

In what factors student's grade may affect

Grades may influenced because of various factors

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Assignment-1 (Quantitative Data Analysis)

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One year master program in Artificial Intelligent
Empirical Research Methodology
HT 2021

EMDSV

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Abstract

The survey is about the students who are studying in DSV campus. There are 72 questions which has been asked to the students and based on their responses I have formulated the question related to final grades, and sub questions are derived from the various factors of given data survey report. By using quantitative analysis different types of analysis are carried out to find the insight of the data. Moreover, a scientific method is used for hypothesis testing to make the statement to conclude if we have a meaningful results. On using SPSS tools with the help of data and variable view expected results has been found, which is very useful for understanding the grades relations in various aspects. During analysis I have used different mathematical statistics and charts to discover the expected results. Also, I have used different hypothesis to find the relationships among the other aspects which may affect the final grades. This report shows that whether final grades vary in different situation or not on using SPSS statistical tool.

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1 Introduction

The report is about the final grades which has been taken from the student survey who are studying in DSV campus. There are 72 questions in the survey by which one problem statement and three sub questions are derived and taken for the quantitative analysis. In a given data survey a various factors are analyzed to understand the relationships among different aspects and to check if we have a meaningful result in the survey by which result can be concluded.

Based on the assumption from the student's survey, research question has been formulated and while doing research on this problem statement we can identify the student's assumption on their own grades. The scientific and mathematical approaches have been performed using IBM SPSS tool which helped in analysis and conclude the expected result from the statement.

1.1 Research Question

The main objective of this research question is to identify the various factors which may affect the grades of students from the survey assumption.

Research Question : Does the various factors affect the final grades of university student?

Sub-question 1 : Is there a connection between employment and final grades at DSV campus?

Sub-question 2 : Is there a difference between male and female students on final grades?

Sub-question 3 : Is there a connection between different learning of blended learning/flipped learning and final grades in campus?

1.2 Hypotheses

Sub-question 1: Is there a connection between employment and final grades at DSV campus?

Hypotheses

H0: There is no connection between employment and final grades at DSV campus.

HA: There is a connection between employment and final grades at DSV campus.

Sub-question 2: Is there a difference between male and female students on final grades?

Hypotheses

H0: There is no difference between men and women in terms of final grades.

HA: There is a difference between men and women in terms of final grades.

Sub-question 3: Is there a connection between different learning of blended learning/flipped learning and final grades in campus?

Hypotheses

H0: There is no connection between different learning of blended learning/flipped learning and final grades in campus.

HA: There is a connection between different learning of blended learning/flipped learning and final grades in campus.

2 Method

In this method different statistical tests or analyses are performed to find out the expected results. In this statistical tests mainly we will be focusing on descriptive type and bivariate analyses. In bivariate the Nominal and Ordinal variables mostly we perform for various test techniques to get the output for hypotheses. Thus a various test will be explained below

2.1 Statistical Tests

Spearman Correlation Analysis, Independent T-Test, Chi-Square are the methods used for three sub-questions of hypotheses

- 1) Spearman Correlation: In hypotheses variables are ordinal. Correlation predicts the relationships between two variables using bivariate analysis. Here the spearman correlation is used between ordinal variables, Thus this test is the best for the hypotheses of sub question 1.
- 2) Independent T-Test(nominal): This test is an inferential statistical test that determines whether there is a significantly difference between the mean in two unreated groups which is more suited for sub-question 2 male and female difference which can help to conclude the result from this test.
- 3) Chi-Square: If two categorical variables are related in some population then chi-square statistical test are performed. Hence in sub-question 3 where two different learnings on blended /flipped classroom related to final grades helped in analysing of these two variables.

2.2 Research Ethics

In this research, all the tests, method and analyses are performed using IBM SPSS statistics tool which are licensed. Also the result of the research are validated and reliable as per the license.

3 Results and Analysis

In this section, Using hypotheses various test are going to perform and using different statistical tests, study has been conducted which would validate the results.

3.1 Employment impact the students final grades when studying at campus

In this section, from the data survey one of the various factors has been taken for analysis and derived the sub question related to the work where the students can impact final grades of study while working at the same time.

Sub Question 1: Is there a connection between employment and final grades at DSV campus?

Spearman correlation test has been carried out for the hypotheses.

3.1.1 Hypotheses

H0: There is no connection between employment and final grades at DSV campus.

HA: There is a connection between employment and final grades at DSV campus.

Using hypotheses, analyze the test to check the meaningful result.

Correlations

```
NONPAR CORR
/VARIABLES=GradePrg Employment
/PRINT=SPEARMAN TWOTAIL NOSIG FULL
/MISSING=PAIRWISE.
```

Nonparametric Correlations

| Correlations | | | GradePrg | Employment |
|----------------|------------|-------------------------|----------|------------|
| Spearman's rho | GradePrg | Correlation Coefficient | 1.000 | .156 |
| | | Sig. (2-tailed) | . | .171 |
| | | N | 79 | 79 |
| | Employment | Correlation Coefficient | .156 | 1.000 |
| | | Sig. (2-tailed) | .171 | . |
| | | N | 79 | 79 |

Correlation is not significant as the (2-tailed) 0.05 level is greater.

Table 1(correlation between employment and final grades)

3.1.2 Spearman Correlation Test Report

The p-value in the sig. (2-tailed) is .171 which is greater than 0.05. Therefore the result is not significant as it is greater than 0.05 alpha level.

Normally, the p-value must be equal to or less than 0.05. In this result, the p-value is greater than the standard alpha value, so the outcome of test fail to reject H_0 and in statement there is no evidence to reject H_0 .

Finally, as the result is not significant therefore the data consist of two variables- employment and final grades are not associated with each other.

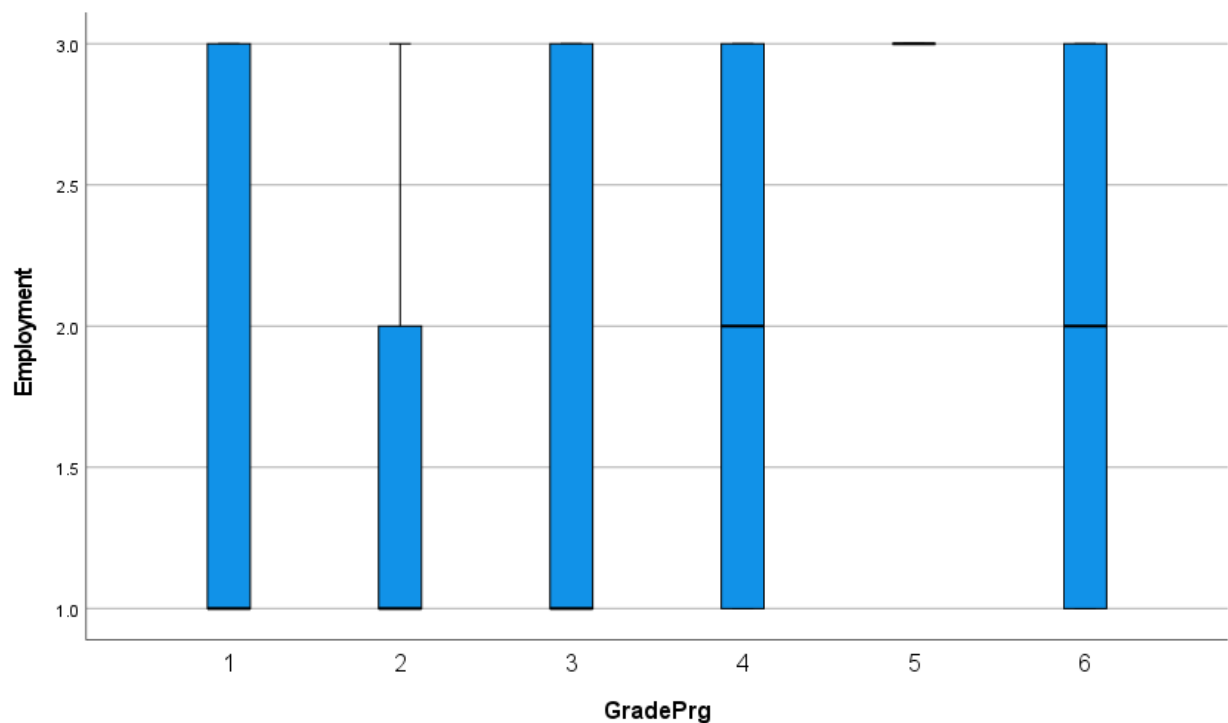


Figure1 (Gradeprg and Employment simple boxplots chart)

3.2 A part of gender when final grades are estimated

In this section independent T-Test is used for sub question to find out the difference between the male and female students on estimated final grades.

Sub Question 2: Is there a difference between male and female students on final grades?

3.2.1 Hypotheses

H0: There is no difference between men and women in terms of final grades.

HA: There is a difference between men and women in terms of final grades.

T-Test

| Group Statistics | | | | | |
|------------------|--------|----|------|----------------|-----------------|
| | Gender | N | Mean | Std. Deviation | Std. Error Mean |
| GradePrg | 1 | 44 | 2.52 | 1.023 | .154 |
| | 2 | 32 | 2.59 | 1.103 | .195 |

| Independent Samples Test | | | | | | | | | |
|--------------------------|-----------------------------|---|------|------------------------------|--------|-----------------|-----------------|-----------------------|--|
| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference Lower Upper |
| GradePrg | Equal variances assumed | .147 | .702 | -.289 | 74 | .773 | -.071 | .246 | -.560 .418 |
| | Equal variances not assumed | | | -.286 | 63.879 | .776 | -.071 | .249 | -.568 .426 |

| Independent Samples Effect Sizes | | | | | |
|----------------------------------|--------------------|---------------------------|----------------|-------------------------|-------|
| | | Standardizer ^a | Point Estimate | 95% Confidence Interval | |
| | | | | Lower | Upper |
| GradePrg | Cohen's d | 1.057 | -.067 | -.522 | .389 |
| | Hedges' correction | 1.068 | -.067 | -.517 | .385 |
| | Glass's delta | 1.103 | -.064 | -.520 | .392 |

a. The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation.

Hedges' correction uses the pooled standard deviation, plus a correction factor.

Glass's delta uses the sample standard deviation of the control group.

Table 2 (T-Test difference between gender and final grades are validated)

3.2.2 T-Test Result

P-value is .702 which is greater than 0.05 alpha value, so we will reject the hypotheses of variable which are not dependent to each other.

Hence, based on the test analysis, gender does not correlated to each other for the final grade of estimation.

3.3 Different learning experiences the students can impact the final grades

In this section, for the below sub question Chi-Square cross tabulation is performed to produce the expected result.

Sub Question 3: Is there a connection between different learning of blended learning/flipped learning and final grades in campus?

3.3.1 Hypotheses

H0: There is no connection between different learning of blended learning/flipped learning and final grades in campus.

HA: There is a connection between different learning of blended learning/flipped learning and final grades in campus.

Case Processing Summary

| | Valid | | Cases Missing | | Total | |
|------------------------|-------|---------|---------------|---------|-------|---------|
| | N | Percent | N | Percent | N | Percent |
| FCdiffLearn * GradePrg | 79 | 100.0% | 0 | 0.0% | 79 | 100.0% |
| BLdiffStudy * GradePrg | 79 | 100.0% | 0 | 0.0% | 79 | 100.0% |

FCdiffLearn * GradePrg

Crosstab

| | | | GradePrg | | | | | | Total |
|-------------|----------------|----------------|----------|------|------|-----|-----|-----|-------|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | |
| FCdiffLearn | 0 | Count | 3 | 13 | 6 | 3 | 0 | 1 | 23 |
| | | Expected Count | 2.3 | 10.5 | 7.3 | 1.7 | .6 | .6 | 23.0 |
| | 3 | Count | 1 | 1 | 1 | 3 | 0 | 0 | 3 |
| | | Expected Count | .3 | 1.4 | .9 | .2 | .1 | .1 | 3.0 |
| | 4 | Count | 1 | 11 | 4 | 3 | 0 | 0 | 16 |
| | | Expected Count | 1.6 | 7.3 | 5.1 | 1.2 | .4 | .4 | 16.0 |
| | 5 | Count | 0 | 5 | 8 | 1 | 1 | 0 | 16 |
| | | Expected Count | 1.6 | 7.3 | 5.1 | 1.2 | .4 | .4 | 16.0 |
| | 6 | Count | 2 | 2 | 4 | 5 | 0 | 0 | 13 |
| | | Expected Count | 1.3 | 5.3 | 4.1 | 1.3 | .3 | .3 | 13.0 |
| | 7 | Count | 1 | 3 | 2 | 3 | 1 | 1 | 8 |
| | | Expected Count | .8 | 3.5 | 2.5 | .5 | .2 | .2 | 8.0 |
| Total | Count | | 8 | 35 | 25 | 5 | 2 | 2 | 79 |
| | Expected Count | | 8.0 | 36.3 | 25.0 | 6.3 | 2.0 | 2.0 | 79.0 |

Chi-Square Tests

| | Value | df | Asymptotic Significance (2- sided) |
|------------------------------|---------------------|----|--|
| Pearson Chi-Square | 42.052 ^a | 25 | .018 |
| Likelihood Ratio | 38.360 | 25 | .043 |
| Linear-by-Linear Association | 4.438 | 1 | .035 |
| N of Valid Cases | 79 | | |

a. 29 cells (80.6%) have expected count less than 5. The minimum expected count is .08.

BLdiffStudy * GradePrg

Crosstab

| | | | GradePrg | | | | | | Tctal |
|-------------|-------|----------------|----------|------|------|-----|-----|-----|-------|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | |
| BLdiffStudy | 0 | Count | 0 | 7 | 4 | 0 | 0 | 1 | 12 |
| | | Expected Count | 1.2 | 5.5 | 3.8 | .9 | .3 | .3 | 12.0 |
| | 2 | Count | 0 | 2 | 2 | 0 | 0 | 0 | 4 |
| | | Expected Count | .4 | 1.8 | 1.3 | .3 | .1 | .1 | 4.0 |
| | 4 | Count | 1 | 11 | 2 | 0 | 1 | 1 | 16 |
| | | Expected Count | 1.6 | 7.3 | 5.1 | 1.2 | .4 | .4 | 16.0 |
| | 5 | Count | 3 | 8 | 7 | 1 | 1 | 0 | 20 |
| | | Expected Count | 2.0 | 9.1 | 6.3 | 1.5 | .5 | .5 | 20.0 |
| | 6 | Count | 3 | 6 | 7 | 5 | 0 | 0 | 21 |
| | | Expected Count | 2.1 | 9.6 | 6.6 | 1.6 | .5 | .5 | 21.0 |
| | 7 | Count | 1 | 2 | 3 | 0 | 0 | 0 | 6 |
| | | Expected Count | .6 | 2.7 | 1.9 | .5 | .2 | .2 | 6.0 |
| | Total | Count | 8 | 36 | 25 | 6 | 2 | 2 | 79 |
| | | Expected Count | 8.0 | 36.0 | 25.0 | 6.0 | 2.0 | 2.0 | 79.0 |

Chi-Square Tests

| | Value | df | Asymptotic Significance (2- sided) |
|------------------------------|---------------------|----|--|
| Pearson Chi-Square | 26.492 ^a | 25 | .382 |
| Likelihood Ratio | 29.751 | 25 | .234 |
| Linear-by-Linear Association | .096 | 1 | .757 |
| N of Valid Cases | 79 | | |

a. 29 cells (80.6%) have expected count less than 5. The minimum expected count is .10.

Table 3(Chi-Square test among two variable and one factor)

3.3.2 Chi-Square Tests Result

A chi-square test for association was conducted between different learning of blended /flipped classroom and the final grades. Expected cell frequencies differ the alpha value from each learnings where blended learning were less than five and flipped classroom aysmptotic significance (2-sided)shows greater p-value. There is not a statistical significant association between different learning of blended /flipped classroom and the final grades, $X^2(25) = 26.492^a$, $p = .005$.

Below are chi-Square bar chart.

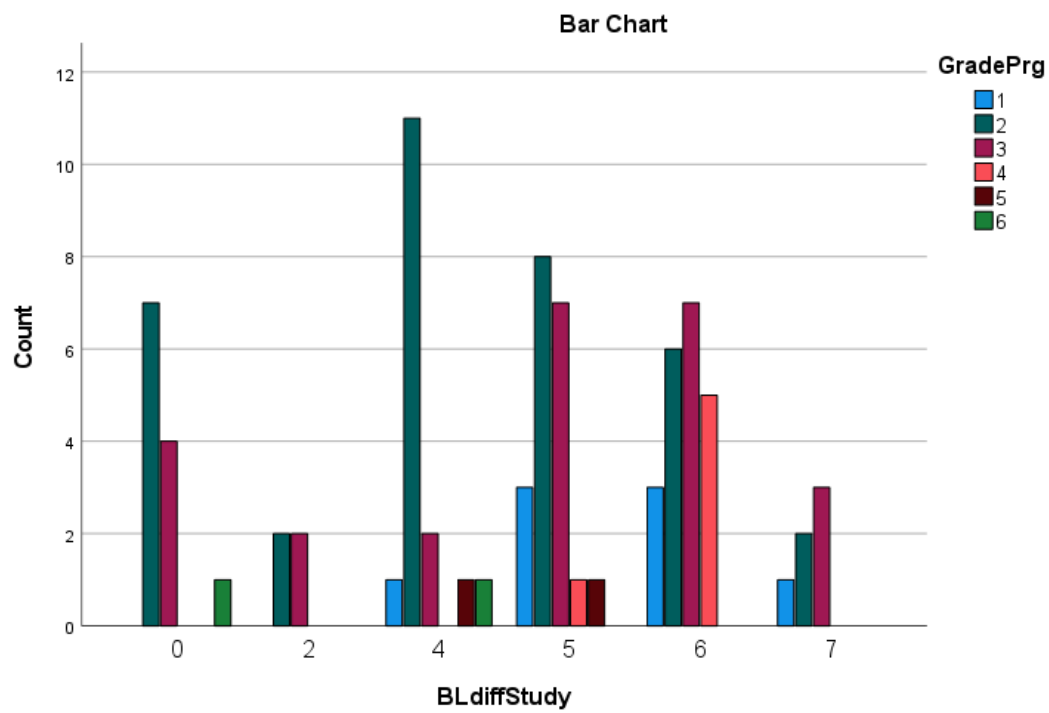
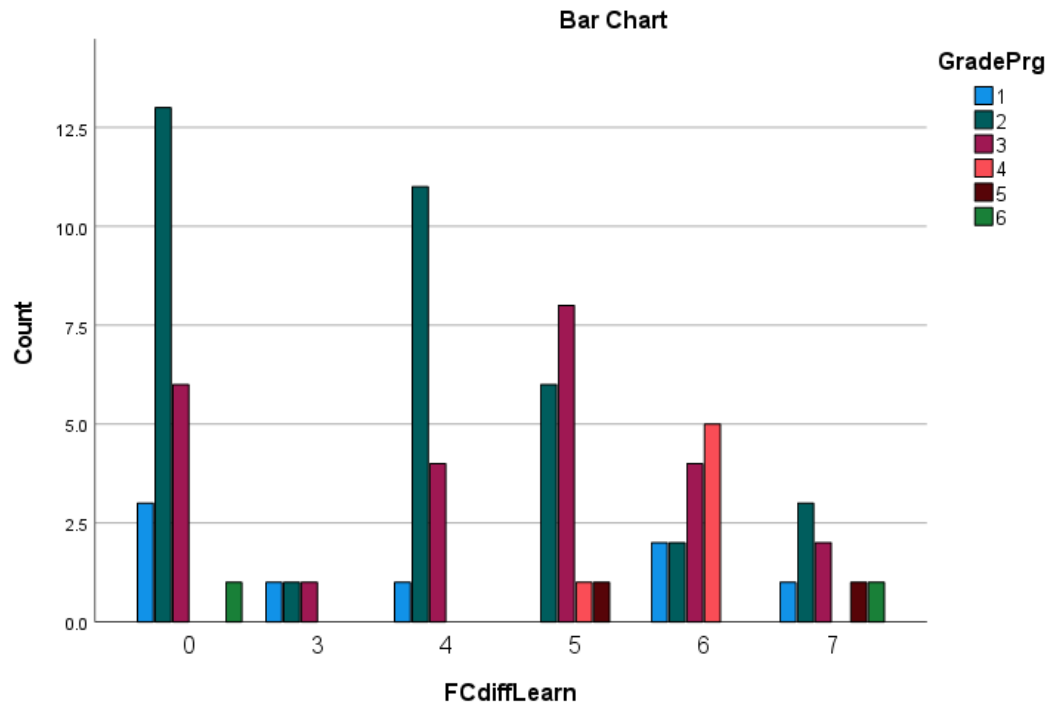


Figure 1. blended /flipped classroom and the final grades,

4 Discussion and Conclusion

In the report analysis, various results based on the various factors which might affect the assumption of final grades. Considering the three type of test, first factor is whether the employment work and the studies at the same time may affect the final grades, the result is, it doesn't correlated and came out as a negative. So the employment work will not affect the final estimated grades.

On second test difference between male and female impact on final grades are validated, hence in the Conclusion it shows as there is no difference on gender in terms of final grades.

Lastly, Different learning of two variables has been compared with the final grades there is a no correlation impact final grades which they are not dependent to each other.

Thus, I conclude that most of the factors does not affect the assumption of student's final grades from the analysis

4.1 Study of report and future prospects

On the assumption of given data survey we got an overview about how grades may affect the students.

Using method and analysis, different mathematical test has been performed and explained how each factors are affected. Here are some short description of outcome of all three sub question.

- 1) Sub question 1- Is there a connection between employment and final grades at DSV campus?. This test report shows as negative where the students can do both work and study at same time.
- 2) Sub question 2- Is there a difference between male and female students on final grades?. The test result shows as there is no relationships between gender and final grades of students studies.
- 3) Sub question 3- Is there a connection between different learning of blended learning/flipped learning and final grades in campus?. This test report shows there is a no connection between two variables and factor of final grades.

Therefore only few factors has been affected from the research question from the given survey of students at DSV campus.

In future, these types of mathematical test would be very useful to validate the students' grades whether the learnings may affect or not in various factor.

References

Zina O’Leary (2021). *The Essential Guide to Doing Your Research Project*. (4th Ed.). Sage. ISBN 978-1-5297-1347-3. (pp. 317-342)

SPSS ultimate tutorial guide - <https://www.spss-tutorials.com/>

Appendix (if needed)

If you have anything (extra but important to the reader) that need to be presented in support of your findings, but that are too large to be a part of the text itself, they can be included as extra appendices.