Statistical Analysis of the Relationship between Employees Salary and Experience

1. Introduction:

This report presents a statistical analysis of real word data collected on employees' salaries and years of experience. the objective of this study is a to explore whether there is a significant relationship between an employee's experience and their salary ,and to identify patterns or salary ,and to identify patterns or trends that might inform organizational decisions salary structure planning.

2. Data Description:

The data set used in this analysis includes real data gathered from a group of employees. the main variables include:

- **Years of Experience (**numeric and independent variable**)**

3. Methodology:

- **Descriptive Statistics:**

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Residuals:
    Min      1Q  Median      3Q     Max
-7958.0 -4088.5  -459.9  3372.6 11448.0

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)       24848.2     2306.7   10.77 1.82e-11 ***
YearsExperience    9450.0      378.8   24.95  < 2e-16 ***
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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 5788 on 28 degrees of freedom
Multiple R-squared:  0.957,    Adjusted R-squared:  0.9554
F-statistic: 622.5 on 1 and 28 DF,  p-value: < 2.2e-16
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- **Correlation Analysis**

  0.9782416, relationship positive strong

- **Simple linear regression**

γ=24848.2+9450.0X

- **Statistical comment**

  B_1 :Every an employee s experience increases by one year ,his annual salary increases by an average of 9450.0

  B_0:Yeas there is a possibility that an employee .

  This means that the employee who has zero experience based on the mentioned sample has an annual salary of 24848.2.

  R-squared

  Next, take a look at the R-squared value (0.957). This tells us that 96% of the change in **Salary** can be explained by the change in **Years of Experience** in this model. Ignore the Adjusted R-squared value for now. That becomes useful when we do multiple regression.

  The F-statistic

  The F-statistic is a measure of the overall ability of the explanatory variables to explain (or predict) the outcome variable's values. If the *p* value is small (below a predetermined

  threshold) then we can be confident that the model has value. This becomes more useful in multiple regression.

  In this case the *p* value for the F statistic is 1.091e-14 (a very small number indeed)

  Predictive modeling:

  We can use this model to predict the **Salary**, given **Years of Experience**.

  (0,2,4,8,15)

  1 2 3 4 5

  24848 43748 62648 100448 166598

4. Conclusion :

The result indicates that appositive linear relationship between years of experience and salary, meaning that Salary increases significantly with increasing experience .this model is useful for predicting employee salaries based on their number of experience and can be used in developing compensation policies for companies and institutions.

5. References

This report was prepared based on concepts learned during the Applied Statistic course at Yarmouk University addition to reviewing some explanation from a YouTube Type equation here.course titled “linear Regression Analysis Using R –[R programming 101]