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Examining the Effect of Facilitating Conditions as an imperative input in enhancing the intention to use Mobile Learning systems in Universities

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ABSTRACT

This study centered on facilitating conditions as an imperative key in determining intention to use Mobile Learning systems in Universities. The study used a cross sectional survey with a sample size of 370 students from the universities. The correction results revealed a strong significant positive relationship between facilitating conditions and the intention to use m-learning systems, this signifies that facilitating conditions are key imperatives in determining intention to use mobile learning systems in universities. As universities look out for the better ways to increase the use of mobile learning systems, more attention should be given to facilitating conditions in their bid to ensure that student's intention to use mobile learning systems is highly enhanced.

Key Words: M-Learning, Facilitating conditions, UTAUT, Intention to Use and M-learning systems

Academic Discipline and Sub-Disciplines

Mobile Learning, Electronic Learning, Mobile Government, Mobile healthy information systems

SUBJECT CLASSIFICATION

Information and Communication Technology in Education

TYPE (METHOD/APPROACH)

The study used a cross sectional survey with a sample size of 370 students from both private and public universities to collect data.

1.0 INTRODUCTION

The change brought about by mobile technologies has resulted to the emergence of mobile learning, which is the extension or prolongation of e-learning. Sharma and Kitchens (2004) defined mobile-learning as a learning process which takes the advantages of mobile devices, ubiquitous communications technology and intelligent user interfaces. In universities, mobile learning helps educational institutions to enhance the accessibility, interoperability and reusability of educational resources, and also to improve flexibility and interactivity of learning behaviours at convenient times and places Murphy (2006). For learners in general, mobile learning facilitates the use of previously unproductive time, enables learning behaviours regardless of time and place; and brings about great possibilities for personalized, customized and context-aware learning support services Liu (2011).

Despite the benefits and infamy of Mobile Learning systems deployed by universities, there is currently a very limited usage rates in Ugandan universities. According to Kasse et al (2015), Universities in Uganda are higher institutions of learning and composed of varying forms of learners at different levels with various intentions of learning. Many of the students have varying motivators to being active learners. Some are self-driven, others induced by sponsors while some are learners by circumstance. Regardless of the type of learner, universities must conveniently provide education across the board to create, share knowledge and transform the learner. More still, in such higher institutions of learning, knowledge is co-created. Learning is rather an active process where both the learner and facilitator are involved to generate knowledge (Kasse et al, 2015). Consequently M-learning can be considered as an appropriate learning method that supports active involvement and engagement of the learner to co-create knowledge at convenience and flexibility.

Regardless of the high degree of insertion of mobile devices in Ugandan universities, the mere availability itself does not guarantee that its potential will be used for learning or accepted by all evenly to facilitate the usage of M-learning systems. Nassuora (2013) states that, the understanding of the usage of mobile technologies in educational environments is still incipient and in particular, questions about how to enhance student's intention to use mobile learning are still largely unresolved. This therefore implies that the role of facilitating conditions in enhancing student's intention to use m-learning has been quite ignored as most studies focus on the whole UTAUT or making an extension to it. In addition, little research in the literature is found to single out facilitating conditions as an independent determinant in influencing student's intention to use m-learning systems. For instance, the study carried out on investigating students willingness to use m-learning systems was empirically examined by applying the whole UTAUT model (Shuhaiber, 2015) yet it could be very vital in

identifying the effect of a single variable of UTAUT towards predicting the power of students intention to use m-learning systems.

Therefore, this study aimed to examine the dimensions of facilitating conditions, and to understand which of them could have a significant influence on students' intention to use m-learning systems.

2.0 LITERATURE REVIEW

2.1 Facilitating conditions

Mtebe and Raisamo (2014) defines facilitating conditions as availability of resources to support adoption and usage of mobile learning at a given institutions. In the context of mobile learning, the resources include availability of mobile devices, reliable broadband connection, and other related resources. Therefore, student's decision to use mobile learning systems is influenced by his or her perception on availability of support services and resources to deliver mobile learning.

Iqbal & Qureshi, (2012) states that acceptance of any new technology largely depends upon the supporting conditions or environment. Iqbal & Qureshi further explain that facilitating conditions have a significant positive effect on an individual's use of an information system. Also emphasizes the importance of providing students with guidance and technical support to facilitate engagement with learning technologies. Hence, facilitating conditions appeared to be an essential construct in the research model.

2.2 The Relationship between facilitating conditions and intention to use M-Learning

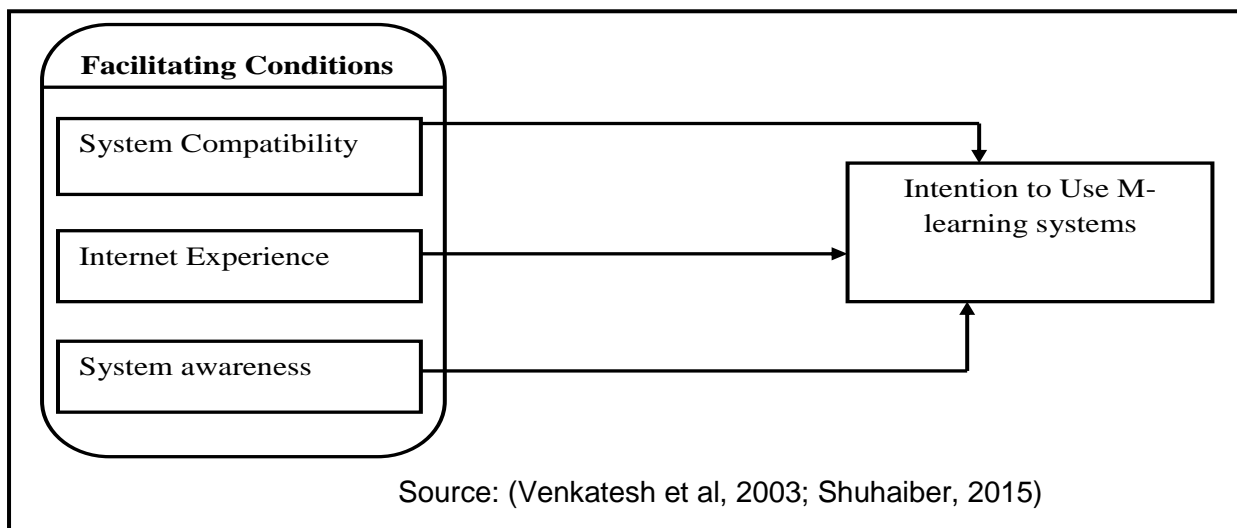
The study conducted by Abu-Al-Aish and Love (2013) emphasized facilitating conditions as a force for providing students with guidance and technical support to enhance their intention to use and engage with M-learning technologies. Wang et al (2008) reveal that facilitating conditions have a significant positive effect on student's intention to use mobile learning. In the context of mobile learning, learner's intention and decisions are affected by the perception of support from learning material providers, compatibility of personal devices, internet experience and learners awareness.

In the relevant literature examining mobile technology, many studies have claimed that a facilitating condition can have a positive effect on an students intention to use m-learning systems (Attalla et al., 2012; Iqbal and Qureshi, 2012; Nassuora, 2013). This signifies that there is there is a positive effect by the facilitating conditions on the intention by students to utilize m-learning.

2.3 Proposed Research Model and Hypothesis

Basing on literature review on the construct of Facilitating conditions, three variables were developed to measure their effect on student's intention to use m-learning systems in universities. These variables are systems compatibility, internet experience, systems awareness. The proposed research model is show below

A proposed research model



Hypothesis Number	Statement
H1	Facilitating conditions significantly influences student's intention to use m-learning systems.

3.0 METHODOLOGY

The study used a quantitative research method with questionnaire as the instrument for data collection. The questionnaire was based on the instruments used by previous studies Kituyi and Tsubira (2013). Perceptual measures in the form of

statements were used for measuring each variable with a corresponding Likert scale anchored as 1 for “Strongly Disagree”; 2 for “Disagree”; 3 for “Neither Agree Nor Disagree”; 4 for “Agree” and 5 for “Strongly Agree”. The questionnaire was pre-tested with several experts and prospective respondents. Subsequently, it was pilot tested with 30 students.

The population of 11, 363 Selected from two different universities in Uganda was considered. The Universities were; Makerere University with a total population of 9,563 students in the department of distance Learning (Muyinda; 2013 & Makerere University; 2013). Kampala University with a total population of 1,800 students in the department of distance Learning (Kampala University Strategic Planning Report, 2014). The sample size of 370 respondents was chosen basing on the approved sample size determination table of Krejcie and Morgan (1970). Using the simple random sampling technique, a total of 370 questionnaires were sent to the targeted students. The duration of data collection was one month and after the period was over, a total of 232 questionnaires were returned. The 232 were analyzed using IBM SPSS version 20.

On the side of data analysis methods, descriptive statistics was used to analyze data relating to background information using Mean, Percentages, Frequencies and Tables while Factor analysis method was used to evaluate the potency of the factors within the variables. Further to the above, Correlation analysis was used to analyze the effect of one facilitating conditions onto Intention to use M-learning systems.

3.1 Measurement of the Variables

Facilitating conditions as an imperative key in determining student’s intention to use m-learning was measured using as illustrated by Shuhaiber (2015). The respondents assessed variables of facilitating conditions, intention to use m-learning systems on a five-point Likert-type scale, ranging from 5= strongly agree, 4= Agree, 3= Not Sure, 2= Disagree, 1= strongly disagree were used to determine respondents’ level of agreement / disagreement with questions / subject matters.

Table 2: Measurement of the Variables

Variable	Construct	Source
Facilitating conditions	Awareness, Internet experience, Systems Compatibility	Shuhaiber (2015)
Intention to Use		Huang (2014); Abu-Al-Aish and Love (2013); Vosloo (2012)

3.2 Reliability and Validity of the Questionnaire

It was very vital to ensure that the questionnaire instrument measured what it intended to measure, which is its validity (Straub, 1989). Most of the items in the questionnaire were adapted from the items developed by Abu-Al-Aish and Love (2013); Shuhaiber (2015); Vosloo (2012) and Huang (2014) to estimate the facilitating conditions employed in UTAUTs, and from other studies in the students intention to use m-learning systems (Shuhaiber, 2015; Iqbal and Qureshi, 2012; Nassuora, 2013). Thus, the face validity of the questionnaire instrument was ascertained for most of the items.

The reliability of the questionnaire was also assessed. According to Straub (1989), reliability is the extent to which the items measure the same way each time they are used, under the same conditions, with the same sample. This was attained by determining the Cronbach alpha coefficient, reliability estimates were all greater than .70 which is the minimum as suggested by Nunnally (1978).

Table 3 and 4 shows validity and reliability results:

Table 3: Content Validity

Variable	Number of Items	CVI
Facilitating Conditions	14	.896
Intention to use	5	.857

Source: Primary data

Table 4: Reliability analysis

Construct	Number of Items	Cronbach’s Alpha coefficient
Facilitating Conditions		
System Compatibility	5	.821
Internet Experience	5	.876
System Awareness	4	.742
Intention to use	5	.891

Source: Primary data

FINDINGS AND ANALYSIS

4.1. Background characteristics

Based on the demographics and other background information of the respondents in the study, Table 5 shows that 56.5% of the respondents were males whereas 43.5% were females. Hence we can conclude that the intention to adopt and use M-learning services is irrespective of their gender. In terms of university distribution, 65.9% were from Makerere University and 43.1% were from Kampala University. Besides, respondents undertaking undergraduate degrees represented 65.9% of the sample, whereas respondents undertaking PGD studies represented 16.4% of the sample, respondents undertaking Master studies represented 13.8% and 3.9% were Diploma students. We can conclude that students undertaking undergraduate degrees have the highest intention to use M-learning system.

Table 5: Demographic profile of the participants

Variable	Value	Frequency	Percentage
Gender	Female	101	43.5%
	Male	131	56.5%
	Total	232	100.0
Mobile Devices types	Smartphone	84	36.2%
	Tablet	45	19.4%
	IPad	64	27.6%
	None	39	16.8%
	Total	232	100.0
University	Makerere University	153	65.9%
	Kampala University	79	43.1%
	Total	232	100.0
Duration of using mobile Devices	0-2 years	31	13.4%
	3-4 years	70	30.2%
	5-7years	77	33.2%
	8 years & above	54	23.3%
Total		232	100.0

Source: Primary data

Regarding the usage of mobile devices, respondents who had used the devices between 5-7 years represented the largest part of the sample of 33.2%, followed by 3-4 years standing at 30.2%. Implying that most of our respondents have used mobile devices for a long period hence the intention to use M-learning is directly proportional to the mobile devices usage.

Regarding mobile devices type, respondents who owned smart phones represented 36.2%, those who owned iPads were 27.6%, respondents who owned Tablets were 19.4% were as those who did not own any of the mobile devices were 16.8%. We can conclude that students owning smart phones have the highest intention to adopt and use M-learning system followed by those owning iPads.

4.2 Factor Analysis for Facilitating Conditions

In trying to establish the strength of the factors that measure facilitating conditions as a vital key factor in enhancing student's intention to use m-learning systems, Factor analysis was carried out. Factor analysis is a statistical analysis that can be used to analyze strength of the variables and to explain those variables in terms of their common underlying dimensions (factors). Factor analysis involves condensing of information contained in original variables into smaller set of dimensions with minimum loss of information.

4.2.2. Rotated Component Matrix^a for Facilitating Conditions

Factor analysis was further used to extract factors that measure facilitating conditions using the principal component analysis and varimax rotation methods as illustrated in table 5

Table 6: Rotated Component Matrix^a for Facilitating Conditions

Items	Component		
	1	2	3
I believe I have interest in finding out about new M-learning systems	.905		
I can use mobile devices for writing /checking mail	.716		
I believe I have the willingness to learn new M-learning systems	.823		
My past performance with internet has been good		.786	
I can use mobile devices for online chatting		.775	
I will adopt M-learning system if it does not require an upgrade of my mobile device		.731	
I will adopt M-learning technologies if hardware and software is readily available		.728	
I will adopt M-learning technologies if adequate policies are put in place		.536	
I can use mobile devices for writing /checking mail		.428	
I have been using internet to find needed information			.858
I believe I have the appropriate skills to use M-learning applications			.818
Eigen Values	2.929	2.820	2.042
% of variance	24.409	23.501	17.015
Cumulative variance %	24.409	47.910	64.924

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 10 iterations.

Source: Primary data

Key

- 1- Internet experience
- 2- System awareness
- 3- System compatibility

Internet experience: The three items of that measured this factor indicated students' expectations concerning the use M-learning activities at the respective institutions and these items include;. I believe I have interest in finding out about new M-learning systems (.905), I can use mobile devices for writing /checking mail (.716), and I believe I have the willingness to learn new M-learning systems (.823).

System awareness: The items loaded measuring this factor were six and these include My past performance with internet has been good (.786) I can use mobile devices for online chatting (.775), I will adopt M-learning system if it does not require an upgrade of my mobile device (.731), I will adopt M-learning technologies if hardware and software is readily available (.728), and I will adopt M-learning technologies if adequate policies are put in place (.428).

System compatibility: The two items that measure this factor these include; I have been using internet to find needed information (.858) and I believe I have the appropriate skills to use M-learning applications (.818).

Exploratory factor analysis was further used to extract factors that measure facilitating conditions. Only values with a loading over 0.5 and Eigen values in excess of 1 were retained for analysis. Factor analysis yielded three components which were interpreted as internet experience (24.409%), Awareness (23.501%) and compatibility (17.015%) explaining 64.924% of the variance in facilitating conditions.

4.3 Correlations Analysis

In order to establish the relationship between facilitating conditions and the intention to use mobile learning systems, correlation analysis in particular the Pearson correlation analysis method was used.

Table 7: Correlation Analysis

Study Variables	Facilitating conditions	Intention to Use M-learning
Facilitating conditions	1	
Intention to Use	.692**	1

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

Source: Primary data

Relationship between Facilitating conditions and the intention to use M-Learning

The findings from table 7 above, also indicate a significant positive relationship between facilitating conditions and the intention to use M-Learning ($r = .692^{**}$, $p < 0.01$). In essence, this means that an improvement in facilitating conditions is associated with an improvement in the intention to use M-Learning. Likewise, low levels of facilitating conditions are associated with low levels in the intention to use M-Learning.

Internet experience as a component of facilitating conditions can influence student’s intention to use m-learning systems. This indicates that the more internet experience in the use m-learning systems and how to it works the more the intention to use it. However, the lower the internet experiences in the use m-learning systems and how to it works the lower the intention to use it. In addition, the systems compatibility as an enable of facilitating conditions impacts students’ intention to use m-learning systems, the more the mobile learning system is compatible with the learners mobile devices the more the intention to use the system and the more incompatibilities that comes with the mobile learning systems, the more the reduced students intentions to use the systems. Also, systems awareness a dimension of facilitating conditions affects students intention to use mobile learning systems were by the more learners are aware of the available deployed mobile learning systems the more the enthusiasm to adopt and use them while the lesser the students awareness of the available learning systems, the lower the intention to use the mobile learning systems.

Therefore, this implies that facilitating conditions with its dimensions of internet experience, systems awareness, and systems compatibility is key imperative factor in determining student’s intention to use m-learning systems in universities.

This conforms to H1 which states that facilitating conditions significantly influences student’s intention to use M-learning in Ugandan universities.

4.3.3 Regression analysis for testing the predictive power of facilitating conditions as a key determinant of intention to use m-learning systems

Table 8: Regression analysis for Facilitating conditions on the intention use M-learning systems

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.097	.374		2.936	.004
Facilitating conditions	.551	.132	.386	4.175	.000

R = .672

R Square = .486

Adjusted R Square = .486

F statistics = 45.672

Sig. (F statistics) = .000

a. Dependent Variable: Intention to Use

Source: Primary data

The regression results as seen in table 8 revealed that the students intention to use m-learning systems in Ugandan Universities was significantly determined by Facilitating Conditions (beta = .386, $p < 0.01$, Sig = .000), This signifies that Facilitating Conditions should therefore be highly given a highest priority by the universities to ensure that there is an improvement in the usage of m-learning systems in Ugandan Universities.

The Model specification was found to be fit and valid for this study (Sig<0.00). Table 8 shows that regression analysis model was found to be significant and hence well specified, which means that; Facilitating Conditions was found to be an imperative key factor in determining students intention to adopt and use m-learning systems in Ugandan universities. The predictive power of the model was found to be 48.6% (Adjusted R Square = .48.6). This implies that Facilitating Conditions account for 48.6% variation in impacting student’s intention to use m-learning systems in Ugandan Universities while the remaining 51.4% impacting student’s intention to use M-learning systems is accounted for by other factors that are not part of this study.

DISCUSSION OF FINDINGS

The findings from the study revealed that there was a significant positive relationship between facilitating conditions and the intention to use m-learning. In essence, this means that an improvement in facilitating conditions is associated with an improvement in the intention to use m-Learning systems. Likewise, low levels of facilitating conditions are associated with low levels in the intention to use M-Learning. This is in line with the study conducted by Abu-Al-Aish and Love (2013) who emphasized that facilitating conditions is a force for providing students with guidance and technical support to enhance their intention to use and engage with m-learning technologies. The finding also concurs with Wang et al (2008) states that that facilitating conditions have a significant positive effect on student's intention to use mobile learning. This implies that possibly when external controls and catalysts in the usage of m-learning systems are less difficult, it induces student's intention to use mobile learning systems. Respondents indicated that they have the internet experience to use mobile learning systems, have the necessary knowledge to use mobile learning systems and if they have difficulty using mobile learning systems, there will be experts to guide them out and their mobile instruments are compatible with mobile learning systems requirements. This is in line with usage Venkatesh, et al., (2003) who pointed out that facilitating conditions can make the intention to use the existing technology less difficult by removing any obstacles to adoption and sustained.

CONCLUSION AND RECOMMENDATIONS

The finding of the study have numerous theoretical and practitioner implications. As for theory, the study has explored new constructs and provided new significant dimensions of facilitating conditions that can influence student's intention to use mobile learning systems in universities. As presented prior in the literature review, no earlier studies have investigated the effect of dimensions of facilitating condition in determining students intention to use m-learning systems, which in turn fills an important knowledge gap and significantly contribute to the relevant literature. Practically, it is signified that universities top management should consider the systems compatibility, internet experience and systems awareness as key imperative factors of facilitating condition that influences student's intention to use mobile learning systems.

The findings of the study also revealed that there was a significant positive relationship between facilitating conditions and the intention to use m-learning systems. This is an indication that the facilitating condition directly affects the intention to use m-learning systems. a detailed factor analysis and rotated component matrix for facilitating conditions showed that all the facilitating condition factors such systems compatibility, internet experience, system awareness all had a positive relationship with the intention to use m-learning systems.

For universities to deal with new technologies, universities should train students to equip them with the relevant skill in the usage of such technologies unless students have a great deal of experience in dealing with such technology. In addition to that, facilitating conditions, such as internet experience, systems compatibility, and systems awareness are key imperatives in determining student's intention to use m-learning systems in universities of higher learning. This suggests that students will not be inclined towards m-learning adoption and use in the absence of these facilitating conditions. Limited Internet experience and systems compatibility may prohibit ready access to mobile content. Students view about internet experience, systems compatibility, and systems awareness as facilitating conditions to support m-learning systems are the main driving forces that can easily enhance student's intention to use m-learning systems.

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