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DETERMINANTS OF NURSES' INTENTION TO USE eLEARNING IN TANZANIA

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ABSTRACT: Tanzania is among the countries striving to attain knowledgeable and skilled health workers who are capable of addressing health challenges facing its population. However, in regard of nurse's shortage in number, tight schedules sending them away from work place for further lessons is a challenge as will result into a more insufficient health services due to their absence. eLearning for nurses to upgrade their professional skills while they are still at their working place has been introduced in Tanzania, however, use of eLearning is only 4.9%. This paper examine determinants of nurses' intention to use eLearning in Tanzania. It is using mixed sequential explanatory design to explore several technology acceptance models, identify the appropriate ones and latter suggest strategies that will improve nurses' intention to use eLearning. Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) research model was adopted with some modification. Nine determinant factors were identified to be used: six adopted directly from UTAUT2 and three customized factors. The study collected data from 140 nurses and their inputs were tested against all nine determinant factors using Linear Regression Analysis. Out of nine factors, five were significant: Performance Expectancy (β=-0.214, ρ=0.005), Effort Expectancy (β=0.163, ρ=0.030), Social Influence (β=0.170, ρ=0.032), Hedonic Motivation (β=0.174, ρ=0.023) and Self-Management (β=0.242, ρ=0.002) while four were not significant: Habit (β=0.103,ρ=0.164), Price Value (β=-0.025, ρ=0.736), Resource Facilitating Conditions (β=-0.041,ρ=0.588) and Technology Facilitating Conditions (β=0.058, ρ=0.436). Inadequacy of: awareness with eLearning, knowledge to use eLearning, computers and lack of Internet are some of the problems facing nurses. This study used mixed research design with UTAUT2 model with the exception of mediating variables: age, gender and experience, therefore further research can be conducted by including the mediating variable.

Keywords: eLearning for Nurses, Technology Acceptance Models, Determinants to Use, Intention to Use, health, Tanzania.

1. INTRODUCTION

Tanzania is a nation with over 40 million people and it has only 5.2 clinical workers per 10,000 populations which makes to have one-fifth of the target ratio proposed by world health organization (WHO). Referring back in 2006-2007 the number of health workers have increased

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from 47,000 to 64,449 in 2012-2013 with high number of doctors and nurses by ratio of 0.974 (per 10,000 population) for assistant nursing officer and 0.563 for nursing officer. Shea et al [1] regarded Tanzania to be among countries with critical need of health workers and it is striving to have health workers who will be capable of addressing health challenges facing its population. In 2006, the Ministry of Health, Community, Development, Gender, Elderly and Children (MoHCDGEC) reported that the size of health workers had declined in both absolute number and relative to the population size [2]. According to Kwesigabo et al [2], it was estimated to have shortage of government health workers by 65% which requires the ministry to train and employ 144700 people to work for the health sector so as to meet its development plans.

However due to shortage of nurses, tight schedules and three-shift system, sending nurses away from work place for further learning is costly. It will add more time for them to be away from work place hence leading to insufficient health services due to their absence [1]. Adding up with the advancement of science and technology, knowledge attained at school is getting out of date, therefore, there is a need to undertake further lessons to upgrade professional skills and knowledge so as to be able to solve clinical problems and ensure provision of quality healthcare services [3, 4]. Oye et al [5] commented that adoption and use of technology seems to be inevitable as digital communication has become the most preferred and easy means of communicating, storing and disseminating information. Henceforth, technology is termed to be important and improves the day to day human activities in every field. On the other hand technology has helped to provide environment for health workers to attain education while they are at work place through the use of various technologies such as learning management systems [6, 7, 8]. With that, learners at remote areas can now learn independently (individually or group) with no teachers' mediation through devices such as personal computers, smart phones and tablets [7].

In Tanzania, the African Medical and Research Foundation (AMREF) Health Africa in collaboration with the MoHCDGEC introduced a two-year eLearning program in 2011. The program allowed nurses to continue working at their health facilities while attending classes and later sit for their final exams together with the fulltime nurses and midwifery student at different nursing and midwifery training schools in Tanzania. The eLearning program was introduced to improve health care service delivery to communities especially those living in rural areas [9]. Since the deployment of the eLearning program, the number of nurses increased from 79 to 847 in 2014-2015 and a total of only129 students managed to complete their studies [9].

Despite introducing Information Communication Technology (ICT) in education, the adoption of such technology in health and other institutions is still a challenge especially in the developing countries [10] and not much is known about nurses' intentions to use eLearning. However, for learners to engage in and accept eLearning, they require good reasons, otherwise the outcome will be less favorable [11]. Henceforth, the use of eLearning is a subject to acceptance of nurses to use it for learning. Therefore, the paper aims at examining determinants of nurses' intention to use eLearning through exploring several technology acceptance models, identifying the appropriate one and latter suggest strategies that will improve nurses' intention to use eLearning in Tanzania.

2. THEORETICAL REVIEW

Lately with the use of eLearning where Internet technologies are used in delivering solutions that enhance knowledge and performance, health sector has been able to increase the accessibility of information, ease of use as well as personalized instruction. eLearning has also proved the ease of knowledge gain, effective means of learning and cost effective way compared to traditional method of learning [12,13]. Apparently, the use of eLearning is more preferable and necessary than traditional method of learning by the health workers like nurses for continuing education. This is because the nurses believe eLearning can fulfill their personal learning needs as well as job demands of learning while working as long as content is relevant to their practice since some nurses encountered that the content was too focused and not relevant [14, 15]. Saleh et al [16] state that eLearning is recognized as a learning method enhancing nurses' knowledge and skills. eLearning ensures optimization of benefits, provide opportunities for nurses to be exposed to the most advanced ways of learning, and can make nursing staff effectively be enabled to accomplish their work requirements efficiently, attract and retain the very best health professionals.

Louho et al. [17] refers technology acceptance as to how people agree and adopt the technology for their daily use. Furthermore, technology acceptance is said as the determinant of how far technology has succeeded or failed and it is perceived that technology is of little or no value if at all not intended, accepted or used [5, 18]. Therefore, it is vital to understand how technology is perceived within particular community as it will benefit in designing, evaluating and

predicting new technology towards end-users for better utilization and impact as well as changes within environment and existing technology [5, 18].

Literature shows that researchers have used social science and related domains theories for predicting behavioral intention to come-up with models for investigating individual's acceptance and technology use. Such models and theories include Innovation Diffusion Theory (IDT), Theory of Planned Behavior (TPB), Theory of Reasoned Action (TRA), Social Cognitive Theory (SCT), Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT) and extended Unified Theory of Acceptance and Use of Technology (UTAUT2). The comparative summary of these models based on factors, variance, limitations and mediators are as shown in Table 1.

Table 1: Model Summary Based on Factors, Variance, Limitations and Mediators

Model/ Theory	Factors	Explained variance (R^2)	Critics/Limitations	Mediators
TAM	– Perceive Usefulness – Perceived ease of use	0.40	Limited explanatory and predictive power	Gender
IDT	– Observability – Relative advantage – Triability – Compatibility – Complexity – Ease of use – Image	0.40	– Doesn't have enough predictors for adoption behavior – Ignore other factors for adoption instead much focus is on the end product/innovation – Difficult to measure what causes adoption of innovation	Experience
C-TAM-TPB	– Perceive Usefulness – Subjective norm – Attitude towards behavior – Perceived behavioral control	0.39		Experience
UTAUT	– Performance expectancy – Effort expectancy – Social influence – Facilitating conditions	0.70	– Less parsimonious than TAM – Cumbersome to interpret single psychometric factor due to grouped factors like social influence	Age Experience Gender Voluntariness
UTAUT2	– Performance expectancy – Effort expectancy – Social influence – Facilitating conditions – Price value – Hedonic motivation – Habit	0.74	– Cumbersome to interpret single psychometric factor due to grouped factors like facilitating conditions	Age Experience Gender

3. METHODOLOGY

3.1 Research Design

The study adopted mixed research method of sequential explanatory design starting with quantitative research method used as a primary method where data was captured directly from the respondents and followed by qualitative method. The study was looking for determinants of nurses' intention to use eLearning in Tanzania so as to know specifically the key factors that identify nurses' intention and their continuing intention to use eLearning. Henceforth, mixed research method was best fitted to measurable variables obtained from quantitative data showing which factors have significant influence to the nurses' intention as well as qualitative data for in-depth explanation of the quantified results.

3.2 Study Area

The study was conducted in Dar es Salaam region at Kinondoni, Temeke and Ilala districts. Six health facilities were included, two from each district with one private and one public. The chosen health facilities were: Mwananyamala and Hubert Kairuki Memorial from Kinondoni district, Muhimbili and Aga Khan from Ilala district, Temeke and Arafa from Temeke district. This is due to the fact they are aware of the eLearning program and among them such as Hubert Kairuki Memorial host eLearning program.

3.3 Study Population and Sample Size

The target population of this study were in-service nurses with certificate and diploma education level and the total sample size was 163 respondents, 78 from private health facilities and 85 from public health facilities based on the formula N>= 50 + 8m, where m represents the number of variables (factors) as suggested by Green [19].

3.4 Research Approach

Through intensive literature review, different technology acceptance models/theories were studied and compared based on their factors, critics, mediating variables and variance to explain the intention and use of technology. From the comparison, UTAUT2 was selected to be used since it extends its generalization and applicability to consumer context. However, based on its critic, the Facilitating Condition factor was split into two independent factors which were resource

facilitating condition and technology facilitating condition so as to explain separately about availability of technological resources and other required resources including human support, knowledge and training. Self-Management in learning factor was also adopted from Wang et al. [20] and included in the UTAUT2. This resulted into nine independent factors to determine nurses' intention to use eLearning.

Using nine factors, a well-designed questionnaire was developed with 32 items to measure the intention to use eLearning. The questionnaire with nine factors and five point Likert scale was adapted from Venkatesh et al. [21] and tailored according to the context of this study. The questionnaire was distributed to 163 nurses in six health facilities. Each health facility was distributed with not less than 25 close-ended quantitative questionnaire which contained 32 items for 10 factors measured in a 5-point Likert scale from "Strongly Disagree" to "Strongly Agree". The study collected all questionnaires from the nurses and find out only 140 were completely filled which implies a response of almost 86%.

The information from completed filled questionnaires were then coded in SPSS version 20 for analysis. The sub-factors for each factor were coded as for example Performance Expectancy (PE)**:** PE_1, PE_2, PE_3 and PE_4 respectively. Each sub-factor on every factor was measured on the five point Likert scale which were assigned numbers in the SPSS as follows: Strongly Disagree "1", Disagree "2", Neutral "3", Agree "4" and Strongly Agree "5". Thereafter the analysis to measure the level of consistency and accuracy of the instrument used was done. This is called reliability analysis and was calculated by using Cronbach alpha. Factor analysis followed for investigating the factor relationships in psychometric factors, and lastly regression analysis was conducted. After obtaining the quantitative results, a small sample of nurses from the previous study population was chosen and interviewed to obtain in-depth information based on the factors which were obtained to be significant. The information obtained was used to elaborate the quantified results.

3.5 Data Collection

This study collected both primary and secondary data. Primary data were collected directly from the first hand sources by means of questionnaire and interview from the respondents. The secondary data were collected by going through document review; use of existing data from

various sources such as databases, libraries, journals, reports from AMREF Health Africa etc. which were either published or unpublished. The questionnaire was structured into three sections.

- The section to get respondents' characteristics like gender, profession level and health facility affiliated.
- The section to measure independent predictors within the research model which included factors with respective sub-factors as in Table 2 [21]:

Table 2: Research Model Factors and Respective Sub-Factors

Factor	Code	Sub-Factor
Performance Expectancy (PE)	PE_1	I will find eLearning useful in my daily life
	PE_2	Using eLearning will help me accomplish learning activities quickly
	PE_3	Using eLearning will help me increase my knowledge
	PE_4	Using eLearning will help me increase my skills
Effort Expectancy (EE)	EE_1	Using eLearning for learning is ease for me
	EE_2	My interaction with eLearning is clear and under stable
	EE_3	I find eLearning easy to use
	EE_4	It is easy for me to become skillful at using eLearning
Social Influence (SI)	SI_1	People who are important to me think that I should use eLearning
	SI_2	People who influence my behavior think that I should use eLearning
	SI_3	People whose opinions that I value prefer that I use eLearning
Self-Management of learning (SM) [20]	SM_1	I am able to manage my study time effectively and easily complete assignments on time
	SM_2	When it comes to learning and studying I am a self-directed person
	SM_3	In my studies I set goals and have high degree of initiative
	SM_4	In my studies, I am self-disciplined and find it easy to set aside reading and homework time.
Hedonic Motivation (HM)	HM_1	Using eLearning is fun
	HM_2	Using eLearning is enjoyable
	HM_3	Using e-Learning is very entertaining
Habit (H)	H_1	The use of eLearning has become a habit for me
	H_2	I must use eLearning
	H_3	I am addicted in using eLearning
Resource Facilitating Conditions (RFC)	RFC_1	I can get support from others when I have difficulties using eLearning
	RFC_2	I have the knowledge necessary to use eLearning
	RFC_3	I have been well trained on how to use eLearning

Technology Facilitating Conditions (TFC)	TFC_1	I have compatible computer to access eLearning
	TFC_2	The content is relevant to my context
	TFC_3	I have Internet connection
Price Value (PV)	PV_1	eLearning is reasonably priced
	PV_2	At the current price, eLearning provides a good up-to-date materials

- The last section measured the respondents' Behavioral Intention (BI) considered as a dependent variable to explain the determinants of nurses' readiness to use eLearning. BI was represented by three items BI_1, BI_2 and BI_3 to use eLearning as follows:
  - ✓ BI1 - I intent to continue using eLearning in the future
  - ✓ BI2 - I will always try to use eLearning in my daily life
  - ✓ BI3 - I am planning to continue using eLearning frequently

3.6 Data Analysis

Data analysis started with the secondary data of the technology acceptance model/theories to obtain one that will fit the context of this study. Thereafter the primary data captured from questionnaires were used in several analysis including reliability to evaluate consistency of the measures used in a questionnaire. The reliability analysis mostly measured by Cronbach alpha coefficient was conveyed in form of numbers with a range of 0-1. Nunnally et al. [22] argued that the Cronbach alpha coefficient should be positive and greater than 0.70. This implies that, the more alpha value is closer to 1 the more reliable results, which interprets that items in a test tend to measure same concepts and are inter-related. Table 3 shows the range values of Cronbach alpha coefficient as graded by Matkar [23].

Table 3: Cronbach Alpha Coefficient Range

Range of Alpha coefficient	Strength of association
0.9	Excellent
0.8-<0.9	Very good
0.7-<0.8	Good
0.6-<0.7	Moderate
<0.6	Poor

Reliability analysis was conducted to measure the inter-relation and consistency of 32 items among the 10 factors and the results of the reliability analysis in-terms of their Cronbach alpha coefficient value. Thereafter factor analysis was done purposively to reduce large number of factors into fewer factors which were later used to perform a regression analysis to find the association between the independent factors and dependent factor so as to understand which factors determine nurse's intention to use eLearning.

4. DEVELOPMENT OF A RESEARCH MODEL

Bagozzi [24] stated that the best model with high explanatory power is the one, which is parsimonious with good prediction, and few predictors. However, Venkatesh et al. [25] argued that parsimony is desirable only if it facilitates understanding, henceforth models should be assessed based on the parsimony as well as their capability of understanding what they contribute. From the literature relating to technology acceptance theories/models, UTAUT2 seem to have highest power in explaining and predicting the intention of individuals by 74%, when compared to other models. UTAUT2 also has more contributing drivers of technology acceptance. Considering such strength this study is heavily based on this model. However, despite the importance of UTAUT2, this does not imply that it is perfect but also has some critics such as lack of individual characteristics measuring the intention towards acceptance and adoption of technology. Therefore, this study has incorporated three factors to the UTAUT2 model to be among the predictors of nurses' intention in adopting eLearning by:

a) Adding Self-Management in learning
b) Splitting Facilitating Conditions into two independent factors:
    - Technology Facilitating Conditions and
    - Resource Facilitating Conditions

Hence, the nine adapted factors as shown in Figure 1 to measure the nurses' intention in adopting eLearning are: *those adopted directly from the UTAUT2 which included:* Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Hedonic Motivation (HM), Habit (H) and Price Value (PV) and *those added and customized factors which included:* Self-Management (SM) in learning, Resource Facilitating Conditions (RFC) and Technology Facilitating Conditions (TFC).

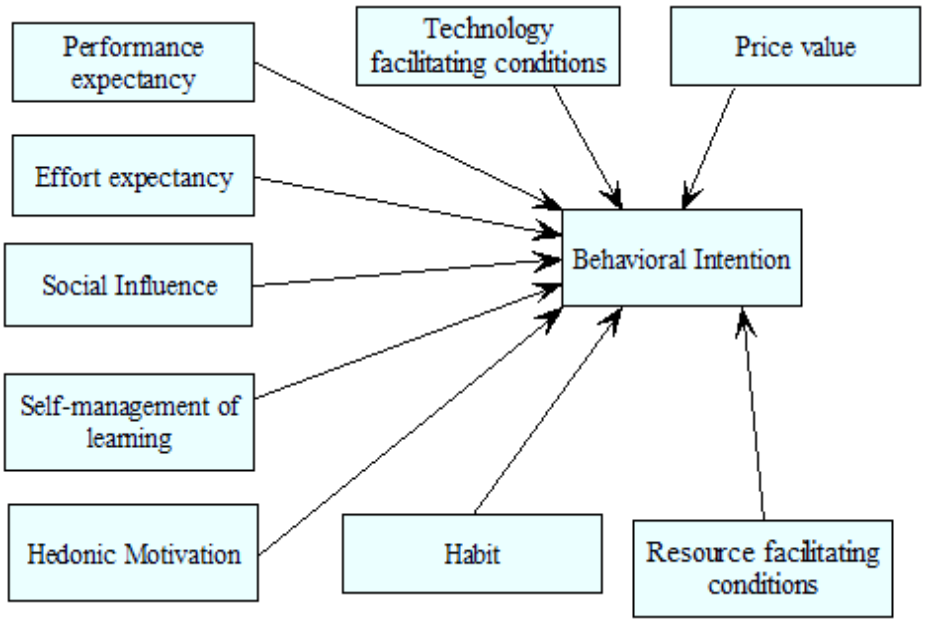

Figure 1: Designed Research Model

With respect to this study:

- PE is defined as the degree to which nurses believe using eLearning will improve their performance at work. According to Venkatesh et al. [25] and Venkatesh et al [26] PE is regarded as the strongest predictor of intention and use of various technological applications in both voluntary and mandatory environment. Hence the tested hypothesis was:

  Hypothesis 1 - Performance expectancy has an effect on nurses' intention to use eLearning.

- EE represents the degree to which nurses believe use of eLearning will be ease and require less effort. This is in line with Xu et al. [27] argument that individuals intend to use and continue using technology if the technology is perceived to be easy to use, therefore it is important to include such predictor. Therefore, the tested hypothesis was:

  Hypothesis 2 - Effort expectancy has an effect on nurses' intention to use eLearning.

- SI as defined by Venkatesh et al. [21]is the degree to which consumers perceive that it is important for other factors like family, friends and colleagues to use a particular technology. Based on this study, social influence has been included to determine the relationship between nurses and their intention to use eLearning. The factor has been included because Venkatesh

et al. [26] argued that it has significant effect towards shaping individuals intention to use technology. Therefore, the following hypothesis was tested:

Hypothesis 3 - Social influence has an effect on nurses' intention to use eLearning.

- HM is defined by [21] as the pleasure derived or fun experienced when individuals use technology. It is conceptualized as perceived enjoyment in IS research and found to have influence in acceptance and indirect use of technology through intention. In this study, hedonic motivation was referred to as nurses believe that use of eLearning is fun and enjoyable. The tested hypothesis was:

  Hypothesis 4 - Hedonic motivation has an effect on nurses' intention to use eLearning.

- Habit is referred as automatic influence on individual's intention and direct use of technology based on learned behavior [21]. Venkatesh et al. [21] described habit to have direct relationship with behavioral intention and direct influence towards technology use. In this study habit is defined as the extent to which nurses tend automatically to use eLearning for learning. Hence the tested hypothesis was:

  Hypothesis 5 - Habit has an effect on nurses' intention to use eLearning.

- Cost and pricing structure as argued by Venkatesh et al. [21] may have a significant effect on consumer's intention and use of technology. Therefore, since consumers are the ones bearing the monetary cost it is rational to include such factor in explaining determinants of nurses' intention to use eLearning for learning. Hence the tested hypothesis was:

  Hypothesis 6- Price value has an effect on nurses' intention to use eLearning.

- SM factor is used as a predictor of BI to understand the nurses' time management, self-esteem towards learning, their degree to set and execute their plans to achieve their goals as well as self-discipline upon executing their plans in attaining their targets. SM factor was adopted from Wang et al. [20] who investigated the determinants for accepting m-learning in Taiwan and findings indicated that SM had a significant impact on users' intention to use m-learning. This factor was added to UTAUT2 since to engage nurses in eLearning require high level of self-

monitoring as eLearning as part of distance learning which needs less supervision and more of individual motivation. Additionally, this factor helps in understanding nurse's perception about SM in learning for determining their intention to use eLearning. The tested hypothesis was:

Hypothesis 7 - Self-Management in learning has an effect on nurses' intention to use eLearning.

- RFC in this study is defined as the extent to which nurses perceive that the availability of needed resources such as knowledge and skills about ICT, human resources, training, uninterrupted electricity will influence their intention to use eLearning. The tested hypothesis was:

  Hypothesis 8 - Resource Facilitating Conditions have an effect on nurses' intention to use eLearning.

- TFC was defined as the degree to which nurses perceive that the existence and availability of relevant infrastructure, Internet connectivity and compatible computers influence their intention to use eLearning. The tested hypothesis was:

  Hypothesis 9 - Technology Facilitating Conditions have an effect on nurses' intention to use eLearning.

- Behavioral Intention (BI) theorized by Venkatesh et al. [25] that to use a particular technology has a significant influence on use behavior. In this study, BI has been used as a dependent variable to explain the determinants of nurses' readiness to use eLearning.

5. FINDINGS

5.1 Demographic Analysis

The study was conducted in three districts each including one public and one private health facility. Results show that out of 140 completely filled questionnaires, most of the respondents were from Hubert Kairuki Memorial with 27 respondents (19.3%) followed by Mwananyamala with 26 respondents (18.6%), Temeke and Muhimbili with 23 respondents (16.4%), Arafa Upendo with 21 respondents (15%) and Aga Khan had with 20 respondents (14.3%). Most of the respondents were enrolled nurses, of which 53.6% (75 respondents) holding certificate education level and 46.4% (46.4 respondents) registered nurses holding diploma education level. With regard

to gender, out of 140 respondents from the six health facilities, the number of female nurses was higher of about 104 female nurses which makes 74.3% compared to that of male nurses of about 36 male nurses which making 25.7%. This implies that the findings of this study are more on female nurses' implications than male nurses. This is important to consider because gender variation tend to have impact towards the research findings. Figure 2 show the distribution of nurses per gender based on health facilities

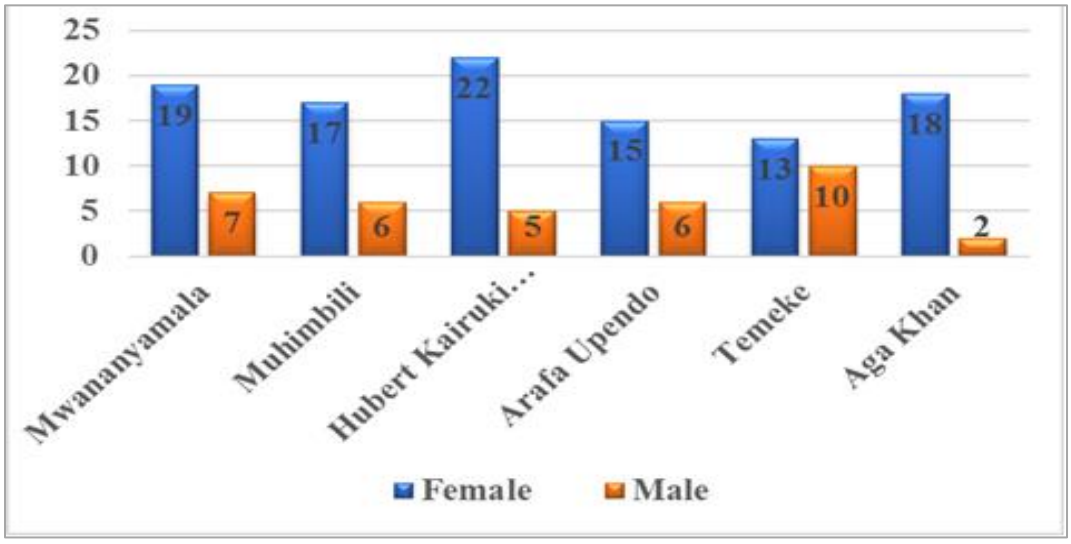

Figure 2: Gender Distribution per Health Facility

5.2 Reliability Test

A reliability test was performed and the SPSS results of Cronbach alpha coefficient for the 32 items in this study was found to be 0.934. Furthermore, the reliability test for each factor with respect to its number of measuring items (e.g. PE: PE1, PE2, PE3 and PE4 etc.) was also performed and results are shown in Table 4.

Table 4: Cronbach Alpha Coefficients

Factor	Cronbach's alpha (α)
Performance Expectancy	0.905
Effort Expectancy	0.748
Social Influence	0.888
Self-management in learning	0.849
Hedonic Motivation	0.872
Habit	0.569

Resource facilitating condition	0.863
Technology facilitating condition	0.831
Price value	0.849
Behavioral Intention	0.909

Based on the reliability test, all other factors are consistent as they have attained a value beyond 0.7 except for the Habit factor which has a value of 0.569 hence termed to have poor association among the 3 items (H: H_1, H_2 and H_3).

5.3 Factor Analysis

Factor analysis (FA) was done with the use of principal component analysis extraction method on 32 items by direct-oblimin rotation with Kaiser Normalization. This was mainly to show if related items were under the same factor or not. Table 5 shows factor loadings for each item or sub factor in every factor respectively to the 10 factors in the questionnaire.

Table 5: Factor Loadings on Research Model Factors Items

	PE	EE	SI	HM	H	PV	SM	RFC	TFC	BI
PE_1	-0.416									
PE_2	-0.510									
PE_3	-0.481									
PE_4	-0.608									
EE_1		0.510								
EE_2		0.783								
EE_3		0.824								
EE_4		0.095								
SI_1			0.788							
SI_2			0.835							
SI_3			0.983							
HM_1				0.223						
HM_2				0.498						
HM_3				0.399						
H_1					0.030					
H_2					0.775					
H_3					0.090					
PV_1						-0.817				
PV_2						-0.701				
SM_1							0.183			
SM_2							0.895			
SM_3							0.848			

SM_4	0.812			
RFC_1		0.722		
RFC_2		0.723		
RFC_3		0.763		
TFC_1			0.795	
TFC_2			0.678	
TFC_3			0.741	
BI_1				0.783
BI_2				0.964
BI_3				0.885

5.4 Regression Analysis

After the factor analysis, PE, EE, SI, SM, H, PV, HM, RFC and TFC independent factors were used to conduct a linear regression analysis to measure the model success and predict factors contributing to nurses' intention. Table 6 represents the research model summary with adjusted R^2 = 0.324 which indicates that 32.4% of the nurses' intention could be explained by nine independent factors (PE, EE, SI, SM, H, PV, HM, RFC and TFC) and the remaining 67.6% may be explained by other factors. Table 7 shows the significance level and standardized beta (β) values from regression analysis in determining factors predicting nurses' intention as the stated hypotheses.

Table 6: Research Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.606	0.367	0.324	0.82239524

Table 7: Standardized Regression Coefficients and Significance level for each factor

Factor	Standardized Coefficient (β)	Significance level (ρ)
Performance Expectancy	-0.214	0.005
Effort Expectancy	0.163	0.030
Social Influence	0.170	0.032
Self-Management in learning	0.242	0.002
Hedonic Motivation	0.174	0.023
Habit	0.103	0.164

Resource Facilitating Conditions	-0.041	0.588
Technology Facilitating Conditions	0.058	0.436
Price Value	-0.025	0.736

Based on the number of factors of this study the linear regression equation was represented as

$$Y= \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (i)$$

Where;

Y: Represents dependent factor/variable,

β_0: Represents constant,

β1 to β9: Represents the beta values for PE, EE, SI, SM, HM, H, RFC, TFC and PV factors respectively as in Table 6

x1 to x9: Represents the independent factors/variables respectively as in Table 6

Therefore, the linear regression equation/ linear prediction model was:

$$BI=\beta_0-0.214(PE)+0.163(EE)+0.170(SI)+0.242(SM)+0.174(HM)+0.103(H)-0.041(RFC)+0.058(RFC)-0.025(PV)$$

$\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$ *(ii)*

Table 8 shows the summary of the hypotheses mentioned in item 4 – development of a research model and compared with the standard significance (ρ=0.05) value. For a factor to be significant in determining the intention of nurses then its ρ value is required to be less than or equal to 0.05. Results from Table 6 show that PE, EE, SI, SM and HM are the only significant factors since their ρ values: 0.005, 0.030, 0.032, 0.002 and 0.023 respectively are < 0.05, while H, RFC, TFC and PV are insignificant due to their ρ values: 0.164, 0.588, 0.436 and 0.736 be > 0.05 respectively. The summary of the supported and not supported hypotheses for each factor are shown in Table 8.

Table 8: Summary of the hypotheses results

Hypothesis	Results	Conclusion
Hypothesis 1	β=-0.214,ρ=0.005<0.05	Supported
Hypothesis 2	β=0.163,ρ=0.030<0.05	Supported
Hypothesis 3	β=0.170,ρ=0.032<0.05	Supported
Hypothesis 4	β=0.174,ρ=0.023<0.05	Supported
Hypothesis 5	β=0.103,ρ=0.164>0.05	Not Supported
Hypothesis 6	β=-0.025,ρ=0.736>0.05	Not Supported
Hypothesis 7	β=0.242, ρ=0.002 >0.05	Supported
Hypothesis 8	β=-0.041,ρ=0.588>0.05	Not Supported
Hypothesis 9	β=0.058, ρ=0.436 >0.05	Not Supported

6. DISCUSSION

Tanzania is among the developing countries seeking every possible means to meet the demands of health sector including availability of well-trained health workers such as nurses. To achieve that, a distance-learning program has been established to allow nurses upgrade their education through eLearning while they are working. This study investigated factors influencing nurses' intention to use the eLearning. Results revealed that five out of nine hypothesized factors were supported for predicting nurses' intention such factors include PE, EE, SI, SM and HM while RFC, TFC, PV and H appeared to be non-significant.

The results of this study indicated that, Performance Expectancy has a significant effect with ρ value 0.005 however it had a negative significant effect (β=-0.214) towards nurses' intention which implies that, nurses perceived eLearning not to have an impact upon their performance improvement in their job. To understand better, more information was searched through interview and findings obtained from nurses had contradictory views as majority agreed that, the eLearning program tend to improve their performance at work as it enhances their knowledge and skills such as management of complicated cases like abnormal delivery e.g. breech delivery, mid-wife issues as well as leadership and management. Additionally, they mentioned that, using eLearning will enable them improve their information skills and quality of learning which in turn will help them in their work activities. Moreover, respondents explained that, through

eLearning some of learning activities such as practical rotation are being accomplished easily because they can be undertaken at respective working place.

Effort expectancy has a positive significance (β= 0.163) effect on behavioral intention with a ρ value 0.030. Such results support the hypothesis that effort expectancy has an effect on nurses' intention to use eLearning. Despite their perception that eLearning will be easy to use, they shared the difficulties they are likely to face and majority mentioned the accessibility of Internet for retrieving and sending reading materials and assignments but also use of computer is also a challenge as they are not familiar. However, few of the respondents disagreed as they are well experienced with technology hence use of eLearning is very simple to them. The findings of both quantitative and qualitative show that nurses' intention is also influenced by their perception that use of eLearning will be ease and require less effort. That is to say nurses perceive eLearning to be more ease than the traditional way of learning as they have to move from their respective working areas to a particular institution within all time of studies hence become difficult to maintain and afford. Additionally, to some of them accessibility of resources such as computers and knowledge on how to use the computers as well as Internet is a major problem to them therefore intervention upon this is required. This finding is similar to the study by Mtebe et al. [28] and Venkatesh et al. [21]) which stated that if individuals find technology to be easy and understandable in using then their intention of using technology will increase.

Social Influence is the degree to which nurses perceive that other important parties like family, friends, and colleagues also should use eLearning. Table 6 shows that SI is positively significant with ρ value 0.032 and β value 0.170. Hence support the hypothesis that SI has an effect on nurses' intention to use eLearning. Nurses were interviewed to know exactly among the group of important others who had much influence to them and results showed that majority are influenced by their senior nurses who some happen to have studied through eLearning as well. However, few of the respondents appeared to be influenced by their close friends. Despite the important few nurses had mentioned about other social environmental situations that influence them to study through eLearning such as family and personal responsibilities as well as lack of permission from their employers for further studies, therefore eLearning help them since they were able to study according to their comfortable time table. The above findings are in line with that of [29, 30], that Social Influence has a positive and significant association with behavioral intention to use eLearning. This may be due to the important people including colleagues, peers, friends,

family providing their opinions about the benefits of using eLearning to the target respondents hence tend to motivate and have an impact upon nurses' decision.

Table 7 shows that Hedonic Motivation has positive influence with β=0.174 on the intention of nurses to use eLearning. This is significant with ρ value 0.023 which is less than standard ρ value 0.05. This shows that the fun and enjoyment derived from using eLearning by nurses has an effect on nurses' intention to use eLearning. Therefore, we accept the hypothesis 5 as in Table 7. Such results were anticipated since nurses perceived eLearning will be ease to use and requires less effort. Then it is obvious that they will find pleasure when using it. To understand more, nurses were asked about what they enjoy the most and majority mentioned easy knowledge sharing, storage and retrieval of simplified modules. They also added that apart from easy retrieving and storing of materials the accessibility was flexible in search a way they could access even in a mobile phone and send assignment on time. The experience to use computer and Internet for learning purpose was also part of what they enjoyed as it is simple to access, store and share materials. Despite their inputs on what they happen to find interesting, they also suggested that to improve the pleasure and enjoyment, students should be extensively trained on how to use computers so that they can easily read and do their assignments. AMREF should improve and design eLearning in such a way that there is a discussion forum where students can be able to discuss academic issues with the intervention of instructor if necessary.

Habit was used to hypothesize the automatic behavior of nurses to use eLearning and results identified that habit had a non-significant effect (β= 0.103) with ρ value 0.164 which is greater than 0.05 standard ρ value. This resulted not to support the hypothesis that Habit had on effect to nurses' intention to use eLearning. This implies that nurses' readiness towards using eLearning is not driven by their tendency or addiction. Such results are probably due to the reason that 90% of respondents disagreed that the use of eLearning has become their habit and their addiction upon using eLearning.

Price Value factor was also found to be non-significant since its ρ value was 0.736 greater than 0.05 standard ρ value. This is likely due to the fact that majority of nurses perceived eLearning to be not reasonably priced because it requires to incur very high cost in terms of school fees and Internet access as well as, based on its cost doesn't provide up-to date materials. This resulted nurses to strongly disagree and disagree upon the Price Value factor.

Self-Management (SM) in learning appeared to be the strongest predictor of behavioral intention with positive significance effect of (β=0.242) and with p-value of 0.002. Such results support the hypothesis that Self-management of learning has an effect on nurses' intention to use eLearning. On the other hand, information collected from interviews with nurses revealed that, SM is very important for eLearning program in managing studies at the same time proceeding with the daily job routines. In addition, they argued that, self-regulation and strategies are very important to monitor themselves for the working and learning situation. One of the strategies used for eLearning for the nurses included developing a self-study practices after working hours at least 4 times a week and using other free working days they get as per routines job. The findings from both quantitative and qualitative instruments suggest that, nurse's intention is mostly likely to be influenced with high autonomous learning ability such as self-discipline, self-esteem as well as self-monitoring in learning since eLearning requires self-direction and less supervision in using eLearning. These findings are in line with the findings by Wang et al. [20] who suggest that use of technology such as m-learning was being driven by independent ability to manage and monitor oneself.

The Resource Facilitating Conditions was generated from the original factor Facilitating Conditions. Results from this study show that the RFC factor was non-significant due to its ρ value to be 0.588 which is greater than the standard ρ value of 0.05 in determining behavioral intention of nurses to use eLearning. Such results are probably due to large number of nurses who strongly disagree (28 nurses ~ 20%) and disagree (33 nurses ~ 46%) that they have necessary supporting resources such as human support in-case of difficulties, appropriate knowledge on how to use eLearning and training based on ICT usage as well as importance of eLearning. Additionally, the non-significance of the RFC may also be due to the presence of both EE and PE in predicting behavioral intention. This tend to affect the significance of RFC because the RFC factor tend to have direct effect in predicting actual usage of the eLearning than the behavioral intention.

The quantitative results of this study identified Technology Facilitating Conditions to be non-significant in determining nurses' intention to use eLearning. Such results were due to high ρ value of 0.436 compared to the standard ρ value 0.05. Therefore, the hypothesis 9 from Table 8 is not supported, this implies TFC doesn't have an effect on nurses' intention to use eLearning. Such findings were probably because of the presence of EE and PE in determining the behavioral intention as argued by Venkatesh et al. [25] that if both PE and EE are used in predicting the

behavioral intention then facilitating conditions tend not to be significant since it has a direct effect in actual use of technology.

7. CONCLUSION

In conclusion, this paper firstly noted that nurses have agreed and strongly agreed that eLearning tend to improve their knowledge, skills and assists them to accomplish learning activities more quickly. This implies that eLearning is perceived usefully in improving nurses' performance. Secondly revealed that nurses find eLearning is easy to use therefore organizations implementing eLearning should make sure eLearning is simple and require less effort to use and lastly through HD factor nurses seem to enjoy and find it fun using eLearning. Therefore, to increase the pleasure and enjoyment, organizations implementing eLearning should consider creating multimedia contents for learning purpose such as audios, videos.

8. RECOMMENDATIONS

- Not everyone undertaking eLearning program has skills and knowledge in leveraging technology especially the health related people. Therefore, due to the poor familiarity and experience with technology, intensive training should be provided to the nurses enrolling into the eLearning so that they are influenced towards eLearning.
- Designers and implementers of eLearning should be very considerate in designing eLearning. First by designing an environment that facilitates peer to peer and peer to instructor interaction. This is mainly to support one another in case of difficulties, ideas and knowledge sharing upon their understanding to improve the learning outcomes since everyone learn at his or her own pace of time. Additionally, establishment of a well-designed and user-friendly learner interface is also important because it will influence the decision to use eLearning. This is due to the fact that a simple, effort less and useful interface tend to affect learner's attitude towards eLearning system.
- Integration of multimedia contents for learning purpose such as audios, videos etc. to enhance content delivery will help ease the understanding and accessibility of information for better achievement of knowledge and skills.

- The MoHCDGEC together with AMREF should also establish standardized curriculum and learning materials between those learning through eLearning and the ones who take day to day classes at particular institution. This is crucial because those learning through eLearning tend to feel less competent when it comes to practicing what has been learnt. Therefore, to overcome this, standards are necessary since the goal is to attain well skilled and knowledgeable nurses.
- Furthermore, there is also a need to establish a curriculum that will be used by educators to inspire and improve learner's capability towards self-monitoring and directing in learning aspects. This will assist to bring effect on learner's habit towards Self-Management on learning. In addition, eLearning designed with learning progress control, learning content hierarchy control and functions of time will also be of much help in improving Self-Management in learning.

The study used mixed research design with UTAUT2 model, with the exception of mediating variables of age, gender and experience, therefore further research can be conducted by including the mediating variable or use qualitative method to obtain other factors that explains nurses' intention. On the other-hand the scope of the study area can be expanded to other regions so as to obtain more precise and valid results instead of one area only as different states have different perceptions about the topic.

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