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RESEARCH PAPER

Association of Social Media and Desire Result in Examination with Study Time of Students

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ABSTRACT

Academic achievement is one of the major goals of students which depends on many factors. The crucial factor is study time of students. The students study more get higher grad in examination. The present study aims to assess the effects of factors on student's study time which is measure by number of study hours at home/hostel or university. The population of this study is undergraduate students of University of Malakand. Ninety students from various faculties are selected by stratified random sampling method. The academic faculties are considered as strata. A structure questionnaire is formatted and distributed among students. The data is presented by tables. Multiple linear regression model is used to identify the significant factors associated with number of study hours of students. Use of social media and desire result of the students are found significantly associated with response variable. Assumption of the regression model is tested, and found satisfactory.

| KEYWORDS | Associated Factors, Desire Result, Social Media, Study Time, Undergraduate Students |

Introduction

Education is a valuable resource and a crucial component of human development. To fulfill the millennium development goal of education, governments and statistics have allocated a sizable portion of their budgets to the global education sector. The purpose of spending on education is to prepare human being to technical revaluation Globally (Battle & Lewis, 2002). The purpose of education is to boost human productivity and elevate standard of living. Additionally, it enhances students' skills, allowing them to create new sources of income that will ultimately benefit all of humanity (Saxton, 2000). Rich academic performance leads to high graduation and attrition rate, one of the yardsticks of assessing the world-class status of universities (Okagbue et al., 2018; Ogundile, 2019; Okagbue, 2018).

Academic achievement is dependent upon many different variables including intelligence, instructor quality, curriculum quality, material presented, and the amount of time spent studying the material presented during the day. Most of these variables are extremely difficult to analyze except the amount of time spent studying (Young, 1998). Ebele and Olofu (2017) found some factors associated with academic performance; previous studies, good study habits include studying in a quiet place, studying daily, turning off devices that interfere with study (such as TV and mobile

phones), taking notes of important content, having regular rests and breaks, listening to soft music, studying based on own learning style, and prioritizing the difficult contents.

By maintaining certain habit by students, these objectives can be met. One of the positive factors is study time of the students. The students study more get higher grade than students' study less (Khan et al., 2022; Ukpong & George, 2013; Khan, 2012; Khan et al., 2022). Study time is defined as the amount of time and attention spent learning new skills, accumulating knowledge, and developing insights in a specific physical or virtual place (schools, universities, distance learning, blended learning) using various methods including reading alone, with peers, or in a group discussion. One can learn utilizing a variety of media, including books, lecture notes, practical guides, mobile applications, eLearning platforms, recorded lectures, and novels. Students' study time is frequently competed with by various non-academic and recreational activities, such as reading for pleasure (Wong et al., 2017). Language barriers, the start of puberty (Cockroft and Atkinson, 2017; Jameel et al., 2019), and multitasking (Delello et al., 2016) have all been linked to decreased study time among students. Lack of study time is typically the cause of the students' inability to effectively cover the required course material (St Clair-Thompson, 2018; Muzaffar, et. al. 2019; Frisbee, 1984; Kember et al., 1995; Muzaffar, et. al. 2020; Spitzer, 2022).

Gartner (1998) found that students who were organized in their approach to completing projects had higher quarter grade point averages. Also positively related to GP A was time spent studying. However, an extra hour of study time increased Fall Quarter grade point average by only 0.015 points. Thus, a student can increase his or her GPA, by increasing the amount of time, he or she studies, however a substantial change in GPA would require a substantial increase in study time. Doumen et al. (2011) found the role and place of study time in self reglate4d learning environment. They found a strong relationship between study timing and academic achievement. Young (1998) found correlation between minutes of study and grades for the subjects of this study. Their study revealed that extra hour of study increases the grade of students. Ng et al. (2016) investigated the contribution of time use among students to academic achievement. Their study highlighted use of time among Malaysian youths as it relates to school achievement, particularly one that differentiates between school-related activities and non-school-related activities, may provide insights into how these activities impact the performance of youths in school. Liu (2022) investigated the relationship between study time and academic performance by analyzing the number of selected courses, study time, and grades provided by open-source data sites. Their study observed a positive relationship between study time and academic performance. Moreover, they found that when the study time reaches a certain standard, the grade would no longer show a significant change.

The present study aims to estimate average study hours of undergraduate students of University of Malakand. Moreover, the study assesses the significant factors associated with study hours of the students.

Material and Method

Study area

The University of Malakand (UOM) one of the public sector universities founded in 2001. The university situated in an attractive location near the River Swat. A charter signed by the governor of Khyber Pakhtunkhwa created the official status of UOM. The higher education commission (HEC) of Islamabad has approved it. The UOM offers

undergraduate degrees and postgraduate program in number of academic disciplines, these include mathematics, physics, IT, tourism and hotel management, botany, economics, education, biotechnology, political science, software engineering, English, Pashto and oriental languages, statistics, geology, Islamic studies, journalism and mass communication, law, zoology, software engineering, management studies, psychology and sociology.

The university has 7,000 students, 284 teaching faculty, 750 employees, 28 departments (University of Malakand). The 2023 QS world rankings placed the University of Malakand among the top 351–400 in Asia. (Press, 2022 and University of Malakand home page)

Stratified Random Sampling

One of the main objectives of estimation is obtain representative sample from the population. A well-known and mostly used method of sampling is simple random sampling which is appropriate for population which is homogeneous with respect to the characteristic under study. For such population the simple random sampling produces representative sample from population. On the other hand, when the population is not homogeneous or heterogeneous with respect to the characteristic under study, then the simple random sampling cannot produce representative samples from the population. In this case we switch to another sampling scheme, stratified random sampling. Stratified random sampling divide the heterogeneous population into sub population. Care must be taken that sampling units are homogeneous within the sub population. While, it must be heterogeneous between/among the sub population. The smaller groups or subpopulations are known as strata. Each stratum is treated as a separate population and sample are drawn by simple random sampling method from it. For example, estimating the incidence of diabetes in an adult population, it would be possible to divide the population into strata on the basis of region i.e district. This would yield district wise incidence of diabetes. The sample could also be stratified by urban, rural or peri urban which would give us area-wise of diabetes with equal representation from each group.

The population of this study is the under graduate students of University of Malakand. From the population, students are selected by stratified random sampling method. For this purpose, the population is divided into strata and then from each stratum equal samples are selected. Academic faculties are considered as strata, and from each faculties sample are selected by simple random sampling method. The University of Malakand has nine faculties; sciences, arts and humanities, social Sciences, law, biological sciences, information technology, engineering, education, management sciences. From each faculty three teachers are identified by stratified random sampling equal allocation method. A structured questionnaire is formatted and distributed among the selected respondents. All the faculty members fill the questionnaires and returned. Thus, response rate is 100 percent.

Multiple Linear Regression Model

Multiple linear regression model is extension of ordinary least square regression model because it consists of more than one independent variable. It is used to predict the average value of response variable on the basis of several explanatory variables. The job of multiple linear regression model is to model the linear relationship among the independent variables and dependent variable (Keith, 2019).

One of the assumptions of multiple regression, beta coefficients are valid while holding all other variables constant ("all else equal"). The output from a multiple regression can be displayed horizontally as an equation, or vertically in table form.

Thus, multiple linear regression model is as under,

$Yi = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots + \beta_p X_p + e_i$

Where,

Yi= response variable

β_0 = intercept

β_i =partial regression coefficient, $i=1,2,\ldots\ldots,p$

e_i = disturbance term

The intercept term and partial regression coefficient are estimated by ordinary least square method.

Coefficient of determination (R-squared)

The coefficient of determination (R-squared) is used to measure how much of the variation in dependent variable can be explained by the variation in the independent variables. One of the features of R2 is that it always increases as more predictors are added to the multiple linear regression model, even though the predictors may not be related to the dependent variable.

Thus, R^2 cannot be used as selection criteria for independent variables. The range of R^2 is between 0 and 1, where 0 indicates that the independent variable cannot explain the dependent variable and 1 indicates that independent variable can predict the dependent variable perfectly without error (Gujarati, 2004).

Multicollinearity

In regression analysis it is obvious to have a correlation between the response and predictor(s), but the correlation among independent variables makes problem. There are many factors on the basis of which independent variables are included in the model for example historical data, experience, etc. The main objective is selection of most important independent variable that affects more on the response variable. Multicollinearity is the correlation between two or more independent variables. It increases the standard error of the coefficients which make some variables statistically insignificant when they should be significant. (McClendon and McKee, 2002). In terms of statistics, it will be more challenging to quantify the link between each independent variable and the dependent variable in a multiple regression model with significant multicollinearity. In other words, it is challenging to identify the independent variable that is affecting the dependent variable when the independent variables are closely connected.

Variance Inflation Factor (VIF)

The variance inflation factor (VIF) is used to test of the multicollinearity. The variance inflation factor calculates how much an independent variable's behavior

(variance) is inflated by its interaction and correlation with other independent variables. It is a quick measure of the amount of contribution of variable in the standard error in the regression. In case of sever multicollinearity the VIF is very large for the variables involved. Several approaches are used to eliminate the multicollinearity in the identified variable. In general terms, VIF equal to 1 means variables are not correlated, between 1 and 5 means variables are moderately correlated, and greater than 5 indicating variables are highly correlated (Gujarati, 2004).

Heteroscedasticity

One of the key presumptions of the standard linear regression model is that the variance of each disturbance term, u_i, is some fixed number equal to σ^2, conditional on the chosen values of the explanatory variables. This is the homoscedasticity, or equal (homo) spread (scedasticity), or variance, underlying assumption.

If this assumption violated then this situation is called heteroscedasticity which have serious consequences on OLS estimators.

If regression residuals have a constant spread across all fitted values then there is no problem of heteroscedasticity. One can see that as the fitted values get larger, so does the vertical spread of the residuals. That increasing spread represents predictive information that is leaking over into your residual plot (Gujarati, 2004).

Autocorrelation

"Correlation between members of series of observations ordered in time [as in time series data] or space [as in cross-sectional data]" is one definition of the term autocorrelation. The standard linear regression model in the context of regression presupposes the absence of such autocorrelation in the disturbances μ_i. Simply put, the classical model holds that the disturbance term associated with any given observation is unaffected by the disturbance term associated with any other observation (Gujarati, 2004).

The Durban Watson test is used to detect the autocorrelation in multiple linear regression model. The Durban Watson test statistics 'd' is calculated. The upper and lower critical values, d_U and d_L have been tabulated for different values of k (the number of explanatory variables) and n. Then, tabulated and calculated value of Durban Watson statistics is compared, and decision about autocorrelation is taken.

Result and Discussion

Ninety undergraduate students from University of Malakand are selected consisting 63 (70%) male and 27(30%) female students (Table 1). Further, Students are selected randomly, therefore, students from various semester are selected. Table 1 shows that Out of 90 students, 20(24%) are from age 18 to 19, 5(61%) from age 20 to 21, 13(14%) from age 22 and above are selected.

The Table further shows the study time of the students. The students who study from 0 to 3 hours daily are 28(31%), from 4 to 6 hours daily are 43(48%), and from 7 to 9 hours daily are 19 (21%). According to Table 1, 36(40%) students spent 0 to 3 hours daily watching social media, 41(46%) students used social media from 4 to 6 hours daily, 13(14%) students claim that they are watching social media 7 to 10 hours daily. Moreover, the students study daily to obtain desire result in examination. The Table 1

shows that 52(58%) students obtained their desire result, while 38(42%) students are unable to obtain the desire result. Moreover, finding shows that average daily study hours is 3.5.

Table 1
Characteristic of Students, Number of Stud Hours, Use of Social Media, Desire result of Students

	Number	Percentage	Cumulative percentage
Gender			
Male	27	70	70
Female	63	30	100
Age			
18−19	22	24	24
20−21	55	61	84
22 and Above	13	14	100
Study Hour daily			
0−3	28	31	31
4−6	43	48	79
7−9	19	21	100
Social media watching in hours daily			
0−3	36	40	40
4−6	41	46	86
7−10	13	14	100
Desire Result			
Yes	52	58	58
No	38	42	100

The result of multiple linear regression models is presented in Table 2. The response variable is number of study hours of students, and predictor variables are desire result and use of social media daily in hours. The coefficient of desire result is 1.356 which is positive indicating positive relationship between desire result and number of study hours. Further, as the level of desire result increases the number of study increase. The Table further shows that coefficient of social media is negative indicating its inverse relationship with response variable. Thus, the higher the number of social media hours the lower the number of study hours of students and vice versa. The coefficient of use of social media is -0.25 indicating one hour increase in use of social media is decreasing 0.25 study hour. Further the desire result and use of social media are significantly associated with response variable (P<0.05).

The coefficient of determination R^2 is .17 which shows 17 percent of variation in response variable number of study hours is explain by the desire result and use of social media.

The Table further shows that VIF for desire result and use of social media is 1.01 indicating moderate multicollinearity which is not a problem.

Table 2
Multiple Linear Regression Model

	Coefficient	SE Coefficient	T-Value	P value	VIF

Constant	3.99	0.524	7.61	0.000	
Desire Result	1.35	0.423	3.20	0.002	1.01
Use of Social Media	-0.25	0.099	-2.50	0.014	1.01

$R^2=.71$

In order to detect heteroscedasticity, the fitted value is plotted against standardized residual in Figure 1 which shows the vertical spread of the residuals is consistent across the range of fitted values. Thus, heteroscedasticity is not found in the regression model.

Versus Fits
(response is Study hours)
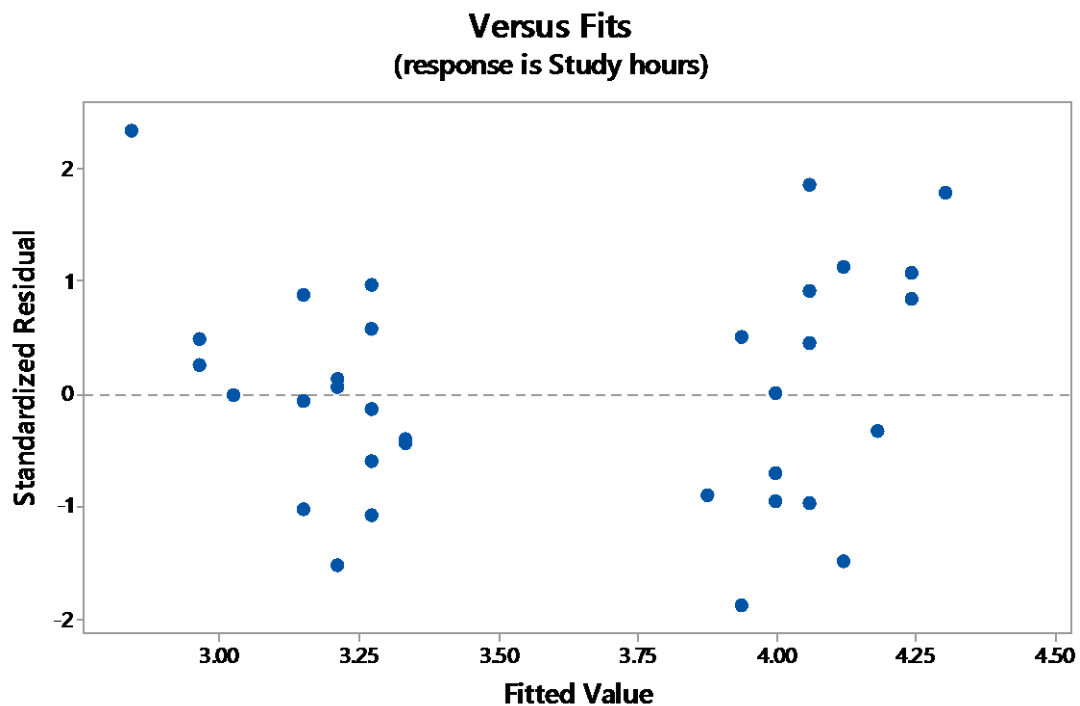
Autocorrelation in the fitted model is assessed by Durban Watson test. The value of 'd' is equal to 2.13, the Durban Watson tabulated values are d_L=1.64 and d_u= 1.68. We found that $4-d_u < d < 4-d_L$, thus, the test is inconclusive.

Conclusion

The present study estimates the number of study hours of undergraduate students University of Malakand. Finding shows that the students average daily study hours is 3.5. Moreover, multiple linear regression model is used to identify the significant factors associated with number of study hours. The result of the model shows that desire result is positively associated with response variable, while the use of social media is inversely associate with the response variable.

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