

## Modelling Graduate Unemployment from Students' Perspectives

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**Abstract:** The purpose of this study is to examine the significant difference in mean on graduate unemployment from students' perspectives between genders and to study the factors that influence graduate unemployment from students' perspectives and also their relationship. This study is aimed at undergraduate students of UiTM Kota Bharu Campus in Kelantan, as the population. Two hundred and ninety-three students were selected as the respondents using the stratified sampling technique. A cross-sectional design was used to collect primary data, and SPSS was used to analyze the primary data that had been collected. The study indicated a significant difference in mean on graduate unemployment from students' perspectives between genders on Independent T-test analysis. The independent variables had a moderate positive correlation with the dependent variable using Pearson Correlation. Furthermore, from the Multiple Linear Regression analysis conducted, three independent variables, unrealistic salary, academic performance, and graduate attributes, significantly affect graduate unemployment from students' perspectives. However, employability skills do not significantly affect graduate unemployment from students' perspectives. Therefore, this study can help future graduates to prepare themselves before venturing into the realm of work.

**Keywords:** Graduates, Multiple Linear Regression, Graduate Unemployment, Students' Perspective.

### 1 Introduction

Unemployment is a phrase that refers to those who are employable and actively seeking employment but are unable to find work due to various factors. Corporate Finance Institute in 2021 mentioned that this category includes people who are currently employed but do not have a suitable position. In today's world, every emerging market is plagued with the problem of graduate unemployment. When unemployment is low, it is feasible for a country to experience growth. A country with a high unemployment rate, on the other hand, will find that its human resources are underutilized as well. In September 2020, the unemployment rate in Malaysia was 4.6%, which is about 737,500 jobless Malaysians [1]. The increase in unemployment is happening in Malaysia and across the world. For example, the unemployment rate in the United States (US) rose to 16.25% in just five weeks, which equals to 26.5 million Americans [2].

There are several key factors in graduate unemployment. In a poll conducted by JobStreet.com regional communications head, Simon Si, employers were asked why it was difficult for recent graduates to obtain employment, and 68% of the respondents stated that recent graduates demanded unrealistic compensation [3-7]. Other than that, academic achievements and self-concept are considered important factors in determining levels of employability. The higher the academic achievement and



self-concept among students, the higher the employability, and vice versa [8]. Another common reason found from a study by [9-10], most respondents believed that the attributes of graduates, the competency of lecturers, and the quality of education, which is referred to the curriculum of a field of study, are among the elements that contribute to the current unemployment problems among Malaysian graduates.

Another study conducted by [11-15] stated that there is a significant gap between the importance ratings and satisfaction ratings of graduates' employability skills, especially regarding English language abilities. However, graduate unemployment remains unsolved when the economy was thrown into chaos due to the spike in the Covid-19 pandemic. The shutdown of markets has a considerable impact on a variety of other critical enterprises. As a result of a second Movement Control Order (MCO 2.0), certain businesses experienced difficulties making payroll. A direct outcome of this is the elimination of job positions in order to decrease operating costs. There have also been cases where new recruitment was put on hold.

The Ministry of Higher Education (MOHE) said that 75,000 out of 300,000 fresh graduates are estimated to be jobless this year due to the pandemic-induced economic crisis [16]. Graduates of public higher educational institutions (IPTA) and private higher educational institutions (IPTS) know that finding work in the labor market will be difficult. Because of this, being a fresh graduate can be challenging, particularly when graduates have student loans to pay, family obligations to maintain, and the desire to find meaningful employment. With an increase in the number of college graduates and degree holders over the past few years, there is also an increase in job applicants competing for the same post. This means that there will be massive competition in the job market, particularly for entry-level positions.

## 2 Research Materials and Design

### A Study Design and population

The cross-sectional study was conducted among 293 students from Universiti Teknologi Mara (UiTM) Kota Bharu Campus in Kelantan. The population was divided into six strata based on their program code, which were BA240 (Bachelor of Business Administration (Hons) Marketing), BA242 (Bachelor of Business Administrations (Hons) Finance), BA249 (Bachelor of Business Administrations (Hons) Islamic Banking), BA250 (Bachelor of Business Administrations (Hons) Business Economics), CS241 (Bachelor of Science (Hons) Statistics) and CS291 Bachelor of Science (Hons) Statistics and Bachelor Of Entrepreneurship (Logistic And Distributive Trade). The total number of students in UiTM Kota Bharu Campus is 1221, where the 293 students were selected using a proportionate stratified random sampling technique. Then, the conclusion of sample size for each program code is summarized in Table 1.

Table 1: Summarized Minimum Sample Size for Each Programme

Program Code	Population Size (Ni)	Proportionate Sample Fraction	Study sample
BA240	191	0.1570	46
BA242	348	0.2833	83
BA249	188	0.1536	45
BA250	175	0.1433	42
CS241	307	0.2526	74
CS291	12	0.0102	3
Total	1221	1	293

## ***B Instruments and data collection***

A structured questionnaire was used as an instrument to collect the data. It contains 6 parts: Part A (Personal Details), Part B (Graduates Unemployment), Part C (Unrealistic Salary), Part D (Academic Performance), Part E (Graduate Attribute), and Part F (Employability Skills). In Part A, the respondents were asked about their personal information such as student numbers, gender, course, semester, and age. In Parts B to F, the respondents will have a Likert Scale score from 1 to 5. Data was collected from the respondents using online questionnaire (Google Form). The questionnaire was distributed randomly to the respondents by using WhatsApp. The questionnaire was distributed in both English and Malay language.

## **3 Method of Data Analysis**

Analysis was performed using Statistical Package of Social Sciences (SPSS) software version 22 (IBM Inc., USA). Frequency and percentage using a graphical presentation were analysed for socio-demographic variables. Gender, age, programme, CGPA, and factors about graduate unemployment were some of the tools used in this study to summarise the critical nature of the respondents.

### ***A Pearson's Correlation***

A Pearson correlation coefficient demonstrates the direction, strength, and significance of the bivariate relationship between dependent variable, graduate unemployment and independent variables (unrealistic salary, academic performance, graduate attributes and employability skills). Statistical test was run using 95% confidence interval. Values of strength relationship can be measured between -1 and +1. The correlation is closer to  $\pm 1$  if stronger correlation is measured.

### ***B Independent t-test***

This study used this test to determine whether there is a significant difference in graduate unemployment from students' perspectives between male and female students. Significant value (p-value) is used to determine the significance of the two independent variables. If the p-value is less than the alpha value at 0.05 significance level, then the test is considered significant and we can conclude that there is significant difference in graduate unemployment between male and female students.

### ***C A Multiple Linear Regression***

Factors associated with graduate unemployment ( $Y$ ) were determined using Multiple Linear Regression Analysis. The independent variables included to analyse multiple linear regression were: unrealistic salary ( $X_1$ ), academic performance ( $X_2$ ), graduate attributes ( $X_3$ ), and employability skills ( $X_4$ ). In Multiple Linear Regression analysis, variable for inclusion in the model were selected by using stepwise selection procedure. Independent variables with a p-value less than 0.05 reported to dependent variable which is graduate unemployment influenced by independent variables. Goodness-of-fit model was checked using coefficient of determination and adjusted coefficient of determination. The model is specified as Graduate Unemployment

$$(Y) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon_t \quad (1)$$

where  $\beta_0, \beta_1, \beta_2, \beta_3$  and  $\beta_4$  were the regression coefficient estimated from the sample.  $\varepsilon_{ij}$  was represented as error random.

#### **i. Stepwise Regression Procedure**

Stepwise regression is a technique that combines forward and backward selection and is a frequently used technique for variable selection. It constructs the regression model step by step, adding or

eliminating variables. Two distinct significance thresholds should be chosen for deletion and added to the model.

#### ***D Model Adequacy Checking***

Model adequacy checking was done to check the assumptions of regression model. Normality plot and residual versus predicted plot were used to check both normality of the error and homoscedasticity of the error assumptions. Variance Inflation Factor (VIF) and tolerance value were used to check multicollinearity. If the value of  $VIF > 10$  and tolerance value  $< 0.1$ , therefore, serious multicollinearity exists.

## **4 Results**

### ***A Reliability Study***

Table 2 below shows the result of reliability analysis for all variables that consists of five sections: Section B, Section C, Section D, Section E, and Section F. The result is mainly with a value greater than 0.7. When the value of Cronbach's Alpha is close to 1, it indicates a more significant internal consistency of every item in the scale.

Table 2: Reliability Test

<b>Section</b>	<b>Variable</b>	<b>Number of Item</b>	<b>Cronbach's Alpha</b>
B.	Graduate Unemployment	5	0.810
C.	Unrealistic Salary	5	0.888
D.	Academic Performance	5	0.787
E.	Graduate Attributes	5	0.885
F.	Employability Skills	5	0.884

### ***B Socio-demographic characteristics***

Table 3 shows a summary of the demographic profile of the respondents. Majority of the respondents were female (70.53%) with a smaller percentage of males (29.47%). Most of the respondents were aged 20 to 22 years old (84.95%) and the rest were 23 to 25 years old (12.54%). The percentages of respondents according to programme were from BA242 (30.72%), BA249 (17.87%), BA240 (17.55%), BA250 (16.30%), CS241 (15.99%) and CS291 (1.57%). 55.80% students have a CGPA between 3.51 and 4.00, followed by 37.30% with a CGPA between 3.01 and 3.50. Additionally, 6.27% of respondents had a CGPA between 2.51 and 3.00, while 0.63% of respondents had a CGPA below 2.50.

Table 3: Summary of demographic profile

Variable	Class Variable	Number of Sample (n)	Percentage (%)
Gender	Female	225	70.53
	Male	94	29.47
Age	Below 20 years	5	1.57
	20-22 years	271	84.95
	23-25 years	40	12.54
	Above 25 years	3	0.94
Programs	BA242	98	30.72
	BA249	57	17.87
	BA 240	56	17.55
	BA 250	52	16.30
	CS 241	51	15.99
	CS 291	5	1.57
CGPA	Below 2.5	2	0.63
	2.51 – 3.00	20	6.27
	3.01 – 3.50	119	37.30
	3.51 – 4.00	178	55.80

### C Results of Correlation Analysis

Table 4 shows that all independent variables namely unrealistic salary, academic performance, graduate attributes and employability skills status have a moderate positive relationship towards graduate unemployment with Pearson's correlation coefficient of 0.547, 0.525, 0.503 and 0.474, respectively. All the variables have significant relationship with p-value <0.001 less than the level of significance 0.05.

Table 4: Result of Pearson Correlation between life satisfaction and independent variable

Variables	Correlation Coefficient (r)	p-value
Graduate Unemployment * Unrealistic salary	0.547	<0.001
Graduate Unemployment * Academic performance	0.525	<0.001
Graduate Unemployment * Graduate attributes	0.503	<0.001
Graduate Unemployment * Employability skills	0.474	<0.001

### D Independent Sample T-test

Independent sample t-test was used to test the significant mean difference of graduate unemployment among male and female students.

#### i. Normality Assumption

Normality assumption was performed before proceeding to the statistical analysis. Table 5 shows the result of normality among graduate unemployment and gender. It can be considered as normally distributed since the value of skewness is between -1 and 1.

Table 5: Result of Normality Checking

Variables	Frequency	Skewness
Graduate Unemployment	319	-0.437
Gender (Male)	94	-0.384
Gender (Female)	225	-0.486

## ii. Homogeneous Assumption

Levene's test was used to check the assumption of equal variance of graduate unemployment among the genders (male and female).

Table 6: Equality of Variance

Levene's Test for Equality of Variances	p-value
Graduate Unemployment	0.008

Table 6 shows the result of assumption of equal variance. The p-value for Levene's test was 0.008, which is less than the significant value 0.05. The researcher can conclude that the population variances for female and male students were not equal. This resulted in a violation of the assumption of homogeneity of variance.

## iii. Independent Sample T-Test Result

The result of independent t-test shown in the table below:

Table 7: T-test for Equality of Means of Graduate Unemployment between Genders

T-test for Equality of Means	Test Statistic	Sig. (2-tailed)
Graduate Unemployment	2.382	0.018

The p-value was 0.018, which is less than the significant value 0.05, as shown in Table 7. As a result, it is possible to conclude that there is a difference in the unemployment challenges faced by female and male graduates.

## D Multiple Linear Regression Analysis Model

The regression analysis was used to investigate the factors contributing to students' life satisfaction. Model adequacy checking was done before further analysis on multiple linear regression model.

### i. Model Adequacy checking

Figure 1 shows the P-P plot of residual and scatter plot of residual versus predicted for checking normality and Homogeneity assumption respectively. Since most of the points in P-P plot were scattered roughly along the line, therefore, it can be concluded that the normality assumption of error is satisfied. Scatterplot of residual versus predicted shows no pattern of increasing or decreasing in any circumstances. Thus, it shows that homoscedasticity of error variance assumption is satisfied.

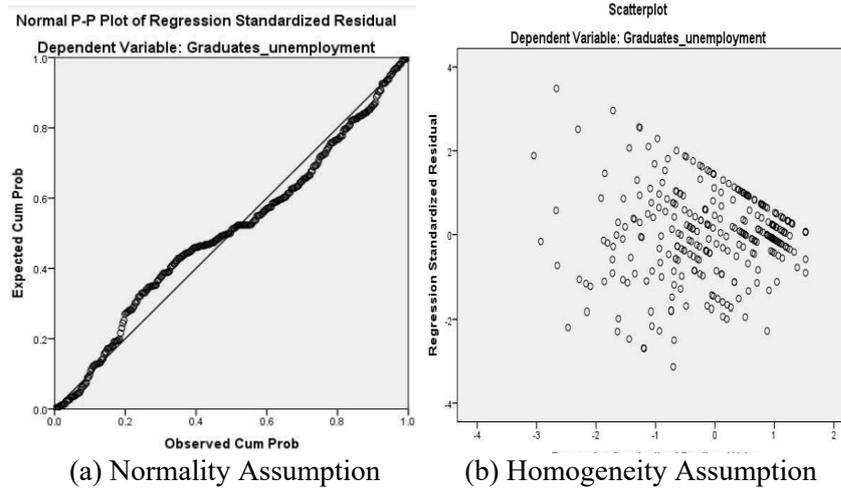


Figure 1: Normality Plot of residual and Scatter Plot of: Residual versus predicted

**ii. Goodness of Fit of the Model**

Goodness of fit of the regression model was assessed using the value of R-squared for multiple linear regression. R-squared is a statistical measure of how close the data are to the fitted regression line.

Table 8: Goodness of Fit (R and R-Square)

Model	R	R-square
1	0.669	0.448

Table 8 above shows that, based on the coefficient of determination, 44.8% of the total variation in graduate unemployment ( $Y$ ) is explained by unrealistic salary ( $X_1$ ), academic performance ( $X_2$ ), graduate attributes ( $X_3$ ) and employability skills ( $X_4$ ) while the balance, 55.2%, is explained by other factors. Hence, it can be concluded that the regression line is fit in this model.

**iii. Multicollinearity**

Based on Table 9, the result shows the value of variance inflation for the independent variables which are unrealistic salary, academic performance, graduate attributes and employability skills. From the values, it was found that all the independent variables were not correlated with each other since the values of VIF were less than 10 while the values of Tolerance were more than 0.1. Therefore, multicollinearity does not exist.

Table 9: Multicollinearity among Independent Variables

Model	Collinearity	
	Tolerance	VIF
Unrealistic salary	0.772	1.296
Academic performance	0.639	1.565
Graduate attributes	0.328	3.051
Employability skills	0.291	3.432

**iv. Result on model significant (ANOVA)**

Table 10 shows the F-value and significant value to test the significance of regression model. The F-value and significant value were 63.726 and 0.001, respectively. Since the significant value was less than p-value, which was 0.05, therefore, the model is significant.

Table 10: Overall F-Test – Test for Significance of Regression Model

<b>F</b>	<b>p-value</b>
63.726	< 0.001

**v. Model Formulation**

Further analysis on statistically significance of independent variables can be done after the regression model is significant.

Table 11: Analysis of the predictors on graduate unemployment

<b>Variable</b>	<b>B</b>	<b>p-value</b>	<b>Conclusion</b>
Constant	1.580	< 0.001	Significant
Unrealistic salary	0.332	< 0.001	Significant
Academic Performance	0.273	< 0.001	Significant
Graduate attributes	0.198	< 0.001	Significant
Employability skills	-0.035	0.553	Not Significant

Table 11 shows the significance of the independent variables. There were 4 independent variables in the study. The significant variables were graduate unemployment towards unrealistic salary, academic performance and graduate attributes where their p-value were less than 0.001, respectively, except for employability skills with  $0.553 > 0.001$ , which was not significant. Therefore, the predicted model was,  $\hat{y} = 1.580 + 0.332x_1 + 0.273x_2 + 0.198x_3$  Graduate Unemployment = 1.580 + 0.332 (Unrealistic salary) + 0.273 (Academic performance) + 0.198 (Graduate attributes).

**E Model Selection and Validation (Stepwise)**

Due to insignificant variables in the model, the analysis proceeded with the model selection and validation criterion using stepwise regression. The stepwise approach was selected since it resulted in the simplest model. According to Table 12, model 3 is the best since it produced the highest  $R^2$  value of 0.447 compared to other models. As a result, model 3 was selected as the final model.

Table 12:  $R^2$  Value for Each Model

<b>Model</b>	<b>Variable Included</b>	<b><math>R^2</math></b>
1	Unrealistic salary	0.299
2	Unrealistic salary Academic performance	0.405
3	Unrealistic salary Academic performance Graduate attributes	0.447

### *i. Goodness of Fit of the Model*

Table 13 contains the goodness-of-fit value for model 3. R equals 0.669 for the aggregate model. As a result, the model's linear correlation may be moderately positive. Meanwhile, the model's R-squared value of 0.447 indicates that the variable's unrealistic salary, academic performance, and graduate attributes account for 44.7% of the variance in graduate unemployment. There is a somewhat positive correlation between the variables, with the remaining 55.3% explained by other factors.

Table 13: Goodness of Fit (R and R-Square)

<b>Model</b>	<b>R</b>	<b>R-square</b>
1	0.669	0.447

### *ii. Multicollinearity*

In Model 3, the tolerance values were above 0.1 and the VIF values were below 10 for the unrealistic salary, academic performance, and graduate attributes, as illustrated in Table 14. Thus, the variables were independent and not interconnected, as no multicollinearity exists in these variables.

Table 14: Multicollinearity among Independent Variables

<b>Model</b>	<b>Collinearity</b>	
	<b>Tolerance</b>	<b>VIF</b>
Unrealistic salary	0.777	1.287
Academic performance	0.707	1.415
Graduate attributes	0.723	1.382

### *iii. Result on model significant (ANOVA)*

Analysis of variance (ANOVA) for regression model 3 is shown in Table 15. It shows that Model 3 was statistically significant since the significance value was  $< 0.001$ , less than 0.05. Furthermore, the F-statistics value for Model 3 was 85.025, higher than the enter regression method model (63.726).

Table 15: Value of the Significant of the Model 3

<b>F</b>	<b>p-value</b>
85.025	$< 0.001$

### *iv. Model Formulation*

Further analysis on statistically significance of independent variables can be done after the regression model is significant.

Table 16: Analysis of the predictors on graduate unemployment

<b>Variable</b>	<b>B</b>	<b>p-value</b>	<b>Conclusion</b>
Constant	1.590	$< 0.001$	Significant
Unrealistic salary	0.330	$< 0.001$	Significant
Academic Performance	0.264	$< 0.001$	Significant
Graduate attributes	0.175	$< 0.001$	Significant

From Table 16, it can be concluded that all variables were significant since the p-value for unrealistic salary, academic performance, and graduate attributes was less than 0.05. Thus, it can be concluded that graduate unemployment was significantly affected by unrealistic salary, academic performance, and graduate attributes. As a result, graduate unemployment increases as unrealistic salary increases. Then it shows that if academic performance increases, graduate unemployment will increase too. In addition,

graduate unemployment can be inferred by graduate attributes. However, employability skills are omitted from this model because it is less significant. Thus, this indicates that employability skills do not influence graduate unemployment.

The estimated regression equation was  $\hat{y} = 1.590 + 0.330x_1 + 0.264x_2 + 0.175x_3$ , where Graduate Unemployment = 1.590 + 0.330 (Unrealistic salary) + 0.264 (Academic performance) + 0.175 (Graduate attributes). Holding all other variables constant, the mean of graduate unemployment is estimated to increase by 0.330 for each different scale for unrealistic salary. For each additional unit of scale for academic performance, the average graduate unemployment is estimated to increase by 0.264 units, keeping all other variables constant. Holding all other variables constant, for each additional unit of graduate attributes scale, the average graduate unemployment is estimated to increase by 0.175 units.

## 5 Conclusion and Recommendation

The t-test showed a significant difference in mean on graduate unemployment from students' perspectives between genders. The result indicates a significant positive relationship between unrealistic salary, academic performance, graduate attributes, and employability skills with graduate unemployment. Furthermore, the independent variables had a moderate positive correlation with the dependent variable. The last objective was to identify the significant factors (unrealistic salary, academic performance, graduate attributes, and employability skills) that influence graduate unemployment from students' perspectives. Again, multiple linear regression was used. The results obtained showed a significant effect of the factors discussed in the research towards graduate unemployment from students' perspective.

For future research, a larger sample size is strongly recommended. The research can include other university students with different courses, semesters, and study backgrounds. Since this research involved a small sample size, the outcome obtained from the analysis may not offer enough evidence to support the hypothesis used. Therefore, future researchers should explore the analysis by using data from organizations and people under the human resources manager responsible for recruiting new employees. Lastly, future researchers should incorporate more factors in the study. Numerous elements might also influence the graduate unemployment. As a result, other researchers should add other variables to their analyses to identify the one most associated with graduate unemployment.

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### Conflict of Interest Statement

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

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