Asian Journal of Information Technology 14 (7): 253-259, 2015
ISSN: 1682-3915

Exploring Social Networking and University Students Academic Performance

[1]A.A. Adebiyi, [1]S.R. Okuboyejo, [2]M. Akinbode, [2]M. Agboola and [1]A.A. Oni
[1]Department of Computer and Information Sciences, Covenant University, Ota, Nigeria
[2]Department of Business Management, Covenant University, Ota, Nigeria

Abstract: The subscription to Online Social Networking Services (OSNs) and the frequency of usage by the student population group continue to be on the increase. There are contrasting opinions in literature by researchers on the impact of OSNs on students' academic performance. Some argued that there is a statistically significant negative relationship between OSNs and academic performance and vice-versa. The focus of this study is to validate the different opinions expressed in literature on the impact of OSNs and academic performance. A survey of students of a large private university was conducted. The survey results were analyzed with Structural Equation Modeling (SEM) using Partial Least Squares (PLS) approach. The findings revealed negative effect of OSN services on students' academic performance. Students who spend considerable amount of time in OSNs on average usually have lower Grade Point Average (GPA) than non-users of OSNs during academic session. The implication of the findings is for policy makers to find a way of mitigating the impact of OSNs on students' academic performance.

Key words: Social networking, academic performance, facebook, structural model, time management

INTRODUCTION

Online Social Networking services (OSNs) is one of the fastest growing and dominant trend in the use of technology in modern times. Social networking generally, refers to the interaction of people using various social media platforms with the absence of geographical and time barriers. Social media is a term that is broadly used to describe any number of technological systems related to collaboration and community. It has been discovered that over 2.2 billion people are active on social media platforms. Online social network sites like MySpace and Facebook became common destinations for young people in the United States. This trend had shortly moved to other parts of the world like Africa, Europe and Asia which is now considered to be the highest when it comes to internet usage for online social networking. While not all teens are members of social network sites these sites developed significant cultural resonance amongst teens globally in a short period of time. In recent times, we have witnessed the development of more social media platform for online social networking like Twitter, Google+, Instagram and others and this has expanded the level of networking and increased the use of social media for both private and corporate purposes.

Social networking sites have to an extent, transformed the ways in which users interact socially and have shaped communication, friendship and relationships in unique ways. This redefinition has fostered the creation of "virtual societies". The usage of online social networking in higher education is emerging seamlessly and gaining wide acceptance. The effect of such usage in universities and higher education revealed the following (Falahah and Rosmala, 2012): the main functionalities of OSNs are for sharing, conversation and relationship, the choice of social networking sites to visit is dependent on environmental access policy and the usage of OSNs for academic activities was dominated by resource material sharing, searching and assignments. Recent studies have revealed the negative effect of addiction to social networking on academic performance of students in higher institutions (Kirschner and Karpinski, 2010; Paul *et al*., 2012). This study seeks to identify the relationship between time spent on OSNs and student's academic performance. We examine how this fast growing trend of online social networking services has affected the academic performance of students in Nigerian Universities. The following Research Questions (RQ) (which form the hypotheses) will be investigated:

- RQ1: Does academic competence have a significant impact on student characteristics
- RQ2: Does academic competence have a significant impact on time management
- RQ3: Do the predictors of behavior have a significant impact on time management
- RQ4: Is there a significant impact of attention deficit on time spent on OSNs

Corresponding Author: A.A. Adebiyi, Department of Computer and Information Sciences, Covenant University, Ota, Nigeria

- RQ5: Is there a negative impact of time spent on OSNs on academic performance
- RQ6: Do student characteristics have a significant impact on academic performance
- RQ7: Does academic competence have a statistically significant impact on academic performance
- RQ8: Is there a significant relationship between time management and students' academic performance

Literature review: Over the years several researchers had given particular attention to investigate various factors affecting academic performance in different perspectives ranging from time management skills, student characteristics, academic competency, study strategies, etc. (Margrain, 1978; Sansgiry *et al*., 2004; Paul *et al*., 2012). However, in recent studies as observed from literature online social networking media has gained considerable attention as a factor affecting students' academic performance (Kolek and Saunders, 2008; Kirschner and Karpinski, 2010; Rouis *et al*., 2011; Paul *et al*., 2012; Michikyan *et al*., 2015). In the research of Paul *et al*. (2012), a statistically significant negative relationship between time spent on OSNS and academic performance was identified. They found out that OSNs heavily influenced the attention span of the students, particularly, the higher the attention span, the lower the time spent on OSNs.

Kirschner and Karpinski (2010) differs sharply on the proponents that argued that the modern youth possesses the ability to multitask and process multiple channels of information simultaneously. Their study, involving Facebook use and simultaneously carrying out learning activities in relation to the students' academic performance as measured by the Grade Point Average (GPA), revealed that students with lower GPAs spent fewer hours per week on their study than non-users. Similarly, Junco reported in his research that multitasking with technologies can interfere with students learning process. This finding is as indicated in the research in cognitive science that there is performance decrement when students endeavor to attend to two tasks simultaneously. The outcomes of his findings on OSNs (Facebook and Text messaging) show negative relation to GPA. Karpinski *et al*. (2013) supported the arguments from various studies that multitasking with technology particularly using online social networking services decreases both efficiency and productivity in an academic setting. Their results provided valuable cautionary information about the impact of multitasking and using OSNs in a learning environment on university students GPAs. A negative relationship was found between OSNs use and GPA.

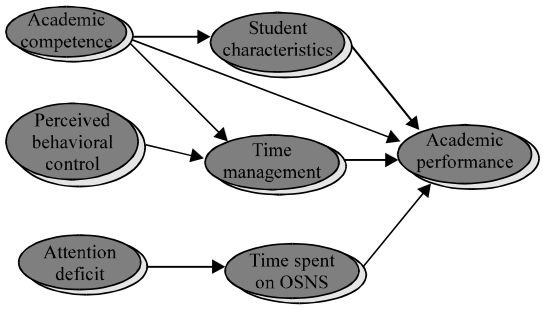

Fig. 1: The research model

In a contrary opinion Pasek and Hargittai (2009), reported that there is no robust negative relationship between facebook use and academic performance. Their study revealed there were no differences between Facebook users and non-users in relation to academic performance. Yu *et al*. (2010) argued that online social networking directly influences university students learning outcomes and also assist in attaining social acceptance from others and adapt to university culture both which enhances their learning outcomes. Alwagait *et al*. (2015) in their study on the impact of social media usage on students' academic performance in Saudi Arabia, argued that from their findings there is no linear relationship between social media usage and academic performance. They opined other factors such as time management affect students' academic performance negatively if not properly planned. Also, in the research of Ainin *et al*. (2015), researchers found a positive relationship between Facebook usage and students' academic performance. They argued that the higher the usage of social media, the better they perceived they perform.

It obvious from above that there are contrasting opinions on impact of online social networking on students' academic performance. The focus of this study is to validate and clarify the contradictory opinions expressed in extant literature on the impact of OSNs and academic performance in sub-Sahara Africa. The basic model proposed in Paul *et al*. (2012) was adopted in this research and presented in Fig. 1. A survey of students of a large private university was conducted. The survey results were analyzed using Structural Equation Modeling (SEM) technique, a powerful alternative to multiple regressions. The SEM technique was adopted due to its ability to construct variables which are not measured directly but are estimated in the model from several measured variables (MacCallum and Austin, 2000; Hair *et al*., 2010, 2011, 1995).

MATERIALS AND METHODS

Research design: Survey questions measuring each of the constructs in the model were developed building on

Table 1: Frequency distribution of the demographic characteristics of respondents

Demographic categories	Frequencies	Percentage	Cumulative percentage
Genders			
Male	163	55.6	55.6
Female	130	44.4	100.0
Total	293	100.0	
Ages			
15-19 years	197	67.2	67.2
20-24 years	95	32.4	99.7
25-above	1	0.3	100.0
Total	293	100.0	
Academic background			
Sciences	195	66.6	66.6
Social sciences	89	30.4	96.9
Art	9	3.1	100.0
Total	293	100.0	-

the research of Paul *et al*. (2012). The population sample includes undergraduate students enrolled in different programmes across the different colleges in a large private university in Nigeria. The sample was selected via the convenience sampling method. The demography details of the 293 valid survey responses are presented in Table 1.

RESULTS

Frequency distribution of sampled respondents showed that male represents 55.6% of the sample while female represent 44.4% of the sample. The analysis on respondent's age indicates that majority of the sample, 67.2% are aged 15-19 years, 32.4% constitute ages 20-24 and 0.35% are above 25 years. Analysis of respondent's educational background revealed that 66.6% represent sciences, 30.4% social sciences and 3.1% represent arts (humanities).

The analysis of the data gathered in this study was carried out with the use of Structural Equation Modeling (SEM) techniques using Analysis of Moment Structures Software (AMOS). SEM is a statistical technique that helps to determine the nature of dependent relationships between theoretical constructs and measured variables (Hair *et al*., 2010). SEM involves a two-step approach of developing and accessing models namely measurement model and structural model. The assessment of the measurement model is done by using empirical measures to indicate how well the relationships specified in the study are represented by the sample data (Hair *et al*., 2010). These measures are known as goodness-of-fit indices and the fitness of the measurement model is assessed by referring to several goodness-of-fit indices such as normed chi-square (χ^2/df), Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Normed Fit Index (NFI) and Root Mean Square Error of Approximation (RMSEA). As a rule of thumb, a normed χ^2<3, a GFI and NFI>0.9 CFI>0.95 and RMSEA<0.08 are considered as suitable for demonstrating adequate fitness of a measurement model (Hair *et al*., 2010). Once the measurement model shows appropriate fitness, the structural model is developed and assessed.

Table 2: KMO and Bartlett's test

Tests	Values
Kaiser-meyer-olkin measure of sampling adequacy	0.767.00
Bartlett's test of sphericity	
Approx. chi-square	1975.987
df	190.000
Sig.	0.000

Table 3: Reliability statistics

Reliability statistics cronbach's alpha	Cronbach's alpha based on standardized items	No. of items
0.828	0.855	20

Assessment of the measurement model: Exploratory factor analysis was used to indicate variables that can be grouped together and to test the validity of the measurement scales. Principal Component Analysis (PCA) with varimax rotation was used to test the validity of the measurement scale. In assessing the sampling adequacy, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy Test result showed 0.767 and the Bartlett's test of Sphericity was 1975.987 with degrees of freedom 190 and statistical probability p = 0.000 which shows the correlation matrix has significant correlation among some of the variables and as such the sample size was deemed appropriate for the study. These tests are shown in Table 2.

The Likert-scale questions were tested for internal consistency by computing the Cronbach's alpha with the use of SPSS 21.0. The scale reliability was 0.828, standardized 0.855 which exceeds the commonly reported Nunnally criterion of 0.70 for an acceptable alpha. The result is shown in Table 3. Using the principal component analysis with a Varimax Rotation, Table 4 indicates the loading of each item. A variable is said to load on a factor if it had a component loading of 0.40 or higher on that factor and <0.40 on any other factors (Devellis, 2003). The result as shown in Table 4, shows that all items loaded well on their respective factors. This shows that the derived factors were indicative of the online social networking and academic performance construct that was being measured.

To test for the accuracy of the measurement model, confirmatory factor analysis was carried out using IBM, SPSS AMOS (Version 21) software. Confirmatory Factor Analysis (CFA) was used to test the relationship between observed variables and their underlying latent constructs and also to validate and confirm the theoretical model used in the study (Brown, 2006). Firstly, the measurement

Table 4: Summary of factor loading of items

Construct	Measures	Mean	SD	Loading
Time Spent on OSNS (TS)				
TS1	The amount of time (hours) I spend on OSNS on a daily basis is	2.286	0.82740	0.774
TS2	The average amount of time (minutes) I spend, per class on OSNS while attending class is	1.774	1.00800	0.640
TS3	For every 8 h I spend in class, I spend hours on OSNS	1.907	0.95536	0.628
Attention Deficit (AD)				
AD1	On a daily basis, I check OSNS times	3.112	1.39800	0.685
AD2	While in class, I check OSNS times	1.399	0.90330	0.723
Time Management (TM)				
TM1	I find it easy to organize study and leisure time	3.413	1.40000	0.743
TM2	I have enough time to complete my school assignments	3.522	1.11200	0.721
TM3	I have a good time management skills	3.543	1.05500	0.641
Academic Competence (AC)				
AC1	I am able to manage my course load without any difficulty	3.570	1.11000	0.649
AC2	I can easily understand the material taught in class	3.829	0.96420	0.737
AC3	I find the courses taught in school interesting	3.754	1.00700	0.832
AC4	I am enjoying all the courses offered in my department	3.526	1.12100	0.751
AC5	I always do my best to understand the course material	3.986	0.92890	0.666
Perceived Behavioural Control (PB)				
PB1	I feel that I am capable enough to use OSNS to do what I want to do	3.932	0.87490	0.781
PB2	I feel competent enough to use all functions in an OSNS	3.809	0.93870	0.832
PB3	I know how to use OSNS as an effective study tool	3.679	1.00900	0.757
Academic Performance (AP)				
AP1	My overall GPA is	4.003	0.84200	0.945
AP2	My GPA from last semester exam was	4.058	0.85210	0.949
Student Characteristics (SC)				
SC1	Gender	1.444	0.49680	0.761
SC2	Academic background	1.365	0.47810	0.637

Table 5: Goodness of fit indices for the measurement model

Fix index	Estimated value
χ^2/df	1.687
RMSEA	0.048
CFI	0.952
GFI	0.913
NFI	0.872

Table 6: Discriminant validity and correlations

			Construct						
Construct	CR	AVE	SC	TS	TM	AD	AC	PB	AP
SC	0.756	0.900	0.813						
TS	0.770	0.870	-0.090	0.880					
TM	0.739	0.640	0.196	-0.212	0.698				
AD	0.800	0.750	-0.182	2.618	0.526	0.801			
AC	0.827	0.590	0.315	-0.243	0.576	-0.774	0.700		
PB	0.802	0.578	0.046	-0.191	0.489	0.034	0.345	0.761	
AP	0.969	0.940	0.203	-0.225	0.314	-0.323	0.410	0.152	0.970

*CR = Composite Reliability; AVE = Average Variance Extracted; SC = Student Characteristics; TS = Time spent on OSNS; TM = Time Management; AS = Attention deficit; AC = Academic competence; PB = Predictors of Behavior; AP = Academic Performance; *Diagonal elements are the square root of AVE; These values should exceed the inter-construct correlations for adequate discriminant validity

model developed was assessed using goodness of fit indices. The assessment result as shown in Table 5 indicates that the fit indices were within acceptable limits and as such the model is acceptable leading to the CFA test. CFA was assessed on the criteria of reliability, convergent and discriminant validity. The convergent validity of the measurement model was assessed by checking the cross-factor loadings. The loadings for that particular construct is expected to be higher than the other indicators used to measure the other constructs which should exceed 0.70, although 0.6 is also acceptable (Chin and Newsted, 1999). To achieve satisfactory discriminant validity the square root of the Average Variance Extraction (AVE) for a particular construct should be larger than the correlations between it and the other constructs (Chin, 1998). Convergent validity can also be assessed by calculating the Composite Reliability (CR) which should exceed the recommended cut-off of 0.7 (Chin, 1998) and Average Variance Extracted (AVE) which should be ≥0.5 for satisfactory convergent validity for a construct (Fornell and Larcker, 1981). The results from the measurement model analysis are shown in Table 5 and 6.

The Result from Table 6 above revealed that all measures in the model have adequate reliability, convergent and discriminant validity. Convergent validity was assured as the composite scale reliability exceeded the recommended threshold of 0.7 (Hair *et al*., 1995). Also, convergent validity was assessed with the factor loading of all items (Table 4) >0.50 (Hair *et al*., 2010) which was considered to be significant. Results from Table 4 showed that all factor loadings of items in the research model ranged from 0.6-0.9 indicating an acceptable convergent validity. Discriminant validity of the factors is satisfied when the square root of the AVE from a construct exceeds the constructs' correlation with any other variable in the model (Fornell and Larcker, 1981). In Table 6, the diagonal elements represent the square root of the

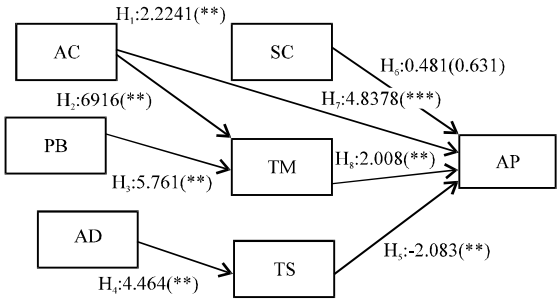

Fig. 2: The structural model; goodness of fit indices: (÷2/df): 1.536; GFI: 0.959; CFI: 0.973; NFI: 0.931; RMSEA: 0.043; **, *** indicates p<0.05; 0.001

variance shared between the constructs and their measures and off-diagonal elements are the correlations among the constructs. The result from Table 6 shows that all diagonal elements are greater than their corresponding off-diagonal elements, suggesting that all constructs in the model exhibit acceptable discriminant validity. In summary, the above analysis implies that the constructs in this study exhibits reliability, convergent and discriminant validity.

Analysis of the structural model: After obtaining appropriate fitness for the measurement model, the structural model was developed as shown in Fig. 2. The structural model also demonstrated adequate fitness.

The results presented in Table 7 are the confirmed relationships as all the p<0.001 or 0.05 except for SC and AP. Furthermore, SEM analysis revealed that all the structural paths in the structural model are positive and significant. However, path SC to AP is not significant and path TS to AP is negative. In particular, hypothesis H_1, H_2, H_3, H_4, H_5, H_7 and H_8 were supported. However, H_6 indicating the relationship between student characteristics and academic performance did not show significant relationship.

DISCUSSION

Using the results presented in Fig. 2, the hypotheses stated earlier in the paper is discussed and presented. There is a positive and statistically significant relationship between academic competence and student characteristics. Student characteristics include age, gender and academic background. In other words, age, gender and academic background are related to academic competence of the student. The impact of academic competence on student characteristic cannot be neglected as it helps to mediate the effect on student academic performance. The significant relationship between student characteristics and academic competence has been supported in literature. A positive and statistically significant effect was found between academic competence and time management. This implies that academic competence is positively correlated with the time management which in turn has a positive impact on academic performance. In other words, academic competence indirectly impacts on academic performance through time management. This finding supports existing literature (Paul *et al*., 2012). Also, there is a positive and statistically significant effect of predictors of behavior on time management. The results showed that students who perceived themselves as having a high level of control over their behavior can easily manage their time and thus, increase their academic performance compared to those who believed themselves to be less in control over their time. The finding in this study supports findings reported from existing literatures (Nonis *et al*., 1998; Bandura *et al*., 1999).

A positive and statistically significant impact exists between attention deficit and time spent on online social networking. The results indicate that as the level of attention deficit increases, the amount of time spent on online social networking increases. This implies that as students lose concentration and become distracted, the higher the tendency for them to visit and spent more time on OSN sites. Also, this finding supports exiting literature (DuPaul and Volpe, 2009). Our findings also reveal a significant negative impact of time spent on OSNs and academic performance. In other words, student academic performance reduces as more time is spent on OSN services. Also, findings from this hypothesis indicates that time spent on OSNs serves as a mediating variable between attention deficit and academic performance. This implies that time spent on OSNs negatively impacts academic performance. This finding supports that of Paul *et al*. (2012). Furthermore, we found no significant impact of student characteristic on academic performance. Findings from studies relating to student characteristics and impact on academic performance have not been consistent over the literature. Variations reported in findings has been attributed to the notion that researcher uses numerous factors varying from demographic, psychographic, economic and academic factors to test student characteristics in different country which necessarily will not give similar findings (Alhajraf and Alasfour, 2014).

We also established a positive significant impact of student academic competence on academic performance. This implies that the degree to which students feel competent and confident of their ability in completing educational tasks influences their performance in such

tasks. In other words, the higher the degree of student academic competence, the higher the academic performance. As in the existing literature this finding supports that of Abu-Hilal (2000) and Bandalos *et al.* (1995). Lastly, findings from this study show a positive significant impact of time management on student academic performance. The results shows that as time management score increases, academic performance improves, indicating that good time management leads to improved academic performance This implies that increased ability to effectively manage time positively relates to increase in academic performance. This finding corroborates with findings in the literature (Karim and Kandy, 2011; Paul *et al.*, 2012).

CONCLUSION

The findings obtained in this research show that OSNs has a negative impact on academic performance. The results indicate that as the level of attention deficit increases, the amount of time spent on online social networking sites increases. This implies that as students lose concentration and become distracted, the higher the tendency for them to visit and spent more time on OSNs. In line with this, policies could be put in place that prohibits bringing these technologies to classrooms unless it is needed for the purpose of the course. Also this finding supports existing literature (DuPaul and Volpe, 2009; Paul *et al.*, 2012). Therefore, it is important for educators and parents to bring to the awareness of students the negative impact of OSNs on academic performance continually. Once the habit of daily visits to social networking sites is cultivated, valuable productive hours for academic studies are lost. The need to emphasize the importance of time management skills to students by academic faculty and students' advisor through seminars and workshops would go a long way in helping the students' understanding of detrimental effects of OSNs on academic performance. Such seminars and workshops can be integrated into their studies once or twice in an academic session. Students can also be trained on new and emerging technologies that could enhance and improve their time management skills. The future studies are to investigate the possibility of using OSNs platform in improving the students learning outcomes because there is every tendency that the usage of the online social networking services would be on the increase in the nearest future.

IMPLICATIONS

The cardinal focus of this study is to clarify and resolve existing contradictory opinions as reported in literature on the impact of OSNs and students' academic performance. Our overall goal is to motivate and initiate positive behavioral changes in students regarding social networking use within and outside of class with the aim of improving academic performance.

REFERENCES

Abu-Hilal, M.M., 2000. A structural model for predicting mathematics achievement: It's relation with anxiety and self-concept in mathematics. Psychol. Rep., 86: 835-847.

Ainin, S., M.M. Naqshbandi, S. Moghavvemi and N.I. Jaafar, 2015. Facebook usage, socialization and academic performance. Comput. Educ., 83: 64-73.

Alhajraf, N.M. and A.M. Alasfour, 2014. The impact of demographic and academic characteristics on academic performance. Int. Bus. Res., 7: 92-100.

Alwagait, E., B. Shahzad and S. Alim, 2015. Impact of social media usage on students academic performance in Saudi Arabia. Comput. Hum. Behav., 51: 1092-1097.

Bandalos, D.L., K. Yates and T. Thorndike-Christ, 1995. Effects of math self-concept, perceived self-efficacy and attributions for failure and success on test anxiety. J. Educ. Psychol., 87: 611-623.

Bandura, A., C. Pastorelli, C. Barbaranelli and G.V. Caprara, 1999. Self-efficacy pathways to childhood depression. J. Pers. Social Psychol., 76: 258-269.

Brown, T.A., 2006. Confirmatory Factor Analysis for Applied Research. 1st Edn., The Guilford Press, New York, ISBN-13: 978-1593852740, Pages: 475.

Chin, W.W. and P.R. Newsted, 1999. Structural Equation Modeling Analysis with Small Samples using Partial Least Squares. In: Statistical Strategies for Small Sample Research, Hoyle, R. (Ed.). Sage Publications, London, pp: 307-341.

Chin, W.W., 1998. The Partial Least Squares Approach to Structural Equation Modelling. In: Modern Methods for Business Research, Markoulides, G.A. (Ed.). Lawrence Erlbaum, Mahwah, New Jersey, USA., pp: 295-336.

DeVellis, R.F., 2003. Scale Development: Theory and Application. 2nd Edn., Sage Publications Inc., Thousand Oaks, CA., USA., ISBN-13: 9780761926054, Pages: 171.

DuPaul, G.J. and R.J. Volpe, 2009. ADHD and learning disabilities: Research findings and clinical implications. Curr. Attention Disorders Rep., 1: 152-155.

Falahah and D. Rosmala, 2012. Study of social networking usage in higher education environment. Procedia Soc. Behav. Sci., 67: 156-166.

Fornell, C. and D.F. Larcker, 1981. Evaluating structural equation models with unobservable variables and measurement error. J. Market. Res., 18: 39-50.

Hair, Jr., J.F., R.E., Anderson, R.L. Tatham and W.C. Black, 1995. Multivariate Data Analysis with Readings. 5th Edn., Prentice Hall, Englewood Cliffs, NJ.

Hair, J.F., W.C. Black, B.J. Babin and R.E. Anderson, 2010. Multivariate Data Analysis. 7th Edn., Prentice Hall, Upper Saddle River, NJ., ISBN-13: 9780138132637, Pages: 785.

Hair, J.F., C.M. Ringle and M. Sarstedt, 2011. PLS-SEM: Indeed a silver bullet. J. Market. Theor. Pract., 19: 139-152.

Karim, S. and M. Kandy, 2011. Time management skills impact on self-efficacy and academic performance. J. Am. Sci., 7: 720-726.

Karpinski, A.C., P.A. Kirschner, I. Ozer, J.A. Mellott and P. Ochwo, 2013. An exploration of social networking site use, multitasking and academic performance among United States and European University students. Comput. Hum. Behav., 29: 1182-1192.

Kirschner, P.A. and A.C. Karpinski, 2010. Facebook and academic performance. Comput. Hum. Behav., 26: 1237-1245.

Kolek, E.A. and D. Saunders, 2008. Online disclosure: An empirical examination of undergraduate Facebook profiles. NASPA J., 45: 1-25.

MacCallum, R.C. and J.T. Austin, 2000. Applications of structural equations modeling in psychological research. Ann. Rev. Psychol., 51: 201-226.

Margrain, S.A., 1978. Student characteristics and academic performance in higher education: A review. Res. Higher Educ., 8: 111-123.

Michikyan, M., K. Subrahmanyam and J. Dennis, 2015. Facebook use and academic performance among college students: A mixed-methods study with a multi-ethnic sample. Comput. Hum. Behav., 45: 265-272.

Nonis, S.A., G.I. Hudson, L.B. Logan and C.W. Ford, 1998. Influence of perceived control over time on college student's stress and stress-related outcomes. Res. Higher Educ., 39: 587-605.

Pasek, J. and E. Hargittai, 2009. Facebook and academic performance: Reconciling a media sensation with data. First Monday, Vol. 14.

Paul, J.A., H.M. Baker and J.D. Cochran, 2012. Effect of online social networking on student academic performance. Comput. Hum. Behav., 28: 2117-2127.

Rouis, S., M. Limayem and E. Salehi-Sangari, 2011. Impact of Facebook usage on student's academic achievement: Role of self-regulation and trust. Electron. J. Res. Educ. Psychol., 9: 961-994.

Sansgiry, S.S., A.A. Kawatkar, A.P. Dutta and M.J. Bhosle, 2004. Predictors of academic performance at two universities: The effects of academic progression. Am. J. Pharm. Educ., Vol. 68.

Yu, A.Y., S.W. Tian, D. Vogel and R.C. Kwok, 2010. Can learning be virtually boosted? An investigation of online social networking impacts. Comput. Educ., 55: 1494-1503.