Evaluating the Influence of Performance Expectancy on the Adoption of Students’ Information System in Higher Learning Institutions

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Abstract
The application of computer-based information systems in higher learning institutions as a catalyst to enhance academic performance is inevitable in the 21st technology-oriented century. The intent of this study was to evaluate the influence of performance expectancy on the adoption of MOODLE as one of the learning information systems in higher learning institutions. Specifically, the performance expectancy is measured by quickness for accomplishment of class tasks, confidence on improvement in academic performance, usefulness of the system in study activities, actual improvement in academic performance, usefulness in enhancing learning activities, and improvement of accessibility and download of learning materials. Simple random sampling was used to obtain a total of 97 respondents from the population of about 3,000 students of the Institute of Accountancy Arusha (IAA). This study used a structured questionnaire as a tool of data collection. Descriptive statistics, and correlation analysis were used for data analysis. The findings indicate that 67% of the respondents supported that the system enables them to accomplish their tasks quickly and timely, 45% agreed that the system enables them to improve the confidence for better academic performance, 67% supported the usefulness of the system in their studies, 54% agreed that the system helped them towards the improvement in actual academic performance and 80% supported that the system provides access to download learning materials. On the basis of these research findings, it can be argued that the performance expectancy is somehow capable of influencing the adoption of student information system in higher learning institutions. It is argued that most of students find MOODLE helpful and supportive in achieving their academic targets. It is recommended for IAA to encourage students and learners to make full use of MOODLE so as to enjoy the embedded potentials and benefits. Further studies can be carried to investigate on the extent to which the performance expectancy influence the adoption of Students’ Information System in other levels of educational institutions such as secondary schools.

Keywords: MOODLE, Performance expectancy, Students’ performance, Higher learning institutions.

1. Introduction
The use of Students’ Information System (SIS) in Higher learning institutions provides a platform to access learning materials and student activities, grading of student activities, reducing operational costs, encourage student participation in learning activities, fastening the
accomplishment of student activities, enable off-campus learning, and ultimately improve academic performance. These systems can be useful to overcome the teaching and learning challenges such as the shortage and cost of learning materials that are facing the educational institutions in Tanzania (Mtebe, 2014).

The use of Learning Information Systems (LIS) has been vividly manifested in various parts of the World. The use of LIS via the establishment of educational centers in Asia has been useful to reduce the digital divide (UNESCO UIS, 2014). According to Murgor (2015), 80% of University students in Europe reported to have used SIS at least twice a week. African countries have recognized the use of information technology including the SIS as an important tool towards the strive for industrialization (Barakabitze et al., 2019). South Africa is among the leading country in Africa in making use of SIS where technologies such as Web 2.0 and web 3.0 have been widely adopted in universities (Ohei and Brink, 2019). The use of SIS to enhance learning environments has been one of the top concerns in the Government of Kenya where 15% of university students seem to have used information system for learning activities several times a day (Macharia & Pelser, 2014).

The adoption of SIS in Tanzania especially through the use of internet has been useful in improving the accessibility of learning materials. This has reduced the teaching and learning costs in higher learning institutions (Luoga, 2014). As an open-source software, MOODLE is among the potential applications that can be adopted to handle the teaching and learning activities in higher learning institutions. According to Muries (2017), the use of MOODLE in Tanzania has been significantly considered due to its efficiency in simplifying the learning activity, improving the quality of education in the learning environment and improvement of productivity for students and staff. Students and teachers who focus much on students’ information system for learning and teaching are taken as cost considerate.

MOODLE was adopted as a SIS at IAA to enhance the teaching and learning activities for more than Five years now. Among others, MOODLE is used by IAA for uploading and downloading of learning materials, module guideline and assignments. Other uses such as chatting and grading of student activities are highly appreciated. The usefulness of MOODLE at IAA was well manifested during the outbreak of COVI 19 pandemic whereby through it, IAA was among the leading and teaching institutional means in Tanzania that made use of SIS to enable the teaching and learning activities to take place off-campus. In the course of improving the use of MOODLE and other SIS at IAA, the understanding of the parameters which inspires such adoption is inevitable.

STATEMENT OF THE PROBLEM
Despite the efforts made to ensure fully adoption of SIS in higher learning institutions, several universities around the world including those in Tanzanian, reported to have made scanty use of such systems (Mathew and Alkawaz, 2018c; Murgor, 2015b). This calls for the need to investigate on the factors that influence the adoption of student information system as an input to invent proper strategies to inspire students in higher learning institutions to make optimal use of the same. Several studies have been conducted about technology adoption in educational environments and this include the study
conducted by Padayachee (2013), Njuguna (2013) and Baliyan (2016). Nevertheless, these studies are too generic by addressing the extent of the adoption of e-learning technologies and did not focus specifically to the factors that influence the adoption of students' information system in higher learning institutions. Other studies include the research conducted by Ooko (2016) and Ndongo (2013) which was limited to the usefulness of technology adoption as an aid to enhance teaching and learning tasks. Some of the research with respect to factors influencing the adoption of SIS include studies by Rosaline et al. (2017), Nyeko & Ogenmungu (2017), Ansong et al. (2016), Pramana (2018), and Seifu (2020). However, these studies worked on areas outside Tanzania. This study investigated the factors influencing the adoption of student information systems in higher learning institutions specifically the use of MOODLE at the Institute of Accountancy Arusha, Tanzania. The study has been focused on measuring the perceptions of students with respect to improvement in quickness of task accomplishment, confidence for better performance, actual performance and accessibility of learning materials as well as the usefulness in enhancing learning activities.

2. Literature Review
This study is guided by the Unified Theory of Acceptance and Use of Technology (UTAUT). The model explains the determinants for information system adoption. The strength of UTAUT model lies on the fact that it integrates the insights of several technology adoption models (Abu-Al-Aish and Love, 2013a). Performance expectancy is among these determinants established by UTAUT model. In the contexts of this study, performance expectancy is centered on the belief that using SIS enables the attainment of better performance in teaching and learning (AlQudah Ahmed, 2014). A Study by Ekundayo (2019), revealed that performance expectancy has significant relationship with the students adoption behavior and the actual use of SIS in higher learning institution, and this idea is also supported by (Lubua & Semlambo, 2017a). Students’ information system application allows students to perform their day to day activities without much worries of issues such as poor language because MOODLE interface can be opened to only specific participant (Hsu, 2012). A study by AlQudah Ahmed (2014) found that MOODLE system enables teachers to enhance their teaching environment and also provide chances to quickly accomplish their daily tasks. When university facilitators perceive the use of technology useful to their job, it influences their intention to make use of the same (Radovan & Kristl, 2017).

A study conducted by Liu (2013), found that the performance expectancy is significant factor for the adoption of students’ information system as a system which offers the alternative ways of learning to students. Chew (2018) added that the successful adoption of students’ information system should go parallel with the appropriate training of staff. A study by França et al., (2012) concluded that it requires less efforts to monitor students and tutors through MOODLE. It is also established that application of MOODLE improves the quality of distance learning and supports students and facilitators in attaining their academic desires (Carmen, 2015). The adoption of MOODLE system in higher learning institutions depends much on strategic plan as recommended by Mwakyusa (2016). Similarly, Clarke-
okah et al. (2009) supports that the use of MOODLE enables students to work online and expands geographical boundaries by allowing students to pursue studies anywhere in the world. With respect to blended learning, MOODLE system is useful to supplement the face to face learning (Ping, 2017). Specifically, this study evaluates the influence of performance expectancy on the adoption of MOODLE with a focus at the Institute of Accountancy Arusha.

3. Methodology
This study adopts the mixed research approach that comprises qualitative and quantitative research. This study selected case study from the higher learning institution which is the Institute of Accountancy Arusha. IAA was chosen as a case study because its teaching staff and students adopted the MOODLE for undertaking of academic activities for a considerable period of time that is reasonable to carry out the evaluation. The current study used probability and non-probability sampling which involved the use of simple random sampling and quota sampling respectively (Taherdoost, 2018). The study also used structured questionnaires as a data collection instrument. This instrument provided the easiest and quick way of collecting and analyzing research data (Megel & Heermann, 2018). The study also used structured questionnaires as a data collection instrument. This instrument provided the easiest and quick way of collecting and analyzing research data (Megel & Heermann, 2018). The researcher used the UTAUT model and adopted the questionnaire items related to previous studies as recommended by Creswell (1998). The study customized and used questionnaire items used by Venkatesh et al. (2012) that is also supported by other studies such as Bervell & Umar (2017).

The study population was 3,000 students at the Institute of Accountancy Arusha who were about. The sample size for this study was obtained by considering the combination of precision, confidence levels, and variability hence the application of the following formula (Israel, 1992a).
\[ n = \frac{N}{1+Ne^2} \]

Where \( n \) is the sample size, \( N \) is the population size and \( e \) is the level of precision (Israel, 1992b).

For this study \( N=3,000 \), \( e= 10\% \) and confidence level is 95% therefore:
\[ n = \frac{3,000}{1+3,000 \ (0.1)^2} = 97 \]

Then the sample size for this study was 97 respondents.

Data were coded into SPSS v.16 and various descriptive statistics were generated. On the other hand, correlation statistical model for data analysis was used to determine if the relationship exists between two variables.

This study performed validity and reliability test, whereby the data collected from 97 respondents had a Bartlett’s Test of 0.853 which is greater than 0.5 which signifies that the collected data were valid and accurate according to scale value interpreted by Dansoh et al., (2017).

Furthermore, reliability test for performance expectancy was conducted to measure the internal consistency of the data whereby the Cronbach’s Alpha coefficient provided 0.883 which is justified by Arfken & Balon (2011) to be good for internal consistency of the data and this is suitable for decision making (Lubua & Semlambo, 2017b).

IV. FINDINGS
The analysis of findings for this study was based on the data collected from 97 respondents.

Demographic characteristics of the Respondents
The findings from table 1 affirmed that, among the respondents 62.9% were male and 37.1% were female which means that the majority of the respondents were male. On the other hand, the study findings revealed that the majority of respondents 38.1% were ordinary diploma students while certificate students appeared in smallest frequency equivalent which is 25.8% while Bachelor degree were 36.1% and this results show that the findings were drawn from the right respondents who in fact are knowledgeable and competent in the area of study despite the presence of other factors in place.

Respondents’ age groups were grouped as from 14-17 years old who were 3.1%, whereby 18-21 years were the majority of the respondents with 51.5%, while 22-25 years of respondents 40.2 and above 26 years were 5.2%. These findings show that the majority of the age groups were 18-21 years which implies that the data was collected to the right individuals who are somehow matured to understand the influence of performance expectancy on technology adoption.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measured Elements</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>61</td>
<td>62.9</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>36</td>
<td>37.1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td>Level of Study</td>
<td>Certificate</td>
<td>25</td>
<td>25.8</td>
</tr>
<tr>
<td></td>
<td>Ordinary Diploma</td>
<td>37</td>
<td>38.1</td>
</tr>
<tr>
<td></td>
<td>Bachelor Degree</td>
<td>35</td>
<td>36.1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td>Age group</td>
<td>14-17</td>
<td>3</td>
<td>3.1</td>
</tr>
<tr>
<td></td>
<td>18-21</td>
<td>50</td>
<td>51.5</td>
</tr>
<tr>
<td></td>
<td>22-25</td>
<td>39</td>
<td>40.2</td>
</tr>
<tr>
<td></td>
<td>26 and above</td>
<td>5</td>
<td>5.2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>97</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field Data (2020)

The influence of performance expectancy on the adoption of student’s information system

The performance expectancy was measured through the quickness for accomplishment of class tasks, confidence on improvement in academic performance, usefulness of the system in study activities, actual improvement in academic performance, and improvement of accessibility and download of learning materials. In evaluating performance expectancy, respondents were supposed to rank the measured variables by using a five – Likert scale points from Strongly Disagree to Strongly Agree.

The study revealed that the majority of the respondents 44% and 23% agreed and strongly agreed respectively that MOODLE system enables them to quickly accomplish their class tasks in their learning environment. On the contrary, the minority of the respondents 10% and 13% disagreed and strongly disagreed respectively with the idea, while 9.3% of the respondents were neutral. Furthermore, the study established that about 31% and 14% of the respondents agreed and strongly agreed respectively that the adoption of MOODLE as students’ information improve their confidence to perform well in their examination by acquiring good grades. Contrarily, 23% and 10% of the respondents disagreed and strongly disagreed respectively that the adoption provides them the chance of performing well.
Table 2: Descriptive results based on measured variables for Performance expectancy

<table>
<thead>
<tr>
<th>Construct</th>
<th>Measured Variables</th>
<th>SD</th>
<th>D</th>
<th>NAD</th>
<th>A</th>
<th>SA</th>
<th>Mean</th>
<th>STD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Expectancy</td>
<td>MOODLE enables me to accomplish my class tasks as quick as possible</td>
<td>F</td>
<td>13</td>
<td>10</td>
<td>9</td>
<td>43</td>
<td>22</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>13</td>
<td>10</td>
<td>9.3</td>
<td>44</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The adoption of confidence on improvement in academic performance</td>
<td>F</td>
<td>10</td>
<td>22</td>
<td>21</td>
<td>30</td>
<td>14</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>10</td>
<td>23</td>
<td>21.6</td>
<td>31</td>
<td>14</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>The MOODLE is so useful in my studying activities</td>
<td>F</td>
<td>5</td>
<td>16</td>
<td>11</td>
<td>38</td>
<td>27</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>5.2</td>
<td>17</td>
<td>11.3</td>
<td>39</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adoption of MOODLE improve my academic performance</td>
<td>F</td>
<td>13</td>
<td>18</td>
<td>13</td>
<td>42</td>
<td>11</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>13</td>
<td>19</td>
<td>13.4</td>
<td>43</td>
<td>11</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>The MOODLE helps me to access class materials and download them wherever I am</td>
<td>F</td>
<td>9</td>
<td>7</td>
<td>4</td>
<td>27</td>
<td>50</td>
<td>4.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>9.3</td>
<td>7.2</td>
<td>4.1</td>
<td>28</td>
<td>52</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Data (2020)

Key: SD = strongly disagree, D = Disagree, NAD = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree, M = Mean, STD = Standard Deviation

Moreover, the respondents were asked to rank the usefulness of MOODLE system in their learning activities where 39% and 28% of respondents supported and strongly supported respectively that SIS has potential usefulness to enhance the learning environment, whereby the minority of 17% and 5.2% disagreed and strongly opposed respectively that the system can be useful for learning activities and 11.3% of the respondents were neutral.

Furthermore, this study sought to establish whether the MOODLE system improve academic performance of students. The findings indicated that 43% and 11% of the respondents agreed and strongly agreed respectively with the idea. On the other hand, 19% and 13% of the respondents disagreed and strongly disagreed respectively that the adoption of SIS improved the academic performance, while 13.4% of the respondents neither agreed nor disagreed with the idea.

The findings as depicted in table 2 also revealed that 28% and 52% of respondents supported and strongly supported respectively that the adoption of MOODLE system could help them to access and download learning resources when they are inside or outside the campus. On the contrary, 7.2% and 9.3% of the respondents disagreed and strongly disagreed respectively that the system could support them to access and download the learning materials from wherever they are, while 4.1% of the respondents were neutral.

Correlation Analysis

The researcher conducted correlation analysis in order to study the level at which performance expectancy
influences the adoption of students’ information system in higher learning institutions.

### Table 3: Correlation Analysis

<table>
<thead>
<tr>
<th></th>
<th>Performance Expectancy</th>
<th>Behavioral intention to adopt the System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Expectancy</td>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.398**</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>97</td>
</tr>
<tr>
<td>Behavioral intention to adopt the System</td>
<td>Pearson Correlation</td>
<td>0.398**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>97</td>
</tr>
</tbody>
</table>

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

Source: Field Data (2020)

Correlation analysis was conducted to determine if there’s relationship that exists between performance expectancy and the adoption of students’ information system. This relationship was measured by correlation coefficient \( r \) which determines the strength of performance expectancy and the adoption of students’ information system in higher learning institution as supported by Schober & Schwarte (2018). The findings from table 3 above indicate that the correlation coefficient \( r \) is 0.398 which implies a moderate relationship between performance expectancy and the adoption of the system as interpreted by Wong & Hiew (2005) based on range of categories.

4. Findings and discussions

This study aimed at evaluating the performance expectancy for the adoption of SIS in higher learning institutions. Study findings show that SIS enables students to have a quick and an efficient way of accomplishing their class tasks that result in timely. This is in line with (Jebari et al., 2017), who found that the MOODLE system provides timely and interactive ways that motivate students and enables them to comply with the adoption policy given by the institute. In the same vein Handayanto et al., (2018) states that MOODLE system improves students involvement and timely completion of class activities assigned to them.

As regards to improvement in confidence for better academic performance, Umek et al., (2015) found that when higher learning institutions conduct learning activities over the internet through MOODLE platform, they tend to increase students’ performance in their studies. Furthermore, Kim et al., (2019) added that learning through MOODLE enables student to have an individual decision making, thinking skills and problem solving as well as collaborative learning.

Generally, MOODLE system is found to be useful in enhancing students’ learning environment as the majority of the students supported this idea. The findings are in line with Costa et al., (2012) findings which suggest that MOODLE system can be used for information and material repository in higher learning institutions. Additionally study findings by Hsu (2012) revealed that the adoption of MOODLE enables students in higher learning institutions to have conducive environment that avoid unnecessary face to face communication between students and their peers which at the end provides students with enough moments of silence for personal concentration in their learning.

Descriptive findings in this study also indicate that the majority of the respondents are able to access and download learning materials from wherever they reside by using MOODLE. This implies that the adoption of MOODE system discourages the application and use of the classroom writing-boards in learning and teaching.
This observation is in line with the findings by Costa et al., (2012b) who established that students do make use of their own mobile phones and Personal Computers to access learning materials with the help of Internet regardless of wherever they are. What is encouraging to students is that, MOODLE is found to be a great tool for students and facilitators as the best platform for uploading and downloading the learning materials as supported by Chourishi (2015) who argues that MOODLE system supports the higher learning institutions by its usefulness in connecting them with online communities for global sharing of knowledge and learning resources.

5. Conclusions
This research paper sought to evaluate performance expectancy for the adoption of students’ information system in higher learning institutions. The research findings were based on quickness for accomplishment of class tasks, confidence on improvement in academic performance, usefulness of the system in study activities, actual improvement in academic performance, usefulness in enhancing learning activities, as well as improvement of accessibility and download of learning materials. MOODLE system enables students to meet their expectations given that it enhances the learning environment and ultimately improve their academic performance. The study established that performance expectancy has a moderate relationship with the adoption of students’ information system in higher learning institutions having correlation coefficient r=0.398.

6. Recommendations
For the higher learning institutions to have successful adoption of SIS, it is required to have fully and continuous utilization of the system so that its benefits can be more vivid. It is recommended for IAA to encourage students and learners to make full use of MOODLE so as to enjoy the embedded potentials and benefits. Further studies can be carried to investigate on the extent to which the performance expectancy influence the adoption of MOODLE in other levels of academic institutions such as secondary schools.

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