Factors Affecting the Achievement Level of Students of MBS: A Case Study of Shankar Dev Campus

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Abstract

Shanker Dev Campus (SDC) one of the leading constituent Campus of TU is currently offering two years Master of Business Studies (MBS) programme in semester system. The article is to identify the significant factors affecting the achievement level of students of MBS I semester. The achievement level of the students is evaluated in terms of Semester Grade Point Average (SGPA) scores of the students. Required data were gathered from administration department of SDC. The SGPA scores of 500 passed students out of 1238 enrolled students were analyzed. The average SGPA score was significantly higher among the students whose father and mother engaged in non-agriculture occupation compared to others. The average SGPA score of students of Kathmandu valley was also significantly higher compared to other students. However, the differences in average SGPA scores by sex, caste/ethnicity, ecological region and development region were not found to be significant. Age, occupation of father and mother, location (Kathmandu valley and out of Kathmandu valley), class attendance of the students and marks obtained in bachelor were found significantly associated with SGPA scores of students where as sex and caste were found to be insignificant factors for SGPA score in simple regression model. The variables found to be significant factors of SGPA score from simple linear regression model were further analyzed through multiple regression model in which class attendance, marks obtained in bachelor and occupation of father were found to be significant factors of the achievement level of the students of MBS. The assumptions of multiple regressions including normality of residual, hetroscedasticity and multicollinearity were also tested for the valid inference.

Keywords: *Multiple regressions, Multicollinearity, Hetroscedasticity*

Introduction

Shanker Dev Campus (SDC), established in 1951 as in the name of Nepal National College, was amalgamating into Tribhuvan University (TU) with the new name Shanker Dev Campus in 1973. Now, SDC is one of the leading constituent Campus of TU offering higher educations in management since past many years. It is located at the center of the Kathmandu metropolitan city along with very easy access to public vehicles. Currently, it runs graduate and post-graduate courses in business and management including Bachelor of Business Studies and Master of Business Studies (MBS), Master of Business Management, Bachelor of Business

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Administration, Bachelor of Information Management, and Bachelor of Business Management (Shankar Dev Campus, 2018).

SDC offers the post graduate course in business and management since many years with different names including Master of Business Administration (MBA) and MBS. Earlier, MBS was a two years annual programme in which the evaluation was carried out in yearly basis. In annual system, it was found that percentage of student taking regular class was very less and the students' dropout was high. As a result, the average achievement level and pass rate of the students was poor. In year 2017 AD, TU has made a provision to conduct MBS in semester system to all constituent campuses of Kathmandu Valley. Now from 2018, the semester programme in MBS course was implemented throughout the country. As a result, SDC is also running a MBS programme with semester system. In semester system, only limited numbers of students are taught in a class room that ensures quality education and student friendly teaching environment. The regularity of academic programme in terms of admission, examination and result is another good aspect of semester system of MBS programme.

Objective

The main objective of this article is to identify the significant factors affecting the achievement level of students of MBS. The achievement level of the students is evaluated in terms of Semester Grade Point Average (SGPA) score of the students obtained in the first semester of MBS programme.

Methodology

The data regarding the age, sex, caste/ethnicity, location of permanent address, occupations of father and mother and, marks obtained in bachelor level by the students of MBS I semester of batch 2017/19 were obtained from the students' profile filled up during the admission time in the campus. Some students reported their marks of bachelor level in Cumulative Grade Point Average (CGPA). The CGPA score was converted to percentage by Percentage Conversation Table approved by 13th academic counsil meeting and elaborated by 21st academic counsil meeting Pokhara University[1]. The data regarding the percentage of class attended by the student were collected from the campus administration and SGPA scores were gathered from the marks' ledger sent by Faculty of Management, TU in SDC.

The article is aimed to explore whether age, sex, caste/ethnicity, occupations of father and mother, location, marks obtained in bachelor level, class attendance of the students are the significant factors affecting SGPA score or not. For this, simple regression and multiple regression were used. The simple linear regression model is

$$Y_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

1 Retived from *https://sanjayachauwal.wordpress.com*

Where Y is the dependent variable, X is the independent variable, β_0 is intercept and β_1 is regression coefficient and, ε_i is disturbance or error term (Gujrati & Sangeetha, 2007).

The multiple regression model with k explanatory variables is

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots\ldots\ldots\ldots\ldots\ldots + \beta_k X_{ki} + \varepsilon_i; \quad i = 1,2,3\ldots\ldots\ldots\ldots n$$

Where β_0 = Intercept and β_i (i=1, 2, …. k) is the i^{th} regression coefficient corresponding to variable X_i and, ε_i be the disturbance term (Gujrati & Sangeetha, 2007).

The diagnostic of multiple regression including residual analysis, test of multicollinearity, homoscedasticity test were also carried out to ensure the assumptions necessary for fitting a linear regression model. All these analysis were carried out by using SPPS 16.0.

Results and Discussions

Altogether, 1238 students were enrolled in MBS I semester of Shankar Dev Campus. Out of them, 1016 students appeared in the final examination whereas 222 students did not appear. Among these appeared students, 503 students passed the examination. The information regarding the students' profile and marks obtained in bachelor of 3 students were not found in the campus record. Hence, the study was made on 500 passed students.

Table 1 illustrates the mean and standard deviation of SGPA score achieved in the examination of MBS I semester. From the P-P plot, the distribution of SGPA score was seen approximately normal. The distribution of SGPA under Kolmogorov Sminrov test was also found normal with p-value 0.088.

The average SGPA score was significantly higher among the students whose father engaged in non-agriculture occupation compared to agriculture occupation. Similarly, the average SGPA score was found to be more among the students whose mother belongs to non-agriculture occupation followed by housewife and agriculture. The average SGPA score of students of Kathmandu valley was also significantly higher compared to the students belonging to out of Kathmandu valley. However, the differences in averages SGPA scores by sex, caste/ethnicity, ecological region and development region were not found to be significant.

Table 1: Mean and standard deviation of SGPA scores

Factors	Mean	Standard deviation	No. of Students	Test statistics (P-value)
Sex				
Female	3.21	0.16	286	0.128 (0.898)
Male	3.21	0.17	214	
Caste/ethnicity				
Brahman/Chhetri	3.21	0.16	324	0.412 (0.663)
Janajati	3.22	0.16	134	
Other	3.21	0.17	42	
Father's occupation				
Non-agriculture	3.18	0.16	150	-3.658 (0.000)
Agriculture	3.24	0.15	260	
Mother's occupation				
Agriculture	3.17	0.16	83	9.750 (0.000)
Housewife	3.22	0.15	269	
Non-agriculture	3.29	0.14	52	
Location				
Kathmandu non-valley	3.2	0.16	338	-2.880 (0.004)
Kathmandu valley	3.24	0.16	157	
Ecological region				
Terai	3.21	0.16	118	-0.212 (0.832)
Hill/mountain	3.21	0.16	375	
Development region				
Eastern	3.2	0.15	62	1.397 (0.243)
Central	3.22	0.16	285	
Western	3.18	0.16	73	
Mid and far western	3.22	0.17	73	

Table 2 depicts the distribution of age, marks obtained in bachelor and class attendance of the students. The mean age of students was 24.6 years with standard deviation 2.19 years.

Table 2: Mean and SD of age, marks in bachelor, class attendance and SGPA scores

Categories	Mean	Standard deviation (SD)	No. of students
Age	24.6	2.19	495
Marks in bachelor (in %)	54.1	14.86	447
Class attendance (in %)	82.1	1.55	498
SGPA score in MBS I semester	3.21	0.16	500

Simple Regression Model

The simple regression model was run to identify the significant factors affecting the achievement level of the students. Sex, caste/ethnicity, ecological region and development region of the students were found to be insignificant factors of the achievement level.

Table 3 clearly reveals that age, class attendance, marks obtained in bachelor, occupation of father and mother, and the location of permanent address comprising Kathmandu valley and non-valley of the students are the significant factors of SGPA scores. The average SGPA score decreases by 0.011 with increase in age of the students by one year. Unlikely, the score increases by 0.041 with 1 percent increase in class attendance in MBS I semester whereas it increases by 0.005 with the 1 percent increment in marks obtained in bachelor level. The average SGPA score of the students whose fathers are of non-agriculture occupation is higher by 0.058 compared to those whose fathers are of agriculture occupation. With reference to the students whose mothers engaged in agriculture occupation, the average SGPA score is 0.122 more among the students whose mothers engaged in non-agriculture and it is 0.055 more among the students whose mothers are working as a housewife. The average SGPA score of students of Kathmandu valley is greater by 0.044 compared to those from out of Kathmandu valley (Table 3).

Table 3: Simple regression model for SGPA scores

Factors	β	P - value	95% CI	R^2
Age	-0.011	0.001	(-0.018, -0.005)	0.021
Class attendance (in %)	0.041	0.000	(0.033,0.050)	0.155
Marks in bachelor (in %)	0.005	0.000	(0.004,0.006)	0.211
Father's occupation				
Non-agriculture	0.058	0.000	(0.027, 0.089)	0.029
Agriculture (ref.)				
Mother's occupation				
Non-agriculture	0.122	0.000	(0.069, 0.175)	0.044
Housewife	0.055	0.005	(0.017, 0.093)	
Agriculture (ref.)				
Location				
Kathmandu valley	0.044	0.004	(0.014, 0.075)	0.015
Kathmandu non-valley (ref.)				

Multiple Regression Model

The variables found to be significant factors of SGPA score from the simple linear regression model are further analyzed through multiple regression model. Among these factors, class attendance, marks obtained in bachelor and occupation of father were found to be significant in multiple regression model. The adjusted coefficient of determination (R^2) is 0.354 that indicates 35.4% of the total variation in SGPA scores is explained by the significant factors (Table 4).

Table 4: Multiple regression model of SGPA score

Factors	Coefficient	P-value	Remarks
Intercept	-0.271	0.043	R^2 = 0.354 F-value = 67.79 P-value = 0.000
Class attendance (in %)	0.040	0.000	
Marks in bachelor (in %)	0.004	0.000	
Father's occupation			
Non-agriculture	0.032	0.020	
Agriculture (ref.)			

Diagnostics of Multiple Regression

Most statistical tests rely upon certain assumptions about the variables used in the analysis. When these assumptions are not met, the results may not be trustworthy, resulting in a Type I or Type II error, or over- or under-estimation of significance or effect size (Osborne W. J. & Waters E., 2002). Thus the key assumptions including test of multicollinearity, normality of residuals and homoscedasticity of residual were tested.

Test of Multicollinearity

One of the assumptions of multiple regression is that all the independent variables have no relation with each other. Dependency among the independent variables arises the problem of multicollinearity. Multicollinearity refers to the existence of linear relationship among the independent variables in the model (Shah & Yadav, 2018). The problem of multicollinearity is tested by the Variance Inflation Factor (VIF) (Koirala & shrestha, 2012). The values of VIFs are 1.003 for class attendance, 1.050 for marks obtained in bachelor and 1.047 for occupation of father. All the values of VIFs are less than 5 which indicates multicollinearity is absent among the factors of the model.

Residual Analysis

Residuals from linear regressions are used frequently in statistical analysis, often for the purpose of controlling for unwanted effects in multivariable datasets. Residuals analysis was performed through normal P-P plot to see the normality of residuals.

From Normal P-P plot of regression standardized residual, it is observed that the residuals approximately lie on the normal line which indicates that residuals are approximately normally distributed (Figure 1).

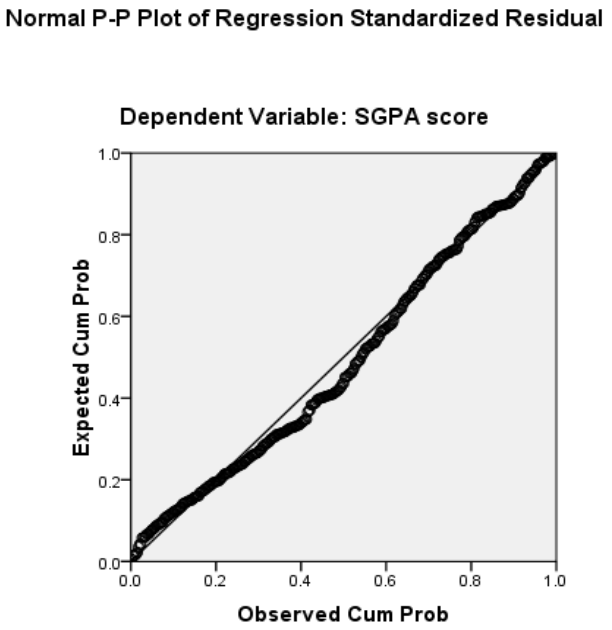

Figure 1: Normal P-P plot of regression standardized residual

Assumption of Homoscedasticity

Homoscedasticity means that the variance of errors is the same across all levels of the Independent Variables (IV). When the variance of errors differs at different values of the IV, heteroscedasticity is indicated. According to Berry and Feldman (1985), slight heteroscedasticity has little effect on significance tests; however, when heteroscedasticity is marked it can lead to serious distortion of findings and seriously weaken the analysis thus increasing the possibility of a Type I error.

This assumption can be checked by visual examination of a plot of the standardized residuals (the errors) by the regression standardized predicted value (Osborne W. J. & Waters E., 2002). Figure 2 shows the scatter plot of the standardized residual against standardized predicted value. Residuals are randomly scattered around 0 (the horizontal line) providing a relatively even distribution which indicates that there is no such high degree of heteroscedasticity.

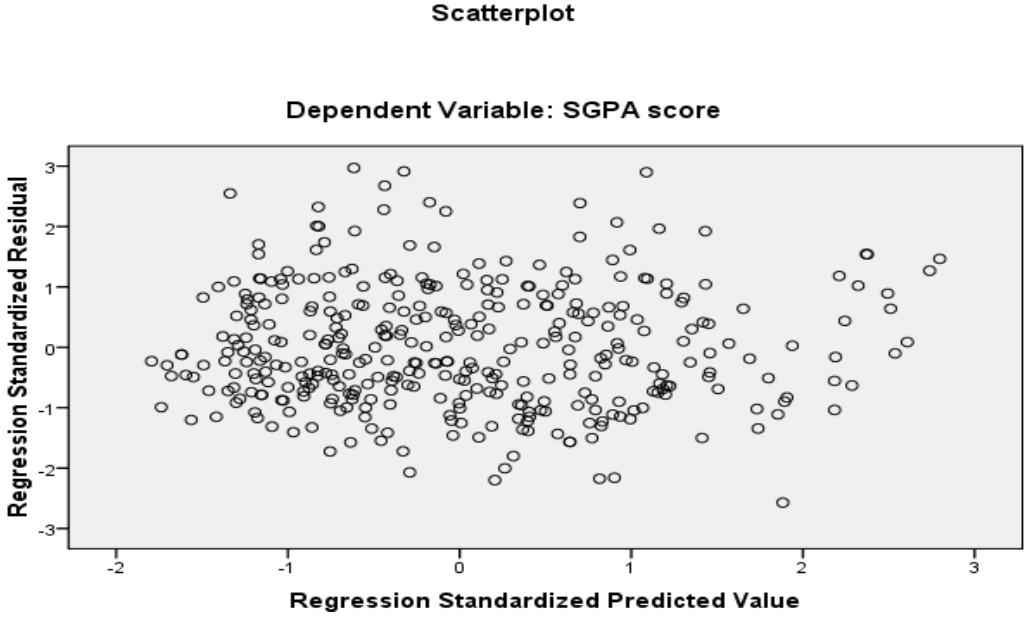

Figure 2: Scatter diagram of standardized residual against standardized predicted value

Conclusion

The main objective of this article is to identify the factors affecting the achievement level of the students of MBS I semester. The variables age, mother's occupation, father's occupation, location in terms of the students living in Kathmandu valley or other, class attendance of the students, marks obtained in bachelor of the students are significantly associated with the achievement level of the students in simple regression model. Through multiple regression model, class attendance, marks obtained in bachelor and occupation of father were found to be significant factors affecting the achievement level of the students.

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