On-Line Quality Management a Precursor for Improving E-Learning Adoption in Midwifery Schools in Uganda

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Abstract: E-learning pedagogy is used in many health training institutions in Uganda, However, despite the high investment, e-learning adoption is still low. This study aimed at ascertaining the relevance of on-line quality management in improve e-learning adoption in midwifery schools in Uganda. It used an explanatory sequential mixed methods design to ascertain if on-line quality management was significant at improving e-learning adoption and the on-line quality traits which would be implemented by midwifery schools to improve e-learning adoption. Data collection was conducted in two phases, the first entailed quantitative data collection and analysis to determine if on-line quality management was significant to e-learning adoption. The second embraced a qualitative data collection and analysis to ascertain the detailed traits of on-line quality management relevant to e-learning adoption. Linear regression analysis established on-line quality management had influence on e-learning adoption (p=0.000). On-line quality management accounted for 55.5% of the variance in e-learning adoption with a strong positive statistically significant relationship, and its salient traits included; Compact Disc, Read-Only-Memory materials meets the expectation of users, collaborative improvement of on-line quality, Learning Management System meets expectations of users, providing the best on-line experience, e-learning program being described as an excellent on-line learning experience, and guidelines for improving on-line quality. Midwifery schools therefore have to focus on the six most relevant traits of on-line quality management if they are to improve e-learning adoption.

Keywords: *On-line quality management, e-learning adoption, Midwifery schools, Uganda, developing country.*

Introduction

The early 1970s were characterized by a paradigm shift in education that argued for a move from elite to mass access to higher education globally (Amano & Kimmonth, 2010; Trow, 2007). As a result, the demand for education, especially in sub Saharan Africa, has more than doubled in the past two decades (Baker, 2014; Lewin, 2009). Bureaucrats and change agents in institutions of higher learning have been grappling with how to manage this rapid change. Amidst this abrupt change, brick and mortar traditional educational systems are becoming more difficult to develop and maintain given the growing demand for higher education (Mbatia, 2008). On the other hand, e-learning has gained popularity and has been positioned as a modern pedagogy aimed at managing this abrupt change (Bates, 2005).

In East Africa and Uganda in particular, e-learning has been positioned as a pedagogy likely to increase the supply of midwives (African Medical and Research Foundation [AMREF], 2015). As a result, the e-learning training approach is being used in many health training institutions in Uganda, and particularly by Ministry of Education and Sports (MoES) through the Business, Technical, Vocational Education &Training (BTVET) directorate, to train midwives across twelve midwifery schools (AMREF, 2014). However, despite the high level of investment on e-learning program since 2010, there is a low adoption of this new pedagogy amongst students and faculty in the participating midwifery schools, and those who do start to use the system opt out later (Liao & Lu, 2008a, 2008b).

This trend of slow e-learning adoption is expected to constrain government's efforts of improving the sets of skills, competencies and the number of midwifery graduates in the country. Thus, this research sought to establish whether

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on-line quality management was critical to e-learning adoption, and the salient traits of online quality management which ought to be focused on by midwifery schools in order to improve the adoption of e-learning in their respective schools. The two guiding questions were:

i.   What is the influence of on-line quality management on e-learning adoption?

ii.   What are the salient on-line quality management traits that should be focused on by midwifery schools so as to improve the adoption of e-learning?

The hypothesis posed was that On-line quality management improves the adoption of e-learning

Literature Review

Online quality is a multifaceted and complex phenomena (Jung, 2011), partly because it evolves from the main stream concepts of quality in the business service sector. In the main stream literature of quality, the concept is interpreted differently by different people. Much as there are agreed upon conventional principles of judging service quality (Cuthbert, 1996; Hughey et al., 2003; Parasuraman et al., 1985; Parasuraman et al., 1988; Stodnick & Rogers, 2008), the question to posse here is should online quality be judged based on these canons? The answers to this question are varied with some arguing that the same conventional principles used to judge the quality of face-to face education should apply (Frydenberg, 2002; McNaught, 2001), while others prefer to consider the value judgements of the end-users of the on-line education approach (Ehlers, 2004), and more still, others argue that a middle line should be toed especially where the quality perspectives of all stakeholders are considered. We expound more on the issues of online quality in the proceeding sections.

On-line Quality management and e-learning adoption

The quality of e-learning is conceptualized as gaining the finest learning accomplishment, in conjunction with 'something that is excellent in performance' (Ehlers et al., 2005). However, quality in e-learning is enhanced by accepting to reassess the globally accepted standards and notions of quality to allow flexible progression of compromise through negotiations on the perspectives of quality espoused by both the student and the teacher. In this study, it was also recommended that to improve e-learning quality, students ought to play a critical role in shaping the quality of e-learning activities; and quality improvement must be designed jointly by all those involved. These aspects have a great influence on the adoption and continued use of e-learning because they revolve at the nexus of beliefs and motivations for e-learning (Ehlers & Goertz, 2006).

The aspect of involving learners in determining the quality of e-learning is very critical because it is in tandem with Jung's (2011) assertion that the dimensions of on-line quality management are sometimes conceptualized differently between learners and faculty and the assessment is also sometimes one-sided, especially skewed on e-learning providers, donors and government agencies. This contradiction is likely to affect the adoption and continued use of e-learning, in a sense that e-learning quality cannot be provided to the student but rather it should be co-developed by the student and the teacher in the interactive phase of instruction and learning, predominantly in a collaborative e-learning milieu (Ehlers, 2004).

Jara and Mellar (2007) have argued that improvement endeavors of e-learning quality have to consider the perspective of the student, and this might include determining the needs of the student in concrete terms before starting an e-learning endeavor. Subsequently, e-learning quality has to empower and enable the student to verbalize what seems not to be going on well, along the e-learning trajectory. The student has to be given an opportunity to define what e-learning quality means to them at the onset of the e-learning trajectory, in so doing, the teacher also takes note of what is supposed to be improved. In such circumstances, quality in e-learning becomes to be constructed as a co-production progression between the learning-milieu and the student. Inherently, therefore, it becomes known to the learner that she too has a role to play in shaping the quality of the e-learning program. Quality development from a student's point of view refers to the considering the students' inclinations as the basis of quality enhancement in the proceeding e-learning activities. However, this should not mean that the student's viewpoint and inclinations by themselves should be the only ones to be considered, the economic, organizational, regulations and legal considerations should as well be considered (Jara & Mellar, 2007).

While aware that there are different perspectives of on-line quality, the learner's perspective of quality is the most critical in relation to the adoption and continued use of e-learning in a particular school. Research on on-line quality management indicates that there are seven most common fields of leaner preferences that eventually guide their judgment on the quality of e-learning; they include, teacher support, effective collaboration and communication on the program, technological infrastructure, expectations on costs, value judgement, transparent information flow, structure of the program, and teaching methods (Ehlers, 2004).

The common understanding is that online learning is unique in a sense that it is more inclined to distributed-learning (Jung & Latchem, 2007). The learners have access to vast open resources, and most importantly, on-line learning relies to a greater extent on the learner's commitment to interact and collaborate with others, and his or her own motivation

to study (Jung, 2011). It is against this background that this study aimed at eliciting the on-line quality management aspects that would facilitate a fairy judgement on the learner's motivation and commitment to collaborate and interact with others on the e-learning program. Both students and tutors on the e-learning program were construed as learners, and the online quality management aspects evaluated included: CD-ROM materials meets the expectation of users, collaborative improvement of on-line quality, Learning Management System meets expectations of users, providing the best on-line experience, e-learning program being described as an excellent on-line learning experience, and guidelines for improving on-line quality. More literature on these online management aspects is discussed next.

Compact Disc –Read –Only-Memory (CD-ROM), has been the main avenue of providing access to online content in distance and e-learning programs in low income countries (El-Khouly, 2008). The e-learning program we assessed, started by using CDROMs, the content would be developed by different subject matter expert, it would be subjected to a rigorous review process, thereafter it would be given to an expert to convert it to CDROMs and the CDROMs would be provided to students to access the different content which would supplement their phased face to face sessions. The major preference for CDROMs by then was the limited coverage of internet services in the country, coupled with its prohibitive costs. However, the questions that any e-learning sympathizer would wish to be answered, would be: what do users say about the quality of CDROMs? Does the CDROM meet the expectations of the user? Literature has shown that a CD-ROM played many functions including browsing the web off line as it has the capacity to store vast amounts of textual content, including entire web sites(El-Khouly, 2008). Indeed, the program we assessed, CDROMs were being used to host voluminous content, including power point presentations, text files, and test questions for the entire course.

Additional preferences for using CDROMs were that the content developer did not need to have access to an expensive server, since videos can run directly CD-ROM without any Internet connection. Moreover, the quality of a video played from a CD-ROM is believed to be better than the quality offered by an Internet connection. Others have also emphasised that using a CD-ROM should not stop one to use the internet because the two complement each other, and CDROM is a convenient alternate for transmitting fixed content. Any important characteristic of Internet not contained in CDROM technology, like discussion groups and email, can always be allocated in other more developed systems like the LMS (Weber & Hamlaoui, 2018).

For a student to use a CD-ROM, having access to a computer is essential, but the learner doesn't need to own one because access to computer can often be found in libraries, workplaces, and Internet Cafes, including homes of friends. The advantages of using Internet-based CD-ROM are several, including, no need of installing new programs on the computer a leaner wishes to use. This detail is important, owing to the fact that computers in public places sometimes are configured not to install any new programs because of fear of malware. The important fact to note is that, to use a CDROM on any particular computer, that computer should have an Internet browser. Data from the CDROM will be read directly as if it were on a website. This is an advantage because the computer does not need to be connected to the Internet while using a CDROM, hence, no additional costs incurred (Rodrigues et al., 1999). As time went by, the e-learning program under study, acquired a Learning Management System (LMS), however, because the LMS was heavily inclined to Internet connection, the CDROM approach of delivering content continued alongside the LMS.

In line with technological advancement, Learning Management Systems (LMS), have tended to replace the massive use of CDROMs on most e-learning programs on the African content and Uganda in particular. It is believed that prolific use of LMS might have begun in 1997, with the release of Blackboard and Web CT 1.0 on the market, and these fascinated millions of users (Muhsen et al., 2013). Although the current market is flooded with several open source software (OSS), such as Ilias, eduplone, Claroline, SAKAI, WebCT and Bscw, Modular Object Oriented Dynamic Learning Environment (Moodle), which was introduced in 1998, and released on market in 2001, seems to be the commonly used LMS (Al-Ajlan & Zedan, 2008). Our interest with the LMS on this study was to answer the question, does the LMS meet expectations of users?

Several studies have documented experiences of users with the LMS, a case in point is Udo et al.'s (2010) study, which looked at the perceptions and expectations of e-customers on web service quality, this study indicated that the developers of the website need to be cautious so that the website does not make e-customers run away because of difficulties of navigation. Their recommendations to LMS/website developers was to develop websites/LMS that can be navigated easily; integrating user-friendliness and top-notch usability design principles. And the LMS/website should comprise modest and easily understood instructions. Basically, the main aim is to offer the user with an exciting experience and evade user frustration which, not only can result in terminating the session but earnestly reducing the probability of LMS/website avoidance (Udo et al., 2010).

Likewise, Martinez and Batalla (2016) have asserted that, today's e-learners have become vital customers of Universities and higher educational institutions. Subsequently, Universities and higher learning institutions have to develop strategies of satisfying the needs of these e-learners so as to enable them become loyal customers of the e-learning services. One of the strategies of achieving this is having a robust LMS/websites which meets most of the needs of an e-learner (Martínez-Argüelles & Batalla-Busquets, 2016). Many universities have designed student caring strategies similar to traditional business strategies for retaining customers (Pham et al., 2019). In the realm of e-

learning this directly relates to e-learning perceived quality. Relatedly, one of the e-learning perceived quality dimensions is the quality of the user interface which is directly related to the quality of the LMS (Martínez-Argüelles et al., 2013). Albeit there are several researchers who have developed e-learning service quality dimensions (Dursun et al., 2014; Jun & Cai, 2001; Machado-Da-Silva et al., 2014; Martínez-Argüelles et al., 2013; Pham et al., 2019; William & Ephraim, 2003). We felt our research was more inclined to the dimensions of Martinez-Arguelles et al., 2013.

According to Martinez-Arguelles et al., (2013) study, there are four dimensions of e-learning service quality: administrative or facilitative services, supportive services, core business – teaching services and user interface services, each having several indicators. In the dimension of core business or teaching services, there are about ten indicators, however, factor analysis showed that knowledge, pedagogical capacity and experience, feedback received by learners from tutors, and the speed of solving student queries were the most significant dimensions (Martínez-Argüelles et al., 2013). On the administrative services, there are six aspects but the most significant included: speed of solving administrative queries, delivery of documents, clarity of guidelines and administrative procedures and IT problem solving. Generally, these services were referred to as responsiveness by other researchers (Parasuraman et al., 2005; Zeithaml et al., 2002). In the supportive or supplementary services, four quality aspects were found to be critical including: extra curricula activities, synchronous activities as chats, video conferences, and virtual spaces for group discussions and group forums. The user interface indicator included four critical quality aspects: speed of navigating and web page loading, speed of file uploads and down loads, simplicity and intuitiveness of navigating to campus, and connecting to campus at all times and quickly. Parasuraman et al., 2005, and Zeithamle et al., 2002, summarised this dimension as system availability or reliability, translated as always available and operating.

We acknowledge that due to methodological, logistical and time constraint, this study did not divulge much in all the dimensions of e-learning service quality as enshrined in Martinez et al., (2013) seminal work. However, it hinged on a few issues of e-learning service quality for the e-learning program under review, such as perceived quality of the CDROMs and LMS which fall under the user interface domain, providing the best online experience, and e-learning program being described as an excellent on-line learning experience, these two fit into the core business-teaching service, and collaborative improvement of online quality together with guidelines for improving on-line quality which fit into the administrative services.

Methodology

This study used an explanatory sequential mixed methods design to ascertain whether on-line quality management was relevant to e-learning adoption and the essential online quality management traits to be implemented by midwifery schools. An explanatory sequential mixed methods research design was preferred because of its vital proposition that a combination of qualitative and quantitative methodologies delivers superior conceptualization of a research phenomenon than using a single methodology (Creswell, 2013). Quantitative and qualitative approaches of data collection and analysis were employed to generate the findings of the study. In the first phase a structured questionnaire was used to generate stakeholder's views on on-line quality management and e-learning adoption. Data from the questionnaires was analyzed and interpreted and the findings were used to refocus the second phase of data collection and analysis which embraced a qualitative approach by use of focus group discussions and key informant interviews.

Quantitative phase

The sample size of the midwifery schools was determined by the use of Morgan and Kreicie technique (Krejcie & Morgan, 1970). After determining the sample size of the schools, simple random sampling was used to select the individual schools to participate in the study. Secondly, the total population of tutors and students from the sampled schools was ascertained, and this was subjected to the Morgan and Kreicie technique to determine a representative sample size of students and tutors to participate in the study. Thirdly, Probability Proportional to Size (PPS) sampling was used to select the proportionate sample size of students and tutors from each of the midwifery schools selected, proportionate to their population. Fourthly, simple random sampling was used to select individual tutors and students to participate in the study from the determined sample size. In total 10 midwifery schools, 98 tutors and 126 students on the e-learning program were sampled to participate in the study.

Quantitative data was collected using one method, and that is the structured self-administered questionnaire, for tutors and students. The validity of the questionnaire was established using the content validity index (CV1) (Shi et al., 2012). Three experts were requested to rate each of the items of the questionnaire based on relevance, clarity, simplicity and ambiguity on the five -point scale. The results of the content validity of the scale were analysed. Items that scored a CVI of over 0.75 were retained and those scoring below 0.75 were discarded. The retained items were further modified based on the experts' opinion.

Two processes were undertaken to determine reliability of the questionnaire, namely pilot testing in the field, and testing reliability of the items of the questionnaire based on the Cronbach Alpha method provided by Statistical Package for Social Sciences (SPSS). We chose the Cronbach Alpha method because it was expected that some items or

questions would have several possible answers, and hence the Cronbach Alpha method was assumed to be the best method for determining consistency of the items or questions.

Quantitative data was analyzed by performing both descriptive and inferential analysis. The study used Statistical Package for Social Sciences (SPSS), Version 23 to perform descriptive and inferential analyses. Descriptive analysis begun with generation of a scatter plot to ascertain if the data was normally distributed (DataFlair, 2019). The scatty plot showed a symmetric bell-shaped curve where some observations were clustered at a central peak representing average or mean. And the other values moved further away from the mean, tapering off equally in both the left and right direction. This typical bell shaped curve indicated that the data under review was normally distributed. After ascertaining the distribution of the data, measures of central tendency were generated specifically the mean.

The arithmetic mean was preferred because it indicates the average measure of responses. Since we used a 5 item Likert scale, the more the mean value moves towards 5 the more the agreement and the lesser the mean value moves towards one the lesser the agreement with each of the statements in the table. Variability was measured using standard deviation (S.D). S.D was preferred because it measures the magnitude of deviation from the mean of responses. S.D of magnitude 1 and above indicate that the responses were wide spread from the mean, while standard deviations of magnitude less than 1 indicate that the responses were close to the mean. The inferential analysis was largely focused on correlation and regression analysis of on-line quality management and e-learning adoption. The Pearson's correlation coefficient was preferred because the data was found to be normally distributed and thus aided in measuring the strength of the relationship of variables.

Qualitative phase

Three data collection methods for qualitative data were used in this study, these included: key informant interviews, records review and focus group discussions. Qualitative data analysis commenced with commencement of data collection, data was recorded in field notes and supported by audio recorders, transcription was done verbatim and some samples referred back for cross reference. Data was also coded, categorized, and themed. Code reliability was ascertained using the Kappa coefficient generated through NVivo vr 8. Codes found in the range of 0.60 – 0.79 were retained and those below 0.40 were excluded from further analysis (McHugh, 2012). The procedure of axial, selective, and open coding centered on the seminal works of Strauss and Corbin (1998) was applied in the analysis of data to help in triangulating data and provide a thick and deep description about on-line quality management and e-learning adoption. The procedures employed in coding also relied on the method of comparative sampling, a practice that is iterative and makes possible thick collection of data. Additionally, to aid the management of large amount of data and to enable data reduction progression, NVivo vr 8 was employed.

Study participants

A total of two hundred twenty four (224) questionnaires were distributed and one hundred sixty seven (167) were completed and returned. The response rate for questionnaires was therefore 74.6 percent. The above response rate was considered adequate enough to provide a rational judgement to make a case for any scientific recommendations or observations. Additionally, a higher response rate is appropriate in pedagogical research because it demonstrates the interest of the participants in a particular phenomenon and provides an unbiased estimates (Dillman, 2000; Heberlein & Baumgartner, 1978). Likewise, Mugenda and Mugenda (2003) opines that a response rate of fifty per cent is acceptable for analysis and reporting; a rate of sixty per cent is respectable and a response rate of seventy per cent and above is exceptional. It is also worth noting that the female sample was almost eight times the male sample.

Based on Tab 1, although both male and female respondents participated in the study, the majority 149 (89.2%) were females as compared to only 18 (10.8%) males. The females dominated in number because the midwifery profession in Uganda is generally dominated by females both as students and staff. Majority, 79.0% were below 40 years, depicting a slightly younger population undertaking the e-learning program as either students, tutors or administrators at the sampled midwifery schools. the highest number of respondents, 104 (62.3%) were of certificate level of education, Respondents who possessed certificates were majorly certificate midwives who had enrolled on the e-learning program to upgrade to the diploma level in midwifery studies, and these constituted the biggest number of respondents as students 54.5% (91). While respondents with Postgraduate diplomas, Bachelors' and Masters' degrees were either tutors or administrators. The above findings are an indication that all stakeholders on the e-learning program within the midwifery school environment participated in the study.

Table 1. Demographics of respondents (n=167)

Information		Frequency	Percent (%)
Gender			
	(1) Female	149	89,2
	(2) Male	18	10.8
Age			
	(1) 20 – 29 yrs.	83	49.7
	(2) 30 – 39 yrs.	49	29.3
	(3) 40 – 49 yrs.	19	11.4
	(4) 50 yrs. &above	16	9.6
Highest education level			
	(1) Post Graduate Diploma	8	4.8
	(2) Bachelor's degree	49	29.3
	(3) Master's degree	6	3.6
	(4) Certificate	104	62.3
Role of respondent in the school			
	(1) Tutor	53	31.7
	(2) Student	91	54.5
	(3) Administrator	8	4.8
	(4) Clinical instructor	15	9.0

Findings

In the ensuing section we present results on e-learning adoption in midwifery schools in Uganda, views of participants on on-line quality management, and correlation and regression analyses for on-line quality management and e-learning adoption.

E-learning adoption in midwifery schools in Uganda;

E-learning adoption was measured on the questionnaire using eight statements and the participants were requested to indicate their level of disagreement or agreement. The level of e-learning adoption was ascertained to be at 61% as majority of the respondents somewhat and strongly agreed to all the eight statements used to assess e-learning adoption. However, if only 61% of students and faculty agree that they are satisfied with the overall e-learning program, and that they are happy with the number of students taking on and using e-learning as their main approach for their quest for knowledge and skills, quantitatively expressed in terms of number of students enrolled on the program; number of students and tutors using LMS/CD-ROM; and the number of faculty offering online support to their learners, the 40% who superficially pronounce disaffection represents a slightly bigger constituency of likely defaulters over time, and something needs to be done to arrest the situation.

Table 2. Views of participants on e-learning adoption

E-learning adoption	SD	SWD	NAD	SWA	SA	Mean	S.D.
The number of e-learning students has been increasing from the time the program was initiated	6 (3.6)	15 (9.0)	11 (6.5)	49 (29.3)	86 (51.5)	4,2	1,2
The number of log-ins on the learning management system has been increasing over time.	10 (6.0)	28 (16.8)	40 (24.0)	58 (34.7)	31 (18.6)	3,4	1,3
On-line support mechanisms to e-learning students has been diversifying since the inception of the e-learning program	12 (7.2)	29 (17.4)	43 (25.7)	70 (41.9)	13 (7.8)	3,3	1,1
Different e-learning program activities have been introduced overtime	19 (11.4)	30 (18.0)	41 (24.6)	58 (34.7)	19 (11.4)	3,2	1,4
Tutors provide timely e-feedback to their students	24 (14.4)	24 (14.4)	21 (12.6)	68 (40.7)	30 (18.0)	3,3	1,7
Students provide timely e-feedback to their tutors	10 (6.0)	19 (11.4)	28 (16.8)	79 (47.3)	31 (18.6)	3,6	1,2
The quality of the e-learning program has improved with time	9 (5.4)	21 (12.6)	24 (14.4)	73 (43.7)	40 (24.0)	3,7	1,3
The e-learning program is exciting	11 (6.6)	14 (8.4)	8 (4.8)	66 (39.5)	68 (40.7)	4	1,4
Average of E-learning adoption	13 (7.6)	23 (13.5)	27 (16.25)	65 (39.0)	40 (23.8)	3,6	1,3

Key: SD: Strongly Disagree, SWD: Somewhat Disagree, NAD: Neither Agree nor Disagree, SWA: Somewhat Agree, SA: Strongly Agree

In table 2, a mean between 1.0 and 2.4 indicate disagreement and a mean between 3.5 and 5.0 indicate agreement, whereas a mean between 2.5 and 3.4 means neither agree or disagree to the statement. The Standard Deviation (S.D.) measures the magnitude of deviation from the mean of responses. Standard deviations of magnitude 1 and above indicate that the responses were wide spread from the mean, while standard deviations of magnitude less than 1 indicate that the responses were close to the mean.

The findings from table 1 show that the average mean was 3.6 and the average standard deviation was 1.3. These findings suggest that the respondents were generally in agreement with the statement on E-learning adoption, and the average standard deviation of 1.3, is an indication that the responses were wide spread from the mean.

Views of participants on on-line quality management

In order to elicit the views of the respondents on on-line quality management, so as to analyze whether they had influence on e-learning adoption in midwifery schools in Uganda, the research employed six statements on the questionnaire and participants were requested to express their views by selecting their appropriate responses on the six statements, and the results are presented in table 3. Qualitative findings collected from interview guides, FGDs and document reviews were used to supplement the quantitative findings.

Table 3. Views of participants on on-line quality management

Statements	SD	SWD	NAD	SWA	SA
1) Our e-learning program provides the best online learning experience	26 (15.6)	36 (21.6)	26 (15.6)	63 (37.7)	16 (9.6)
2) Our Learning Management System (LMS) meets most of my online learning expectations	31 (18.6)	36 (21.6)	23 (13.8)	69 (41.3)	8 (4.8)
3) The CD-ROMS we use on our eLearning program meets my on-line learning expectations	29 (17.4)	27 (16.2)	40 (24.0)	62 (37.1)	9 (5.4)
4) Our eLearning program can be described as an excellent on-line learning experience	21 (12.6)	41 (24.6)	25 (15.0)	63 (37.7)	17 (10.2)
5) Our school, has set guidelines for improving the quality aspects of our eLearning program	21 (12.6)	26 (15.6)	29 (17.4)	66 (39.5)	25 (15.0)
6) The quality aspects of our eLearning program are collaboratively worked upon together with Tutors, Students, and the school administrators	22 (13.2)	22 (13.2)	22 (13.2)	62 (37.1)	39 (23.4)
Average of On-line quality management	25 (15.5)	31 (18.8)	28 (16.5)	64 (38.4)	19 (11.4)

Key: SD: Strongly Disagree, SWD: Somewhat Disagree, NAD: Neither Agree nor Disagree, SWA: Somewhat Agree, SA: Strongly Agree

Table 3 shows that respondents were in agreement on two (2) out of the six (6) statements used to measure On-line quality management in midwifery schools in Uganda. The four poorly rated on-line management aspects included; LMS meeting their learning needs at 40%, the e-learning program providing the best online experience at 37.1%, e-learning program described as an excellent on-line learning experience at 37.1% and CD-ROMs meeting the expectations of the learner.

On the LMS particularly, a key informant noted that the LMS will only meet students' online learning expectations when the tutors have put in an effort to take care of the learning expectations of the students and include them in the materials uploaded on the LMS. Similar sentiments were raised on whether the CD-ROMS they use on the e-learning program meets their on-line learning expectations, 33.6% in disagreement, 24.0% neither in agreement nor in disagreement and 42.5% in agreement. The KIIs and FGDs helped explain why these two were lowly rated, where it was indicated that students have been using the two avenues of accessing their content concurrently, however, sometimes the CD-ROMs fail to open and at times the LMS itself is often on and off and does not possess an offline mode. One of the key informant had the following to say:

> …….We started this e-learning program with CD-ROMs, however, we would receive several complaints from students about CD-ROMs failing to open on their computers, yet some of those students used to come from far, one person indicated to us that the CD-ROMs were not well configured! We thought of acquiring an LMS using the Moodle open source software, but also we did not have all the money to work on all the configurations recommended, up to today we use the two concurrently until such a time when we shall get funds to rectify the gaps explained…

Average of on-line quality management

On average 7.2% of the respondents strongly disagreed to all the statements used to measure on-line quality management, whereas 18.6% somewhat disagreed, 29.3% neither agreed nor disagreed, 36.5% somewhat agreed and 8.4% strongly agreed. This is an indication that generally the respondents had mixed reactions to all the statements

used to measure on-line quality management in midwifery schools in Uganda, with on average 25.8% in disagreement, 29.3% neither in agreement nor in disagreement and 44.9% in agreement.

4.4 Correlation analysis for on-line quality management and e-learning adoption

In order to assess whether there is a relationship between on-line quality management and e-learning adoption in midwifery schools in Uganda, Pearson's product-moment correlation coefficient was generated at 95% confidence level to compute the degree and direction of the relationship between the two variables and table 4 below presents the results.

Table 4. Matrix of Correlation for on-line quality management and e-learning adoption

		On-line quality management	E-learning adoption
On-line quality management	Pearson Correlation	1	.747*
	Sig. (2-tailed)		0.000
	N	167	167
E-learning adoption	Pearson Correlation	.747*	1
	Sig. (2-tailed)	0.000	
	N	167	167
*. Correlation is significant at the 0.05 level (2-tailed).			

Findings in table 4 above indicates a strong positive relationship between on-line quality management and e-learning adoption in midwifery schools in Uganda, (r = 0.747, p = 0.000, n = 167). The relationship is statistically significant at 95% confidence level since p-value (Sig.) is equal 0.000 (<0.050). This means that improvements in on-line quality management are likely to result into improvements in e-learning adoption in midwifery schools in Uganda. Similarly decline in on-line quality management is likely to result into decline in e-learning adoption in midwifery schools in Uganda.

Regression analysis for on-line quality management and e-learning adoption

Regression analysis was used to analyze whether on-line quality management has a significant influence on e-learning adoption in midwifery schools in Uganda. The coefficient of determination (R Square) under regression analysis is as presented in table 5 below.

Table 5. Summary for regression analysis for on-line quality management and e-learning adoption

Model	R	R Square	Adjusted R Square
1	.747a	.558	.555
a. Predictors: (Constant), On-line quality management			

Source: Generated from primary data

Based on table 4 above, it is indicated that Pearson's correlation coefficient is (R = 0.747), Coefficient of determination or R Square is 0.558 and Adjusted R Square is 0.555. Subsequently, an adjusted R Square of 0.555 means that on-line quality management accounts for 55.5% of the variance in e-learning adoption in midwifery schools in Uganda. This means that apart from on-line quality management there are other factors that contribute to e-learning adoption in midwifery schools.

To ascertain the general significance of the regression model for on-line quality management and e-learning adoption in midwifery schools, analysis of variance (ANOVA) and regression coefficients were performed and table 6 below presents the results.

Table 6. Analysis of variance and regression coefficients for on-line quality management and e-learning adoption

Model	Df	F	Sig.	Standardized Beta Coefficient	t	Sig.
Regression	1	208.186	0.000a	0.747	14.429	0.000b
a. Dependent Variable: E-learning adoption						
b. Predictors: (Constant), On-line quality management						

To ascertain if a regression model is significant, the decision rule must be that the calculated p-value (level of significance) for ANOVA need to be less than or equal to 0.05. Subsequently, the calculated p-value of 0.000a was less than 0.05, the regression model was deemed to be statistically significant (F=208.186, df = 1, p<0.05 (=0.000)). This

indicated that on-line quality management has a statistically significant influence on e-learning adoption in midwifery schools in Uganda.

Furthermore, to establish whether on-line quality management is a predictor of e-learning adoption in midwifery schools in Uganda and determine the magnitude to which on-line quality management influences e-learning adoption in midwifery schools in Uganda, t and Standardized Beta coefficients were calculated. In order for the magnitude to be significant the decision rule is that the t value must not be close to 0 and the p-value must be less than or equal to 0.05. In this calculation, the t value was found to be 14.429, which is not close to 0 and the p-value<0.05 was (0.000), the study confirmed that on-line quality management was a predictor of e-learning adoption in midwifery schools in Uganda. Additionally, the standardized Beta coefficient value of 0.747 indicates that for every 1 unit increase in on-line quality management will translate to an increase of 0.747 units of e-learning adoption in midwifery schools in Uganda.

Research findings from correlation analysis established that on-line quality management has a strong positive statistically significant relationship with e-learning adoption in midwifery schools in Uganda. Findings from regression analysis confirmed that on-line quality management has a statistically significant positive influence on e-learning adoption in midwifery schools in Uganda. The study therefore accepted the research hypothesis that was stated as thus: "On-line quality management improves the adoption of e-learning".

Salient traits of on-line quality management

This study conceptualized on-line quality as something that cannot be delivered to the learner as it is portrayed in several literature but rather as something that is enhanced collaboratively between the students and the teacher throughout the instruction and learning progression, predominantly in an iterative e-learning milieu (Ehlers, 2004). As such the traits of on-line quality management took cognizant of the two perspectives of on-line quality, i.e. the perspective of the student and the perspective of the teacher or administrator. These aspects were further elicited from the FGDs and KIIs conducted, to augment information collected by the questionnaire and records review.

On average all the six on-line quality traits were scored below 50% by participants, to be precise 44.9%. poorly scored traits being CD-ROMS-meets expectation of users, collaborative improvement of on-line quality, LMS-meets expectations of users, providing the best on-line experience, e-learning program being described as an excellent on-line learning experience, and guidelines for improving on-line quality. The key informant interviews and focus group discussions were used to elicit more information on why participants felt the way they felt and ways of improving each of the six traits so as to improve on-line quality and subsequently enhance e-learning adoption.

On CD-ROMS not meeting the expectations of users, it was discovered that most midwifery schools use Compact Disc, read-only-memory (CD-ROMS) as the major avenue of delivering content to their learners, however, the CD-ROMS also have several issues all pointing to dissatisfaction. One of the FGD members indicated that:

> …The CD-ROMS are good because we use them even if you have no internet connection, however, the disadvantage with them is that they have no opportunity for group discussions or even connecting with a tutor in case you have an urgent issue for clarification….

Although all schools have installed the learning management system as a means of delivering e-learning content to students, the learning management system (LMS) is always on and off. Indeed two of the KII respondents had to say the following:

> ..The LMS is always on and off and worse still when it comes on, it also takes a lot of time to open, and whole process becomes frustrating, "I have taken several months without discussing with colleagues on the LMS, whenever, we arrange for our group discussions the LMS is always off, management has to do something to sort out this issue..

These aspects of frustration from learners eventually prevent them and their colleagues from using the LMS put in place and hence the number of students who would have wished to join the e-learning program eventually reduces, thus impending faster adoption to e-learning pedagogy.

Discussion

The key findings as per this study were that majority (79%) of the people on the midwifery e-learning program in Uganda are below the age of 40 years, and majority (89.2) are females who are either desirous to upgrade to a higher level of midwifery qualification or are on the program as tutors or clinical instructors. The composition of higher levels of females on the program is not surprising as this is not only in line with the unwritten policy of training midwives in Uganda which constructs the specialty as a domain of the female species, but also in tandem with the World Health Organization Report on Gender equity in the health workforce which indicated that women form 70% of the health care workforce (Boniol et al., 2019).

In this study, the quality of midwifery e-learning program was rated at 44.9% overall. Research findings established that on-line quality management has a moderate positive statistically significant relationship with e-learning adoption

in midwifery schools in Uganda and furthermore that on-line quality management has a statistically significant positive contribution of 55.5% of the variance observed in e-learning adoption in midwifery schools in Uganda. This finding concurs with the findings of Klasnic et al., (2010), where it was stated that 45% of students using Omega as the online learning system had agreed with the idea that there was enhanced learning quality with the omega system. However, the quality of online learning being rated at 44.9% by the users of the system, rises a lot of questions on what might have gone wrong!.

The KIIs and FGDs clearly indicated why this might have been so, particularly they pointed out the two channels used to deliver the e-learning content that is the LMS and the CD-ROMs had systemic issues. There were also mixed reactions on whether; the eLearning program provides the best online learning experience, the Learning Management System (LMS) meets most of their online learning expectations, the CD-ROMS they use on the eLearning program meets their on-line learning expectations and whether the eLearning program can be described as an excellent on-line learning experience.

These sentiments are also echoed by Uppal (2017), where in his study he discovered that when the e-learning system is versatile, incorporating video and audio formats, it has a positive correlation with responsiveness of students to the learning content and course website. This means, students will associate the e-learning system with quality basing on the media format in which the learning content is provided.

The idea of packaging the user interface as the delivery channel of e-learning content has also been found to be vital by Mayer's (1997) multimedia principle. Mayer argued that when the learning content is delivered through an attractive and interactive planform including audio and video provisions, students perceive it to be of better quality. Additionally, when the components of the user interface are made available in multimedia form, student perception of quality also improves. This assertion is also supported by one of the SEVQUAL dimensions that talks about responsiveness being improved with the use of multimedia (Barótfi, 2000) .

It is therefore not surprising that in this study, e-learning quality was rated low, the major reasons were to do with the user interface that the school administrators had chosen. The user interface was not attractive to students, it was never available most of the time and the CD-ROMs also had issues of failing to load appropriately. All these occurrences increased the frustration of the user with the system, hence their value judgement of the entire e-learning program become compromised (Ardito et al., 2006). Therefore, when designing and developing e-learning systems, educators and providers must consider these aspects so as to maximise system quality perception. The issue of e-learning user interface is very critical as it has been emphasised by several researchers that it should be reliable, and always available and operating so as to meet the desired needs of e-learners (Martínez-Argüelles & Batalla-Busquets, 2016; Parasuraman et al., 2005).

Quality in e-learning is conceptualized as gaining the greatest learning accomplishment, in conjunction with 'something that is exceptional in performance' (Ehlers et al., 2005). Research findings revealed that the quality traits of the e-learning program are collaboratively worked upon together with teachers, students, and the school administrators and that the school has set guidelines for improving the on-line quality traits of the e-learning program. This means that midwifery schools have put emphasis on the quality of e-learning. The authors further argue that e-learning quality has a two-fold implication: first, e-learning has been linked to increasing the quality of didactic prospects, which ensures an increased information to society in a more successful way. Secondly, the debates connected with avenues of improving the quality of e-learning itself have also increased. In the very study, it was also recommended that to improve quality, students have to play an increasingly critical role in shaping the quality of e-learning activities; and quality enhancement ought to be designed jointly by all those involved, and as such some researchers have recommended blueprints inform of benchmarks to be followed in the endeavors of improving e-learning quality (Frydenberg, 2002; McNaught, 2001; Phipps & Merisotis, 2000).

The on-line quality management traits discovered by this study have a great influence on the adoption and continued use of e-learning because they revolve between the nexus of beliefs and motivations for e-learning (Ehlers & Goertz, 2006). The management apparatus of midwifery schools need to develop strategies of improving them as they have a connection with improving student satisfaction. Pham et al., (2016), argue that institutions of higher learning should develop mechanisms of keeping their students as loyal customers and one approach of achieving this is to focus on all the four dimensions of e-learning service quality enshrined in Martinez-Arguelles and Batalla-Busquets's (2016) study.

According to Jung, (2011), the aspect of involving learners in determining the quality of e-learning is very critical. Jung, (2011) asserts that the dimensions of on-line quality management are sometimes conceptualized differently between learners and faculty and the assessment is also sometimes one-sided, especially skewed on e-learning providers, donors and government agencies. This contradiction is likely to affect the adoption and continued use of e-learning, owing to the fact that the quality of e-learning is a phenomena that cannot be delivered to the student but rather a phenomena which is enhanced together by both the student and the teacher in an iterative instruction and learning progression, specifically in a collaborative e-learning milieu (Ehlers, 2004). Basing on the findings of Jung, (2011) and (Ehlers, 2004), it is not surprising that there were mixed reactions on whether the e-learning program provides the

best online learning experience, whether the Learning Management System (LMS) meets most of the learners' online learning expectations and whether the e-learning program can be described as an excellent on-line learning experience.

Conclusion

Based on the research findings it is concluded that improvements in on-line quality management shall lead to improvements in adoption of e-learning in midwifery schools in Uganda. However under the current status the following recommendations are here under made to ensure that on-line quality management contributes to adoption of e-learning in midwifery schools in Uganda; the salient traits of on-line quality management should collaboratively continue to be worked upon by Tutors, Students, and the school administrators. Schools should continue to set guidelines for improving the quality of the e-learning program, but the guidelines must be simple and easy to follow by all the stakeholders involved; for the e-learning program to achieve the description of the "best online learning experience" all stakeholders must be involved in the designing and redesigning of the e-learning program to address the expectations of all stakeholders. All schools should re-install the Learning Management System (LMS) so as to meet most of students' online learning expectations. The CD-ROMS used on the eLearning program should continuously be improved upon to meet students' on-line learning expectations. The eLearning program should continuously be improved upon to create an excellent on-line learning experience.

Recommendations

This study comes up with recommendations for e-learning practitioners especially in the Ugandan context, and it recommends as follows: When designing e-learning programs there is need to ensure that the user interface is well developed so as to meet the learning needs of the e-learners. Particularly paying attention to features that can increase interactivity, easy navigation, reliability and can give access to campus all the time. If the e-learning program is still in its infancy and relying on CD-ROMs as the main charnel for delivering content, ensure the CD-ROMs are of high quality and internet enabled, so as to be able to be accessed on any computer irrespective of the model. The DVD technology could also be used instead of CD-ROM. Ensure effective training of the users is accomplished before they can access the content. Involve users in eliciting feedback on the user interface for continuous quality improvement.

Based on the findings of the study, the following are recommended for future research: Given the fact that the study did not address all the dimensions of e-learning service quality, there is need for follow on study to cover all the dimensions of e-learning service quality across all e-learning programs in Uganda. There is need also for follow on research to study what constitutes e-learning service quality in the context of Uganda, the current dimensions used are based on more developed countries like the USA, UK, Vietnam and other developed countries.

Limitations

This study did not cover all the areas of e-learning service quality neither did it use a standard SURVQUAL tool for e-learning service quality, hence the findings are only limited to user's perception and expectations towards CD-ROMs and the LMS which only addresses two out of the four dimensions of e-learning service quality as enshrined in the study of Martinez-Arguelles, et al., 2013. The study was mainly an explanatory research of the critical online management practices that were found to be more relevant to e-learning adoption, consequently, some systematic biases might have been introduced along the way, but these were mitigated by using multiple methods of data collection and analysis. Since the study employed a mixed research method, basing on two stages of data collection and analysis, time to complete the entire research within the agreed time was a bit limiting. However, this was mitigated by designing and implementing realistic actions putting in mind the time available to complete the entire research process.

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