



King Saud University
**Journal of King Saud University –
Computer and Information Sciences**

www.ksu.edu.sa
www.sciencedirect.com



Strengthening the academic usage of social media: An exploratory study



Murad Ali *, **Raja Ahmad Iskandar Bin Raja Yaacob**,
Mohd Nuri Al-Amin Bin Endut, **Naseeb Ullah Langove**

Management & Humanities, University Technology PETRONAS (UTP), Perak, Malaysia

Received 19 February 2016; revised 10 July 2016; accepted 2 October 2016
Available online 10 October 2016

KEYWORDS

Media learning;
Social media;
Learning;
Information sharing;
Behavior

Abstract Technology strengthens learning and dominates over the conventional methods in too many aspects. Technologies are advancing learning procedure by their multiple formats, variety of resources, numerous delivery channels and not restricted to time space and place. Social media is a new form of communication that transformed the entire landscape of information access and dissemination online. This platform consists of a range of communication channels, considerably popular among students and assists them in various types of communication and collaborative learning. However, the platform of social media can also be considered as a source of distractions and divert student's attention from learning and academic achievements. The principal objective of the current study is to understand the recent trends of social media use, the phenomenon of distractions and factors out convincing students for the academic use of social media. Interviews administered to enquire the phenomenon and analyzed with the help of ATLAS-Ti-7 and MS Excel. It is concluded from the results that individual psychological characteristics, social influences, information quality and system usefulness are the leading factors. Furthermore, the survey established the importance of this platform for academic purposes and perception concerning the phenomenon of distraction. In addition, future research directions and study limitations are discussed.

© 2016 The Authors. Production and hosting by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

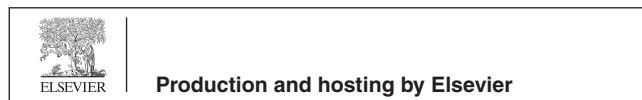
1. Introduction

Technologies enhance learning, increases learning demand and offer flexible delivery with respect to time, space and place (Westera, 2012). Technology has advantages over the traditional intermediaries in terms of display such as images; color graphics, audio, videos and transferring of information in short period of time (Ziqing and Jinping, 2013). The history of technologies in education is traced back to the inventions of Thomas Alva Edison recording devices and reached to the present era of interaction or two-way communications with

* Corresponding author.

E-mail addresses: ali04chd@yahoo.com (M. Ali), iskandar_yaacob@petronas.com.my (R.A.I.B.R. Yaacob).

Peer review under responsibility of King Saud University.



the invention of computer and the Internet (Westera, 2012). Social media is a new form of communication and consists of a variety of communication tools such as, blogs, collaborative projects, social networking sites, content communities and virtual world (Kaplan and Haenlein, 2010). These sites contribute by providing unlimited opportunities to interact, socialize and share with each other (Correa, Bachmann, & Hinsley, 2013 and Özgüven and Mucan, 2013). Social media has become an extremely important means of communication of the present age (Al-rahimi et al., 2013) and connect people with similar interest of sharing activities (boyd and Ellison, 2008).

According to Global Digital Statistics (2014), there are 2.95 billion (41% of total population) people who are active Internet users with 2.03 billion penetrations of active social media users, whereas 1.56 billion of them access these social applications through their mobile devices (We are social, 2014). Social media applications are commonly used by millions of people across the world for different reasons on the regular basis (Al-rahmi et al., 2014). This rapid growth in acceptance of social media applications in a short period of time is due to its increasingly widespread operation by students (Kirschner and Karpinski, 2010). This increase in the use of these applications is because of its convenience, flexibility and functionalities (Al-rahimi et al., 2013). These tools are highly beneficial for students of higher education and modernizing the process of student learning, interaction, collaboration and sharing (Chai-lee, 2013 and Al-rahmi et al., 2014). However, on the other hand, these applications are also a source of distraction and divert students' attention from their learning (Kirschner and Karpinski, 2010; Purcell et al., 2013; Junco and Cotten, 2012). Nevertheless, social media has reduced the geographical barriers, and we are no longer limited geographically. Today everyone can interact, comment, debate and collaboratively create knowledge, no matter where they are. The application assists students in too many aspects and needs to understand their use behavior (Boyd and Ellison, 2008), because, social media facilitates learner integration and satisfaction (Andersen, 2013).

Learning takes place by interacting with others, exchanging ideas and critiques. Policy makers and educators are required to develop strategies and design applications to motivate students in adaption of social media for learning (Helou et al., 2012 and Santoso et al., 2014) by integrating with their learning activities (Baran, 2013 and Chai-lee, 2013). Human beings, in general, and students, in particular, are a very complex phenomenon, and their motivational problems are usually manifested in their behavior, which needs careful and systematic observation (McKerlich et al., 2013) Because inquiring their online behavior is important to enhance their learning experiences (Jin et al., 2013) and particularly to their information sharing (Sohn, 2014; Chang and Hsiao, 2014; Tinto, 2013). In Malaysian perspective, these emerging technologies are negatively affecting students' reading behavior and learning performances (Inderjit, 2014 and Hamat et al., 2012) and very rarely examined, which may cause serious problems and threats to the future sustainable development of young higher education (Masrom and Usat, 2013). The purpose of the current investigation is to explore those factors that can help to understand the academic use of social media among students, reduce the phenomenon of learning distraction and enhance their online engagement.

2. Literature review

Creativeness, innovativeness, collaboration and competitiveness are highly essential for successes in the global markets of today. People and societies constantly require information for improvement of their knowledge. Technology enhances learning, increases learning demand, increases customization and facilitates flexible delivery with respect to the time, pace and place (Westera, 2012). Thomas Alva Edison was the first to create the technology for recording and displaying moving images by the end of the 19th century. Edison claimed that the technology would bring revolution in education by bringing new ideas for learning and contents. According to Cuban (1986) before the advent of moving images, radio was used in educational deliveries during 1910 and Reiser (1987) instructional television from 1950 to support instruction and learning as cited by (Westera, 2012). During 1960, audio compact cassettes became available as a portable recording device and were used to provide guidance along with written material. Lasser (2005) and Westera (2012) are further describing that the arrival of video cassettes as a next revolution in learning and education. These resources were more flexible and students could use it any time. Computer was commercialized in 1980. In contrast to audio & video technologies, computer was found more interactive. According to Papert (1982) interaction with computer is an ideal environment for knowledge production, while Shank and Cleary (1995) mentioned that computers make available all the things essential for learning with creative excitement, eagerness, curiosity, exploration, natural learning, and fun as cited by (Westera, 2012). According to Lai & Kritsonis (2006), computer has positive effect on student learning and other achievements, employing computer technology in learning can be convenient to generate independent and collaborative learning environment. While Gulekand Demirtas (2005) and Lowther (2007) using computer technologies can improve students' learning as compared to traditional methods especially in subjects such as, Mathematics, geometry, languages, writing and overall grade point averages and its immediate feedback leads to reduced learning time as cited by (Saba, 2009).

The advent of the internet during 1990s marks an essential change in the way society functions. The wide-ranging nature of the internet gives new ideas of information access, information services and social connectivity, enlarged global economy and wider exchange of cultures. Internet represents the first technological invention that allows education providers to bring changes at an institutional and organizational level. The digital divide among the young and adults shows that the new generation has a more positive attitude toward new technologies (Westera, 2012). Internet has rapidly entered the life of the people in the 20th century. It is a fast means of communication to get people closer to each other, within a short time while having the ability to enhance their knowledge. Educational literature which is freely accessible such as dictionaries, encyclopedias, references, databases etc play an important role in distant learning, in collaborative projects with students from other schools, universities, countries and also enables discussion of different problems with them. Internet in the sphere of education is really unique and was invented especially for education (UNESCO, 2003). Internet turned to a symbol of change as it offered unlimited choices to access

information. Internet affects education process, offering alternative and creative methods of learning, and helps to acquire desired information and has changed the concept of time and place. In every aspect of education and learning different applications of internet technology are spreading (Tutkun, 2011). Internet has changed the way people access information and wide ranges of learning resources are available on the Internet (Johnson, 2011).

The advent of Web 2.0 has introduced new philosophy of powers that also encourages education. Web 2.0 replaces traditional models of content development that were hierarchical and company guided with bottom-up models or with individual contributors in social spaces, such as Blogs, Wikipedia, and YouTube. In education, various applications of web 2.0 are utilized by experts to create, adapt, share and annotate learning content in an open licensing model (Westera, 2012). Web 2.0 is an information space where everyone has immediate access, not just to browse, but to create (Berners-Lee, 1999) or we became the media (Biafra, 2001) as cited by (Anderson et al., 2007). Social media which is based on web 2.0 as the second generation of web is built on the philosophy that (1) to use internet as platform (2) make the web more democratic and (3) find and employ techniques to enhance information sharing (Anderson et al., 2007). These emerging technologies have introduced new trends in education. These trends are more open, personalized, creative, innovative and with greater emphasis on lifelong learning (Owen et al., 2006). According to Glogoff (2006), these social software especially wikis play an important role in learning. Wikis facilitate students to work together, build a wiki-based glossaries which provides them with opportunity to comment and support instructor in designing for learning as cited by (Anderson et al., 2007). Wikis and blogs are particularly useful writing tools that aid composition practice, where education is more like a conversation and learning (Alexander, 2006).

The term Web 2.0 was first used in 2004 as a new way where software developers and end-users use the WWW, as a platform in collaborative fashion to produce contents and applications. Web 2.0 is not different from the WWW and does not denote any specific version of the Web, but relatively a series of technological improvements. It includes some new features and functionality that were not available in Web 1.0. The set of basic functionalities necessary for its functioning are including adobe flash (for adding animation, audio/video), RSS (web feed formats used to publish and updated content), and AJAX (asynchronous java script, to retrieve data from web servers, allowing the update of web content) so, Web 2.0 is used as a platform for the evolution of Social Media (Kaplan and Haenlein, 2010). Social Media is a group of Internet-based applications built on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange of user generated content (Kaplan and Haenlein, 2010). Social media is the collection of websites and web-based systems that allows for mass interaction, conversation and sharing among members of a network (Murphy et al., 2014). Social media enhances communication, collaborative learning, and creative expressions as well as boosts education in higher institutions of learning (Al-rahimi et al., 2013). Social media increase students' learning, conversation, sharing, publishing and participation (Chai-lee, 2013). Social media in learning process allows students to collaborate and share with each other (Gikas and Grant, 2013). These applications are becoming

popular among students of higher education and have positive effect on students' e-learning (Elkaseh et al., 2015).

Andersen (2013) quoted the statement of Brenner-Lee, 1998; according to the statement "the dream behind the WWW is a common information space where people communicate by sharing information". Social media allows sharing information, and its importance is due to the increasing emphasis on integrated working or collaborative learning concept across the globe. Information sharing through social media has affectively changed the way people learn and network (UNCTAD, 2012) and a universal method of information gathering in academic environments (Talja, 2002). It can positively predict students' learning performance (Junco, 2012a), enhance and support academic learning (Gray and Annabell, 2010), as precious components in the learning process and assist students to achieve meaningful online dissertation that includes various levels of intellectual skills and different types of knowledge (Lin et al., 2013). According to British Library, Jisc (2009) doctoral and research students are more and more dependent on secondary research resources and facing problems to use those resources because of authentication access and license to subscription. Social media platform opens valuable information and knowledge sharing among people such as SSRN, Social Science space, Academia.edu and ResearchGate (Kichanova, 2012). Social media applications are connecting people free of cost and facilitate the sharing of information in different formats (Cain et al., 2009) and students are socially connected through social software and sharing their daily learning experiences on several topics (Liccardi et al., 2007).

However, Social media applications are highly utilized by students for a lot of non-educational purposes; these applications may badly affect students' academic life and learning experiences (Kuppuswamy and Narayan, 2010). These new technologies are revolutionary but some of its applications are highly insecure (Trusov et al., 2009). The use of Social media applications such as social networking among students are mostly for entertainment (Khan, 2012), other applications such as Facebook is significantly negative associated with GPA and learning performance (Junco et al., 2011; Junco, 2012b; Junco and Cotten, 2012) and especially among fresh students (Junco, 2015). Internet and new technologies have positive impact on students but also cause distraction instead of helping them academically (Gafni et al., 2012). In Malaysian perspectives, the uses of these emerging technologies are adversely affecting students' reading behavior (Inderjit, 2014), their learning performance (Hamat et al., 2012) and limited inquired for student learning behavior (Masrom and Usat, 2013).

3. Theoretical foundation

This study is exploratory in nature, and the main objective of the study is to navigate factor's guide to penetrate student online behavior and model their best possible use of social media to enhance their learning and academic performance. Theories explain behavior of interest or a phenomenon that required using the scientific method (Bhattacherjee, 2012). In order to forecast a better understanding of technology usage, acceptance and adoption, there is a wide range of theoretical models on hand from distinct disciplines (Venkatesh

et al., 2003). The ubiquitous nature of social media is continuously flourishing for the present information-age learners. These applications have the potential to improve students learning, however, the area is insufficiently examined for its impacts on students. The idea of social learning is belonging to the social constructivism theory of 1960s advanced by Vygotsky's in 1978. The theory suggests that students learning are based on collaborative activities. This collaborative learning is more effective than the independent learning and contributing a lot to motivation, achievement oriented, and creating beneficial collective outcomes. In the contemporary digital age, by merging the social learning with the social web platform, where learning is not an individualistic activity and learners are significantly collected information through multiple resources of this platform (Chen and Bryer, 2012). In addition, students motivations and ability with respect to the acceptance or adoption of social media can be understood through the motivation theory of (Pintrich and Schunk, 1996). The theory suggests that motivation is the person's willpower to test, whereas ability is what a person can do. The aim of the theory is to describe student behavior or future behavior. The theory of motivation such as a model by Pintrich and Schunk (1996) is focusing students' beliefs with respect to the importance of a task, students' beliefs with ability and their emotional reactions. Furthermore, there are a number of models and theories to predict technology acceptance and adoption in IS research. The most influential models among these are technology acceptance model of Davis et al. (1989), UTAUT of Venkatesh et al. (2003) and five-factor model of personality of McCrae and Costa (1987). However, due to the absence of environmental factors in FFM and personality factor in TAM, The current study considered the social cognitive theory as a theoretical approach. Because SCT (Bandura, 1999) describes that behavior is determined through personal and external factors. Based on the SCT, the current study is trying to explore factors both personal and environmental to understand the desired behavior.

4. Methodology

According to Burns and Grove (2001) exploratory research is conducted to discover new ideas, improve novel insights, and increase acquaintance related to a phenomenon. Brown (2006) indicated that exploratory research helps in handling new or rarely investigated problems, research conclusion and even for the problem existence. The data are collected through interviews from the students of higher education. The participants are first given the exposure to different social media applications. A range of questions asked comprised of different social media applications, its importance for learning and the problems associated such as distraction and finally to explore the factors that can motivate them in using social media applications to share information for learning and academic purposes. These questions were formulated to meet the objectives of the study. All these interviews were conducted in PG lounge, information resource center, university technology PETRONAS, and the Data collected are analyzed with assistance of ATLAS-Ti-7, and MS Excel. The current research is administered to answer the following research questions:

1. Do you agree that using social media application can support your learning and academic performance?
2. Do you agree that time spent on social media applications for social interactions (others than learning) can cause distraction or divert your attention from studies or academic achievement?
3. What are the factors that motivate you to use social media applications for learning and academic's purposes?

5. Results and discussion

A total of 47 students were interviewed. The sample included 55 percent of male and 45 percent of female. 70 percent of the respondents' ages were ranging from 19 to 20 years and 30 percent of the respondent ages were ranging from 23 to 26 years. In the current study, the sample representing the population is consisting of multi-ethnic groups. In order to achieve true representations of the population, the sample consists of the different ethnic groups such as, 45 percent Malay, 19 percent Chinese, 15 percent Indian and 21 percent from all minority groups. The study levels of the respondent consisted of 78 percent undergraduate, and 22 percent are postgraduate. The generated output shows that majority of the participants are undergraduate ages from 19 to 22. The details of the demographic characteristics are shown in the Table 1.

The use of the Internet and social media identified shows that only 3 percent respective respondents use the Internet for one hour a day, 15 percent for two hours, 38 percent for three hours and 40 percent of them use the Internet for four hours and above in their everyday life. The use of social media shows that 19 percent of the participant uses it for one hour or less, 23 percent for two hours 32 percent for three hours, and 26 percent of them use social media for four hours and above. Furthermore, the uses of these different social media applications are mainly consumed for information sharing, entertainment and socializing activities. These details of these activities are tabulated in Table 2.

Social media is a new form of communication and can enhance students learning performance; however, they consider these applications as a source of entertainment and sufficiently use it for their social interaction (Chen and Bryer, 2012). In order to understand student's views that how they

Table 1 Demographic characteristics of respondent.

		Number	Percentage
Gender	Male	26	55
	Female	21	45
Age	19–22	33	70
	23–26	14	30
Ethnicity	Malay	21	45
	Chinese	9	19
	Indian	7	15
	Others	10	21
Study Level	UG	32	78
	PG	13	22

Table 2 Frequency of social media use.

		Number	Percentage
Hours surf internet in a day	1 h or less	3	6
	2 h	7	15
	3 h	18	38
	4 h and above	19	40
Hours surf social media sites in a day	1 h or less	9	19
	2 h	11	23
	3 h	15	32
	4 h and above	12	26
Use of social media sites for	Information sharing	7	15
	Entertainment	9	19
	Socializing	11	23
	Above all	20	43

understand and interpret the term social media. The outputs grabbed are showing that 19 percent student believe the term as a source of interaction, which is the mutual exchange among individuals and building blocks of the society. 13 percent believe to be a source of exchange, which is an activity among individuals or groups, with more or less rewarding as well as tangible or intangible. 23 percent believe to be a source of entertainment which the action or set of actions providing or being provided with amusement and 45 percent of them understand the term as a source of communication, which is the sharing of information using symbols either auditor or visuals format. These views suggest that students have clear understanding of the term because these characteristics are the different attributes of social media and use interchangeably. The students' views on the term social media identified are presented in the figure (Fig. 1).

Social media is an umbrella term and consists of different online applications such as social network, blogs, content communities, collaborative projects and virtual or game words (Kaplan and Haenlein, 2010). These applications are based on user generated contents (UGC) and facilitates everyone to access, create and share information online (Correa et al., 2013). In order to understand student use frequencies of these different applications, the output generated shows that Facebook, YouTube and WhatsApp are the three main players followed by Wikipedia and blogs as shown in the figure (Fig. 2).

These different applications of social media facilitate different kinds of communication and information sharing; however, the basic idea of all these sites is same and all of them are based on web 2.0. To understand the primary use of these applications among students of higher education, the data col-

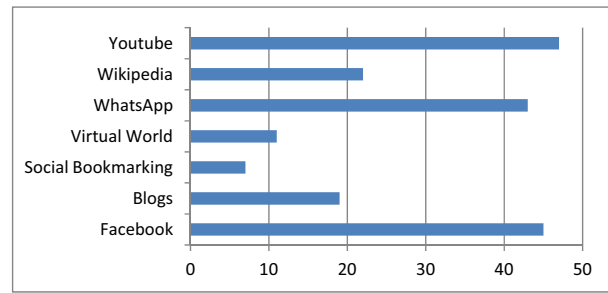


Figure 2 Frequencies of different social media applications.

lected show that 18.51 percent of students use these applications for socializing and learning, 37 percent for learning, 11.11 percent for entertainment and 33.33 percent for socializing purposes. These information are presented in the figure (Fig. 3).

Social media is the mean of commutation (Al-rahimi et al., 2013). However; students consider these applications as a source of entertainment and considerably use it for their social interaction. This attitude of students has turned these applications as a source of distraction and negatively influences their academic performance (Chen and Bryer, 2012; Kirschner and Karpinski, 2010; Gafni et al., 2012; Junco and Cotten, 2012). In order to get student's response and confirm the phenomenon of distraction associated with the use of social media applications. All the students are agreed, and some of them mentioned their own experiences associated with distraction. Therefore, the findings from this study are similar to those of (Chen and Bryer, 2012; Kirschner and Karpinski, 2010; Gafni et al., 2012; Junco and Cotten, 2012). The phenomenon of distraction is what that causes prevention to give attention to something else or from a real issue. In the context of social media for learning purposes, distraction refers to delay in study time, less concentration with respect to learning, low for academic practice, cyber-bullying or malicious behavior; privacy concerns and health treat weak learning outcomes, lower GPA and motivational problems, which is the personal desire of student to get high achievements in academic life (Kirschner and Karpinski, 2010; Junco et al., 2011; Rouis et al., 2011; Chen and Bryer, 2012; Lederer, 2012; Guy, 2012; Inderjit, 2014). These studies mentioned that these distractions were ranging from psychological disorder to emotion disorder and lower GPA, which is the ultimate achievement of every individual in their education life. Furthermore, they were also inquired for their agreement with the statement that these applications can help them in learning and can improve their

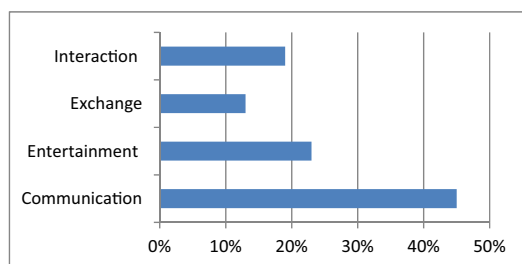


Figure 1 Students views about the term social media.

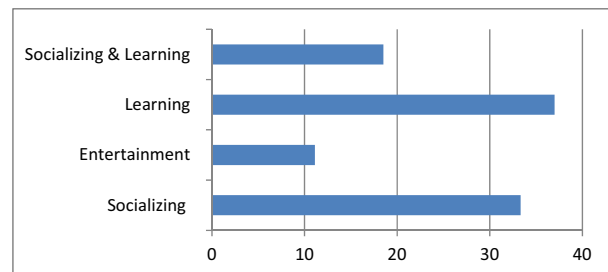


Figure 3 Primary use of social media application.

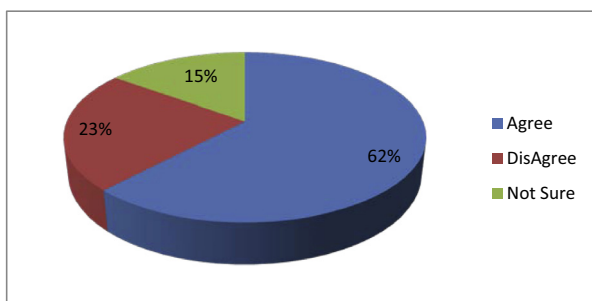


Figure 4 Social media enhance learning.

academic performance. The data analyzed show that 62 percent of them are agreed, and 23 percent are and 15 percent are not sure that using social media applications can enhance their learning and academic performance. In addition, they were also inquired about their agreement on the statement that these applications can help them in learning and can improve their academic performance. The data analyzed show 62 percent of them are agreed, and 23 percent are and 15 percent are not sure that using social media applications can enhance their learning and academic performance. These responses are shown in the figure (Fig. 4).

The principal objective of the study is to explore those factors that can motivate students to use social media for academic or learning purposes. The query is made to extract these factors which can motivate them to use social media applications for learning and academic purposes. Some of the student responses are listed below (Table 3).

In the first phase, all keywords from the responses as highlighted above are accumulated by using the world crunchier through Atlas-ti software version 7. The concluded inventory acquired is encompassed of a huge number of important terms that carry some thoughtful meaning and suggestions. In the second phase, all these keywords identical or those carrying the same meaning are combined into a particular term, for example, friends, class fellow, and family. Teachers and media are termed as subjective norms or social influence. The same procedures are applied for all the collected responses, in order to get meaningful factors. According to the output generated shows that personality, Social Influence, information quality and system usefulness are the dominant factors, which can motivate them to use social media applications for learning and academic purposes. The detailed information about these factors is portrayed in the chart as Fig. 5 and is listed.

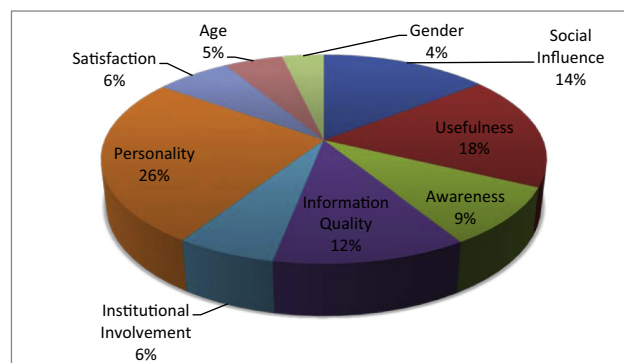


Figure 5 Factors enhance the use of social media for learning.



Figure 6 List of factor extracted.

In the third phase, the reduced numbers of terms are pulled out in a suitable structure through world cloud by using Atlas-ti-version 7. However, only those terms are clouded in the final model having minimum 25% minimum response rate. The final list of extracted factors that are considered to the influential factor with respect to the academic use of social media is shown in the world cloud (Fig. 6).

As shown above, there are nine factors extracted through the world clouds, illustrating that majority of students are agreed that psychological characteristic, information quality, Social Influence and system usefulness are the leading factors that can motivate them to use these applications for learning and academic purposes. Among these factors extracted, social influence and system useful are the core constructs of TAM and UTAUT (Davis et al., 1989; Venkatesh et al., 2003). The other factors is the student personality which is a individual relatively stable psychological characteristics and one of the

Table 3 Student responses on factors motivate their academic use of social media.

Respondent: 1	The curiosity to achieve a better academic performance can attract us to use these sites for learning purposes. However, my exposure to these services is social and needs a guideline. Maybe I did not think it before
Respondent: 2	I think over these applications as a source of social interaction. Anyhow, to suppose the platform as a learning tool, besides the usefulness of its services, also there are some influential factors such as, teacher and family motivation, awareness, personal interest and self-discipline. However, depends on site content's quality
Respondent: 3	Information quality is the key feature to attract us for academic context. If part of the exam, may it work to be learning tool
Respondent: 4	I am agreeing that these sites provide learning opportunity by unlimited access to variety of information along with relaxation. It helps to reduce tension by playing games and listening music sideway, but we normally follow the trends of our classmates and friends. It saves time, easy to interact and give new ideas
Respondent: 5	These sites are free but contents quality is the main concern. Even so university environment specifically can turn these sites in order to learning platform

most influential factors to understand users online behavior (Correa et al., 2013 and Özgüven and Mucan, 2013). The factors of age and gender are also important and suggested by (Al-rahmi et al., 2014) for future online research. Furthermore, the factor of satisfaction is somewhat used in health-related research, however, awareness, and institutional involvement are diverse and new in this context.

6. Conclusion

The use of technology in education is traced back to Thomas Alva Edison invention of recording. Social media consists of a variety of communication tools such as Blogs, collaborative projects, social networking sites, content communities and virtual world or virtual game worlds. These channels of this platform are providing unlimited opportunities to communicate interact, socialize and share with each other. In the field of IS research, understanding user behavior for technology acceptance or adaptation is important and as well as a challenging issue. Social media has changed the entire scenario of information sharing. However, it can also be a source of distraction for students. According to Venkatesh et al. (2003), researcher select constructs from the existing models to meet their study objective, which sometime fails to meet their desired objectives. Keeping in view, the current study is conducted to supplement the existing models by revisiting the target audience. The current study has achieved its main objectives by extracting some related factors, which include individual psychological characteristics such as personality, social influence, information quality, system usefulness, satisfaction, age and gender as well as confirming the issue of distraction causing by these sites. Furthermore, to achieve a more concrete understanding of student online activities, particularly to their learning technology acceptance model by Davis et al. (1989) and the Big Five models (FFM) by McCrae and Costa (1987) are required to integrate under a single framework. As prior research recognizes that only 35% individuals' behavior is aligned with their intentions (Taylor and Todd, 1995 and Venkatesh et al., 2003), and beside high behavioral intentions, some individuals are not adopting the actual use of an information system, because of their intentions into behavior in accordance with their personality (Maier et al., 2012). Intention-behavior gap in IS research is widely accepted, encouraging researchers to integrate personality into different streams of IS research, such as the updating of beliefs or the transferring of behavioral intentions into behavior (Moore and McElroy, 2012 and Maier et al., 2012). Data collected during this study from students of engineering background only. In future, more explorations are required with respect to different population and research methodology to achieve the desired objectives.

References

- Alexander, B.B., 2006. Web 2.0: a new wave of innovation for teaching and learning? *Educ. Rev.*
- Al-rahmi, W.M., Othman, M.S., Musa, M.A., 2013. Using TAM model to measure the use of social media for collaborative learning. *Int. J. Eng. Trends Technol.* 5 (2), 90–95.
- Al-rahmi, W.M., Othman, M.S., Musa, M.A., 2014. The improvement of students' academic performance by using social media through collaborative learning in Malaysian higher education. *Asian Social Sci.* 10 (8), 210–221. <http://dx.doi.org/10.5539/ass.v10n8p210>.
- Andersen, J.C., 2013. *Learner Satisfaction in Online Learning: An Analysis of the Perceived Impact of Learner-Social Media and Learner-Instructor Interaction*. East Tennessee State University. Retrieved from: <<http://dc.etsu.edu/etd>> .
- Anderson, P., Hepworth, M., Kelly, B., Metcalfe, R., 2007. What is Web 2.0? Ideas, Technologies and Implications for Education by JISC Technology and Standards Watch. Retrieved from: <<http://www-128.ibm.com/developerworks/podcast/dwi/cmint082206>> .
- Bandura, A., 1999. *Social Cognitive Theory of Personality*. Guilford Publications, New York.
- Baran, E., 2013. Connect, participate and learn: transforming pedagogies in higher education. *Bull. IEEE Tech. Committee Learn. Technol.* 15 (1).
- Berners-Lee, T., 1999. *Weaving the web*. Orion Business Books.
- Bhattacharjee, A., 2012. *Social Science Research: Principles, Methods, and Practices*. Open Access Textbooks. <http://dx.doi.org/10.1186/1478-4505-9-2>.
- Boyd, Ellison, 2008. Social network sites: definition, history, and scholarship. *J. Comp. Mediated Commun.* 13, 210–230. <http://dx.doi.org/10.1111/j.1083-6101.2007.00393.x>.
- Brown, T., 2006. *Confirmatory Factor Analysis for Applied Research*. Guilford Press, New York.
- Burns, Grove, 2001. *The Practice of Nursing Research: Conduct, Critique and Utilization*. W.B. Saunders, Philadelphia, Pennsylvania, USA.
- Cain, J., Scott, D.R., Aker, P., Akers, P., 2009. Pharmacy student's Facebook activity and opinions regarding accountability and e-professionalism. *Am. J. Pharm. Educ.* 73 (6), 104. <http://dx.doi.org/10.5688/aj7306104>.
- Chai-lee, G., 2013. The Use of Social Media in Education: A Perspective 2nd International Higher Education Teaching and Learning Conference 2013. Retrieved from: <[http://www.curtin.edu.my/tl2013/PDF/The Use of Social Media in Education_ A Perspective.pdf](http://www.curtin.edu.my/tl2013/PDF/The%20Use%20of%20Social%20Media%20in%20Education%20A%20Perspective.pdf)> .
- Chang, T., Hsiao, W., 2014. Time spent on social networking sites: understanding user behavior and social capital. *Syst. Res. Behav. Sci.* 114, 102–114. <http://dx.doi.org/10.1002/sres>.
- Chen, B., Bryer, T., 2012. Investigating instructional strategies for using social media in formal and informal learning. *Int. Rev. Res. Open Distance Learn.* 13 (1).
- Correa, T., Bachmann, I., Hinsley, A.W., 2013. Personality and Social Media Use. *IGI Global*. <http://dx.doi.org/10.4018/978-1-4666-4026-9.ch003>.
- Cuban, L., 1986. *Teachers and Machines: The Classroom Use of Technology Since 1920*. Teachers College Press, New York.
- Davis, F.D., Bagozzi, R.P., Warshaw, P.R., 1989. User acceptance of computer technology: a comparison of two theoretical models. *Manage. Sci.* 35 (8), 982–1003. Retrieved from: <<http://www.jstor.org/stable/2632151>> .
- Elkaseh, A.M., Wong, K.W., Fung, C.C., 2015. Perceived ease of use and perceived usefulness of social media for e-learning in Libyan higher education: a structural equation modeling analysis. *Int. J. Inf. Educ. Technol.* 6 (3), 192–199. <http://dx.doi.org/10.7763/IJJET.2016.V6.683>.
- Gafni, R., Aviv, T., Deri, M., Aviv, T., 2012. Costs and benefits of Facebook for undergraduate students. *Interdiscip. J. Inf. Knowl. Manage.* 7.
- Gikas, J., Grant, M.M., 2013. Internet and higher education mobile computing devices in higher education: student perspectives on learning with cellphones, smartphones & social media. *Internet Higher Educ.* 19, 18–26.
- Glogoff, H., 2006. The LTC Wiki: Experiences with Integrating a Wiki in Education. In: Mader, S. (Ed.), *Using Wiki in Education*.
- Gray, Annabell, L.K.G., 2010. Medical students' use of Facebook to support learning: insights from four case studies. *Med. Teach.* <http://dx.doi.org/10.3109/0142159X.2010.497826>.
- Gulek, J.C., Demirtas, H., 2005. Learning with technology: The impact of laptop use on student achievement. *J. Technol., Learn.*

- Assess. 3 (2), 3–38. Retrieved from <http://www.bc.edu/research/intasc/jtla/journal/pdf/v3n2_jtla.pdf> .
- Guy, R., 2012. The use of social media for academic practice: a review of literature. *J. Higher Educ. Policy Pract.* 1 (2), 1–21.
- Hamat, A., Embi, M.A., Hassan, H.A., 2012. The use of social networking sites among Malaysian university students. *Int. Educ. Stud.* 5 (3), 56–66. <http://dx.doi.org/10.5539/ies.v5n3p56>.
- Helou, A.M., Zairah, Z., Rahim, A., 2012. Students' perceptions on social networking sites influence on academic performance. *Int. J. Social Networking Virtual Commun.* 1 (1), 7–15.
- Inderjit, S., 2014. Reading trends and improving reading skills among students in Malaysia. *Int. J. Res. Social Sci.* 3 (5), 70–81. Retrieved: <<http://www.ijsk.org/uploads/3/1/1/7/3117743/6>> .
- Jin, L., Chen, Y., Wang, T., Hui, P., Vasilakos, A.V., 2013. Understanding user behavior in online social networks: a survey. *IEEE Commun. Mag.* 51 (9), 144–150. <http://dx.doi.org/10.1109/MCOM.2013.6588663>.
- Johnson, M.P., 2011. *Using the Internet to Improve Student Learning and Achievement*, pp. 1–29.
- Junco, R., 2012a. In-class multitasking and academic performance. *Comp. Hum. Behav.* 28 (6), 2236–2243. <http://dx.doi.org/10.1016/j.chb.2012.06.031>.
- Junco, R., 2012b. Too much face and not enough books: the relationship between multiple indices of Facebook use and academic performance. *Comp. Hum. Behav.* 28 (1), 187–198. <http://dx.doi.org/10.1016/j.chb.2011.08.026>.
- Junco, R., 2015. Student class standing, Facebook use, and academic performance. *J. Appl. Develop. Psychol.* 36, 18–29. <http://dx.doi.org/10.1016/j.appdev.2014.11.001>.
- Junco, R., Cotten, S.R., 2012. No A 4 U: the relationship between multitasking and academic performance. *Comp. Educ.* 59 (2), 505–514. <http://dx.doi.org/10.1016/j.compedu.2011.12.023>.
- Junco, R., Heiberger, G., Loken, E., 2011. The effect of Twitter on college student engagement and grades. *J. Comp. Assisted Learn.* 27 (2), 119–132. <http://dx.doi.org/10.1111/j.1365-2729.2010.00387.x>.
- Kaplan, A.M., Haenlein, M., 2010. Users of the world, unite! the challenges and opportunities of Social Media. *Bus. Horiz.* 53 (1), 59–68. <http://dx.doi.org/10.1016/j.bushor.2009.09.003>.
- Khan, S., 2012. Impact of social networking websites on students. *Abasyn J. Social Sci.* 5 (2), 56–77. Retrieved from: <<http://64.17.184.140/wp-content/uploads/2013/02/V5I2-5.pdf>> .
- Kichanova, 2012. *The Role of Social Media in Research and Development*. Hagga-Helia University of Applied Sciences (June).
- Kirschner, P.A., Karpinski, A.C., 2010. Facebook® and academic performance. *Comp. Hum. Behav.* 26 (6), 1237–1245. <http://dx.doi.org/10.1016/j.chb.2010.03.024>.
- Kuppuswamy, S., Narayan, P.B.S., 2010. The impact of social networking websites on the education of youth. *Int. J. Virtual Commun. Social Networking* 2 (1), 67–79. <http://dx.doi.org/10.4018/jvcsn.2010010105>.
- Lai, C.C., Kritsonis, W.A., 2006. The Advantages of Computer Technology in second language acquisition. Retrieved from <<http://faculty.ksu.edu.sa/saad/Documents/.pdf>> .
- Lasser, W., 2005. *Some Didactic Aspects of Audio-Cassettes in Distance Education*. Distance Education. Routledge.
- Lederer, 2012. Pros and Cons of Social Media in the Classroom. *Campus Technology*. Dominican University's School of Education. Retrieved from: <<https://campustechnology.com/articles/2012/>> .
- Liccardi, I., Ounnas, A., Pau, R., Massey, E., Kinnunen, P., Lewthwaite, S., Sarkar, C., 2007. The role of social networks in students' learning experiences. *ACM SIGCSE Bull.* 39 (4), 224. <http://dx.doi.org/10.1145/1345375.1345442>.
- Lin, X., Featherman, M., Lin, X., 2013. *Information Sharing in the Context of Social Media: An Application of the Theory of Reasoned Action and Social Capital Theory Information Sharing in the Context of Social Media*.
- Lowther, D.L., 2007. Freedom to learn Program March. *Lancet* 369 (9575), 1783. [http://dx.doi.org/10.1016/S0140-6736\(07\)60801-0](http://dx.doi.org/10.1016/S0140-6736(07)60801-0).
- Maier, C., Weberei, A. Der, Eckhardt, A., Laumer, S., Weitzel, T., 2012. Using User Personality To Explain the Intention-Behavior Gap and Changes in Beliefs: a Longitudinal Analysis. *ICIS*, pp. 1–21.
- Masrom, M., Usat, S., 2013. Understanding Students' Behavior on the Use of Online Social Networking, (099), pp. 488–493.
- McCrae, R.R., Costa, P.T., 1987. Validation of the five-factor model of personality across instruments and observers. *J. Personality Social Psychol.* 52 (1), 81–90. <http://dx.doi.org/10.1037/0022-3514.52.1.81>.
- McKerlich, R., Ives, C., McGreal, R., 2013. Measuring use and creation of open educational resources in higher education. *Int. Rev. Res. Open Distance Learn.* 14 (4), 90–103. <http://dx.doi.org/10.1002/asi>.
- Moore, K., McElroy, J.C., 2012. The influence of personality on Facebook usage, wall postings, and regret. *Comp. Hum. Behav.* 28 (1), 267–274. <http://dx.doi.org/10.1016/j.chb.2011.09.009>.
- Murphy, J., Link, M.W., Childs, J.H., Tesfaye, C.L., Dean, E., Stern, M., Harwood, P., 2014. *Social Media in Public Opinion Research: Report of the AAPOR Task Force on Emerging Technologies in Public Opinion Research*, pp. 1–57. <http://dx.doi.org/10.1093/poq/nfu053>.
- Owen, M., Grant, L., Sayers, S., Facer, K., 2006. *Social Software and Learning*, vol. 44. Futurelab, p. 36. Retrieved from: <<http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Social+software+and+learning#1>> .
- Özgüven, N., Mucan, B., 2013. The relationship between personality traits and social media use. *Social Behav. Personality Int. J.* 41 (3), 517–528. Retr: 10.2224/sbp.2013.41.3.517 nhhttp.
- Papert, S., 1982. Children computer and powerful ideas. *Mindstorms*, 4–47.
- Pintrich, Schunk, 1996. *Motivation in Education: Theory, Research, and Applications*. Merrill/Prentice Hall, Englewood Cliffs, NJ.
- Purcell, B.Y.K., Rainie, L.E.E., Heaps, A., Chen, C., Zickuhr, K., 2013. *How Teens Do Research in the Digital World*. Pew Research Center's Internet & American Life Project, pp. 11–18 (February).
- Reiser, R.A., 1987. *Instructional Technology: A History*. In: Gagne, R.M. (Ed.). *Instructional technology: Lawrence Erlbaum Associates*.
- Rouis, S., Limayem, M., Salehi-Sangari, E., 2011. Impact of Facebook usage on students' academic achievement: role of self-regulation and trust. *Electron. J. Res. Educ. Psychol.* 9 (3), 961–994.
- Saba, A., 2009. *Benefits of Technology Integration in Education*.
- Santoso, H.B., Becker, K., Reeve, E.M., 2014. High and low computer self-efficacy groups and their learning behavior from self-regulated learning perspective while engaged in interactive learning modules. *J. Pre-College Eng. Educ. Res.* 4 (2), 10–29.
- Shank, R.C., Cleary, C., 1995. *Engines for Education*. Lawrence Erlbaum Associates, inc., Hillsdale NJ.
- Sohn, D., 2014. Coping with information in social media: the effects of network structure and knowledge on perception of information value. *Comp. Hum. Behav.* 32, 145–151. <http://dx.doi.org/10.1016/j.chb.2013.12.006>.
- Talja, S., 2002. Information sharing in academic communities: types and levels of collaboration in information seeking and use. *New Rev. Inf. Behav. Res.* 3, 143–159.
- Taylor, Todd, 1995. *Understanding Information Technology Usage: A Test of Competing Model*. Information System Research.
- Tinto, F., 2013. *Study into Individuals' Information Sharing Behaviour of 'Happy Information'*. University of Strathclyde.
- Trusov, M., Bucklin, R.E., Pauwels, K., 2009. Effects of word-of-mouth versus traditional marketing: findings from an internet social networking site. *J. Market.* 73, 90–102. <http://dx.doi.org/10.1509/jmkg.73.5.90>.
- Tutkun, Ö.F., 2011. Internet access, use and sharing levels among students during the teaching-learning process. *Turk. Online J. Educ. Technol.* 10 (3), 152–160.

- UNCTAD, 2012. *Report of the United Nations Conference on Trade and Development on its thirteenth session*. Doha, Qatar: UN.
- UNESCO, 2003. Developing and using indicators of ICT use in education. <http://dx.doi.org/10.1017/CBO9781107415324.004>.
- Venkatesh, V., Morris, Michael G., Davis, Gordon B., Davis, F.D., 2003. User acceptance of information technology: toward a unified view. *MIS Q.* 27 (3), 425–478. Published by: Management Information Systems Research Center, University of Minnesota, Retrieved from: <<http://www.jstor.org/stable/30036540>>.
- We are social, 2014. ASIA-Pacific digital Overview, 2014. *Report*. Retrieved from: <<https://visionanalytics.files.wordpress.com/2014/02/2014-asia-pacific-digital-overview.pdf>>
- Westera, W., 2012. The eventful genesis of educational media. *Educ. Inf. Technol.* 17 (3), 345–360. <http://dx.doi.org/10.1007/s10639-011-9162-z>.
- Ziqing, Jinping, 2013. *The Further Understanding in Multimedia Teaching of College Based on Education Dissemination*. ICETMS, pp. 1107–1110.