Plan Analysis

Name

Institutional Affiliation

Date

**Plan Analysis**

Our data show that, the average annual salary of the midlevel supervisors in our sample is 39827.3913, ranging between 23654 and 69246. With the standard deviation 10999.2438.

With 95% Confidence level, we estimate the average salary of the midlevel supervisors at ABC CO. LTD to be 39827.3913 with the margin of errors of plus or minus 3178.572.

We were also interested in the proportion of female to male midlevel supervisors in this company. The sample shows that proportion of females to males is 0.52173913 to 0.47826087.

We then estimated proportion of female to male mid-level supervisors in this company

The 95% Confidence Interval Estimate for the proportion is as follows:

|  |  |
| --- | --- |
| **Confidence Interval** | |
| **Interval Lower Limit** | **0.377385303** |
| **Interval Upper Limit** | **0.666092958** |

The 95% Confidence Interval Estimate for the male proportion is as follows:

|  |  |
| --- | --- |
| **Confidence Interval** | |
| **Interval Lower Limit** | **0.333907042** |
| **Interval Upper Limit** | **0.622614697** |

Explanation: The null hypothesis will be rejected if the values lie outside the limits given for each proportion.

We found it necessary as well to identify the average differences in salaries between female and male supervisors in this company. Thus we identify the average differences of our sample which was females = 42417.5833 and males = 37001.7273.

We use scatter plots to show the relationships between salary and the dependent variables as shown below:

Figure 1 Scatter plot for salary and years of experience

The scatter plot shows a low liner relationship between salary and years of experience.

Figure 2 Scatter plot for salary and years of employment

The scatter plot shows a high liner relationship between salary and years of employment.

Figure 3 Scatter plot for salary and years of education

The scatter plot shows a high liner relationship between salary and years of education.

Figure 4 Scatter plot for salary and Gender

The scatter plot shows a high liner relationship between salary and gender.

We then run correlation and regression analyses for the overall data to identify overall relationship between salary and other variables.

* **Salary and years of experience.**

|  |  |  |
| --- | --- | --- |
|  | *Salary* | *Years Previous Experience* |
| Salary | 1 | 0.02935383 |
| Years Previous Experience | 0.02935383 | 1 |

**Explanation:** There is no correlation between years of experience and salary.

* **Salary and years Employed.**

|  |  |  |
| --- | --- | --- |
|  | *Salary* | *Years Employed* |
| Salary | 1 | 0.76517355 |
| Years Employed | 0.76517355 | 1 |

There is a strong correlation between the salary and years employed.

* **Salary and years of education.**

|  |  |  |
| --- | --- | --- |
|  | *Salary* | *Years Education* |
| Salary | 1 | 0.77699111 |
| Years Education | 0.77699111 | 1 |

**Explanation:** There is a strong correlation between the salary and years of education.

* **Salary and Gender**

|  |  |  |
| --- | --- | --- |
|  | *Salary* | *Gender* |
| Salary | 1 | -0.2486773 |
| Gender | -0.2486773 | 1 |

**Explanation:** There is a weak correlation between the salary and gender.

We test correlation between salary and other variables based on the following hypothesis:

Ho: 𝜌 = 𝑜 that there is no correlation (at 95% confidence level)

Ha: 𝜌 ≠ 𝑜 that, there is correlation (at p-value ≤ 5% significance level)

**The statistical evidences obtained show that:**

1. There is no significant correlation between salary and years of experience (p-value = 0.84645). Thus, we fail to reject the null hypothesis at 5% significance level. This evidence supports workers claims that salary of a supervisor in this company doesn’t consider someone’s years of experience.
2. There is significant correlation between salary and years employed (p-value = 5.9332E-10). Thus, we reject the null hypothesis at 5% significance level. This evidence supports claim that there is no annual salary increment in this company.
3. There is significant correlation between salary and years of education (p-value = 2.17518E-10). Thus, we reject the null hypothesis at 5% significance level. This evidence supports claim the years of education does not matter in terms of salary for supervisors.
4. There is no significant correlation between salary and gender (p-value = 0.09561). Thus, we fail to reject the null hypothesis at 5% significance level. This evidence supports workers claims that gender matters in terms of salary in this company.

We also conducted regression analysis for more evidences. In order to run regression analysis, we created our main model as follows:

**Salary = a + b1Experience + b2Years work - b3Gender + b4education + b5Department + b6Supervisees**

**+ e (See appendix)**

The regression results show that, variables Years Previous Experience, Gender, and Number Supervised significantly reject the Ho (p values 0.619857, 0.294953, 0.136459 respectively) while variables, Years Employed, Years Education, and Department failed to reject the Ho (with p values 1.46E-05, 6.01E-05 and 0.001497 respectively) .

With evidences obtained, we could conclude on the claims as follows:

* Years Previous Experience- A unit change in the Years Previous Experience result in 106.547902 decrease in salary of midlevel supervisors.
* Gender - A unit change in gender results in 1654.074595 decrease in salary of midlevel supervisors.
* Number Supervised - A unit change in gender results in 134.0143504 increase in salary of midlevel supervisors.

**Conclusion**

The statistical results obtained from the above analysis are the evidences to support or fail to support the claims by the midlevel supervisor’s in this company. We have no evidences to support claims that there Is there annual salary increment at ABC Co. LTD and the years of education does not matter in terms of salary for supervisors. However, claims that experience doesn’t count on supervisors’ salary at ABC and gender matter in terms of salary in this company are supported with evidences obtained. We would suggest that based on the evidences obtained, ABC company should increase salary based on experience and remove gender discrimination in terms of salary pay to avoid more complains from midlevel supervisors.

**Appendix**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SUMMARY OUTPUT |  |  |  |  | |  |  |  |
|  |  |  |  |  |  |  |  |  |
| *Regression Statistics* | |  |  |  |  |  |  |  |
| Multiple R | 0.905155 |  |  |  |  |  |  |  |
| R Square | 0.819306 |  |  |  |  |  |  |  |
| Adjusted R Square | 0.791507 |  |  |  |  |  |  |  |
| Standard Error | 5022.367 |  |  |  |  |  |  |  |
| Observations | 46 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| ANOVA |  |  |  |  |  |  |  |  |
|  | *df* | *SS* | *MS* | *F* | *Significance F* |  |  |  |
| Regression | 6 | 4.46E+09 | 7.43E+08 | 29.47246 | 4.9E-13 |  |  |  |
| Residual | 39 | 9.84E+08 | 25224166 |  |  |  |  |  |
| Total | 45 | 5.44E+09 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
| Intercept | 19589.47 | 2862.638 | 6.843154 | 3.52E-08 | 13799.24 | 25379.7 | 13799.24 | 25379.7 |
| Years Previous Experience | -106.548 | 213.079 | -0.50004 | 0.619857 | -537.541 | 324.4451 | -537.541 | 324.4451 |
| Years Employed | 621.0566 | 125.4148 | 4.952018 | 1.46E-05 | 367.3811 | 874.7321 | 367.3811 | 874.7321 |
| Years Education | 1631.831 | 362.7565 | 4.498419 | 6.01E-05 | 898.0865 | 2365.575 | 898.0865 | 2365.575 |
| Gender | -1654.07 | 1558.115 | -1.06159 | 0.294953 | -4805.66 | 1497.51 | -4805.66 | 1497.51 |
| Department | 2134.289 | 624.7683 | 3.416129 | 0.001497 | 870.5761 | 3398.003 | 870.5761 | 3398.003 |
| Number Supervised | 134.0144 | 88.1399 | 1.520473 | 0.136459 | -44.2654 | 312.2941 | -44.2654 | 312.2941 |