RESEARCH ARTICLE

LEARNER ATTITUDES AND MOBILE LEARNING ADOPTION AMONG COMMUNITY HEALTH CARE TRAINEES, KENYA

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ABSTRACT

Education technologies including mobile learning (mLearning) are continually being integrated in teaching and learning. The adoption of mLearning is dependent on the end user that is the learner. This study therefore, sought to determine the relationship between the learner attitudes and adoption of mLearning among Community Health Care Trainees who were enrolled on the mHeath platform by Amref Health Africa in Kenya. The study is based on the Technology Acceptance Model (TAM) which posits that actual system use is determined by user attitude among other factors. Three learner attitude attributes were investigated in this study. They included; attitude towards mobile learning technology , use of mobile devices for learning and learning content. The target population was 3081 learners in the two phases of the mHealth project. A sample size of 354 participants was obtained through simple random sampling procedure. A positive and significant relationship ($r=.483^{**}p < 0.01$) was found between learner attitude and adoption of mLearning. It was therefore, concluded that learner attitudes play an important role in the adoption of mLearning. The study recommends that institutions aiming at implementing mLearning should focus of improving learner attitude toward using mobile technologies by designing mLearning instructional platforms that are user friendly, have comprehensive content and provide learner support services.

INTRODUCTION

Learner attitude towards mobile learning (mLearning) is an essential consideration for successful adoption of the mobile learning process. It is an integral concern in learning environments and should include learner psychological conditions such as attitudes (Hwang, Shi, & Chu, 2011; Al-Fahad ,2009;Traxler, 2013). Indeed, learner attitude has been identified as a critical determinant of technology adoption in eLearning courses (Al-Adwan, Al-Adwan & Smedley 2013; Hussein, 2017) and in use of social software (Ahmed, Kamal, Nik Suryani & Tunku, 2011). Learner attitude is a key feature to usage and adoption of technology in teaching and learning . Therefore, users' attitudes play a critical role in acceptance or rejection of a learning technology (Almasri, 2014). Learner attitude has also been found to relate to learner performance and has substantial influence on technology-based adoption (Zhao & Cziko, 2011; Al-Fahad, 2009). In general, it is important to examine user attitude towards the usage of any technology prior to the development of learning platforms (Al-Emran & Shaalan, 2015). Researchers, such as Al-Fahad (2009); Bechrakis, Gialamas, and Barkatsas (2011) established

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that learners who have favourable attitudes towards using mobile devices for educational purposes are likely to adopt mobile devices for study. Fozdar and Kumar (2007) in a study on learners' attitudes towards the effectiveness of mobile learning found that delivering education using the mobile phone could be useful in enhancing retention rates. This is because mobile phones expand the teaching learning system. Attitude affecting usage of computers, the internet and mobile phones has been measured by several studies (Liu, Han, & Li 2010; Toe *et al*.; 2008; Tai & Ting, 2011). However, studies from different contexts on learners' attitudes towards the use of mLearning have produced dissimilar results. For example , Khaddage and Knezek (2013) indicated that in the United States of America, learners were more positive towards the use of mLearning technology in comparison to learners in the United Arab Emirates. Our study sought to establish the learner attitudes towards mLearning in the Kenyan context among health care trainees.

Literature Review

Attitude is an important psychological construct that contributes towards technology adoption. Indeed, Peters, (2007) showed that psychological perspective in mobile communication technology is generally concerned with

people's perceptions, expectations and attitudes. In other cases, users' attitudes have been shown to have a major influence on the acceptance of new technology (Venkatesh, Morris, Davis, & Davis, 2003; Zhao & Cziko, 2011). Studies conducted in different perspectives have examined attitudes toward mobile learning (Al-Fahad 2009; Baya'a and Daher, 2009). Such studies have established that users' attitudes have an impact on adoption mLearning. Research has also shown that a positive attitude towards technology and ability to use the technology for learning are vital and measurable factors in the level of adoption (Zhao & Cziko, 2011). Al-Fahad (2009) whose main aim was to better understand and measure students' attitudes and perceptions towards the effectiveness of mobile learning, established that majority of learners supported the use of wireless networks. This increased their flexibility in accessing resources necessary for independent learning in any place and time.

There exist a link between learner attitude towards use of mobile phone for learning and motivation adoption of mLearning. Wafa and Abu-Al-Sha'r (2009) in their study of university students' attitudes towards cell phone learning environment, established that the use of cell phone in the university learning environment is highly appreciated by both graduate and undergraduate university students. The results of their study revealed that the undergraduate students have positive attitudes towards the learning environment of the cell phone. Similarly, Thatcher and Mooney (2008) analysed the use of cell phone text messaging to send questions to the lecturer during classes or between classes. Their results indicated that students strongly favoured this mode of learning. The students also suggested more future usage of mobile phones in the educational process to enrich their learning experience. Furthermore, the study by Al-Fahad, (2009) on students' attitudes towards the mobile learning in King Saud University, Saudi Arabia, points to the fact that mobile learning is widely embraced by the student community. Students in this survey changed from passive to active learners who were behaviourally, intellectually and emotionally involved in their learning tasks. Therefore, mobile technologies can be perceived to be effective tools in improving communication and learning experiences.

Learner attitude towards the mLearning content is also a critical determinant for mLearning adoption. Baya'a and Daher (2009) conducted a research to examine the perception of the students in regard to learning of mathematics concepts using mobile phones. The study revealed that the use of the cell phone enhanced positive appreciation of the process of teaching and learning mathematics concepts . This study, showed that learner's change of attitude towards the content impacts on their adoption of the technology in question. On the other hand, Nah, White and Sussex (2008) investigated the potential of using cell phones to browse Wireless Application Protocol (WAP) site for the purpose of learning listening skills. Their study established that learners expressed positive attitudes toward the use of the WAP site. Equally, Wafa and Abu-Al-Sha'r (2009) suggest that the effects of the constant use cell phones for teaching and learning are reflected in students' tendency towards independent learning and adoption of new technology. Additionally, Lai, Wang, and Lei (2012) identified factors that influence Hong Kong university students' adoption of technology for learning. The foremost predictors of students' technology use for learning were found to include: the compatibility of technology and students'

learning styles and needs, the availability of encouragement and support from peers and facilitators, as well as the attitudes toward technology use. Similarly, Sun, Tsai, Finger, Chen, and Yeh (2008) conducted an investigation on the critical factors affecting learners' satisfaction in eLearning. They reported learner computer anxiety, instructor attitude toward eLearning, eLearning course flexibility, eLearning course quality, perceived usefulness, perceived ease of use and diversity in assessments as the critical factors affecting learners' perceived satisfaction.

This study was premised on The Technology Acceptance Model (TAM). The Technology Acceptance Model (TAM), is an adaptation of the theory of reasoned action specifically tailored for modelling user acceptance of information systems (Davis *et al.*, 1989). TAM posits that actual system use is determined by behavioural intention to use. In turn intention to use is determined by both attitude and perceived usefulness. While several studies have explored many facets of technology adoption, few specifically explore learner attitude in a similar context to our current study. However, extrapolations from earlier studies with a different focus offer models that are suitable for this study.

MATERIALS AND METHODS

The study was guided by the pragmatism paradigm. This paradigm was selected because it applies to mixed methods. It was assumed that the combination of qualitative and quantitative approaches would provide a more complete understanding of the research problem than either approach alone (Teddlie & Tashakkori, 2010; Handal *et al.*, 2013). The study further utilised a decripto-explanatory survey research design. The design facilitated detailed description and analysis of the variables under study. Combined designs enabled the researchers to achieve optimal results as there was no single perfect design as is suggested by Saunders, Lewis and Thornhill (2009). The study population was 3081 participants of the two phases of mHealth programme. To achieve the expected threshold for a sample size, the researchers drew the sample size using the formula suggested by Yamane (1967) for calculating sample sizes. This formula gave a sample size of 354. The data was collected from six counties in Kenya of the thirteen counties where the mHealth programme took place. All respondents had been given a brief introduction about the purpose of the study and some instructions to help them complete the survey.

Adoption was measured based on the Mobile Learning Management System (MLMS) data on learner time taken to complete timed assigned topics. The Technology Adopter Category Index further was used to compute adopter categories. The learner attitude attributes considered for this study included; Attitude Towards Mobile Learning Technology (ATMLT), Attitude Towards Use of Mobile Devices for Learning (ATUMDL), and Attitude Towards Mobile Learning Content (ATMLC). The items used for measuring attitudinal constructs were adopted from Tsai, Tsai, & Hwang (2010) PDA attitude scale, with some additional modifications being made by the researchers to suite the current study. The research model consisted of 21 items with each construct being measured by 5 Likert scale options (strongly agree, agree, uncertain, disagree and strongly disagree).

RESULTS

The 21 attitudinal items were coded into three based on the study variable, descriptive analysis of the means and standard deviations are presented in Table 1.

Table 1. Descriptive analysis of attitudinal Constructs

Attitudinal Construct	Question	Mean	Std. dev.
Attitude Towards Mobile Learning Technology (ATMLT)	ATMLT 1	4.49	.617
	ATMLT 2	4.49	.681
	ATMLT 3	4.60	.642
	ATMLT 4	4.62	.578
	ATMLT 5	4.52	.577
	ATMLT 6	4.56	.604
	ATMLT 7	4.52	.666
Attitude Towards Use of Mobile Devices for Learning (ATUMDL)	ATUMDL 8	4.58	.624
	ATUMDL 9	4.40	.783
	ATUMDL 10	2.99	1.509
	ATUMDL 11	4.35	.836
	ATUMDL 12	2.46	1.388
	ATUMDL 13	4.54	.720
	ATUMDL 14	4.49	.739
Attitude Towards Mobile Learning Content (ATMLC)	ATMLC 15	2.40	1.271
	ATMLC 16	2.17	1.251
	ATMLC 17	3.19	1.426
	ATMLC 18	2.41	1.282
	ATMLC 19	2.12	1.298
	ATMLC 20	4.12	1.031
	ATMLC 21	4.17	1.069
N= 294	$\bar{x}$=3.82		

The results (Table 1) show that, all the means for attitude towards mobile Learning technology ranged between 4.49 and 4.62 with a standard deviation <1 for all items. This is an indication that the majority of the respondents had a positive attitude towards the use of mobile learning technology for learning purposes. This was partly validated by the Focus Group Discussions with the respondents where the learners expressed support and liking for the mLearning technology.
"…mLearning is a very good mode of learning…I am able to access content anytime anywhere as I undertake my daily chaos…"

For the Attitude Towards Use of Mobile Devices for Learning (ATUMDL), Only two items had a mean of less than 4.0 and a standard deviation <1. This equally imply that most respondents had a positive attitude towards use of mobile devices for learning. However, the results show that the attitude towards mobile learning content was low with only two items that had a mean above 4.0 although the opinion was spread with the standard deviation for all the items >1. The implication of this finding is that there is need to improve on the way mLearning content is packaged and or offer mLearning as a component of blended learning integrating it with other modes of delivery in Open Distance and eLearning (ODeL). The overall mean for Learner attitude towards mLearning adoption was 3.82. This implies that generally the learners have a positive attitude towards mLearning. This was also partly validated by the Focus Group Discussions with the respondents where some of the learners expressed dissatisfaction with either content delivery mode or the way their devices displayed the content in spite of their overall support of mLearning.

"…Sometimes the messages would be repeated…my device could did not have enough storage capacity for all messages for future reference…..I was not able to read the display with

ease on my small screen…in spite of the challenges…most of which were addressed…I support mLearning…

This findings further, imply that learner attitude is largely dependent on the quality of deliver and learner support services offered to address learner need. The study also sought to determine the relationship between learner mLearning attitude and adoption of mLearning. Correlation analysis was conducted. The results indicate that the composite learner attitude had a moderate and significant relationship (r=.483[**]p < 0.01) with adoption of mLearning. The findings imply that learner attitude towards mLearning is an important consideration for mLearning adoption.

It was hypothesized that: H_0 that there is no relationship between learner attitude and adoption of mLearning for the mHealth community training programme in Kenya. To test the this hypothesis the model $Y = \beta_o + \beta_3 X_3$ was fitted.

The regression results show that the association between the learner attitude towards mLearning and adoption of mLearning was positive and significant $F(1,244) = 74.072$, $p<0.001$, $R^2 = 0.233$. The findings that $R^2 = 0.233$, imply that about 23% of variation in mLearning adoption is explained by variation on learner self-efficacy. The model equation therefore is;

$$Y = 1.585 + 0.643X_3$$

Where Y is mLearning adoption and X_3 is learner attitude towards mLearning

With, $\beta = 0.643, t = 5.019, p < 0.05$ it means that for one-unit increase in learner attitude towards mLearning, mLearning adoption increased by about 0.643. Given that the p-value is < 0.05, the null hypothesis was rejected and it was concluded that there is significant relationship between learner attitude towards mLearning and mLearning adoption. An important implication is that users' attitude is a significant predictor of adoption of mLearning. This implies that institutions offering mLearning will need to ensure that the learners develop positive attitude towards mLearning in order to achieve high adoption rates.

DISCUSSION

This study found that majority of the learners had a positive attitude towards mLearning technology and use of mobile learning devices. This finding is consistent with Al-Fahad (2009) who found that students' positive attitudes and perceptions influenced the effectiveness of mobile learning. This study found that majority of students supported the use of wireless networks for independent learning in any place and time. We also fund that there was an association between the learner attitude towards mLearning and adoption of mLearning (r=.483[**]p < 0.01). These findings are corroborated by Venkatesh, Morris, Davis, & Davis (2003); Putzer & Park (2010) and Peters (2007) who all found that attitudes have a major influence on the adoption of any new technology. Similarly, Lu & Viehland, (2008) and Park & Chen, (2007) in their studies relating to adoption of learning technologies found that there is a strong relationship between learner attitude and adoption of mobile technology. Our findings in this study were consistent with Wafa and Abu-Al-Sha'r, (2009) results whose study established that the use of the cell phone is highly appreciated by university students. Similarly, Thatcher

and Mooney (2008) analysed students use of cell phone text messaging to send questions to the lecturer during classes or between classes and found that students had strong favourable perceptions of this initiative. The results of this study are in conformity with other studies on mobile learning such as Barreh and Abas (2015) and Thatcher and Mooney (2008) who also found that the students' overall appraisal of mLearning was favourable. These findings are also consistent with other researchers such as Fozdar and Kumar (2007) and Baya'a and Daher (2009) who conducted their researches on the attitude towards the use of cell phone from different perspectives.

Conclusions

Based on the finding of this study, it is concluded that learner attitude towards mobile learning plays a significant role in the adoption of mLearning. Institutions aiming at implementing mLearning should therefore, focus of improving learner attitude toward using mobile technologies for learning.

Recommendations

The study recommends that institutions aiming at implementing mLearning should focus on improving learner attitude toward using mobile technologies by designing mLearning instructional platforms that are user friendly, have comprehensive content and provide learner support services .

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