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SOCIAL INFLUENCE: TESTING THE PREDICTIVE POWER OF ITS DIMENSIONS IN EXPLAINING THE INTENTION TO USE MOBILE LEARNING SYSTEMS IN UNIVERSITIES-EMPIRICAL EVIDENCE FROM UGANDAN UNIVERSITIES

By

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ABSTRACT

Among information systems, mobile learning systems are acknowledged for the exponential growth in recent years into education sector specifically in the higher education learning institutions. Mobile learning systems are viewed as a kind of information system, which universities use to better serve their students efficiently and effectively in order to provide sustainable value for education. While past studies from numerous scholars positioned their focus on development of mobile learning frameworks to enhance the usage of mobile learning systems. Comparatively, little research has been conducted to explore the predictive, positional, and potential influence of social influence and its dimensions on student's intention to continuously use mobile learning systems in universities of developing countries like Uganda. This study used a cross sectional survey methodology to gather data from a sample size of N=375 students from both public and private universities. The results of correlation and regression analysis revealed significant positive relationship between social influence and the intention to use M-learning systems in Ugandan universities, implying that social influence is a significant determinant of student's intentions to use M-learning systems in Uganda. Additionally, social influence significantly impacts student's intention to use mobile learning systems. Social influence as presented in this study, explain 34.90% variation in enhancing student's intention to use mobile learning systems in Ugandan universities. Therefore, universities should pay meticulous attention to social influence as one of the major determinants and predictors needed to enhance student's intention to use M-learning systems.

Keywords: M-Learning, Social Influence, Intention to Use, ICT, MoICT.

INTRODUCTION

The advent of technology and the internet has completely changed the way learning is being conducted as Universities continually strive for ways of serving their students efficiently and effectively in order to provide sustainable value for education (Mubuke, Kituyi, & Ogenmungu, 2016). Over the past decade, rapid progress in ICTs has inspired many universities to incorporate new technologies into their developmental strategies. M-learning is an important tool within ICT and has become more influential in the agenda of policy and decision makers over the world (Ngarambe, 2013). Vosloo (2012) asserts that M-learning has now become synonymous in all aspects of Learning.

As Universities continually search for ways to support student learning, effective new tools have been integrated into the educational process to facilitate student learning (MacCallum, 2011). Mobile learning has been seen as a way to provide learners and educators with opportunities to share resources, foster interaction and communication, and provide support outside the classroom. This technology has helped make access to learning easier and often more efficient (Annan, 2014). Annan (2014) stresses that one technology that promises to dramatically change learning are mobile learning systems. Mobile technology has quickly been adopted in everyday life, and it is common for most people to have, and carry, a mobile device with them at all times. In addition Thomas, Singh, and Gaffar (2013) posits that mobile devices are becoming more and more powerful and are replacing some of the tasks that would normally be done on traditional PCs or laptops. Mobile learning has distinctive technological benefits that can be realized from using M-learning system during and after its adoption. Above all, mobility enables ubiquitous learning in formal and informal settings by decreasing "the dependence of fixed locations for work and study, and consequently change the way we work and learn". Presence of Mobile Learning Systems does not necessarily lead to its acceptance in universities. Most M-learning system failures result from a lack of user acceptance rather than poor quality of the system (Davis, 1993; Igbaria, 1993).

Despite the penetration and access of M-Learning technologies in Ugandan Universities, their use to enhance education delivery is not widespread in many Universities (MoICT, 2012). Muyinda (2012) reported that Makerere University implemented Mobile Research Supervision Initiative (MRSI), which did not succeed due to a continued conventional supervision methods offered to students. Mubuke et al. (2016) attributes the low adoption and usage of M-learning to student's preference for traditional campus based education, limited collaboration between learners and the supervisors, unwillingness in using mobile devices for academic purposes as consequent limitations to students intention to use Mobile learning systems. A greater understanding of social influence as a key predictor that impacts students' intention to use M-learning systems could help universities enhance student's intention to use M-learning systems by coming up with appropriate adoption strategies of mobile learning (Hamari & Koivisto, 2015). While there has been an extensive body of literature on mobile learning systems and students' intention to use the technology, no allusion could be found to determine the power of social influence and its impact on predicting students' intention to use mobile learning systems in institutions of higher learning in developing countries like Uganda. However, it is likely that social influence will play a significant role in enhancing students' intention to use mobile learning systems in Universities as it does in general technology adoption. Thus, this study sought to examine the relationship between social influence and the intention to use mobile learning systems in University setting, to examine the predictive power of social influence on the intention to adopt and use mobile learning systems in Ugandan universities, which can be used to elucidate the relevancy of Social influence in enhancing student's intention to use M-learning systems in developing countries.

1. Literature Review

In this section the researchers review relevant literature on studies done by other scholars. They have reviewed literature on social influence and the intention to use M-learning systems, the relationship between social influence, and the intention to use M-learning systems.

1.1 Social Influence

Social influence is defined as "the degree to which an individual perceives that others believe he or she should use the new system" (Sung, Jeong, Jeong, & Shin, 2015). According to Nassuora (2012), social influence is the perceived social pressure to perform or not perform a given behavior. The more favorable the subjective norm with respect to behavior, the higher an individual's intention to perform the behavior will be (Lu & Viehland, 2008). Liu and Li (2010) says that subjective norm is an important determinant of user behavior intention in

information systems. Nassuora (2012) further eulogize that social influence is the perceived social pressure to use mobile learning systems. Social influence by positive word-of-month from lecturers, family, friends, and other adopters positively influences the adoption M-learning systems. Hence, it was rational to include social influence into the research model. However, Hernandez, Montaner, Sese, & Urquizu (2011) called social influence as social factors and defined it as "the individual's internalization of the reference groups' subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations".

1.2 The Relationship between Social Influence and Intention to use Mobile Learning

In the context of mobile learning, Park, Nam, and Cha (2011); Abu-Al-Aish and Love (2013) elaborates that social influence strongly affects students' intention to accept and use mobile devices for academic purposes. Liu and Li (2010) also elucidates that it is necessary for student's intention to use M-learning to be influenced by others, such as peers, lecturers, and thus it is rational to associate social influence and intention to use M-learning systems. Venkatesh, Morris, Davis, & Davis (2003) contends that social influence is a strong predictor of behavioral intention in shaping an individual's intention to use new technology systems.

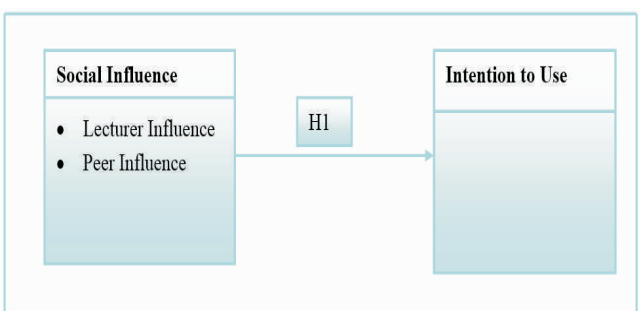
Sarker, Ahuja, Sarker, and Kirkeby (2011) urge that intentions to adopt and use a technology by individuals within the settings of the organizations can improve their performance. Social influence has become a crucial key determinant in influencing students' intention to use mobile learning systems in Universities. To maximize enhanced intentions to use mobile learning systems as education technology innovations and in order to realize the benefits associated with the use of mobile learning, students within universities can be assisted by exerted influence from their peers and lecturers (Kraut et al., 1998). The increase of information about the benefit of using technological innovations in education is significantly facilitated by social influence of students within universities in form of peer and lecture influences within their social networks (Talukder, Harris, & Mapunda, 2008).

Enhanced usage of mobile learning systems can be accelerated by appreciating the role of social influence as a strategy to encourage students' use innovations in learning, communicate with other students within universities, and other members from other Universities (Talukder & Quazi, 2011). Talukder and Quazi's (2011) findings revealed that there is a significant positive relationship between social influence and intention to use mobile learning systems in universities.

Social influence has a crucial impact on the transfer of knowledge process within universities through using the deployed mobile learning systems (Reagans & McEvily, 2003). Moreover, mobile learning systems connect most students within the same university in different universities (Frambach & Schillewaert, 2002). Therefore, social influence dimensions are significantly useful in enhancing students' intention to use mobile learning systems as one of the technological tools to foster learning in universities.

In the perspectives of students' usage of a technology innovation in learning, the intention to use mobile learning systems is enhanced by beliefs of the peers and lecturers about the benefits of the use of mobile technology in education to support student learning that is both engaging and effective (Mubuke et al., 2016). Social influence was adapted in this study to suggest that the intention to use mobile learning systems is determined by the opinions of peers and lecturers in a context of institutions for higher learning.

Figure 1 illustrates a conceptual framework that guided this study, the domains of Social influence such as Lecturer influence and Peer Influence impacts student's



Source: (adapted with modification; Abu-Al-Aish & Love, 2013)

Figure 1. Conceptual Framework

intention to use M-learning systems (Abu-Al-Aish & Love, 2013). This is illustrated in Figure 1 by the arrow that comes from Social Influence to Intention to use M-learning systems. It is evident from this preliminary work and the conceptual framework presented that the relationship between Social Influence and Intention to use M-learning systems will have implications for both academia and practioners. It is worth to find that whether the relationship between social influence and the students' intentions will enhance the usage of mobile learning systems in higher institutions of Learning. Thus, the following hypothesis was formulated,

H_1: Social influence positively relates to intention to use M-Learning.

2. Methodology

2.1 Research Design

The study used a cross-sectional descriptive research design supported by the quantitative technique that was used to collect data from students dispersed in two different universities. The quantitative approach aimed at obtaining data expressed in numerical terms (Collins, 2010, p. 38). The cross-sectional design was used because the researchers aimed at collecting data from a sample of population at a particular time (Amin, 2005) and in this case, pertinent data was collected from all respondents once and for all. This reduced on time and costs that would have been immensely involved during data collection (Neumann, 2006).

2.2 Study Population, Sample Size, Sampling Techniques, and Data Collection and Analysis Method

The study population comprised of N=11,363 students from both private and public universities that is Makerere University and Kampala University, respectively (Makerere University, 2013; Kampala University Strategic Planning Report, 2014). Using the formula provided by Krejcie and Morgan (1970), a sample size of N=375 respondents was determined out of the total population of N=11,363. Purposive sampling technique was used to select the two universities with a rationale of conducting the study and simple random sampling technique was employed with the intent of selecting the respondents from the two selected universities. The main data collection tool was the questionnaire. The questionnaire contained structured series of questions and other prompts relating to the study variables. Pearson correlation analysis method using SPSS version 20 was used to analyze the relationship between Social Influence and Intention to use M-learning. Regression analysis method was used to determine the predictive power of social influence for the intention to use mobile learning systems in Ugandan universities.

2.3 Measurement of the Variables

The respondents assessed social influence and the intention to use M-learning on a five-point Likert-type scale, ranging from 5= Strongly Agree, 4= Agree, 3= Not Sure, 2= Disagree, and 1= Strongly Disagree were used to determine respondents' level of agreement/ disagreement with questions/ subject matters.

In measuring social influence, it was divided into two dimensions of peer influence and Lecturers' influence (Abu-Al-Aish & Love, 2013; Lowenthal, 2010). Lecturers' influence is the extent to which the lecturers directly inspire their students to use M-learning systems (Abu-Al-Aish & Love, 2013). Peer influence refers to the extent to which students encourage or motivate colleagues to use M-learning systems for education benefits (Table 1) (Huang, 2014a).

2.4 Content Validity Index and Reliability Test

Validity tests were done to determine how well research instruments used measured to the concept for which it was intended.

Content validity index was used to test construct validity of the scales, CVI was found to be greater than 0.70 which is the minimum as suggested by Coghlan (2011) (Table 2).

Reliability tests were conducted to measure the

Variable	Factors to Measure Variable	Source
Social influence	Peer Influence, Lecturers Influence	Kihoro et al. (2013); Abu-Al-Aish and Love (2013)
Intention to Use		Huang (2014b); Abu-Al-Aish and Love (2013); Lowenthal (2010); Park et al. (2011)

Table 1. Measurement of the Variables

Variable	Number of Items	CVI
Social Influence	8	.841
Intention to use	5	.765

Table 2. Content Validity Index of the Variables

consistence and stability of a questionnaire as the key instrument that was used to collect data from students in universities (Table 3).

Using SPSS version 20, reliability tests were achieved by computing the Cronbach alpha coefficient, reliability estimates were all greater than .70, which is the minimum as suggested by Nunnally (1978).

3. Findings

3.1 Background Characteristics

The results in Table 4 were generated to explore the distribution of the demographic characteristics of the respondents.

Construct	Number of Items	Cronbach's Alpha Coefficient
Social Influence		
Peer Influence	4	.892
Lecturers Influence	4	.827
Intention to use	5	.798

Table 3. Reliability Analysis of each Construct

Variable	Value	Frequency	Percentage
University	Makerere University	153	65.95%
	Kampala University	79	34.05%
Total		232	100.00

Table 4. Descriptive Statistics of the Sample in Terms of Frequencies and Percentages

The demographic characteristics of the respondents in terms of university distribution indicate that 65.95% were from Makerere University and 34.05% were from Kampala University. This is an indication that both public and private universities were well represented. Therefore, the results from this study can be universally applied in higher educational institutions of learning both public and private.

3.2 Factor Analysis for Social Influence as a Predictor in Students' Intention to Adopt and use M-learning Systems

In trying to understand the dimensions of social influence as outstanding factor in predicting and the intention to use M-learning systems in Uganda, Factor analysis was carried out to measure the strength of the items under the main variable.

3.2.1 Rotated Component Matrix[a] for Social Influence

Factor analysis was further used to extract factors that measure social influence using the principal component analysis and varimax rotation methods as illustrated in Table 5.

Key:

1. Peer Influence
2. Lecturer's Influence

Peer Influence: Four items loaded on this factor and these include; I will adopt M-learning technologies if my peers or

Note: [a]Rotation converged in 3 iterations

Factors Measuring Social Influence	Component 1	Component 2
I will adopt M-learning technologies if my peers or colleagues intend to use the same.	.877	
I will adopt M-learning technologies if my peers or colleague's already use the same.	.839	
I will adopt M-learning technologies if my peers or colleagues offer to help me on how to use it.	.830	
I will adopt M-learning technologies if it makes me feel closer to my peers, or colleagues.	.688	
I will adopt M-learning technologies if my lecturers' supports the use of it.		.819
I will not adopt M-learning technologies if Lecturers in my Department have not been helpful in the use of M-learning systems.		.799
I will adopt M-learning if my lecturers who influence my academic behavior think that I should use it.		.726
I will adopt M-learning technologies if my lecturers encourage me to use mobile learning system.		.646
Eigen Values	2.916	2.650
% of variance	36.443	33.121
Cumulative variance %	36.443	69.565

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
[a]Rotation converged in 3 iterations.

Source: Primary data

Table 5. Rotated Component Matrix[a] for Social Influence

colleagues intend to use the same (.877), I will adopt M-learning technologies if my peers or colleagues intend to use the same (.839), I will adopt M-learning technologies if my peers or colleagues offer to help me on how to use it (.830), and I will adopt M-learning technologies if it makes me feel closer to my peers, or colleagues (.688).

Lecturer's Influence: Four items loaded on this factor and these include; I will adopt M-learning technologies if my lecturers' support the use of it (.819), I will not adopt M-learning technologies if Lecturers in my Department have not been helpful in the use of M-learning systems (.799), I will adopt M-learning if my lecturers who influence my academic behavior think that I should use it (.726), and I will adopt M-learning technologies if my lecturers encourage me to use mobile learning system (.646).

Exploratory factor analysis was further used to extract factors that measure social influence. Only values with a loading over 0.6 and Eigenvalues in excess of 1 were retained for analysis. Eigenvalue > 1 indicates proportion of the variance explained in the dependent variable. The factor analysis results yielded two components/ dimensions, which were interpreted as peer influence (36.443%), and lecturer's influence (33.121%) explaining (69.565%) of the variance in social influence.

3.3 Correlations Analysis

The Pearson correlation test was employed to establish the relationship between social influence and the intention to use M-learning systems.

The results from Table 6 indicate a significant positive relationship between social influence and the intention to use M-Learning as revealed by the correlation coefficient ($r = .428^{**}$, $p<0.01$). This implies that high levels of social influences are associated with high levels of intention to use M-Learning. Similarly, low levels of social influences are associated with low levels of intention to use M-Learning. In other words, an improvement in the social influences is positively associated with an improvement in intention to use M-Learning. On the other hand, a decline in social influence is associated with a decline in the intention to use M-Learning.

Study Variables	Social Influence	Intention to Use M-learning
Social influence	1	
Intention to Use	.428**	1

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

Source: Primary data

Table 6. Correlation Analysis

This conforms to H_1 which states that social influence is positively related to the intention to use M-learning in Ugandan universities.

3.4 Regression Analysis

The findings in Table 7 showed that the intention to use mobile learning systems was significantly influenced by social influence (beta = .223, $p<0.01$, Sig =.000). This implies that social influence with its dimensions of peer influence, lecturers' influence greatly predict students' intention to use mobile learning systems. Social Influence should therefore be highly considered by the university management and board members for better enhancement of the intentions for the students to use mobile learning systems in higher institutions of learning.

The regression analysis model of intention to use mobile learning systems in universities as seen in Table 7 was found to be significant and hence well specified, which means that; social influence with dimensions of peer influence and lecturers influence were found to be appropriate predictors of intention to use mobile learning systems in universities in Uganda. The predictive power of the model was found to be 34.90% (Adjusted R Square =.349). This result in Table 7 indicates social influence account for 34.90% variation in enhancing students' intention to use mobile learning systems in Ugandan

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.656	. 374		7.206	.000
Social Influence	.190	.050	.223	3.830	.000

R = .591[a]

R Square = .424

Adjusted R Square = .349

F statistics = 48.921

Sig. (F statistics) = .000

[a]Dependent Variable: Intention to Use

Source: Primary data

Table 7. Regression Analysis for Social Influence on the Intention to use Mobile Learning Systems

universities hence predicting the intention to use mobile learning systems while the remaining 65.10% of predictors of intention to use mobile learning systems is accounted for by other factors that are not part of this study. The model specification was found to be fit and valid for this study (Sig<0.00).

4. Discussion of Findings

From the Mobile learning systems' perspective, the findings of this study revealed that social influence is a significant predictor of students' intention to use mobile learning systems in higher institutions of learning. Notably, both the peer influence and lecturer's influence as the imperative dimensions that measured social influence on students' intention to use mobile learning systems are prominent. The findings from this study revealed that social influence significantly influences the student's intention to adopt and use mobile learning systems and thus the contribution of social influence is a two way side that is from the perspective of the peers and then from the perspective of lecturer's. Therefore, a recipe of both peers and lecturers dimensions significantly influences students' intention to use mobile learning systems. The earlier research conducted by scholars like Talukder and Quazi (2011), Sung et al. (2015), and Kraut et al. (1998) showed that social influence is an imperative input in predicting the adoption and use of mobile learning systems.

Consistent with findings from other studies (Iqbal & Qureshi, 2012; Nassuora, 2012; Kihoro, Oyier, Kiula, Wafula, & Ibukah, 2013), this study also revealed that social influence had a significant positive effect towards students' intention to use M-learning systems. The findings of this study also concur with that of Wang and Chiu (2008), Miura and Yamashita (2007), Rivis and Sheeran (2003). Based on the result, it can be concluded that the more students perceive lecturers, peers, and other individuals important to them believe they should use mobile learning, the more likely they are to engage in the usage of mobile learning systems. Given this finding, it is crucial that people who have strong connection with the students such as the lecturers and colleagues persistently encourage the student to engage in the usage of mobile learning systems.

The findings of this study revealed that high levels of social influence are associated with high levels of intention to use M-Learning systems. Similarly, low levels of social influences are associated with low levels of intention to use M-Learning systems. In other words, an improvement in the social influences is positively associated with an improvement in intention to use M-Learning systems. On the other hand, a decline in social influence is associated with a decline in the intention to use M-Learning systems. This is agreement with the study conducted by Talukder and Quazi (2011).

Conclusion and Recommendations

This paper demonstrates that social influence plays a significant role in enhancing students' intention to use mobile learning systems. Students with a superior share of their closest contacts who already have mobile devices are more likely to use a mobile learning system, which means that students tend to get connected in the use of mobile learning. The findings revealed that there was a significant positive relationship between social influence and the intention to use M-learning as seen with statistical details in Table 4. This is an indication that the social influence directly affects the intention to use M-learning systems. A detailed factor analysis and Rotated Component Matrix for Social Influence showed that the entire social influence factors such as lecturers' influence, peers influence all had a positive relationship with the intention to use M-learning systems. From regression analysis, results showed a positive relationship between the social influence and students' intention to adopt and use M-learning services in Universities.

Some implications can be derived from these findings. First, Universities should consider carrying out an extensive training and awareness to students who are already using various mobile services about the benefits of using mobile devices for academic purposes. It's upon these early adopters that they will exhibit their potential to influence their peers and colleagues to adopt and use mobile learning systems. Therefore, it is crucial that people who have strong connection with the students such as the lecturers and colleagues should persistently encourage the student to engage in the usage of mobile

learning systems to realize the benefits associated with mobile learning.

Universities should strive hard to provide a stable, easy to use, and quick-response mobile learning systems in sustaining the students' intentions to use the deployed mobile learning systems. This is because a stable and easy to use learning system motivates students to manage their own learning activities as they are sometimes separated from lecturers, peers, and the institutional support staff. This sovereignty brings in an enhanced need for the students to develop critical thinking skills and discover learning needs.

To strengthen the social influence beliefs, universities should develop socialized mobile learning services. This is because a mobile learning that promotes collaboration, interactions, and engagement of both lecturers and the learners will be easily adopted and used for learning purposes. If the lecturers directly and indirectly influence their students to use M-learning systems, the students' intention to use such systems will be enhanced, which will translate into students encouraging or motivating other colleagues to use M-learning systems. This is because the more the learners are influenced by their peers and faculty lecturers, the more they control their own learning activities. Thus, this will swiftly enhance students' intention to use mobile learning systems.

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