

The Improvement of Students' Academic Performance by Using Social Media through Collaborative Learning in Malaysian Higher Education

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Abstract

The social media have infiltrated the 21st century generations of Internet users, making it a very active means of communications, particularly among students of higher institutions of education. Consequently, academic activities in institutions and faculties are increasingly carried out through the social networks, such as Facebook, twitter and LinkedIn. These are essentially used in order to connect with current and prospective students and also to deliver instructional content. Questions arise about the impact of social media on academic performance and the possibility of using them as an effective pedagogical tool to improvement academic performance. A pilot study of undergraduate and postgraduate students at Universiti Teknologi Malaysia (UTM) was carried out to obtain preliminary results of usage of social media currently. Results obtained show that social media affects positively and significantly collaborative learning with interaction with peers, interaction with supervisor, engagement, perceived ease of use, and perceived usefulness.

Keywords: social media, students' academic performance, collaborative learning and higher education

1. Introduction

Social media is generally used on a regular basis by millions of people across the globe for different reasons. A big portion of social media users is made up of youths where most of them are college students. In fact, a recent survey of 3000 students from across the US shows that 90% of college students use Facebook and 37% use Twitter (Dahlstrom et al., 2011). Given the popularity of social media, a number of universities are using them as marketing program and as a means of communication with current and prospective students and also the alumni. University professors are embracing the social media for effective discussions and dealing with their students in matters relating to academics and improving learning benefits through better communication within and outside the classes. However, recent reviews show over-participation or addiction of students to social networking may have a negative impact on their academic performance (Kirschner & Karpinski, 2010). This has spurred discussion among faculties, across disciplines and from various schools in relation to the effectiveness and stability of social media as a teaching tool.

Considering the standard undergraduate class in which the instructor's goal is to create a fascinating atmosphere that encourages deep learning, throughout class periods most students are usually on Facebook instead of following along with the instructor's demonstration. Some are even bold enough to respond to a mobile phone call in school although most professors are strict about that.

The purpose of this study is to develop a general framework that defines the key direct and indirect drivers of academic performance. Particular interest is specifically based on the impact of collaborative learning using social media. Observations of students and a search of current literature indicate that students' academic performance is a function of collaborative learning, skills of students, students' characteristics, academic competence and time spent on social media use.

2. Literature Review

There has been great concern among concerned individuals in education and parents on the growing usage of Facebook and its effect on pedagogy specifically among students in colleges (Abramson, 2011; Kamenetz, 2011).

Studies have shown that Facebook is the most popular social tool used where 85 to 99% of college students use it for different purposes (Hargittai, 2008; Jones & Fox, 2009; Matney & Borland, 2009).

On this basis, curriculum developers have been examining the learning environments and different activities with the aim of internationalizing learning and teaching in the way that will recognize and respect and also usefully engage the ethnic and cultural diversity of students. Social media communication and collaborative technologies capabilities such as threaded bulletin boards are used to support internationalized teaching and learning and have been found to be effective in this case (Leask, 2004). The value of interactive social media technologies in high institutions of learning is now recognized in the way that teaching and learning strategies is in an increasingly globalized process (Gray et al., 2010). One of the most commonly cited benefits of social media by scholars is their ability to facilitate collaborative learning and communication among peers and with people outside academia (Collins & Hide, 2010; Rowlands et al., 2011).

Another frequently reported advantage of social networking is its remarkable ability to facilitate information distribution. Among the examples include blogging tools which are used by many students to disseminate information within their area, their peers and also to everyone globally (Bukvova et al., 2010; Luzon, 2009). The ability to explore unasked questions inside a less formal atmosphere, getting a strong voice through web technology, and getting a location to go over issues within an open, public format are other provisions of social media (Kirkup, 2010). Other than communication, scholarly Twitter users cite information distribution among the primary advantages of social networking and have proven to become popular especially in academic conferences (Letierce et al., 2010; Ross et al., 2011). Despite the fact that using social networking in academia has introduced enormous benefits, it is not without some cons and concerns. It is reported that the most affecting on in using social networking from the scientific studies are the possibility of spending a lot of time on them and denying other important aspects time they deserve (Rowlands et al., 2011).

The primary advantage of choosing social networking to aid learning and teaching can only be fully achieved with existence of clear awareness that stipulates the dos and don'ts so as to ensure that whatever students engage in are aimed at gaining the educational pros of the social media (Rutherford, 2010). In most cases the prospective benefits have been achieved where institutions of higher learning regulate to a certain level the use of social media (Kear, 2011). However, due to the rapid growth of usage of social media many institutions of learning have not created strategies for using social media; this is dangerous and should be revisited (Chretien et al., 2009).

2.1 Social Media for Academic Purpose

Social networking is an expression of the 21st century used broadly to define a number of technological tools that stress the social facets in form of a funnel for communication, collaborative learning, and inventive expression; this is also to boost education in higher institution of learning (Dabbagh & Reo, 2011; Al-rahmi & Othman, 2013b).

Social networking is playing a big role in boosting academic like in social sciences and in education systems as a whole. Many studies have addressed different aspects of using social networking at various academic and social levels. The accessible literature on social media provides useful suggestions of its application in higher institutions of education (Hamid et al., 2011). Social media may be applied by academicians in various ways, like the Facebook was recommended as a way of communication for getting together with students (Mack, 2007). Undergraduate students of IT attest that social networking has continuously improved their academic success from 2007 to 2010 (Smith & Caruso, 2010). Most students in higher institutions of learning wish their institutions alter their means of communication to social networks for strengthening class instruction because it is where they spend most of the time. According to (Madge et al., 2009) states that, social media usage enhances educational access and interaction and it fills the learning gap informally between students and the instructors (Bull et al., 2008).

Integrating social media for both entertainment and learning is common among students in higher level of education. College students use various social media applications to extent that it is now an indispensable part of their everyday life for personal and learning purposes (Cao & Hong, 2011; Dahlstrom, 2012). Mobile technologies and smart phones interweave social media in their palms and at their simple and customized command (Dahlstrom, 2012).

Many academicians have a fear that time spent on social media is beyond the required time, this may lead to plagiarism and privacy issues and in most cases contribute minimally to actual student learning outcomes. They often view the using social media as superfluous or simply not conducive for better learning outcomes (Moran et al., 2012). Studies have proved that most students invest time and efforts on social networks in building

relationships around on shared interests and on same grounds (Maloney, 2007). It has convinced some experts in education that to incorporate social media towards the conventional interaction and dialogue between students and teachers simplifies most of the difficulties used to be in education. According to, some also have even welcomed the capability of social media services to provide teachers a forum for simple networking and positive networking with students (Lemeul, 2006).

3. Conceptual Framework and Hypotheses

This study accounts for a brief discussion on the contents in the suggested framework for evaluating students' academic performance by the use of social media through collaborative learning in higher institutions of learning is presented. However, the investigation of this research finds that social media integration relates to the students' academic performance in their research, this is true through social media variables observed for being utilized through collaborative learning to improve the students' academic performance. The variables observed in this study are: Interactive with peers, Interactive with teachers, Engagement, Perceived ease of use and Perceived usefulness, Influence student's satisfaction, and academic performance of students.

Similarly, a conceptual framework that identifies instruments by which using social networking influences students' academic performance through collaborative learning is supplied which is illustrated in figure 1. Student awareness from a perspective of peers' interaction, interactive with teachers, engagement in educative related aspects, Positive Attitude, Perceived ease of use and Perceived usefulness that is derived from using social media to promote active collaborative learning is a suggestion of this study. In addition, of enhancement of which ultimately results oriented and improvement in academic performance of students. Social media increases the quality of perceived interaction within the class both among students interaction with peers and between students and also the teacher interaction (Banks, 2006). It has been mentioned in a number of literature that interaction is a critical aspect in all training processes. It also encourages students to have the class active collaborative learning and creates a sustained behavior participation in mastering activities and students engagement, Positive Attitude, Perceived ease of use and Perceived usefulness of using social media for collaborative learning (Carnaghan & Webb, 2007; Guthrie & Carlin, 2004; Yanli et al., 2010; Davis, 1989). The existence of these components is instrumental on active collaborative learning to improving students' academic performance in their research.

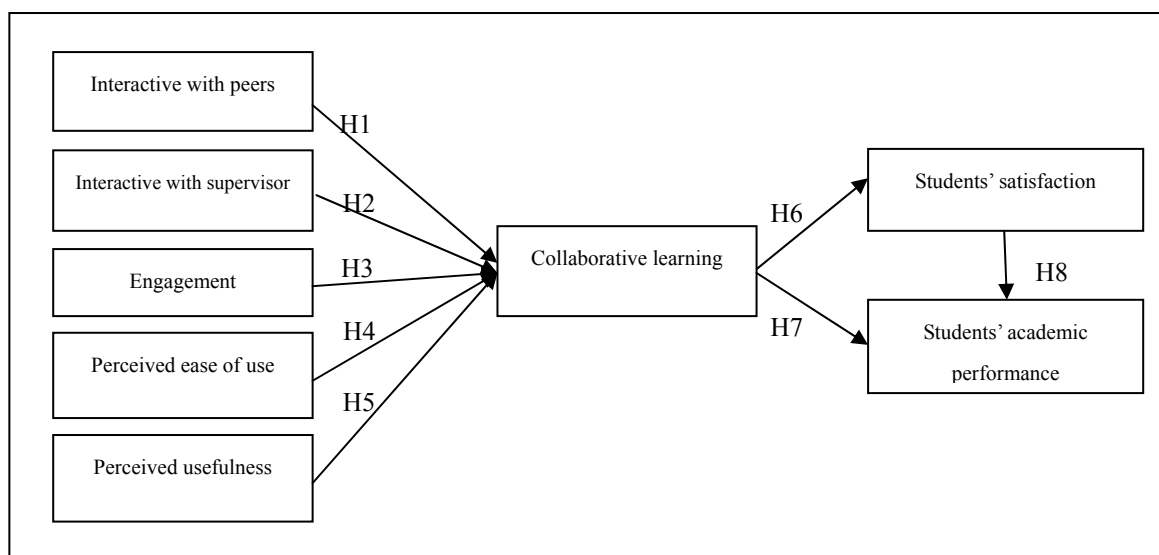


Figure 1. Conceptual framework

3.1 Interactivity with Peers and Teachers

Traditional learning techniques can interrupt smooth interactions within the class (Cotner et al., 2008). In addition, limited class time, rigid seating plans and students' reservations about speaking in school are really known as vital obstacles towards class interaction (Draper & Brown, 2004). However, advanced technologies have transformed the way students interact in classes and outside classes, this consist of new choices to enhance

interaction. Aiding interaction is important because it results in better and even more effective learning and might be an essential way to obtain success in education. (Bannan, 2002; Siau et al., 2006; Chou, 2003; Siau et al., 2006). This idea has formerly been one of the greatest pedagogical setbacks within the class, designed for bigger classes and technology-related courses. When interaction is obtained within the learning activity, students are motivated to understand, and also more conscious, participative and more susceptible to changing ideas together with fellow students. Consequently, interaction influences student learning benefits (Liu, 2003; Erickson & Siau, 2003; Haseman et al., 2002; Arcas et al., 2013; Al-rahmi & Othman, 2013b). Considering conceptual aspect, the idea of integration may be relevant nevertheless the specific ways in which commuting students integrate can vary substantially from students who reside on campus to off campus students, with socio-academic moments as possibly more pivotal for just two-year students (Deil-Amen, 2011). Of those students, the conventional and the idea of interactions with peers and faculty held more appeal and purpose it performs often and depth of connection.

H1. Interactivity with peers as a result of using social media improves students' academic performance through collaborative learning.

H2. Interactivity with teachers as a result of using social media improves students' academic performance through collaborative learning.

3.2 Student Engagement

According to Astin (1984) engagement was defined as the quantity of physical and mental energy that a student devotes towards the academic experience. This theory of student engagement that took its origin from the potency of any educational practice is proportional to all that is practiced to improve student engagement. Engagement is seen today as the energy an individual student puts in educational activities which are empirically associated with preferred college final results (Kuh, 2009). Engagement includes various factors, such as the academic experience with college, interactions with faculty, participation in activities within the class, and interaction with peers. Kuh (2009) added that there are two major aspects these are: in-class or academic engagement and out-of-class engagement in educationally relevant or co-curricular activities, each of which are essential to students' success.

Students engagement represent both the time and energy students invest in activities objected towards educational purposes (Kuh et al., 2007). The study further suggests that due to peer group nature influential student can influence other students through the use of social media. Institutions should therefore take decisive actions to harness and shape this influence so that it is educationally purposeful and helps to reinforce academic performance.

H3. Engagements as a result of using social media improve students' academic performance through collaborative learning.

3.3 Perceived Ease of Use

Perceived simplicity is a term used to denote "the degree that the mark user needs the prospective system to become free from effort" (Davis, 1989). And (Mayer et al., 1995) defines trust because the readiness of the party to become susceptible to those things of some other party. Thus, customers might depend on the social networking provider not to abuse their information because of its personal gain. Technology Acceptance Model (TAM) came from a theory of reasoned action, and could be regarded as a special situation of simply two salient values: perceived simplicity of use and perceived effectiveness. The predictive energy of perceived simplicity of use and perceived effectiveness for users' technology acceptance continues to be empirically confirmed by many studies. Particularly, users' perceived simplicity of use improves their perceived effectiveness and both constructs considerably improve users' intention to simply accept we've got the technology (Yanli et al., 2010; Al-rahmi & Othman, 2013c).

H4. Perceived ease of using of social media improves students' academic performance through collaborative learning.

3.4 Perceived Usefulness

According to Davis (1989), Perceived effectiveness and usefulness is a degree at which a person thinks as he uses a particular system to facilitate and improve his performance. It further means that, the social media is used in boosting pedagogical effectiveness within the class. Studies in the past revealed that perceived effectiveness helps in utilization of social media on collaborative learning. In another finding, (Boulos et al., 2006; Al-rahmi & Othman, 2013c) posits that Perceived effectiveness relates to how an individual thinks in the presence of an optimistic user-performance. The consumer perceives the machine to become an ideal way of carrying out the

duties (Davis, 1989).

H5. Perceived usefulness of using social media improves students' academic performance through collaborative learning.

3.5 Collaborative Learning

There has been wide acceptance and integration of social media into pedagogy in recent years. However, the effectiveness of the social media in improving academic performance in collaborative learning has also been envisaged to have risen substantially. Available studies have shown that social media is a positive tool in enhancing academic performances (Selwyn & Grant, 2009; Arnold & Paulus, 2010; Hung & Yuen, 2010; Mason & Rennie, 2008; Al-rahmi & Othman, 2013a). In addition, collaborative learning using the social media such as Facebook, E-mail, twitter etc. facilitates learning and knowledge sharing among students, teachers or trainers to the context in real life situation and experiences.

Furthermore, in deciding whether to use individual or a collaborative learning activity, the amount of cognitive load that a learning task imposes on the learner's cognitive capacity should be the main determining factors students' strong desire for collaborative learning and learning with technology. Therefore their novelty effects may mislead thinking that the social media support collaborative learning (SSCL) outcomes effectively (Zoghi et al., 2010). Laird and Kuh (2005) found that, social media has a significant and positive potential of engaging learners as well impacting on their academic performance. Johnson et al. (2008) stated that collaborative learning depends on groups. This implies that learners differ from group to group. In a situation where you have a serious and active group members it translates to positive outcomes and vice versa.

H6. Collaborative learning as a result of using social media improves students' satisfaction.

H7. Collaborative learning as a result of using social media improves students' academic performance.

3.6 Student Satisfaction with Social Media Use

Apparently there seem to be an enhanced trend among users to embrace the social networking sites particularly at college level. It appears to possess transformed communication designs even at local level. Palen (2008) and Palen et al. (2009) stated that social networking can offer new methods for individuals to interact both within and outdoors of the spatial bounds from the event. The popularity of utilizing social networking among college students appears to be growing on a daily basis and a lot of them depend on their usage for interactions and communication. According to (Smith & Caruso, 2010; Al-rahmi & Othman, 2013a), it was mentioned that a big ratio of students particularly at greater education level are applying social networking failing to remember regarding their physical, mental and mental health. Nonetheless, country profile and accessibility to the infrastructure play a vital role in the enhanced usage.

3.7 Students' Academic Performance with Social Media Use

Junco (2011) maintains that social media across fields of study has a greater impact on academic performance on its users. This is also found to be so among races and among different gender. In fact, social group formation on Facebook have been found to facilitate student development (Junco et al., 2011) there are some exceptional cases in which findings show positive relationships between Facebook and Twitter (Junco et al., 2010; Al-rahmi & Othman, 2013b) integration to improve learning (Heiberger & Harper, 2008).

In the study conducted by (Englander et al., 2010), he observed that students spend more time using social media for other purposes rather than for educational use, thus affecting their academic performance. In another study (Nalwa & Anand, 2003) mentions that students like using the internet for their own purposes and this affects their academic performance. This study is further elaborated by (Karpinski, 2009) whereby they stated that social media users have lower grade rankings than students who never engage in social interactions. However there are general benefits associated with users of social media. (Roblyer et al., 2010) explained that social media are sources of communication among students and lecturers in their respective faculties. Furthermore, (Kolek & Saunders, 2008) resolved that users of social media who are students have no affected whatsoever with their academic performance.

Kirschner and Karpinski (2010) attempted to study the relationship between Facebook and academic performance. The findings reveal that there is a significant negative relationship between Facebook use and academic performance. Respondents reported spending fewer hours in a week studying on average compared to non-users. Most respondents claimed to use Facebook accounts at least once day. This is in line with findings of (Canales et al., 2009; Junco, 2012).

H8. Students' satisfaction improves students' academic performance of using social media through collaborative

learning.

4. Research Method

The data for this study was collected using a method of survey questionnaire that were administered on 120 Undergraduate and postgraduate students in July/2013. The age-range of the respondents was between 18 and 36. The sample space consisted of 51 males and 69 females. Students were instructed in the survey to offer information about their experiences and impact of using social media on academic performance through collaborative learning. A quantitative approach and give the students the questionnaire in UTM library was used to draw the data for the study.

4.1 Respondents

In this research 120 set of questionnaires was randomly distributed to Undergraduate and postgraduate students from the Universiti Teknologi Malaysia. The analysis of this data was performed by SPSS application (Version-20). The instrument used in this study was designed based on the objectives of the study. It was piloted and the Cronbach's alpha of the reliability and validity of the instrument was put at .855. This is acceptable and the instrument has met the reliability requirement for the study. The questions which are easy to understand and the answers were divided into five sections to make it clearer.

4.2 Data Collection Procedures

A five-point Likert scale (1 for strongly disagree to 5 strongly agree) was applied in this study. The questionnaire was fine-tuned with reference to a pilot study carried out with students, and tested before-hand, examines the students' opinions about the use of social media on academic performance through collaborative learning in Malaysian higher education. A questionnaire consisting of 35 items was designed, following minor revisions to the layout; the survey was administered at the end of the semester (2013, July). Each participant was provided with a questionnaire and a brief background to the study.

The table on appendix shows the 35 items were used to measure the constructs included in our framework. Interactivity with peers and the teachers was measured using a subset of four items from (Liu, 2003; McMillan & Hwang, 2002) Engagement was measured using three items adapted from, (Gallini & Moely, 2003; Medlin & Green, 2009) Perceived ease of use and Perceived usefulness was measured using a subset of four items from, (Ajjan & Hartshorne, 2008). Collaborative learning was measured using four items adapted from, (So & Brush, 2008) students' satisfaction was measured using seven items from, (Zhu, 2012) and finally, students' academic performance was measured using five items from (MacGeorge et al., 2008; Banks, 2006). The letters INT-P stand for interactivity with peers, letters INT-T stand for interactivity with the teachers, letters ENG engagement, letters PEU perceived ease of use, letters PU perceived usefulness, letters CL collaborative learning, letters SS students' satisfaction and letters SAP students' academic performance.

5. Result and Discussion

The relationship between the student academic performance (SAP) with interactivity with peers (INT_P), interactivity with the teacher (INT_T), engagement (ENG), perceived ease of use (PEU), perceived usefulness (PU), collaborative learning (CL) were analyzed. Table 1 shows the Pearson correlation coefficient at 99% confidence level. The best correlation was found between the students' satisfaction (SS) and students' academic performances (SAP) with engagement (ENG) with correlation coefficient of 0.679.

Result of Pearson correlation indicated that there is statistically significant positive relationship between interactivity with the teachers and interactivity with peers ($r = 0.573$, $P < 0.01$). Results demonstrate that relationship between these two construct is moderate and interactivity with the teachers and interactivity with peer's combination contributing moderately towards students' academic performance. Engagement correlation results with interactivity with peers ($r = 0.463$, $P < 0.01$) demonstrate moderate positive relationship, while engagement results with interactivity with the teachers ($r = 0.625$, $P < 0.01$) demonstrate positive relationship showing that these two construct are contributing moderately towards students' academic performance.

Perceived ease of use correlation results with interactivity with peers ($r = 0.411$, $P < 0.01$) demonstrate moderate positive relationship, while perceived ease of use results with interactivity with the teachers ($r = 0.314$, $P < 0.01$) weaknesses, the correlation results but correlation results with engagement ($r = 0.458$, $P < 0.01$). Perceived usefulness correlation results with interactivity with peers ($r = 0.382$, $P < 0.01$) demonstrate moderate positive relationship, while perceived usefulness results with interactivity with the teachers ($r = 0.457$, $P < 0.01$) the correlation results but correlation results with engagement ($r = 0.430$, $P < 0.01$) and the correlation results with perceived ease of use ($r = 0.366$, $P < 0.01$). Similarly, construct of collaborative learning correlation results with interactivity with peers ($r = .496$, $P < 0.10$), interactivity with the teachers ($r = .543$, $P < 0.10$) with the

engagement ($r = 0.528, P < 0.10$) Perceived ease of use correlation results ($r = .359, P < 0.10$) and while perceived usefulness results ($r = .473, P < 0.10$) demonstrate positive and significant relationship. the dependent variable students' satisfaction has positive and significant correlation with interactivity with peers ($r = .347, P < 0.10$), interactivity with the teachers ($r = .425, P < 0.10$) with the engagement ($r = 0.421, P < 0.10$) perceived ease of use correlation results ($r = .171, P < 0.10$) weaknesses correlation results, while perceived usefulness results ($r = .414, P < 0.10$) and with collaborative learning ($r = .290, P < 0.10$). While the dependent variable students' academic performance has positive and significant correlation with collaborative learning ($r = 0.555, P < 0.01$) and positive correlation with collaborative learning. Correlation results of students' academic performance with interactivity with peers ($r = 0.597, P < 0.01$); interactivity with the teachers ($r = 0.566, P < 0.01$); engagement ($r = 0.679, P < 0.01$), perceived ease of use correlation results ($r = .415, P < 0.10$) correlation results, while perceived usefulness results ($r = .397, P < 0.10$) and with students' satisfaction ($r = .495, P < 0.10$). So the positive and significant correlation with engagement.

These results highlight that students' academic performance relationship with interactivity with peers, interactivity with the teachers and the engagement, is contributing to improve students' academic performance. These results highlight that collaborative learning relationship with interactivity with peers, interactivity with the teachers, the engagement, perceived ease of use, and perceived usefulness is contributing towards improvement students' satisfaction and students' academic performance. Figure 2 indicate that interactivity with peers positively and significantly with collaborative learning ($\beta_2 = 0.143, p < 0.05$) While support the interaction among the students may improve the students' academic performance through the collaborative learning. Interactivity with teachers positively and significantly with collaborative learning was ($\beta_3 = 0.130, p < 0.05$).

The interaction between students and teachers found to be lower than interactivity with peers. The engagement has positively and significantly with collaborative learning with standardized beta coefficients was ($\beta_3 = 0.352, p < 0.05$). Perceived ease of use has significantly with collaborative learning ($\beta_3 = 0.052, p < 0.05$) and the perceived usefulness has weaknesses significantly with collaborative learning ($\beta_3 = 0.019, p < 0.05$), the collaborative learning with students' satisfaction has good significantly ($\beta_3 = 0.223, p < 0.05$), the collaborative learning with students' academic performance has also good significantly ($\beta_3 = 0.290, p < 0.05$), and positively and significantly between students' satisfaction and students' academic performance was ($\beta_3 = 0.154, p < 0.05$). In line with the outcome of this study to understand students' academic performance by using social media in higher education, the following have been discovered: To acquire a general satisfaction of social media since it encourages and facilitates student utilization of social media for collaborative learning, and boost the education and experience with a students. In terms of interactivity with peers on social media and acquired a higher percentage when it comes to students' academic performance at University since it influences it to be simple for student to go over questions along with other students through social media It is easy to networking with peers and interact with them because it is the same age, class and education level.

Table 1. Descriptive statistics and correlations

	INT_P	INT_T	ENG	PEU	_PU	CL	S.S	SAP
INT_P	1							
INT_T	.573**	1						
ENG	.463**	.625**	1					
PEU	.411*	.314	.458**	1				
PU	.382*	.457**	.430**	.366*	1			
CL	.496**	.543**	.528**	.359*	.473**	1		
S.S	.347*	.425**	.421**	.171	.414**	.290	1	
SAP	.597**	.566**	.679**	.415*	.397*	.555**	.465**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

In terms of the students' academic performance with engagement acquired a typical percentage when it comes to academic performance of students at University since it provides coalition and sharing of knowledge in the class and library by using social media at any time. The collaborative learning with social media usage and acquired an average percentage when it comes to academic performance of students at University since it helps making

the students feel confident enough to present the social media by collaborative between peers, teachers and engagement within the class.

In terms perceived ease of use social media also has acquired an average percentage when it comes to academic performance of students, the perceived usefulness of social media when it comes to academic performance of students at University with weakness value.

Finally, In terms of the students' academic performance with interactivity with teachers of utilizing social media and acquired a lowest percentage sometimes not allowed to communicate with teachers or shy students, but is good since it provides those more understanding from teachers, and academic achievement in education.

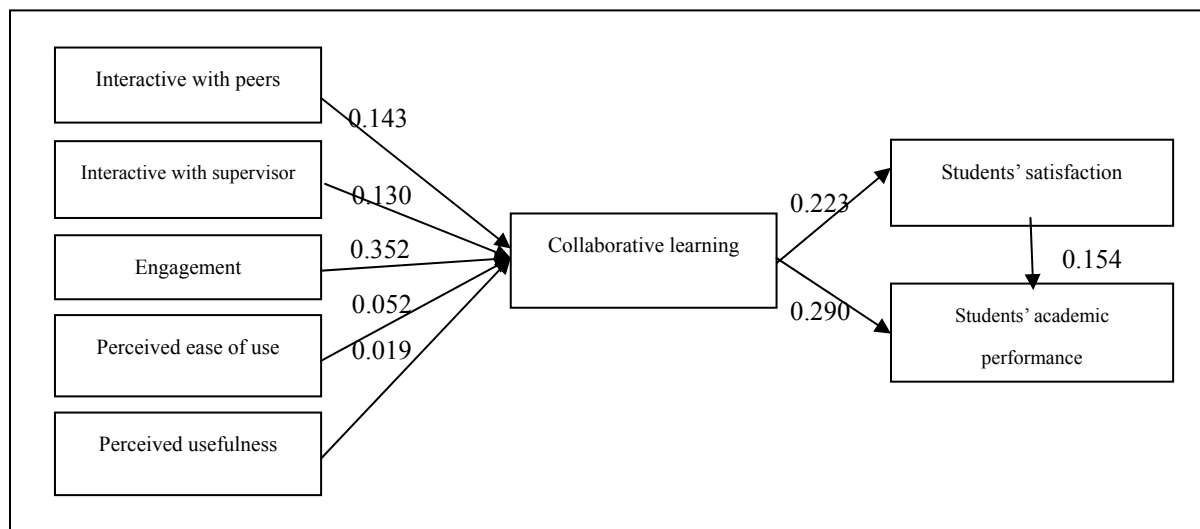


Figure 2. Results for the proposed conceptual framework

6. Conclusion and Future Work

This research suggested five predictors of utilizing social networking for collaborative learning to improvement students' academic performance with satisfaction in higher education. The outcomes state 80% of variance in social media satisfaction to improving academic performance of students could be described through the five predictors. The results attained suggest that research model provided a powerful explanatory energy of social media academic satisfaction for among students. In the results acquired, it may be concluded that social media facilitates the academic experience and collaborative learning with the majority of the participants. The participants may also access material in addition to supplying sufficient content associated with their demands with peers and instructors. Fully engagement in classes towards improving academic performance using social media through collaborative learning in relation to interactive with peers, interactive with teachers, engagement, has resulted in persuasion to ease of use and perceived usefulness is hereby revealed. This paper propose more studies and addition of factors have an effect with collaborative learning to improve students' academic performance as future work (e.g., environmental and cultural). This may be carried out to clarify more in this area also need to study deeper in the future for more than just a single institution of learning but to took a larger sample.

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