (H1): (the difference of the means is not equal to zero”)

Where and are the population means for UAE National and Non-UAE national, respectively.

In the given sample data, we will use two variables: Nationality and Student’s Quality. The variable Nationality has values of either “1” (UAE) or "2" (Non-UAE). It will function as the independent variable in this T test. Student’s Quality is a numeric variable, and it will function as the dependent variable.

* Check the necessary assumptions.
* It assumes that the dependent variable is normally distributed.
* It assumes that the variance of the two groups are the same as the dependent variable.
* It assumes that the two samples are independent of each other.
* In independent sample t-test, all observations must be independent of each other.
* Report the P-value and the test statistic.

The p-value of the test is 0.000 and the test statistic is -14.293.

* Conclusion

The p-value of the t-test is printed as "0.000" and it should be read as p < 0.05 that is p very small at 5% level of significance, so we can reject the null hypothesis (H0) of this test and conclude that the variance in student’s quality of UAE national is significantly different than that of non-UAE national.

On the other hand, the mean student’s quality for UAE was subtracted from the mean student’s quality for non-UAE. Thus, the sign of the mean difference corresponds to the sign of the t value. The negative t value in this output indicates that the mean student’s quality for the first group, UAE (Mean = 3.22), is significantly greater than the mean for the second group, non-UAE (Mean = 3.19).

**Result/Output produced by Mega Stat**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Hypothesis Test: Independent Groups (t-test, pooled variance) | | | | | | |
|  |  |  |  |  |  |  |
|  | Nationality | Students\_quality |  |  |  |  |
|  | 1.75 | 3.2025 | mean |  |  |  |
|  | 0.44 | 0.9183 | std. dev. |  |  |  |
|  | 100 | 100 | n |  |  |  |
|  |  |  |  |  |  |  |
|  |  | 198 | df |  |  |  |
|  |  | -1.45250 | difference (Nationality - Students\_quality) | | | |
|  |  | 0.51636 | pooled variance | |  |  |
|  |  | 0.71858 | pooled std. dev. | |  |  |
|  |  | 0.10162 | standard error of difference | | |  |
|  |  | 0 | hypothesized difference | | |  |
|  |  |  |  |  |  |  |
|  |  | -14.293 | t |  |  |  |
|  |  | **0.00** | **p-value (two-tailed)** | |  |  |
|  |  |  |  |  |  |  |
|  |  | -1.65290 | confidence interval 95.% lower | | |  |
|  |  | -1.25210 | confidence interval 95.% upper | | |  |
|  |  | 0.20040 | margin of error | |  |  |
|  |  |  |  |  |  |  |
|  | F-test for equality of variance | | |  |  |  |
|  |  | 0.8433 | variance: Students\_quality | | |  |
|  |  | 0.1894 | variance: Nationality | |  |  |
|  |  | 4.45 | F |  |  |  |
|  |  | 0.00 | p-value |  |  |  |
|  |  |  |  |  |  |  |

**Case study Questions**

**1.** Descriptive statistics

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Descriptive statistics | | | | | | |
|  |  |  |  |  |  |  |
|  | *Gender* | *Nationality* | *Rank* | *Salary\_benefits* | *Students\_quality* | *Load\_Support* |
| count | 100 | 100 | 100 | 100 | 100 | 100 |
| mean | 1.18 | 1.75 | 2.40 | 3.1952 | 3.2025 | 3.2575 |
| sample standard deviation | 0.39 | 0.44 | 0.89 | 0.9499 | 0.9183 | 0.8594 |
| sample variance | 0.15 | 0.19 | 0.79 | 0.9023 | 0.8433 | 0.7386 |
| minimum | 1 | 1 | 1 | 1 | 1 | 1.636363636 |
| maximum | 2 | 2 | 4 | 5 | 5 | 5 |
| range | 1 | 1 | 3 | 4 | 4 | 3.363636364 |
|  |  |  |  |  |  |  |
| skewness | 1.69 | -1.17 | 0.35 | 0.0581 | -0.1720 | 0.0752 |
| kurtosis | 0.88 | -0.64 | -0.57 | -0.4552 | -0.4193 | -0.6893 |
| coefficient of variation (CV) | 32.72% | 24.87% | 36.98% | 29.73% | 28.68% | 26.38% |

The mean (standard deviation) of Salary\_benefits, Students\_quality, and Load\_Support is 3.1952, (0.9499), 3.2025 (0.9183), and 3.2575 (0.8594), respectively. The skewness of value of the variable shows that the data is normally distributed or lack of symmetry. The general rule of skewness value is that when the value in between -0.5 and 0.5 indicates that the distribution is fairly symmetrical. Therefore, the values of these three variables Salary\_benefits, Students\_quality, and Load\_Support are comes in the range. Thus, these variables are fairly normally distributed.

Graphically,

The salary benefits show a nearly linear pattern, which indicates that the normal distribution is a good model for this data set.

2.

The salary quality also shows a nearly linear pattern, which indicates that the normal distribution is a good model for this data set.

3.

The load support also shows a nearly linear pattern, which indicates that the normal distribution is a good model for this data set.

Hence, the descriptive statistics and the normal curve graphs both supports the statement.

2. (a) Test whether the UAEU faculty members are satisfied with the current salary and the benefits.

Set up the Hypothesis:

Null (H0):

Alternative (H1):

**Result produced by Mega Stat**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Hypothesis Test: Mean vs. Hypothesized Value | | | | | |
|  |  |  |  |  |  |
|  | 3.00000 | hypothesized value | |  |  |
|  | 3.19517 | mean Salary\_benefits | | |  |
|  | 0.94991 | std. dev. |  |  |  |
|  | 0.09499 | std. error |  |  |  |
|  | 100 | n |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  | 2.05 | z |  |  |  |
|  | 0.0200 | p-value (one-tailed, upper) | | |  |
|  |  |  |  |  |  |
|  | 3.00899 | confidence interval 95.% lower | | |  |
|  | 3.38135 | confidence interval 95.% upper | | |  |
|  | 0.18618 | margin of error | |  |  |

Explanation: The p-value of is 0.02 which is less than the significance level of alpha 5% (0.05). Based on the above evidence, we can reject the null hypothesis and support the alternative. Thus, there was statistically significant difference and the conclusion is that the UAEU faculty members are neutral satisfaction with the current salary and the benefits.

(b) Test whether the UAEU faculty members are satisfied with the quality of UAEU students.

Set up the Hypothesis:

Null (H0):

Alternative (H1):

**Result/Output produced by Mega Stat**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Hypothesis Test: Mean vs. Hypothesized Value | | | | | |
|  |  |  |  |  |  |
|  | 3.000 | hypothesized value | |  |  |
|  | 3.203 | mean Students\_quality | | |  |
|  | 0.918 | std. dev. |  |  |  |
|  | 0.092 | std. error |  |  |  |
|  | 100 | n |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  | 2.205 | z |  |  |  |
|  | **0.014** | **p-value (one-tailed, upper)** | | |  |
|  |  |  |  |  |  |
|  | 3.023 | confidence interval 95.% lower | | |  |
|  | 3.382 | confidence interval 95.% upper | | |  |
|  | 0.180 | margin of error | |  |  |

Explanation: The p-value of is 0.014 which is less than the significance level of alpha 5% (0.05). Based on the above evidence, we can reject the null hypothesis and support the alternative. Thus, there was statistically significant difference and the conclusion is that the UAEU faculty members are neutral satisfaction with the quality of UAEU students.

(c) Test whether the UAEU faculty members are satisfied with the workload and the university support.

Set up the Hypothesis Testing:

Null (H0):

Alternative (H1):

**Result produced by Mega Stat**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Hypothesis Test: Mean vs. Hypothesized Value | | | | | |
|  |  |  |  |  |  |
|  | 3.000 | hypothesized value | |  |  |
|  | 3.257 | mean Load\_Support | |  |  |
|  | 0.859 | std. dev. |  |  |  |
|  | 0.086 | std. error |  |  |  |
|  | 100 | n |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  | 2.996 | z |  |  |  |
|  | 0.001 | p-value (one-tailed, upper) | | |  |
|  |  |  |  |  |  |
|  | 3.089 | confidence interval 95.% lower | | |  |
|  | 3.426 | confidence interval 95.% upper | | |  |
|  | 0.168 | margin of error | |  |  |

Explanation: The p-value of is 0.001 which is less than the significance level of alpha 5% (0.05). Based on the above evidence, we can reject the null hypothesis and support the alternative. Thus, there was statistically significant difference and the conclusion is that the UAEU faculty members are satisfied with the workload and the university support.

3. Yes, there are significant differences in the faculty satisfaction among the three measured issues because all the p-value of all the test is less then the level of significance.

Result:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Salary\_benefits | Students\_quality | Load\_Support |
| Mean | 3.19517 | 3.203 | 3.257 |
| Std Dev | 0.94991 | 0.918 | 0.859 |
| N | 100 | 100 | 100 |
| Z-test | 2.05 | 2.205 | 2.996 |
| p-value | 0.02 | 0.014 | 0.001 |

4. First Measured: Hypothesis Testing:

Null (H0): (“the difference of the means is equal to zero”)

Alternative (H1): (the difference of the means is not equal to zero”)

Note: we will use two variables: Gender and Student’s Benefits.

Explanation:The p-value of the t-test is printed as "0.000" and it should be read as p < 0.05 that is p very small at 5% level of significance, so we can reject the null hypothesis (H0) of this test and conclude that the variance in student’s benefits of Male is significantly different than that of Female.

Yes, there are significant differences in the faculty satisfaction in the student’s benefits measured issues between male and female members.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Hypothesis Test: Independent Groups (t-test, pooled variance) | | | | | | |
|  |  |  |  |  |  |  |
|  | Gender | Salary\_benefits |  |  |  |  |
|  | 1.18 | 3.1952 | mean |  |  |  |
|  | 0.39 | 0.9499 | std. dev. |  |  |  |
|  | 100 | 100 | n |  |  |  |
|  |  |  |  |  |  |  |
|  |  | 198 | df |  |  |  |
|  |  | -2.01517 | difference (Gender - Salary\_benefits) | | | |
|  |  | 0.52571 | pooled variance | |  |  |
|  |  | 0.72506 | pooled std. dev. | |  |  |
|  |  | 0.10254 | standard error of difference | | |  |
|  |  | 0 | hypothesized difference | | |  |
|  |  |  |  |  |  |  |
|  |  | -19.653 | t |  |  |  |
|  |  | **0.000** | **p-value (two-tailed)** | |  |  |
|  |  |  |  |  |  |  |
|  |  | -2.21738 | confidence interval 95.% lower | | |  |
|  |  | -1.81296 | confidence interval 95.% upper | | |  |
|  |  | 0.20221 | margin of error | |  |  |

Second Measured: Hypothesis Testing:

Null (H0):

Alternative (H1):

Note: we will use two variables: Gender and Student’s Benefits.

Explanation:The p-value of the t-test is printed as "0.000" and it should be read as p < 0.05 that is p very small at 5% level of significance, so we can reject the null hypothesis (H0) of this test and conclude that the variance in student’s quality of Male is significantly different than that of Female members. Yes, there are significant differences in the faculty satisfaction in the student’s quality measured issues between male and female members.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Hypothesis Test: Independent Groups (t-test, pooled variance) | | | | | | |
|  |  |  |  |  |  |  |
|  | Gender | Students\_quality |  |  |  |  |
|  | 1.18 | 3.2025 | mean |  |  |  |
|  | 0.39 | 0.9183 | std. dev. |  |  |  |
|  | 100 | 100 | n |  |  |  |
|  |  |  |  |  |  |  |
|  |  | 198 | df |  |  |  |
|  |  | -2.02250 | difference (Gender - Students\_quality) | | | |
|  |  | 0.49621 | pooled variance | |  |  |
|  |  | 0.70442 | pooled std. dev. | |  |  |
|  |  | 0.09962 | standard error of difference | | |  |
|  |  | 0 | hypothesized difference | | |  |
|  |  |  |  |  |  |  |
|  |  | -20.302 | t |  |  |  |
|  |  | 0.000 | p-value (two-tailed) | |  |  |
|  |  |  |  |  |  |  |
|  |  | -2.21895 | confidence interval 95.% lower | | |  |
|  |  | -1.82605 | confidence interval 95.% upper | | |  |
|  |  | 0.19645 | margin of error | |  |  |
|  |  |  |  |  |  |  |

Third Measured: Hypothesis Testing:

Null (H0):

Alternative (H1):

Note: we will use two variables: Gender and Load Support

Explanation:The p-value of the t-test is printed as "0.000" and it should be read as p < 0.05 that is p very small at 5% level of significance, so we can reject the null hypothesis (H0) of this test and conclude that the variance in load support of Male is significantly different than that of Female members. Yes, there are significant differences in the faculty satisfaction in the load support measured issues between male and female members.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Hypothesis Test: Independent Groups (t-test, pooled variance) | | | | | | |
|  |  |  |  |  |  |  |
|  | Gender | Load\_Support |  |  |  |  |
|  | 1.18 | 3.2575 | mean |  |  |  |
|  | 0.39 | 0.8594 | std. dev. |  |  |  |
|  | 100 | 100 | n |  |  |  |
|  |  |  |  |  |  |  |
|  |  | 198 | df |  |  |  |
|  |  | -2.07746 | difference (Gender - Load\_Support) | | | |
|  |  | 0.44387 | pooled variance | |  |  |
|  |  | 0.66623 | pooled std. dev. | |  |  |
|  |  | 0.09422 | standard error of difference | | |  |
|  |  | 0 | hypothesized difference | | |  |
|  |  |  |  |  |  |  |
|  |  | -22.049 | t |  |  |  |
|  |  | 0.000 | p-value (two-tailed) | |  |  |
|  |  |  |  |  |  |  |
|  |  | -2.26326 | confidence interval 95.% lower | | |  |
|  |  | -1.89165 | confidence interval 95.% upper | | |  |
|  |  | 0.18580 | margin of error | |  |  |

5. First Measured: Hypothesis Testing:

Null (H0):

Alternative (H1):

Note: we will use two variables: Nationality and Salary benefits.

Explanation:The p-value of the t-test is printed as "0.000" and it should be read as p < 0.05 that is p very small at 5% level of significance, so we can reject the null hypothesis (H0) of this test and support alternative. We can conclude that the variance in salary benefits of UAE national is significantly different than that of Non-UAE national.

Yes, there are significant differences in the faculty satisfaction in the salary benefits measured issues between UAE national and non-UAE national members.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Hypothesis Test: Independent Groups (t-test, pooled variance) | | | | | | |
|  |  |  |  |  |  |  |
|  | Nationality | Salary\_benefits |  |  |  |  |
|  | 1.75 | 3.1952 | mean |  |  |  |
|  | 0.44 | 0.9499 | std. dev. |  |  |  |
|  | 100 | 100 | n |  |  |  |
|  |  |  |  |  |  |  |
|  |  | 198 | df |  |  |  |
|  |  | -1.44517 | difference (Nationality - Salary\_benefits) | | | |
|  |  | 0.54586 | pooled variance | |  |  |
|  |  | 0.73882 | pooled std. dev. | |  |  |
|  |  | 0.10449 | standard error of difference | | |  |
|  |  | 0 | hypothesized difference | | |  |
|  |  |  |  |  |  |  |
|  |  | -13.831 | t |  |  |  |
|  |  | 0.000 | p-value (two-tailed) | |  |  |
|  |  |  |  |  |  |  |
|  |  | -1.65121 | confidence interval 95.% lower | | |  |
|  |  | -1.23912 | confidence interval 95.% upper | | |  |
|  |  | 0.20605 | margin of error | |  |  |

Second Measured: Hypothesis Testing

Null (H0):

Alternative (H1):

Note: we will use two variables: Nationality and Salary quality.

Explanation:The p-value of the t-test is printed as "0.000" and it should be read as p < 0.05 that is p very small at 5% level of significance, so we can reject the null hypothesis (H0) of this test and support alternative. We can conclude that the variance in student’s quality of UAE national is significantly different than that of Non-UAE national.

Yes, there are significant differences in the faculty satisfaction in the student’s quality measured issues between UAE national and non-UAE national members.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Hypothesis Test: Independent Groups (t-test, pooled variance) | | | | | | |
|  |  |  |  |  |  |  |
|  | Nationality | Students\_quality |  |  |  |  |
|  | 1.75 | 3.2025 | mean |  |  |  |
|  | 0.44 | 0.9183 | std. dev. |  |  |  |
|  | 100 | 100 | n |  |  |  |
|  |  |  |  |  |  |  |
|  |  | 198 | df |  |  |  |
|  |  | -1.45250 | difference (Nationality - Students\_quality) | | | |
|  |  | 0.51636 | pooled variance | |  |  |
|  |  | 0.71858 | pooled std. dev. | |  |  |
|  |  | 0.10162 | standard error of difference | | |  |
|  |  | 0 | hypothesized difference | | |  |
|  |  |  |  |  |  |  |
|  |  | -14.293 | t |  |  |  |
|  |  | 0.000 | p-value (two-tailed) | |  |  |
|  |  |  |  |  |  |  |
|  |  | -1.65290 | confidence interval 95.% lower | | |  |
|  |  | -1.25210 | confidence interval 95.% upper | | |  |
|  |  | 0.20040 | margin of error | |  |  |
|  |  |  |  |  |  |  |

Third Measured: Hypothesis Testing

Null (H0):

Alternative (H1):

Note: we will use two variables: Nationality and Load Support.

Explanation:The p-value of the t-test is printed as "0.000" and it should be read as p < 0.05 that is p very small at 5% level of significance, so we can reject the null hypothesis (H0) of this test and support alternative. We can conclude that the variance in load support quality of UAE national is significantly different than that of Non-UAE national.

Yes, there are significant differences in the faculty satisfaction in the load support measured issues between UAE national and non-UAE national members.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Hypothesis Test: Independent Groups (t-test, pooled variance) | | | | | | |
|  |  |  |  |  |  |  |
|  | Nationality | Load\_Support |  |  |  |  |
|  | 1.75 | 3.2575 | mean |  |  |  |
|  | 0.44 | 0.8594 | std. dev. |  |  |  |
|  | 100 | 100 | n |  |  |  |
|  |  |  |  |  |  |  |
|  |  | 198 | df |  |  |  |
|  |  | -1.50746 | difference (Nationality - Load\_Support) | | | |
|  |  | 0.46402 | pooled variance | |  |  |
|  |  | 0.68119 | pooled std. dev. | |  |  |
|  |  | 0.09633 | standard error of difference | | |  |
|  |  | 0 | hypothesized difference | | |  |
|  |  |  |  |  |  |  |
|  |  | -15.648 | t |  |  |  |
|  |  | 0.000 | p-value (two-tailed) | |  |  |
|  |  |  |  |  |  |  |
|  |  | -1.69743 | confidence interval 95.% lower | | |  |
|  |  | -1.31748 | confidence interval 95.% upper | | |  |
|  |  | 0.18997 | margin of error | |  |  |
|  |  |  |  |  |  |  |

6. First Measured: Hypothesis Testing

Null (H0): all population means are exactly equal.

Alternative (H1): all population means are not equal.

Explanation: The p-value is close to zero. Thus, we can reject the null hypothesis and in favour of alternative. Hence, there are statistically significant differences in the faculty satisfaction in the salary benefits measured issues among the different ranks.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| One factor ANOVA | |  |  |  |  |
|  |  |  |  |  |  |
|  | *Mean* | *n* | *Std. Dev* |  |  |
|  | 2.400 | 100 | 0.8876 | Rank |  |
|  | 3.195 | 100 | 0.9499 | Salary\_benefits |  |
|  | 2.798 | 200 | 0.9999 | Total |  |
|  |  |  |  |  |  |
| ANOVA table |  |  |  |  |  |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* |
| Treatment | 31.6145 | 1 | 31.61450 | 37.41 | 0.00 |
| Error | 167.3307 | 198 | 0.84510 |  |  |
| Total | 198.9452 | 199 |  |  |  |

Second: Measured: Hypothesis Testing

Null (H0): all population means are exactly equal.

Alternative (H1): all population means are not equal.

Explanation: The p-value is close to zero. Thus, we can reject the null hypothesis and in favour of alternative. Hence, there are statistically significant differences in the faculty satisfaction in the student’s quality measured issues among the different ranks.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| One factor ANOVA | |  |  |  |  |
|  |  |  |  |  |  |
|  | *Mean* | *n* | *Std. Dev* |  |  |
|  | 2.400 | 100 | 0.8876 | Rank |  |
|  | 3.203 | 100 | 0.9183 | Students\_quality |  |
|  | 2.801 | 200 | 0.9866 | Total |  |
|  |  |  |  |  |  |
| ANOVA table |  |  |  |  |  |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* |
| Treatment | 32.2003 | 1 | 32.20031 | 39.48 | 0.000 |
| Error | 161.4897 | 198 | 0.81560 |  |  |
| Total | 193.6900 | 199 |  |  |  |

Third: Measured: Hypothesis Testing

Null (H0): all population means are exactly equal.

Alternative (H1): all population means are not equal.

Explanation: The p-value is close to zero. Thus, we can reject the null hypothesis and in favour of alternative. Hence, there are statistically significant differences in the faculty satisfaction in the load support measured issues among the different ranks.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| One factor ANOVA | |  |  |  |  |
|  |  |  |  |  |  |
|  | *Mean* | *n* | *Std. Dev* |  |  |
|  | 2.400 | 100 | 0.8876 | Rank |  |
|  | 3.257 | 100 | 0.8594 | Load\_Support |  |
|  | 2.829 | 200 | 0.9717 | Total |  |
|  |  |  |  |  |  |
| ANOVA table |  |  |  |  |  |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* |
| Treatment | 36.7615 | 1 | 36.76154 | 48.16 | 0.000 |
| Error | 151.1260 | 198 | 0.76326 |  |  |
| Total | 187.8875 | 199 |  |  |  |

7. Based on the above analysis, the recommendations to the UAE administration to increase the satisfaction of the UAEU faculty members is to increase the salary and fringe benefits, train them to enhance on their teaching skill which will increase the quality of the UAEU faculty member. If workload on the faculty members will decrease, then faculty will encourage them to increase their productivity.

8. Regression Analysis:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Regression Analysis | |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | r² | 0.543 |  |  |  |  |
|  | r | 0.737 |  |  |  |  |
|  | Std. Error | 0.624 |  |  |  |  |
|  | n | 100 |  |  |  |  |
|  | k | 1 |  |  |  |  |
|  | Dep. Var. | **Students\_quality** | |  |  |  |
|  |  |  |  |  |  |  |
| ANOVA table |  |  |  |  |  |  |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* |  |
| Regression | 45.3690 | 1 | 45.3690 | 116.63 | 0.000 |  |
| Residual | 38.1206 | 98 | 0.3890 |  |  |  |
| Total | 83.4897 | 99 |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Regression output | |  |  |  | *confidence interval* | |
| *variables* | *coefficients* | *std. error* | *t (df=98)* | *p-value* | *95% lower* | *95% upper* |
| Intercept | 0.6367 |  |  |  |  |  |
| Load\_Support | 0.7877 | 0.0729 | 10.800 | **0.000** | 0.6429 | 0.9324 |

After run the linear regression in Megastat:

Equation: **Students\_quality (Y) = Intercept + B1\*Load\_Support**

Students\_quality = 0.6367 + 0.79\*Load\_Support

Interpretation: The Y-intercept = 0.6367, implies that when the value of Load\_Support is 0, then Y is 0.6367. On the other hand, the slope, B1 = 0.79, implies that for each increase of 1 faculty members support, then the student’s quality is estimated to increase by 0.6367.

Model Diagnose:

The R square of the model is 0.54 (54%) which indicates that the variation in the student’s quality variable can be explained by the load support variable. Thus, the model is moderately good fit with the data set.

The p-value of the Load support is less than the significance level of alpha 5%. Thus, the variable is statistically significant. Based on the above evidence, we can reject the null hypothesis and in favour of alternative.

# References

Ross, A., & Willson, V. L. (2017). One-way anova. In *Basic and advanced statistical tests* (pp. 21-24). SensePublishers, Rotterdam. <https://link.springer.com/chapter/10.1007/978-94-6351-086-8_5>

St, L., & Wold, S. (1989). Analysis of variance (ANOVA). *Chemometrics and intelligent laboratory systems*, *6*(4), 259-272. <https://www.sciencedirect.com/science/article/pii/0169743989800954>

Su, X., Yan, X., & Tsai, C. L. (2012). Linear regression. Wiley Interdisciplinary Reviews: Computational Statistics, 4(3), 275-294. <https://onlinelibrary.wiley.com/doi/pdf/10.1002/wics.1198>

Wilcox, R. R. (1990). Comparing the means of two independent groups. *Biometrical Journal*, *32*(7), 771-780. <https://onlinelibrary.wiley.com/doi/abs/10.1002/bimj.4710320702>