Social Networking and Students' Academic Performance: the Role of Attention Deficit, Predictors of Behavior and Academic Competence

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Abstract - There are contrasting opinions in literature by researchers on the impact of online social networking services (OSNS) on students' academic performance. To learn more about the impact of online social networking (OSN) on academic performance, a survey of undergraduate students of a private university in south-west Nigeria was conducted. Survey results were analyzed using structural equation modeling (SEM) and partial least squares (PLS) approach. The results revealed a statistically significant positive effect of academic competence and predictors of behavior on student time management on OSN and their academic performances. The result also revealed a statistically significant positive effect of attention deficit on time spent on OSNS and a statistically significant negative effect on academic performance. Specifically, it was determined that the higher the attention deficit, the higher the time spent on OSN. Further, academic competence was found to be highly correlated with characteristics that predict or influence student behavior, while attention deficit was found to be moderately correlated with predictors of student behavior.

Index Terms – Academic performance, online social networking services, SEM, Social media, Facebook, GPA.

I. INTRODUCTION

Online Social Networking Services (OSNS) is 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. It has been discovered that over 2.2 billion people are active on social media platforms. During 2005, online social network sites like MySpace and Facebook became common destinations for young people in the United States. Throughout the country, young people were logging in, creating elaborate profiles, publicly articulating their relationships with other participants, and writing extensive comments back and forth. By early 2006, many considered participation on the key social network site, Myspace, essential to being seen as cool at school. 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. Although, the luster has since faded and teens are not nearly as infatuated with these sites (Myspace) as they once were, they continue to be an important part of teen social life. In recent time 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. However, the focus of this article is to examine how this fast growing trend of online social networking services have affected the performance of students academically especially in the Universities paying particular attention to students' attention deficit, behavior and academic competence."

II. REVIEW OF RELATED WORKS

Recent studies from extant from literature shows that online social networking media has gained considerable attention as a factor affecting students' academic performance (Kolek & Saunder, 2008, Karpinski & Duberstein, 2009, Kirschner & Karpinski, 2010, Rouis et al., 2011, Paul et al., 2012, Michikyan et al., 2015). In the work of Paul et al., 2012, reveals a statistically significant negative relationship between time spent on OSNS and academic performance. They found out that OSNS heavily influenced the attention span of the students, particularly the higher the attention span, the

lower is the time spent on OSNS. Kirschner & Karpinski, 2010, differs sharply on the proponents that argued that modern youth today 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 GPA, reveals that students with lower GPAs spent fewer hours per week on their study than non-users. Similarly, Junco, 2012 reported in his work that multitasking with technologies can interfere with students learning process as indicated in the research in cognitive science that there is performance decrement when students endeavour 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.

III. METHODOLOGY

This study aims to investigate the role of attention deficit, predictors of behaviour and academic competence in understanding the relationship between online social networking and students' academic performance among undergraduates student in Covenant University. To fulfill this aim, a quantitative research strategy is used for this study. The quantitative strategy is deemed suitable for this research as specific hypothesis formulated in this study are validated by analyzing the data collected from the target sample. The proposed model in this study is validated by the data collected using survey method of the questionnaire instrument. The survey questions are prepared using a five point Likert scale where 1 represents 'Strongly disagree' and 5 represent 'Strongly agree'. In developing the survey questionnaire instrument, questions were adapted from existing instruments of similar research to suit this study.

IV. DATA ANALYSIS AND RESULTS

The survey questionnaire was distributed among 400 undergraduate student of Covenant University. A total of 293 students' responded to the survey questionnaire with a response rate of 73%. Frequency distribution of sampled respondents indicated that 56% of the respondents are female and 44% are male students. Majority of the students who had responded to the survey is aged between 15 and 29 which represent 67% of the respondents. Respondents to the survey questionnaire represented different fields of studies such as, science, social sciences and leadership development studies. This

indicates that the sample respondents for this study fairly represent the population of undergraduates' students in Covenant University.

The data gathered in this study was analysed with the use of structural equation modeling (SEM) techniques using analysis of moment structures software (AMOS). SEM is a statistical technique used to ascertain the nature of dependent relationships between theoretical constructs and measured variables (Hair, Black, Babin and Anderson, 2010). A two-step SEM approach of measurement and structural model was used in developing and accessing the research model of this study. The assessment of the measurement model involves the use of empirical measures known as goodness-of-fit indices such as normed chi-square $(\chi 2/df)$, GFI, CFI, NFI, RMSEA. These indices indicate how well the relationships specified in the study are represented by the sample data [Hair et al. 2010]. The rule of thumb for the acceptance of this indices are as follows; normed chi-square value lesser than 3, GFI and NFI value greater than 0.9, CFI value greater than 0.95 and RMSEA value less than 0.08 are considered as suitable for demonstrating adequate fitness of a measurement model [Hair et al. 2010]. After ascertaining the appropriate fitness for the measurement model, the structural model is developed and assessed.

Firstly, the measurement model developed was assessed using the goodness-of-fit indices. The assessment indicated that the measurement model has adequate fitness with Normed Chi-square value of 1.875, GFI value of 0. 918, CFI value of 0 .947and RMSEA value of 0.055 which are all within the accepted value limits for the indices.

In assessing the reliability of the survey instrument, Cronbach's Alpha was used in assessing the internal consistency of the measurement items used for measuring constructs. As a rule of thumb, Cronbach's alpha value exceeding 0.7 is considered to indicate adequate internal consistency [Hair et al. 2010]. All items used to measure constructs in this study have shown adequate internal consistency based on the above criteria.

In ascertaining the validity of the constructs convergent and discriminant validity was carried out. Convergent validity refers to the extent to which the measurement items measuring a construct converge [Hair et al. 2010]. Convergent validity of the constructs is assessed by examining the standardized factor loadings of measurement variables and average variance extracted (AVEs) of the constructs which should be greater than or equal to 0.5 for satisfactory convergent validity for a construct [Hair et al. 2010]. Convergent validity can also be assessed by calculating the composite reliability (CR) which should exceed the recommended cut-off of 0.7 (Chin 1998b). 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 [Hair et al. 2010; Chin 1998b].

The theoretical constructs in this research have demonstrated adequate convergent and discriminant validity based on the above criteria as shown in Table I.

Analysis of the Structural Model

Following obtaining appropriate fitness for the measurement model, the structural model is developed as shown in Fig. 2. The structural model also demonstrated adequate fitness with Normed Chi-square value of 1.858, GFI value of 0.988, CFI value of 0.974and RMSEA value of 0.054 which are all within the accepted value limits for the indices. Furthermore, SEM analysis revealed that all the structural paths in the structural model are positive and significant. However, path TS to AP is negative and significant. In particular, the support for H1, H2, H4, and H6 is strong with regression weights 0.63 (p<0.001), 0.62 (p<0.001), 0.64(p<0.001) and -0.73 (p<0.05) respectively. Comparatively H3, and H5 are moderately supported but still significant with regression weights 0.41 (p<0.001) and 0.53 (p<0.05) respectively.

V. Discussion of Results

The aim of this study is to investigate the role of attention deficit, predictors of behavior and academic competence in understanding the relationship between online social networking and students' academic performance among Covenant University undergraduates students'. To achieve this objective, SEM was used to validate the proposed model of the study. The hypothesized model showed a positive effect of academic competence, predictors of behavior, and attention deficit on time management, time spent on online social networking sites and academic performance. Finding from this study shows strong supports to the relationship between academic competence, predictors of behavior, and attention deficit on time spent on online social networking sites and student academic performance. This result indicate that academic competence, predictors of behavior, and attention deficit affects students time management and time spent on online social networking leading to an effect on academic performance. Existing research [Wood et al. 2012; Rosen et al. 2011] also find similar findings on the relationships between social media networking and student performance.

Furthermore, similar to this research Paul, Baker and Cochran (2012) also find that academic competence, predictors of behavior and attention deficit has a significant effect on academic performance through time management and time spent on online social networking sites. The SEM analysis also shows a strong direct and indirect impact of academic competence on time management and academic performance. This indicates the positive relationship between student academic competence, student time management and academic performance. Thus, indicating an indirect relationship between academic competence and performance through time management. This finding is congruent to that of Junco & Cotten, [2011] and Paul, et al. [2012] who found out that academic competence is positively directly correlated with academic performance and positively correlated with the time management which is shown to have a positive impact on academic performance. Furthermore, a strong positive support is shown for the

TABLE I: CONVERGENT VALIDITY AND DISCRIMINANT

Construct			Construct					
Construct	CR	AVE	PB	TS	TM	AD	AC	AP
PB	.802	.578	.761					
TS	.755	.666	-0.196	.816				
TM	.739	.698	.487	-0.326	.835			
AD	.843	.750	.218	.816	-0.107	.866		
AC	.827	.572	.342	-0.234	.575	-0.198	.756	
AP	.970	.942	.153	-0.224	.317	-0.166	.408	.971

*CR=Composite Reliability; AVE=Average Variance Extracted
TS=Time spent on OSNS; TM=Time Management
AD=Attention deficit; AC= Academic competence
PB=Predictors of Behaviour; AP=Academic Performance
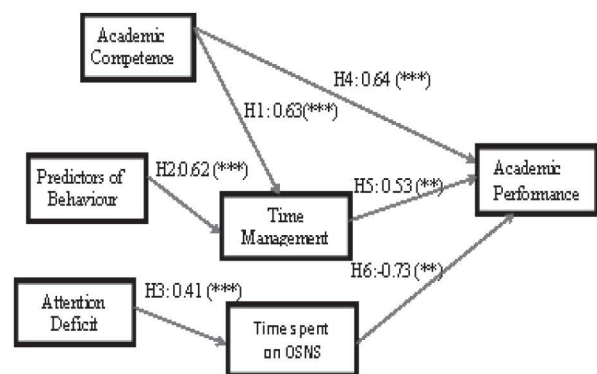*Diagonal elements are the square root of AVE.

Fig. 1. The Structural Model

Furthermore, the SEM analysis in this study shows that attention deficit has a significant positive impact on time spent on online social networking sites, which negatively impacts on the academic performance of the student, thus implying an indirect negative relationship between attention deficit and academic performance. This implies that as student lose concentration in class, the more time they spend socializing, the more negative impacts it has on their academic performance. This findings is in accordance with studies in the literature on time spent on social networking (facebook and texting) which emphasized that as student struggle to regulate their focus in class, an attempt to pay attention to two stimuli simultaneously (lecture/social media) reduces one's ability to both pay attention and process either of those stimuli resulting to poor performance in exams [Wood et al., 2012; Paul et al., 2012; Rosen et al., 2011; Koch et al., 2011]. These results indicate that higher attention deficit is related to increased amount of time spent on OSNS leading to lower academic performance.

CONCLUSION

The prevalence and continuous engagement of online social networking services by the students' population group continued to be on the increase, thereby impacting negatively on their academic performance. This study validates the findings of other researchers in literature on the negative impact of online social networking services. Attention deficit in students' academic activities increases as more time is spent on online social networking services. Therefore, effective time management on academic activities becomes a challenge. This finding is relevant for school administrators to begin to device ways of mitigating the negative impact of online social networking services on students' academic performance. In the future study, strategies to overcome the negative effect of online social network services could be investigated.

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