# Impact of social media network participation on academic performance among undergraduate students in Rajarata university of Sri Lanka

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## Abstract

Technology has accused an overall development in the modern world. With technological development, people are highly addicted to social media usage such as Facebook, Twitter, LinkedIn, Viber, YouTube etc. The largest group among social media users are teenagers. Past literature has shown that there are both negative and positive impacts of social media on students. This study was carried out to uncover the relationship between the participation in social media and academic performance in undergraduate students of the Rajarata University of Sri Lanka. Data were collected from a detailed questionnaire using a Google form and analyzed using SPSS version 21.00. Reliability analysis was performed on several commonly used scale reliability measures and provided information about the relationship between individuals in the scale. Pearson's Chi-square test was used to check the significant associations between variables. Regression analysis was used to determine the relationship between academic performance and social media usage. Moreover, a cross-validation technique was used to validate the results. Besides, it was identified that social media significantly impacts students' academic performance of undergraduates in the Rajarata University of Sri Lanka. Most students use social media for entertainment, chat, follow friends' posts, fashion and styles and waste their spare time. Moreover, the majority of the undergraduates stated that social media negatively affected their academic performance. Out of the gender difference, availability of social media, level of social media usage, reasons for using social media and integration with social media adopted in the study, social media usage has the most significant influence on students' academic performance. Hence the study results concluded that social media has a significant adverse effect on the academic performance of undergraduates.

**Keywords** - Cross-validation, Correlation Analysis, Regression analysis, Reliability analysis, Social Media Analytics

## 1. Introduction

Social media are computer-mediated technologies that facilitate creating and sharing information, ideas, career interests, and other forms of expression via virtual communities and networks. Besides, they are a series of websites and applications designed to allow people to share content quickly, efficiently and in real-time [1]. Most people today define social media as apps on their smartphones, but the truth is, this communication tool started with computers [2,3].

With the tremendous development of technology within the past decades, it is clearly identified that people rely on electronic devices in fulfilling their day-to-day tasks. This fact is mainly

observed among university undergraduates. Often, they rely on social media for entertainment and to maintain relationships. Previous studies [4,5,6] provide evidence on the impact of social mediaon education. Some of them argue that social media affects positively, while some of them highlight the negativity. Also, some studies prove that social media has no impact on students' academic performance.

As an advantage, students can use social media to increase their knowledge, skills and attitudes. They can have good relationships using social media and get help from others to improve their academic and other life events. Moreover, the experiences of same-aged individuals can be shared easily. Students gave more scoring responses towards social media to write their classroom assignment and inclusion of collage related purposes [7,8]. Suppose social media were designed and tailored to the specific educational need and related to each major in communication. In that case, social media can improve the academic performance of undergraduate students in a college of Applied Sciences, Oman. Students can enhance their grades by using Twitter in academic-related activities [9,10]. Social media can be used as an educational tool to help students to reach their destined college outcomes. They provided the evidence to prove that students and faculty are highly engaged in the learning process by communication and connection on social media.

However, various sources highlight that social media encourages voluntary or involuntary time wastage [11,12,13]. Social media has negatively impacted the University of Abuja students because their attention was focused on chatting and music while their academic activities were neglected and left to suffer [14]. Also, students used social media for various purposes, such as writing classroom assignments and other related activities [15,16]. Too much use of social media might harm academic performance.

Some argue that, despite the time spent using social networking sites, and even with the personality differences, students are capable enough to carry out their studies efficiently and effectively [17]. Therefore, literary works often provide contradictory information when they are compared with one another. Since only a few studies focused on Sri Lankan undergraduates, this study was designed to fill the gap [18,19]. The main objective of the study is to identify the impact of social media on students' academic performance. Also, we identify the relationship between academic performance with gender difference, availability of social media, reasons for using social media and integration with social media. Two variables, namely participation in social media and undergraduates' academic performance, were considered in this study. Then, the relationship between social media participation, availability of social media, level of usage of social media, reasons for using social media, and integration with social media were measured.

## 2. Methodology

This study was carried out by engaging undergraduates of the Rajarata University of Sri Lanka. A detailed questionnaire was distributed among undergraduates who were randomly selected from each faculty. The survey was conducted by distributing a questionnaire to 170 undergraduates chosen randomly on the university premises. A simple random sampling method was used in this

study. The questionnaire was prepared in English, and the questionnaire was distributed to respondents in two forms: a hard copy and a Google form. The description of the data used in this study is shown in Table 1.

Table 1: Description of the variables used in the study.

| Category | Variable Name | Description | Data Type |
|---|---|---|---|
| Demographic | Faculty | Studying faculty | Nominal |
| | Academic Year | Studying year | Nominal |
| | Gender | Male or female | Nominal |
| | Current CGPA | Cumulative Grade Average Point value | Continuous |
| Availability of using social media | Have device like smart phone or computer to connect internet. | Yes or No | Nominal |
| | Have internet connection to access internet. | Yes or No | Nominal |
| | Have enough service facility to access internet in the area. | Yes or No | Nominal |
| | Have enough knowledge to use social media websites. | Yes or No | Nominal |
| Level of usage of social media | Have social media profile like (Facebook, messenger, Linked In, Instagram, Twitter, YouTube, Viber, WhatsApp, Imo, Others) | Yes or No | Nominal |
| | Surf on social media daily. | Yes or No | Nominal |
| | Use social media profile to download and share videos. | Yes or No | Nominal |
| | Average time, spent social media daily. | Less than 1 hour 1-2 hours,2-5 hours 5-10 hours more than 10 hours | Ordinal |
| Reasons for using social media | Visit medical pages, News, Sports, Entertainment, Buy products, Follow friend's posts, Fashion and Style, Kill spare time, To chat, To make a new friends, Others | Yes or No | Nominal |
| Integration with social media | Browse educational matters in social media. | Strongly agree Agree Either agree or disagree Disagree Strongly disagree | Ordinal |
| | Post educational posts in social media account | Strongly agree Agree Either agree or disagree Disagree Strongly disagree | Ordinal |
| | Have lecturers in social media account | Strongly agree Agree Either agree or disagree Disagree Strongly disagree | Ordinal |
| | Chat with lecturers about academic maters | Strongly agree | Ordinal |

| | | Agree Either agree or disagree Disagree Strongly disagree | |
|---|---|---|---|

A reliability test is used to check the reliability, most used when having multiple Likert questions in a survey from a scale and wish to determine if the scale is reliable. Descriptive analysis is used as a primary measure to describe, summarize data points in a constructive way such that patterns might emerge that fulfil every condition of the data. Further, the Pearson chi-square test is used to determine the linear relationship between two variables. Regression analysis was used to predict the relationship between academic performance and social media usage. The cross-validation technique is used to assess how statistical analysis results generalize to an independent data set. Cross-validation is necessary to estimate the accuracy of the predictive performance model. The prime reason for using cross-validation rather than conventional validation is insufficient data to partition them into separate training and test sets. The regression diagnostic is one of a set of procedures available for regression analysis that seek to assess the validity of a model.

## 3. Results and Discussion

Table 1 shows the Cronbach's Alpha measures of internal consistency between items in a scale. Availability of using social media, level of usage of social media, and reasons for using social media have 0.824, 0.839, and 0.809 Cronbach's alpha values, respectively. Therefore, these three factors have an excellent internal consistency between items in the scale. Integration with social media has 0.589 Cronbach's alpha value with poor internal consistency, and academic performance has 0.781 Cronbach alpha value with acceptable internal consistency. The overall model has an admirable internal consistency with 0.824 Cronbach's alpha.

Table 1: Cronbach's alpha reliability values of the internal model.

| Variable | Cronbach's Alpha | Internal consistency |
|---|---|---|
| Availability of using social media | 0.824 | Good |
| Level of usage of social media | 0.839 | Good |
| Reasons for using social media | 0.809 | Good |
| Integration with social media | 0.589 | Poor |
| Academic performance | 0.781 | Acceptable |
| Overall | 0.824 | Good |

Pearson's chi-square test results in Table 2 were used to discover a relationship between two variables. There is a significant linear relationship between gender difference with academic performance. Also, there is a significant linear relationship between the level of usage of social media and reasons for using social media with academic performance.

Table 2: Pearson's chi-square test and p-values for the relationship between variables.

| Variable | Pearson's chi-square | |
|---|---|---|
| | **Value** | **p-value** |
| Availability of social media | 6.816 | 0.557 |
| Level of usage of social media | 195.177 | <0.001 |
| Reasons for using social media | 27.392 | 0.001 |
| Integration with social media | 45.789 | 0.054 |
| Gender | 11.219 | 0.024 |

Table 3 shows the full multiple regression model and reduced model obtained after applying the backward elimination method results to identify the factors affecting the academic performance. In the full model, only the variables level of social media usage and integration with social media is significant at a 5% significant level since they have a less than 0.05 p-value. Also, from the coefficient values, some were negative, and some were positive, which means those positive variables were positively affected by the dependent variable. In contrast, negative variables were affected to dependent variables negatively. The VIF values clearly identify the collinearity of the variables. In the reduced model, only the variable log (level of social media usage) is significant at a 5% level since it has a less than 0.05 p-value. Therefore, the level of use of social media harms academic performance.

Table 3: Results of the fitted full and reduced regression models.

| Full Model | | | | Reduced Model | | |
|---|---|---|---|---|---|---|
| **Variable** | **Coefficient** | **p-value** | **VIF** | **Variable** | **Coefficient** | **p-value** |
| Constant | 2.236 | <0.001 | | Constant | 0.142 | 0.002 |
| Availability of social media | 0.073 | 0.654 | 1.024 | Log (Level of usage of social media) | -0.354 | 0.014 |
| Level of usage of social media | -1.764 | <0.001 | 1.541 | Log (Integration with social media) | 0.152 | 0.964 |
| Reasons for using social media | 0.171 | 0.646 | 1.376 | | | |
| Integration with social media | 0.171 | 0.049 | 1.126 | | | |
| Gender | 0.089 | 0.573 | 1.140 | | | |

One of the assumptions of regression is that the observations are independent. The results of the Durbin Watson test applied to both full and reduced models are shown in Table 4. If observations are made over time, it is likely that successive observations are related. If there is no autocorrelation the Durbin-Watson statistic should be between 1.5 and 2.5. Moreover, the Durbin-Watson statistic for the full model is 0.995 which is below 1.5 and therefore the data are autocorrelated and hence the independent assumption is violated. The Durbin-Watson value for

the reduced model is 1.814 which is between 1.5 and 2.5 and therefore the data is not autocorrelated.

Table 4: R - squared, R - adjusted values and Durbin-Watson value for fitted regression models.

| Model | R | $R^2$ Value | Adjusted $R^2$ value | Durbin - Watson |
|---|---|---|---|---|
| Full Model | 0.438 | 0.192 | 0.164 | 0.995 |
| Reduced Model | 0.729 | 0.531 | 0.541 | 1.814 |

According to the significant variables in Table 3, the following simple linear regression model was observed. Moreover, this model has an average adjusted R-squared value of 54.1%. Therefore, overall, the proposed model appears to have performed only one variable. From this model, 54.1% of academic performance is described by only one variable.

$$Log(Academic\ performance) = 0.142 - 0.354 * Log\ (Level\ of\ usage\ of\ social\ media)$$

Out of the five factors measured under the dependent variable, only the log (level of social media usage) showed significance to the dependent variable, while others were not significant. The log (level of social media usage) may negatively affect the undergraduates' performance. Most of the time, young people are adapted to roam the internet for hours and hours. Due to this, they lack time to focus on their studies. Young people are distracted by the entertainment and social functions delivered by social media. Hence, it reduces the enthusiasm for studies.

Many empirical studies have been carried out [20,21] on the impact of social media on students' academic performance in developed countries. When it comes to developing countries, the number of studies on the same topic is limited [22,23]. Therefore, this study will be significant since it paves the way to further research on social media and the academic performance of Sri Lankan undergraduates. Data given in the study will serve as empirical data since there are only a few studies done in the Sri Lankan context. The research will be more reliable since it breaks down the use of social media into availability to use, level of usage, reasons for usage, and integration of usage to study the impact on students' academic performance.

## 4. Conclusions

It is concluded that social media significantly impacts undergraduates' academic performance in the Rajarata University of Sri Lanka. Among the five variables used in this research, log (social media usage) significantly influences undergraduates' academic performance. This is because time management plays an essential role in determining the success or failure of an individual. Thus, undergraduates who lack time management can easily fall prey to social media's negative impact on its uses. Social media, and in particular YouTube, Facebook, Facebook messenger, Viber and WhatsApp, are viral among undergraduates in the Rajarata University of Sri Lanka. Undergraduates have been spending significant time on these media for both academic and non-academic purposes. It is recommended that the universities and the Ministry of Higher Education

organize several programs to improve social media usage for academic purposes rather than entertainment. It will lead to the empowerment of undergraduates and will enhance their ability to move smoothly with the upcoming technologies in their future workplaces.

This research itself has several limitations. Since the targeted population of the study was only the students of the Rajarata University of Sri Lanka, it does not provide a generalized view of the impact of social media on the academic performance of undergraduate students in Sri Lanka. They may be limitations due to the demographic dissimilarities and the level of access provided to the students. This study cannot be applied worldwide since different social media platforms are used in other countries. Also, the overall relevance is limited due to the dissimilarities in the way of life and status. For future research, it can be suggested that a mixed population from different locations will facilitate fewer limitations. Since Sri Lanka is promoting both state and private higher education, the student at private universities should also be accompanied in future studies since it will give a more generalized conclusion.

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