

THE ACCEPTANCE OF E-LEARNING SYSTEMS AND TECHNOLOGY IN ODL INSTITUTIONS: LECTURER'S PERSPECTIVE

Johannes A. Wiid*, Michael C. Cant**

Abstract

The use of technology in our everyday lives has become a very common occurrence and it is integrated in all facets of our lives. This is even more apparent in the field of academia where the leaders of the future are very astute users of technology. Technology, with its fast pace of change, has led to numerous new methods of communication between the students themselves and between the students and their lecturers. Communication is not the same anymore. Educational institutions worldwide have been forced to make better use of technology in order to better interact with students and to improve on the level of education that they provide. Open and Distance Learning (ODL) Institutions, by their very nature, need to ensure they stay on the forefront of developments in this field in order to provide a better learning environment and service to its students. This article aims to determine the level of acceptance of e-learning systems and technology in ODL institutions by faculty, as well as their inclination to support it.

Keywords: Education, ODL Institutions, Technology, TAM, E-Learning, Students

*Department of Marketing and Retail Management, University of South Africa (UNISA). Tel: +27 (012) 429 3939, e-mail: jwiid@unisa.ac.za

**Department of Marketing and Retail Management, University of South Africa (UNISA). Tel: +27 (012) 429 4456, e-mail: cantmc@unisa.ac.za

*** This study is largely based on a similar study, "The Perceptions of students on the use of social networking Systems as a teaching tool in ODL Institutions", by Cant, Wiid and Kallier. Published with The Clute Institute. The theoretical framework will be very similar and overlap may occur, however the research findings are from the perspective of a lecturer.

1 Introduction

The importance of technology cannot be denied. Technology has changed the way we communicate, do business, and even the way we learn. The development of new technology and interactive communication tools, such as text messaging, instant messaging and social networking sites, have impacted the field of education and changed the way in which students interact with each other, and their environment (Educause, 2009:13). This fact in itself implies that lecturers need to make use of technology increasingly more in order to stay in touch with students. Technology influences the interaction between students and educators as well as the variety of methods available for students to gain access to learning content (Alsanaa, 2012:47-50).

The effects of these changes have been more profound in the case of Open Distance Learning (ODL) institutions and the methods used by these institutions to deliver information to students (Ruhe & Zumbo, 2009:2). ODL institutions make it possible for students to pace their studies according to their own needs and tempo (Ruhe & Zumbo, 2009:2), whilst bridging the distance between the student and the lecturer. In addition, ODL institutions resolve the

issues of time and scheduling, limited space and the expensive cost of traditional education (Mishra, 2010). In order to ensure that students utilise the benefit of these changes, lecturers need to adapt their own teaching methods to keep in touch with students.

ODL institutions around the world have used technology to enhance the educational process by making use of the various methods of delivering content such as video teleconferencing, CD-ROM's and blended learning, which uses both technology and human interface (Ruhe & Zumbo, 2009:2). The growth of technology and the use of the internet have also resulted in the use of online and e-learning systems in delivering highly interactive and widely accessible learning opportunities (Venter, Van Rensburg & Davis, 2012:183-198). E-learning, as its name indicates, is learning that is delivered mainly through the use of technology, and includes, but is not limited to the use of online and offline technological tools such as computers and the internet (Alsanaa, 2012:47-50). ODL institutions use the technology accommodated with e-learning systems to provide students with online access to relevant learning content (Park, 2009:150-162).

E-learning is also used in adult learning, with the aim to engage with students more directly, in order to

obtain more interaction between students and lecturers. E-learning enables lecturers to give students online assignments and activities, and allows students to participate in online group discussions (Addah, Kpebu & Kwapong, 2012:51-62). E-learning also provide students with the ability to access study material from anywhere, the ability to gain assistance from lecturers and e-tutors, and the ability to share their experiences with others (Ruhe & Zumbo, 2009:4). All these possibilities and advantages are, however, dependant on the adoption of technologies by lecturers. This study defines e-learning as the use of various technology and communication mediums by educators, in order to deliver relevant information to students and to facilitate student interaction in ODL institutions.

E-learning uses a number of tools such as computers, the internet, telephones, videos, radio and mobile phones to support the learning process. Communication mediums such as social networking sites (SNS) can also be adopted as part of e-learning programmes for ODL institutions to contribute to the effective interaction and communication with students. Social networking sites are web sites that provide a platform for individuals to create profiles, form relationships with other users, comment and partake in discussions with others (Webopedia, n.d). These sites can provide an opportunity for ODL institutions to enhance the learning experience and student interaction (Sewry & Schlenkrich, 2012:12-24). A study conducted by Hoffman (2009) suggests that SNS tools can offer a considerable advantage for ODL institutions. The study indicated that some of the positive attributes of using SNS's include student engagement, motivation and interaction from the student (Hoffman, 2009:92-100).

Self-serving technologies (SST) refer to the systems used by a business that make it possible for individuals to purchase a product, or use a service on their own without any interaction from the business (Makarem, Mudambi & Podoshen, 2009:135). SST's allow individuals to perform services by them self in a manner that is convenient for them. SST's include ATM's, online payment options, mobile services and online booking options (Winifred, 2013:1). ODL institutions make use of SST's such as online web services that provide students with relevant information regarding their studies, online payment options, study material (such as study guides and study notes), online access to libraries and any other resources that students might need. The adoption of SST's in ODL institutions provides students with learning that is flexible, convenient and cost effective (Katz, 2012).

Self-serving technologies and communication tools such as SNS can play a vital role in delivering enhanced and interactive education in ODL institutions. Together with technology, e-learning can close the distance gap between students and facilitators (Addah *et al.*, 2012:51-62). This, however,

can only be done if facilitators and students fully adopt and make use of the available e-learning tools. It is therefore important that institutions who implement e-learning systems consider the involvement, attitude and acceptance of these systems by students and facilitators (Al-Adwan, Al-Adwan & Smedly, 2013:4-18).

The level and extent to which technology is accepted by the market has fascinated researchers over the years. A number of models have been developed, and used, to explain and predict the use of technology. The Technology Acceptance Model is the most common and widely accepted model used to explain the acceptance and use of technology (Addah *et al.*, 2012:51-62). This study will use the Technology Acceptance Model to explain the acceptance of technology and e-learning systems in ODL institutions among students and lecturers.

2 Theoretical framework

The Technology Acceptance Model (TAM) was developed by Davis in 1989 with the purpose of providing an explanation as to why a user accepts or rejects new technology (Park, 2009:150-162). This model explains that there are certain factors that will influence the use of technology. Some of these refer to the individual's behavioural intentions, attitude, perceived usefulness of the system, and the perceived ease of use of the system (Venter, Van Rensburg & Davis, 2012: 183-198). The behavioural intension of the individual is influenced by their attitude towards technology and using the new system (Venter *et al.*, 2012:183-198). There are two determinants that regulate the attitude of the individual; these are perceived usefulness and perceived ease of use (Venter *et al.*, 2012: 183-198). Figure 1 depicts the original TAM (Davis, Bagozzi & Warshaw, 1989:982-1003).

Perceived usefulness refers to the degree to which the individual believes that technology will enhance their work performance (Alsanaa, 2012:47-50). Individuals will use a system if they believe that it will help them do their jobs more reliably and accurately (Chuttur, 2009:2). The perceived ease of use refers to how effortless the individual perceives using the technology will be (Alsanaa, 2012:47-50). This variable determines how comfortable an individual is with the technology and whether the individual thinks the system will be easy or difficult to understand (Mangin, Bourgault, León, & Guerrero, 2012:14).

The perceived usefulness and perceived ease of use influences the individual's attitude towards using new technology (Chuttur, 2009:2). The individual's attitude towards using the new technology refers to their positive or negative feelings towards the new technology (Mangin, *et al.*, 2012:14). The individual's attitude towards the new technology influences the behavioural intention to use the new technology and

the actual use of the new technology (Wong *et al.*, 2013:93). The behavioural intention to use refers to the individual's intention to adopt the new technology

or reject it, which influences the individual's actual use of the new technology (Mangin *et al.*, 2012:14).

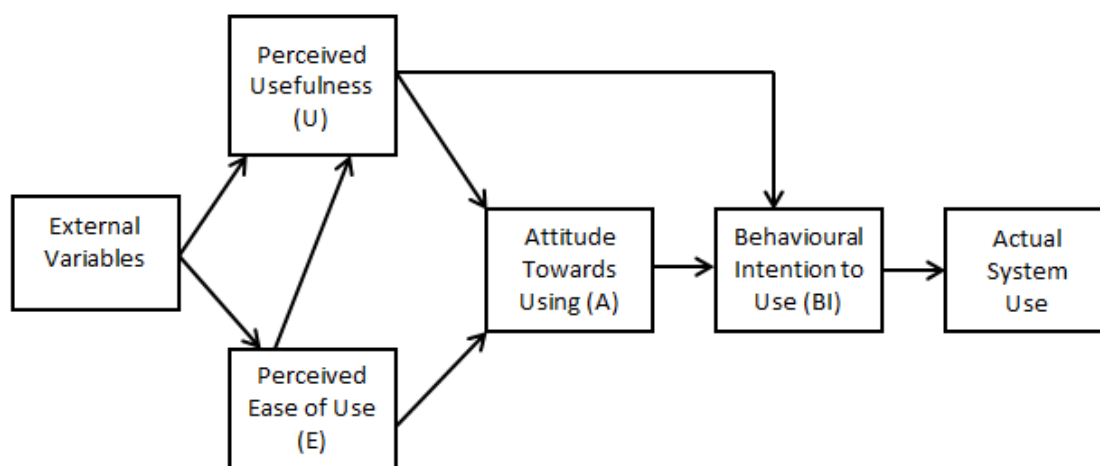


Figure 1. Technology Acceptance Model

External variables such as culture and beliefs can also have an effect on an individual's intention and the actual use, by influencing the perceived usefulness and perceived ease of use (Park, 2009:150-162).

TAM has been used for various studies to investigate the acceptance of information technology such as the World Wide Web, mobile banking and multimedia (Park, 2009:150-162). Numerous studies, using TAM have also been done with regards to e-learning and the acceptance and adoption of technology and e-learning systems (Park, 2009:150-162). A study conducted by Al-Adwan *et al.* (2013) indicated that TAM is useful in understanding individuals' intentions to use e-learning. The TAM model also proved to be successful in a study conducted by Edmunds, Thorpe and Conole (2012) in understanding the use of technology by students for their studies, for work and social activities.

3 Research objective

The purpose of this study is to determine the perceptions of lecturers on social network systems and their use of it. This study aims to determine, within the context of an ODL institution:

- to explore the constructs of the TAM model with regard to the lecturers' view;
- to explore the proposed constructs using the technology acceptance model TAM.

The Technology Acceptance Model (TAM) is the most common and widely accepted model used to explain the acceptance and use of technology (Addah *et al.*, 2012:51-62).

According to Mazhar (2006), the main goal of TAM is "to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behaviour across a broad range of end-

user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified". TAM indicates that if a user perceives a specific technology as being useful, they will believe in a positive user-performance relationship. As effort is a limited resource, a user is most likely to accept an application when they perceive it as being easier to use than another.

As an end result, educational technology that has a high level of *Perceived Usefulness* (PU) and *Perceived Ease of Use* (PEOU) is probably going to encourage a positive perception. The relationship that exists between PU and PEOU is that PU arbitrates the effect of PEOU on both attitude and future uses. This simply means that while PU has a direct impact on attitude and use, PEOU has an indirect influence on attitude and use through PU. The following hypotheses are therefore stated and illustrated in Figure 2:

H₁ There is a positive association between ease of use and perceived usefulness of social network systems.

H₂. There is a positive association between usefulness and attitude to adopt social network systems.

H₃ There is a positive association between ease of use and attitude to adopt social network systems.

H₄ There is a positive association between usefulness and intention to adopt social network systems.

H₅ There is a positive association between attitude and intention to adopt social network systems.

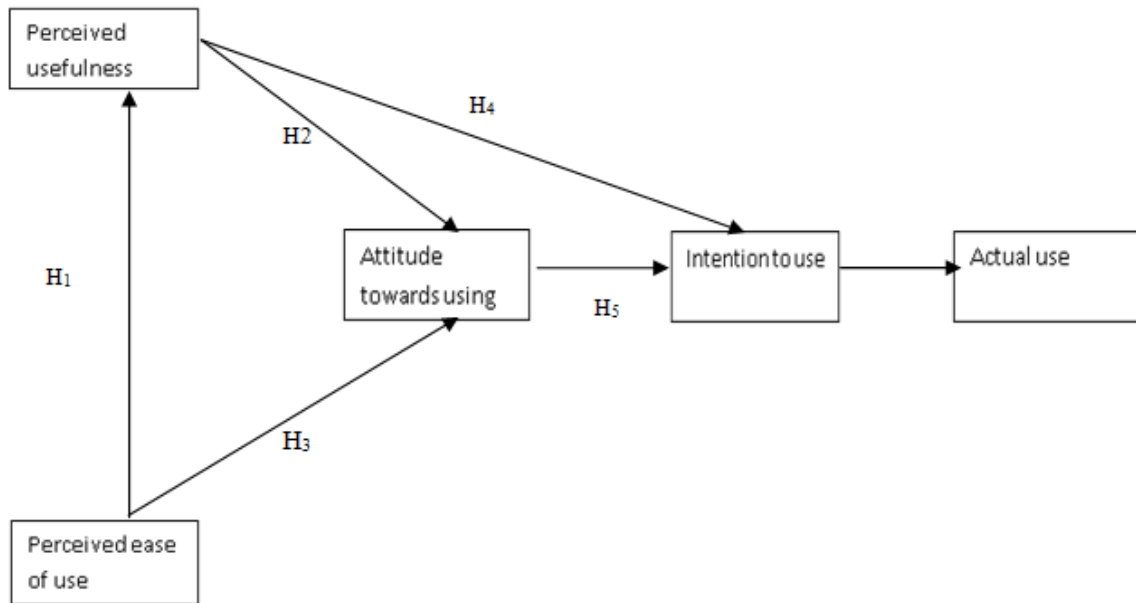


Figure 2. Schematically presentation of the hypotheses

The research method is discussed in the next section followed by the empirical findings and a discussion of the findings.

4 Research methodology

In determining the acceptance of social media as lecturing tool, a quantitative questionnaire was developed. A total of 204 correctly completed

questionnaires were obtained.

The majority of lecturers (41.92 per cent) were between 26 and 35 years of age. The gender split for the respondent group is female dominated, with 55 per cent of lecturers being female. The demographic profile of the respondent group is presented in Table 1 below.

Table 1. Demographic profile

Age group	% of Total	N
< 35 years	46.46	92
36 - 50 years	33.33	66
51+ years	20.20	40
Gender		
Male	44.67	88
Female	55.33	109

5 Research findings

To determine the lecturers' acceptance of social media networking systems as lecturing tool, respondents were asked to rate 20 statements on a seven point Likert scale (1 being "Strongly disagree" and 7 being "Strongly agree"). The 20 statements are structured as sub-constructs according to the technology acceptance model (TAM):

- 'Perceived ease of use': statements 1 to 5;
- 'Perceived usefulness': statements 6 to 10;
- 'Attitude towards using': statements 11 to 15;
- 'Intention to use': statements 16 to 20.

5.1 Construct validity

To examine construct validity of, an exploratory factor analysis was performed. A Principal factor analysis with Varimax rotation was conducted to assess the underlying structure for the 20 items of the TAM questionnaire. Four factors were requested, based on the fact that the items were designed to index four constructs: perceived ease of use, perceived usefulness, attitude toward using and intention to use. After rotation, the first factor accounted for 21.35 per cent of the variance, the second factor accounted for 19.49 per cent, the third factor accounted for 15.50 per cent, and the fourth factor accounted for 14.86 per cent. Table 2 displays the items and factor loadings for the rotated factors, with loadings less than 0.40 omitted to improve clarity.

Table 2. Factor loadings for the rotated factors

Scale item	Factor 1	Factor 2	Factor 3	Factor 4
1	0.78			
2	0.79			
3	0.86			
4	0.79			
5	0.76			
6			0.71	
7			0.77	
8			0.69	
9	0.46	0.44	0.42	
10		0.41	0.56	
11r				0.56
12				0.64
13			0.47	0.59
14r				0.64
15				0.75
16		0.81		
17		0.77		
18		0.84		
19		0.67		
20		0.58		
% of variance explained	21.351	19.488	15.499	14.860
% of cumulative variance explained	21.351	40.839	56.338	71.199

Principal components was used with Varimax rotation and Kaiser normalisation, N = 204. Factor 1 = Perceived usefulness; Factor 3 = Perceived ease of use; Factor 4 = Intention to use; Factor 2 = Attitude toward using.

Most factor loadings were 0.6 or above, showing good convergent validity (Chesney, 2006). The constructs are therefore uni-dimensional and factorially distinct, and all items used to operationalise a constructs load onto a single factor. Some cross loadings were experienced for statement 9 and 13.

5.2 Measures

Reliability is the consistency of the measurement, or the degree to which an instrument measures the same

way each time it is used under the same condition with the same subjects. A Cronbach's alpha value above 0.8 have a good reliability, a value between 0.6 and 0.8 have an acceptable reliability and a value below 0.6 have an unacceptable reliability. Hair Anderson, Tatham and Black (1998) recommended that Cronbach's alpha values from 0.6 to 0.7 were deemed the lower limit of acceptability.

The Cronbach's alpha for the four sub-constructs all yielded high Cronbach's alpha values (≥ 0.80) which is considered very good (Nunnally, 1978). Table 3 below represents the Cronbach's alpha values of each of the four sub-constructs. Hence, the results demonstrate that the questionnaire is a reliable measurement instrument.

Table 3. Cronbach's alpha values, mean scores and standard deviation of each of the sub-constructs

Construct/ Scale	Cronbach's alpha	Mean	Std Dev
Perceived ease of use	0.93	5.23	1.35
Perceived usefulness	0.91	4.81	1.31
Attitude towards using	0.88	5.11	1.32
Intention to use	0.94	4.43	1.58

'Ease of use' was considered most important with a mean of 5.23, while 'Intention' were least important with a mean of 4.43. The means were, however, closely distributed indicating a general agreement on the importance of all the sub-constructs, but not strong. The standard deviations are fairly high

indicating variation in agreement among sub-constructs.

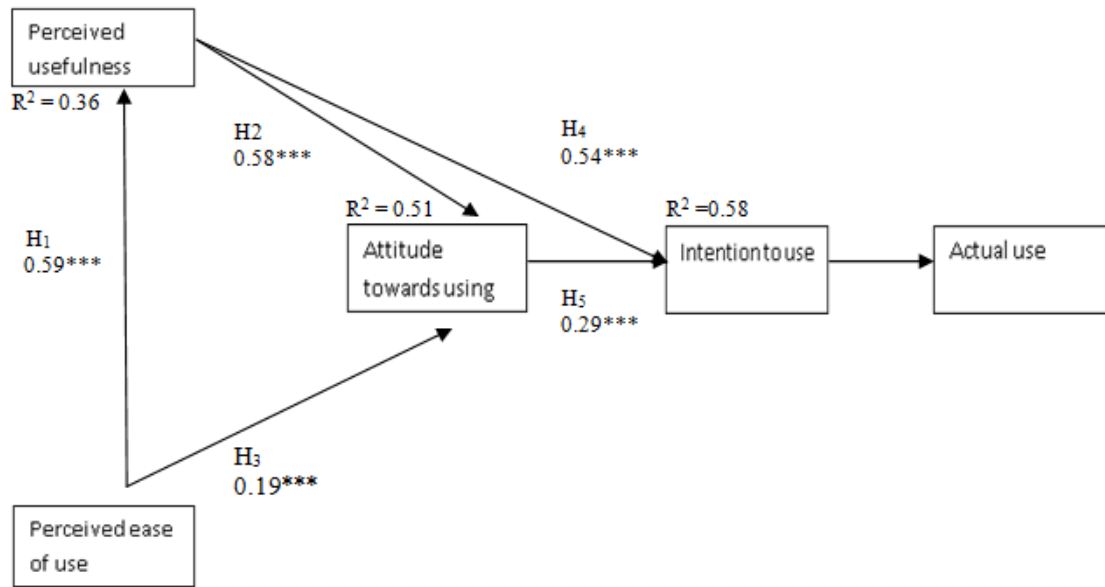
5.3 Results and analysis

The research model shown in Figure 3 was tested using the Statistical Analysis System (SAS JMP) software.

To identify the relationship between the chosen

constructs, regression analysis is performed on the constructs keeping in mind the flow structure of the TAM model. This was achieved by performing three separate regression analyses.

Figure 3. Relationship between constructs



	DV = Dependent variable	IV = Independent variable	Std Beta Coefficient	t-value	p-value
Regression 1	Usefulness ($F_{1,201} \approx 112.08$; $p < 0.0001$) $R^2 = 0.36$	Ease of use	0.59	10.59	<0.0001
Regression 2	Attitude ($F_{2,201} \approx 103.44$; $p < 0.0001$) $R^2 = 0.51$	Usefulness Ease of use	0.58 0.19	9.43 3.04	<0.0001 0.00027
Regression 3	Intention ($F_{2,203} \approx 142.39$; $p < 0.0001$) $R^2 = 0.58$	Usefulness Attitude	0.54 0.29	8.5 4.57	<0.0001 <0.0001

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

The first regression analysis tested the relationship between single predictor ease of use and usefulness as dependent variable. From the analysis, a significant model emerged ($F_{1,189} \approx 112.08$; $p < 0.0001$) with R Square of 0.36 (see figure). The coefficient between ease of use and usefulness was also found significant ($\beta = .59$, $p < .0001$).

The second regression analysis tested the relationship between predictors (i.e. usefulness and ease of use) and attitude as dependent variable. From the analysis, a significant model emerged ($F_{2,201} \approx 103.44$; $p < 0.0001$) with the adjusted R Square of 0.51. The impact of both variables was significant: usefulness ($\beta = .58$, $p < .0001$) and ease of use ($\beta =$

0.19, $p < .0001$).

The third regression analysis tested the relationship between predictors (i.e. usefulness and attitude) and intention as dependent variable. From the analysis, a significant model emerged ($F_{2,203} \approx 142.39$; $p < 0.0001$) with the adjusted R Square of 0.58. The impact of both variables was significant: usefulness (β

$= .54$, $p < .0001$) and attitude ($\beta = 0.29$, $p < 0.0001$).

Considering the above results base on the standardised Beta coefficient used for reporting on the structural model, the stated hypothesis are supported, see Table 4 below.

Table 4. Hypothesis

H ₁	There is a positive association between ease of use and perceived usefulness of social network systems.	Supported
H ₂	There is a positive association between usefulness and attitude to adopt social network systems.	Supported
H ₃	There is a positive association between ease of use and attitude to adopt social network systems.	Supported
H ₄	There is a positive association between usefulness and intention to adopt social network systems.	Supported
H ₅	There is a positive association between attitude and intention to adopt social network systems.	Supported

6 Conclusion

The Technology Acceptance Model (TAM) is an information system (a system that consists of all the network communication channels used within an organisation) theory that demonstrates how users accept and use specific technology (Davis, 1993:475). The model indicates that when users are confronted with a new software package, various factors influence their decision about how and when they will use this specific technology (Mazhar, 2006). Davis *et al.* (1989:985) indicated that user motivation can be explained by three constructs; 'Perceived ease of use', 'Perceived usefulness', and 'Attitude toward using the system'. The first construct is 'Perceived usefulness' which is described according to Davis (1993:477) as, "... the degree to which an individual believes that using a particular system would enhance his or her job performance". The second construct, 'Perceived ease of use' is defined as, "... the degree to which an individual believes that using a particular system would be free from effort" (Davis, 1993:477). The third construct, 'Attitude towards using' is defined as, "... the degree of evaluative affect that an individual associates with using the target the target system in his or her job" (Davis, 1993:477).

Revised statements borrowed from the TAM model as depicted in Figure 1, covering the four constructs perceived ease of use (PEOU), perceived usefulness (PU), attitude towards using (A) and intention to use (I), were included in the questionnaire tested. An exploratory factor analysis was performed on the statements and the four constructs were confirmed and regarded as reliable as the four sub-constructs all yielded high Cronbach's alpha values (PEOU – 0.93; PU – 0.91; A – 0.88 & I – 0.94).

The proposed positive linkage between perceived usefulness and ease of use from the first hypothesis (H₁) is significant.

From the empirical analysis, it is clear that ease of use plays a significant role in predicting attitude towards social network systems (H₃). Usefulness has also been found to be a significant factor in determining attitude towards social network systems confirming the second hypothesis (H₂).

Findings presented in the Figure 3 suggest that usefulness ($\beta = .58$), in comparison to ease of use ($\beta = .19$), has a stronger impact on the attitude towards social network systems.

The study also looked at ease of use as a predictor, taking usefulness as a dependent variable. The findings indicate that ease of use influences attitude directly, as well as indirectly via its impact on usefulness.

Considering the second half of the model, where attitude and usefulness are now treated as an independent variables and intention to use is treated as a dependent variable, both the hypotheses H₄ and H₅ hold valid as there is a positive association between attitude and intention to use social network systems as well as between usefulness and intention to use social network systems.

Findings presented in the Figure 3 suggest that attitude ($\beta = .29$), in comparison to usefulness ($\beta = .54$) has a smaller impact on intention to use social network systems.

Perceived usefulness and ease of use are significant predictors of attitude towards social network systems, user's attitude and usefulness influences the intention to use social network systems. Perceived usefulness influence intention to use both directly and indirectly through influencing attitude.

As social network systems are an integral part of everyday life, it is recommended that institutions of higher learning to put mechanisms in place to encourage and support lectures to use social network systems in their lecturing activities.

References

1. Addah, K., Kpebu, D. and Kwapong, O.A.T.F. (2012), "Promoting e-learning in distance education in an African country", *E-Learning - Long-Distance and Lifelong Perspective*, Vol. 3, pp. 51-62. [Online] Available from: http://cdn.intechopen.com/pdfs/31953/InTech-Promoting_e_learning_in_distance_education_programs_in_an_african_country.pdf
2. Al-Adwan, A., Al-Adwan, A. and Smedly, J. (2013), "Exploring student's acceptance of e-learning using Technology Acceptance Model in Jordanian universities", *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, Vol. 9 No. 2, pp. 4-18. [Online] Available from: <http://ijedict.dec.uwi.edu/viewarticle.php?id=1617>
3. Alsanaa, B. (2012), "Students' acceptance of incorporating emerging communication technologies in Higher Education in Kuwait", *World Academy of Science, Engineering and Technology*, Vol. 64, pp. 47-50 [Online] Available from: <http://www.waset.org/journals/waset/v64/v64-10.pdf>
4. Chesney, T. (2006), "An acceptance model for useful and fun information systems", *An Interdisciplinary Journal of Humans in ICT Environments*, Vol. 2 No. 2, pp. 225-235. [Online] Available from: <http://www.humantechnology.jyu.fi/articles/volume2/2006/chesney.pdf>
5. Chuttur, M.Y. (2009), "Overview of the Technology Acceptance Model: origins, developments and future directions", *Sprouts: Working Papers on Information Systems*, Vol. 9 No 37, pp. 1-21. [Online] Available from: <http://sprouts.aisnet.org/785/1/TAMReview.pdf>
6. Davis, D.F. (1993), "User acceptance of information technology: system characteristics, user perceptions and behavioural impacts", *International Journal of Man-Machine studies*, Vol. 1 No. 38, pp. 475-487. [Online] Available from: <http://deepblue.lib.umich.edu/bitstream/handle/2027.42/30954/0000626.pdf>
7. Davis, D.F., Bagozzi, R.P. and Warshaw, P.R. (1989), "User acceptance of computer technology: a Comparison of two theoretical models", *Management Science*, Vol. 35 No. 8, pp. 982-1003. [Online] Available from: <http://www.jstor.org/stable/2632151>
8. Edmunds, R., Thorpe, M. and Conole, G. (2012), "Student attitudes towards and use of ICT in course study, work and social activity: a technology acceptance model approach", *British Journal of Educational Technology*, Vol. 43 No. 1, pp. 71-84. [Online] Available from: <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8535.2010.01142.x/pdf>
9. Educause. (2009), "Students and information technology", *Educause Centre for Applied Research*, Vol. 6, pp. 11-21. [Online] Available from: http://net.educause.edu/ir/library/pdf/ers0906/rs/ers0906_1.pdf
10. Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998), *Multivariate Data Analysis*, 5th ed, Upper Saddle River, New York.
11. Hoffman, S.E. (2009), "Evaluating social networking tools for distance learning", *Technologies, Colleges and Community (TCC) 2009 Proceedings*, pp. 92-100. [Online] Available from: <http://etec.hawaii.edu/proceedings/2009/hoffman.pdf>
12. Katz, J.M. (2012), *Using Self-Service Lanes to Enhance Higher Education*. [Online] Available from: <http://www.katz.pitt.edu/deanblog/?p=54>
13. Mazhar, N. (2006), *Technology Accepted Model*. [Online] Available from: <http://ezinearticles.com/?Technology-Acceptance-Model&id=202354>
14. Mangin, J.P.L., Bourgault, N., León, J.A.M. and Guerrero, M.M. (2012), "Testing control, innovation and enjoy as external variables to the Technology Acceptance Model in a North American French banking environment", *Journal of International business research*, Vol. 5 No. 2, pp. 13-26. [Online] Available from: <http://ccsenet.org/journal/index.php/ibr/article/view/14579/9942>
15. Makarem, S.C., Mudambi, S.M. and Podoshen, J.S. (2009), "Satisfaction in technology-enabled service encounters", *Journal of Services Marketing*, Vol. 23 No. 3, pp. 134-144. [Online] Available from: <http://www.emeraldinsight.com/journals.htm?articleid=1793205>
16. Mishra, S. (2010), *Open and distance education: History, Status and conceptual analysis*. [Online] Available from: <http://www.slideshare.net/missan/open-and-distance-learning-history-status-and-trends>
17. Nunnally, J.C. (1978), *Psychometric theory*, 2nd ed, McGraw-Hill, New York.
18. Oblinger, D. and Oblinger, J. (2005), "Educating the next generation", Educause. [Online] Available from: <https://net.educause.edu/ir/library/pdf/pub7101b.pdf>
19. Park, S.Y. (2009), "An analysis of the Technology Acceptance Model in understanding university students' behavioral intention to use e-Learning", *Educational Technology & Society*, Vol. 12 No. 3, pp. 150-162. [Online] Available from: http://www.ifets.info/journals/12_3/14.pdf
20. QS Top Universities. (2014), *Universities Using New Technologies*. [Online] Available from: <http://www.topuniversities.com/student-info/choosing-university/universities-using-new-technologies>
21. Ruhe, V. and Zumbo, B.D. (2009), "Evolution in Distance Education and E-learning: The unfolding model", The Guilford Press, New York.
22. Sewry, D.A. and Schlenkrich, L. (2012), "Factors for successful use of Social Networking sites in Higher Education", *South African Computer Journal (SACJ)*, No. 49, pp. 12-240. [Online] Available from: <http://sacj.cs.uct.ac.za/index.php/sacj/article/viewFile/78/56>
23. Venter, P., Van Rensburg, M.J. and Davis, A. (2012), "Drivers of learning management system use in a South African open and distance learning institution", *Australasian Journal of Educational Technology*. [Online] Available from: <http://www.ascilite.org.au/ajet/ajet28/venter.html>
24. Webopedia. (n.d.), *Social networking site*. [Online] Available from: http://www.webopedia.com/TERM/S/social_networking_site.html
25. Winifred1027. (2013), *Evaluate the role and benefit of self-service technology to service retailers*. [Online] Available from: <http://www.studymode.com/essays/Evaluate-The-Role-And-Benefit-Of-1494685.html>
26. Wong, K.T., Osman, R., Goh, P.S.C. and Rahmat, M.K. (2013), "Understanding student teachers' behavioural intention to use technology: Technology Acceptance Model (TAM) validation and Testing", *International Journal of Instruction*, Vol. 6 No. 1, pp. 89-104. [Online] Available from: <http://files.eric.ed.gov/fulltext/ED539841.pdf>