Study of the Success of Moodle System at the University of Belize

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Abstract

Moodle is a learning platform designed to provide educators, administrators and learners with a single robust, secure and integrated system to create personalized learning environments. You can download the software onto your own web server or ask one of our knowledgeable Moodle Partners to assist you. The reason for this study was to see if the implementation of Moodle was a success and if the MIS was benefiting the students. In our study of Moodle, we had 37 participants, 19 males and 18 females. From the data we collected it was shown that most students believe the system to be successful. The system was moderately positive to the respondents, meaning there is still some improvements that can be done to the system so as to meet the needs of students.

Keywords: Administration, Personal learning environment, Moodle, Information System, Integrated System, software, complementary technology, assists.

Introduction

A management information system (MIS) is a computerized database of financial information organized and programmed in such a way that it produces regular reports on operations for every level of management in a company. It is usually also possible to obtain special reports from the system easily. The main purpose of the MIS is to give managers feedback about their own performance; top management can monitor the company as a whole. Information displayed by the MIS typically shows "actual" data over against "planned" results and results from a year before; thus it measures progress against goals. The MIS receives data from company units and functions. Some of the data are collected automatically from computer-linked check-out counters; others are keyed in at periodic intervals. Routine reports are preprogrammed and run at intervals or on demand while others are obtained using built-in query languages; display functions built into the system are used by managers to check on status at desk-side computers connected to the MIS by networks. Many sophisticated systems also monitor and display the performance of the company's stock.

The role of the MIS in an organization can be compared to the role of heart in the body. The information is the blood and MIS is the heart. In the body the heart plays the role of supplying pure blood to all the

elements of the body including the brain. The heart work faster and supplies more blood when needed. It regulates and controls the incoming impure blood, processes it and sends it to the destination in the quantity needed. It fulfils the needs of blood supply to human body in normal course and also in crisis. The MIS plays exactly the same role in the organization. The system ensures that an appropriate data is collected from the various sources, processed and sent further to all the needy destinations. The system is expected to fulfill the information needs of an individual, a group of individuals, the management functionaries: the managers and top management.

The University of Belize has adopted the evolution of information systems for the use of their customers; the students. The University leases the system each month so that it is implemented and available for its students. The purpose of the information system is enabling educators to create their own private website filled with dynamic course that extend learning, anytime, anywhere allow student to complete project forums and test. Moodle provides a central space on the web where students and staff can access a set of tools and resources anytime anywhere. Staff and students of the Department have found most valuable aspects are: An easy way to communicate with students and staff, a quick way to share documents, easy access to relevant and useful online resources and online assignment handing in.

The purpose of this research is to determine how effective this information system is for the University of Belize and its stakeholders (students, faculty, and management). Also, to be able to discover if it is beneficial for the University to keep investing in information system and to see which way is best for the organization. The research will be done on Moodle the information system used for the students of the University of Belize at the FMSS or FEA Campus in Belize City, Belize. This quantitative research was done to study the success and usage of Moodle at the University of Belize. This data collected from this study will help the students and allow them to see what it is that these students really want from these information systems. Within the research we will see if it is accurate enough for the students to use since they are the main ones using the IS.

Literature Review

Information Technology (IT) in organizations has changed significantly over time. Encompassing Information Systems (IS) as well as a whole spectrum of hardware and software technologies used by organizations to provide data, information and knowledge. This comprehensive view of IT is present in the idea of "digital convergence", an expression that has been used in the technology industry (Laurindo, 2009). Below shall highlight the most dominant models; DeLone and McLean of 1992 and 2003 respectively. The two models have been cited in more than 3500 articles to date, and they have been used to evaluate dozens of IS worldwide.

According to Journal of the Association for Information Systems (2012), in the quest to use information systems to support strategic goals, an important aspect of IS success is whether information systems are aligned with the strategic goals of the organization. When measuring the success of an information system, how the information system supports the user (e.g., for data entry, to obtain information, for pleasure) should also be considered (Alter, 2008). By considering the larger work system in which the information system is embedded, the organization is able to see whether the information system is the cause of positive or negative impacts to individuals or the organization, or if these net impacts are due to the environment or the work process being supported (Alter, 2008). Information systems success measures should consider if systems are used by the customers or to support the customer, if it is enjoyable and how easy to use, and also how useful. At the same time provide benefits to the firm (Wang, 2008).

Oliveira (2012), the potential that Information System offers may make e-learning closer to the classroom mode in relation to personal interaction and preserve the distance between teachers and students. In order to improve the process of mediated communication, systematic guidance and constant monitoring, focused on the formation of skills and attitudes that allow the student to have learning process autonomy in a continuous self-education. In this context, it provides progressively greater flexibility and accessibility. The

original DeLone and McLean (D&M) model (1992) highlights system quality, information quality, system use, user satisfaction, individual impact, and organizational impact. Oliveira (2012) also emphasizes the current era has seen the development of global systems and approaches which aim to transfer best practices and procedures. Furthermore, according to research, web-based information systems, (Harmelen, 2004) wrote that in order to understand the mechanism of introduction and to measure the success of web-based information systems into organizations the models and theories for the determination of success of generic information systems have been analyzed. Delone and Mclean (2003) suggested that the nature, quality, and appropriateness of LMS use are important outcomes and measuring time learners have spent on the system is inadequate. Therefore, students need to use almost all features of the system in order to realize the expected benefit.

Educational Institutions are required to provide reliable, timely, and effective support services to such users (Moskal et al. 2013). Moodle 2.0 is the latest version, and new features focus on increased usability including: easier navigation, improved user profiles, community hub publishing and downloading, a new interface for messaging and a feature that allows teachers to check student work for plagiarism (Walsh and Coleman 2010). The evaluation of an LMS is essential to ensure its effective implementation and also the positive impact on the delivery of e-learning (Almrashdeh et al., 2011). According to Venter et al., 2012, found that some of the factors that affect the acceptance and usage of e-learning technologies in most institution in developing countries include the technological infrastructure, high cost of technology, instructional efforts, graduate competencies and technology satisfaction.

The evaluation of an LMS is essential to ensure its effective implementation and positive impact on the delivery of e-learning (Almrashdeh et al., 2011). According to Silva (2013), the best LMS choice for an institution depends on its characteristics and objectives. Furthermore, information systems use networks, which help an organization to reduce the transaction costs, by making it worthwhile for organization to contract external suppliers instead of using internal resources. Based on Keen's view of information systems, the evaluation of the "effectiveness" or "success" of information systems is an important aspect of the information systems field in both research and practice. However, the manner in which we evaluate the success of an information system has changed over time as the context, purpose, and impact of IT has evolved. It is, therefore, essential to understand what these changes have been and what they mean for the future. And it is worthwhile mentioning that in this era, many organizations still struggle to evaluate the success of their information systems because there are so many factors can confound their assessment (Caldeira & Ward, 2003).

Methodology

Many students at the University of Belize use Moodle to conduct most their class work issued by their class lecturer. This makes the IS very useful and needed for many classes. With the six success dimensions, it gave many students the opportunity to test and see how well Moodle has helped or will be able to help them. The study proposes a model to see the success of Moodle, it suggest the information quality, system quality, complementary technology quality, service quality, user satisfaction, use and the perceived net benefits.

Information quality will mainly focus on the information or the system output and how helpful it is the students.

System quality will ask the students how easy they think the IS to use or if it easy to use on their first try.

Complementary technology quality will ask how fast the internet works when using the IS.

Service quality covers how well the IS responds to its users, how reliable they believe the system to be.

User satisfaction is how students acknowledge the IS. Also, if they are satisfied with the work they are able to produce.

Use is the generally speaking of the amount of time users use the system and how it responds to the usage.

Perceived Net Benefits is basically asking if the IS good to use, will it be time consuming or not and also if it will be cost efficient.

Thus, the study focuses on the University of Belize students by using the seven IS success dimensions which are: service quality, complementary quality, system quality, system use, perceived net benefits, user satisfaction and information quality.

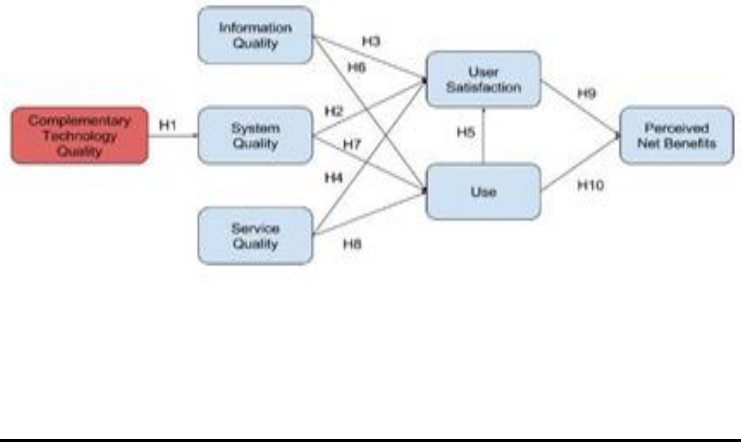

Figure 1. Framework Combining the Model

Figure 1 Framework combing the model
This is a hypothesized relationship between the Moodle system and how successful it is using the success dimension, it will only be based on theoretical work reported by DeLone and McLean (2003). According to the study of the hypothesis it showed these 10 were tested:

Hypothesis

H1.Complementary technology quality will positively impact system quality.
H2. System quality will positively impact user satisfaction.
H3. Information quality will positively impact user satisfaction.
H4. Service quality will positively impact user satisfaction.
H5. Use will positively impact user satisfaction.
H6. Information quality will positively impact use.
H7. System quality will positively impact use.
H8. Service quality will positively impact use.
H9.User satisfaction will positively impact perceived net benefit.
H10.Use will positively impact perceived net benefit.

Description of Participants

The participants are students enrolled at the University of Belize, they are approximately a little over four thousand (4,000) students enrolled. Research data will be collected from students that attend both the Faculty of Management and Social Science (FMSS) and Faculty of Education (FEA) campus, where both campuses are located in Belize City.

Population & Sample Size

The population used for this research is the students of the University of Belize since they are the ones who comes in contact with this IS often. Also, the students are the ones who are familiar the most with Moodle. The research is using a qualitative survey, a survey whereby our respondents will give feedback by number and we will be able to turn them into statistical data. A total of thirty-seven (37) survey papers (questionnaires) were randomly given to students from both FMSS and FEA campus.

Instrument

The DeLone and McLean dimension are used to gather information on the success of the IS, Moodle.

A questionnaire will be used to gain information from the students of the University of Belize. See Appendix A. Each section of the questionnaire has questions as to how well Moodle helps the respondents, in order to see if this is helpful. The questionnaire are separated in seven (7) parts. Each part will be helpful in gathering necessary data from the students needed for the research. This will also help researchers to prove their hypotheses.

Data Collection

At First, students of the University of Belize from either the FMSS or FEA campus will be asked if they would like to participate in a survey to gather information as to how well the students use Moodle. If permission is granted the student(s) will be given a questionnaire.

Table 1. Characteristics of Respondents

Characteristics	Number	Percentage
Gender		
Male	19	51.4
Female	18	48.6
Age		
Less than 25	32	86.5
From 25 to 35	3	8.1
Over 35 and over	2	5.4
Education		
1st Year	5	13.5
2nd Year	18	48.6
3rd Year	3	8.2
4th Year	5	13.5
5th Year	6	16.2
Degree		
Associate's	33	89.2
Bachelor's	4	10.8
Master's	0	0

Data Analysis and Results

Data Analysis

The main purpose of our research is to show how effective Moodle is for the students at the University of Belize. The questionnaire given to the students that participated had a total of thirty-one (31) questions. The ratings were from one (1) which is strongly disagree to seven (7) being strongly agree. The research was not fully able to be carried out due to lack of data collected. However, the information collected was enough for us to show a small amount on histograms for our readers to understand the data that was collected.

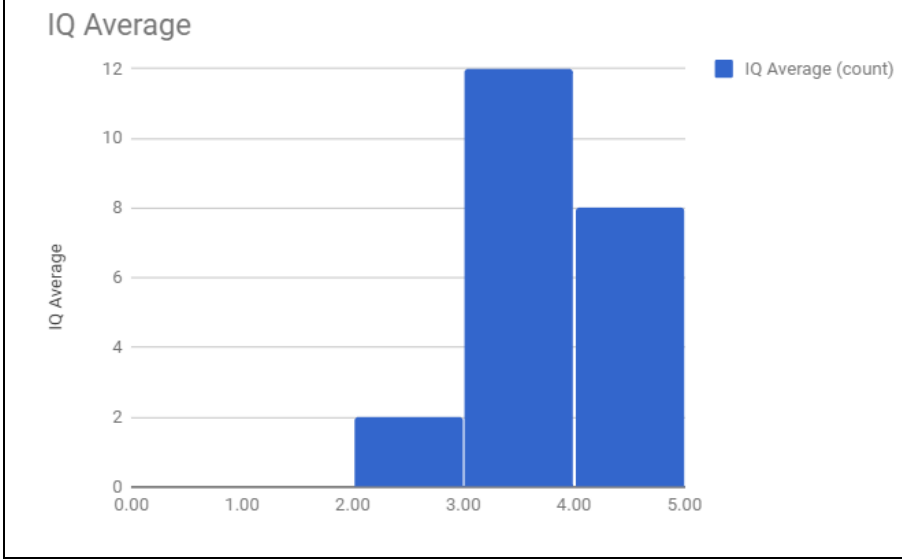

Chart 1. Information Quality

Chart 1. Shows the different variances of the responses from the participants. This shows that most participants are satisfied with the Information quality the Moodle produces. This chart always shows that majority of participants score a 3 followed by 4 and finally 2,

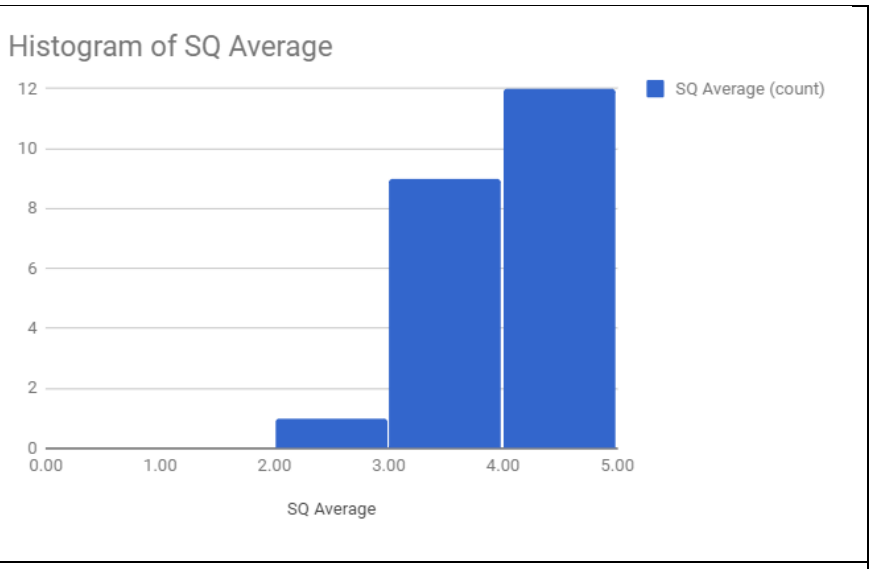

Chart 2. System Quality

Chart 2 Shows how the system quality has three variances one very low, 2nd can be said to be neutral and the 3rd one is very high. This shows that a lot of the participants are satisfied with the system quality that Moodle offers. Hence, this means that many students found Moodle IS to be easy to use.

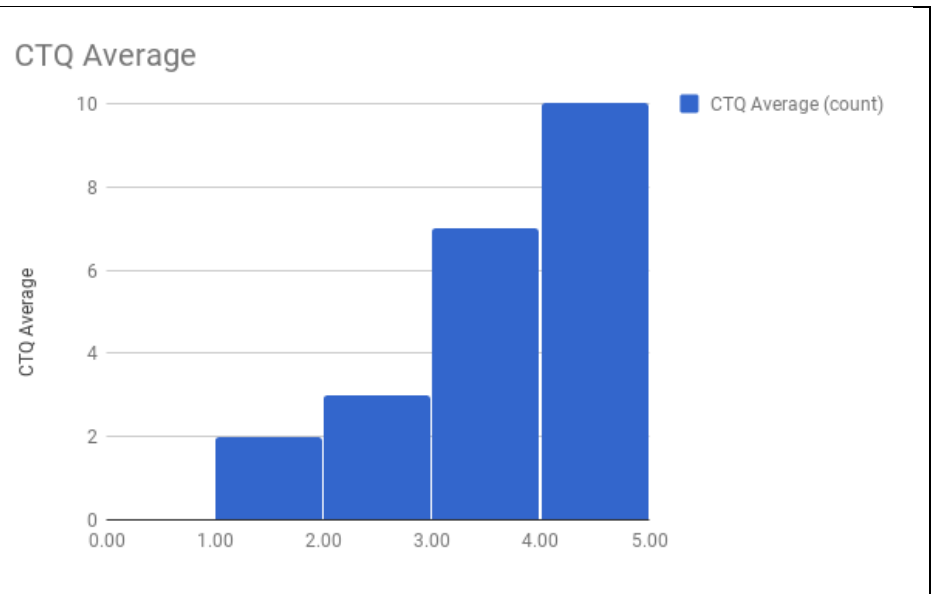

Chart 3. Complementary Technology Quality

Chart 3 Showed that participant's responses were all across the board. The majority of the participants said that the internet connection used to access the information was reliable. Whereby, an average amount of participants said that it was not good.

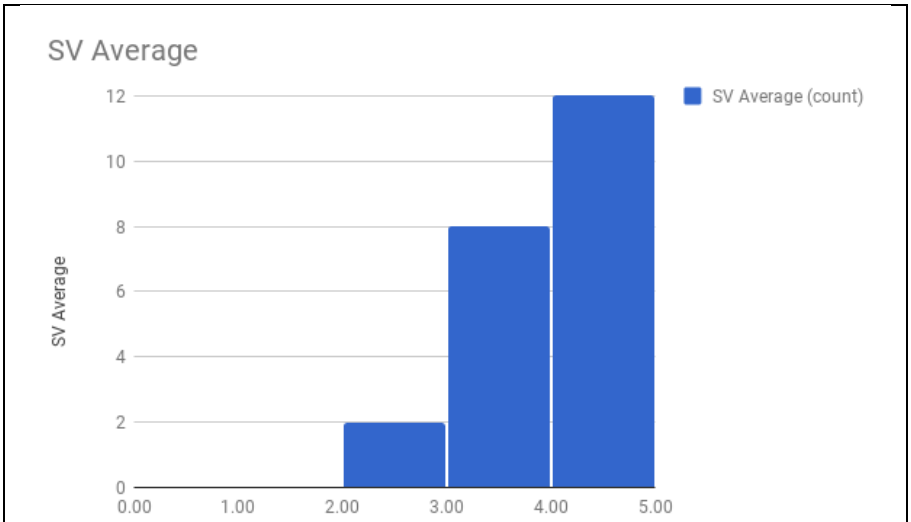

Chart 4. Service Quality

Chart 4 shows that it has a few variances across the board; however, majority of the participants said that the service of the IS, Moodle is great. The quality of the service is well reliable whereby only a few said that it is not all reliable.

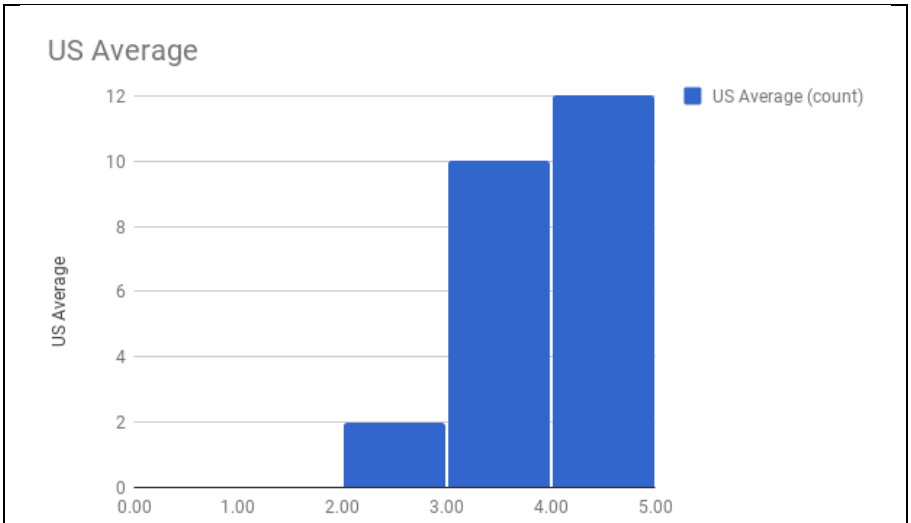

Chart 5. User Satisfaction

Displays that most participants agreed that the user satisfaction (if Moodle has met your expectations) agreed that it has. However, just a few participants believe that it was neutral and just below average said Moodle did not meet their expectations.

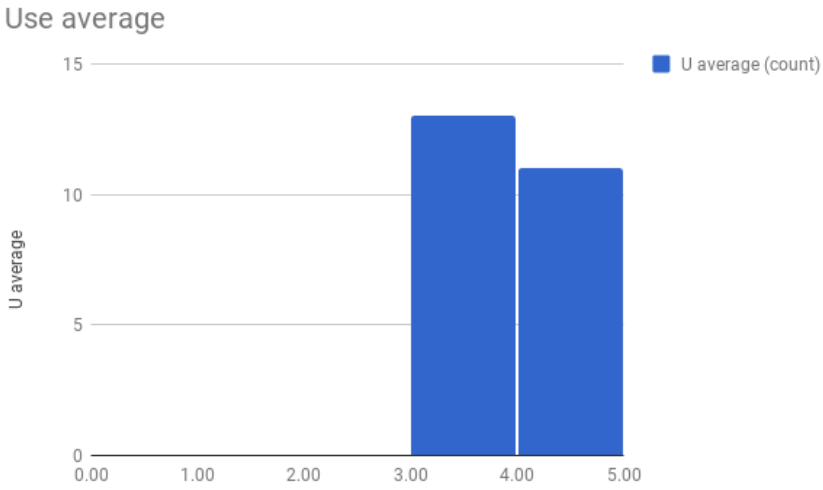

Chart 6. Use

This histogram shows many of the participants don't use Moodle frequently, they may have only used it when necessary e.g. for a computer class. The participants that strongly agreed were less than the amount who said they use it more.

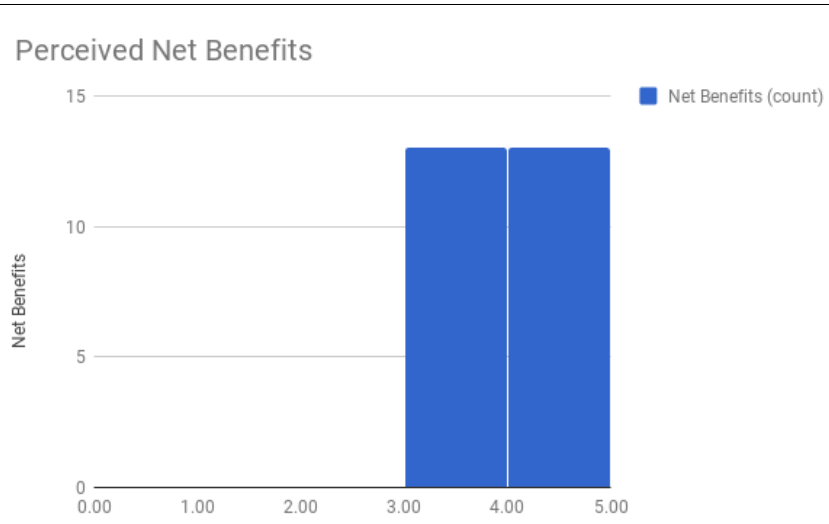

Chart 7. Perceived Net Benefits

This histogram shows that most participants found the perceived net benefits to be tolerable. Many of the students found perceived net benefits help students, save costs, and also in achieving goals. It was an average amount whereby the participants believe that the IS, Moodle, enhances students' performance. Hardly any of the students were dissatisfied with the perceived net benefits of Moodle.

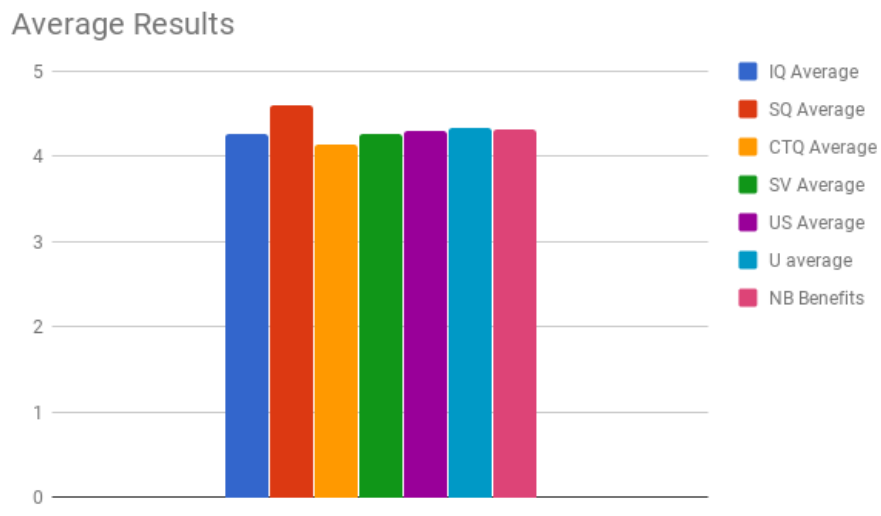

Chart 8. Average Respondents

This chart represents all the participants of the survey responses and it is averaged, it also represents the results of the data collected. All the responses were neutral, none were below average. This is said that most students believe the perceived net benefits of Moodle is helpful in many cases. The information quality was neutral, all respondents were satisfied with the service the IS offers. The system quality was rated by most participants as strongly agreed. The complementary technology quality is said to be average it would mean that many students believe that the internet connection were reliable at times. The service quality can be said to be neutral by the respondents, this means that the most of the time students found Moodle to be in-effective when solving a problem. User satisfaction and the perceived net benefits is said to be neutral by the respondents.

Conclusions

Discussion

This raw material adapts the IS expansion exemplar (Delone and Mclean, 2003, 2004), and the re-specified IS success models exaggerated by at variance scholars (Chen, 2010; Cheng, 2012; Floropoulos et al. 2010; Landrum and Prybutok, 2004; Seddon, 1997) to distinguish the meaningful factors for acceptance of web-based learning powers the systems at the University of Belize. The diamond in the rough conducted show the measurement epitome (IS) and to protect the validity of the diamond in the rough findings. The design examined reliability and validity of the read items by for convergent validity and discriminant validity criteria.

The results show that information quality had consequential positive effects on perceived usefulness, but it had nugatory effects on utilizer contentment. The results show that utilizer contentment had higher impacts on continual utilization intention than the other determinants within the model. Among the four quality-cognate constructs, system quality had the most vigorous total effect on continual utilization intention.

Information quality was a consequential determinant of perceived usefulness, but had no relationship with the utilizer contentment. On one hand, this finding shows that if students perceive the e-learning system has precise, revised, authentic, comprehensible and well formatted course contents, they will find the courses more utilizable for their cognition processes. These results support antecedent research (Chen, 2010; Cheng, 2012).

This research exerted IS success model (Delone and Mclean, 2003, 2004), and the re-designated IS success models developed by sundry philomaths (Chen, 2010; Cheng, 2012; Floropoulos et al. 2010; Landrum and Prybutok, 2004; Seddon, 1997) to examine the paramount factors for approval of web-predicated learning management systems at University of Belize.

The study suggests that system designers should develop e-learning systems with better functionalities, interactivity, utilizer interface and assured replication that reflect utilizer requisites to enhance student's acceptance and utilization of the system. Instructors should develop interactive online courses to incentivize students to make more preponderant utilization of e-learning systems.

Limitations

There were many difficulties when doing this research the information was limited. The sample size that was used for this research were students only from the Belize City campus. It was either from the FMSS or the FEA campus. The time was not enough to properly go around and ask students to participate in the research. Some students were not fund of doing a research, many denied and the few that did participate were hasty. The study also surveyed first year Associate's Degree students and Bachelor's Degree Students because they were the batch of students to use the e-learning system at University Of Belize.

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Appendix

Questionnaire I – Survey of Moodle Impact on University of Belize students

Purpose

This questionnaire asks for information about Moodle to analyze the impact of Moodle on the students of the University of Belize.

Instructions

This is a survey, not a test; there are no right or wrong answers. Please print in the spaces provided and tick the boxes to mark your answers. Your Survey ID number will be provided.

1. Characteristics	Answers:
Please enter your age:	
Please enter amount of year you have been attending UB:	
Please indicate your gender:	Male ☐ Female ☐
Please indicate the degree you are pursuing :	☐ Associates ☐ Bachelors ☐Masters
What faculty do you belong to	

Indicate your agreement with each statement by rating it from (1) strongly disagree to (7) strongly agree.

2. Information quality	Disagree ----------
IQ1: The Moodle system provides information that is exactly what you need.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ2: The Moodle system provides information you need at the right time.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ3: The Moodle system provides information that is relevant to your job.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ4: The Moodle system provides sufficient information	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ5: The Moodle system provides information that is easy to understand.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ6: The Moodle system provides up-to-date Information	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ7: At this time, I am meeting the work goals that I have set for your classes	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
3. System quality	**Disagree ----------**
SQ1:The Moodle system is easy to use	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SQ2:The Moodle system is user friendly	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SQ3:The Moodle system provides high speed information access	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SQ4:The Moodle system provides interactive features between user and system	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

Please answer the following questions using this scale:

1 Never **2** Twice a year **3** Less than once a month **4** once a month **5** once a week **6** once a day **7** Many times a day

4. Complementary technology quality	**Never ----------Often**
The software on the device (desktop computer, laptop, mobile device) used to access the Moodle is adequate.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
The device hardware on the device (desktop computer, laptop, mobile device) used to access the information system is adequate	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
The speed of the internet connection used the access the information system is adequate	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

5. Service Quality	**Disagree ----------**
SV1: The support staff keep the Moodle system software up to	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SV2: When users have a problem the Moodle system is seen as effective as solving the problem	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SV3: The Moodle system support staff tell users exactly when services will be performed	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
6. User Satisfaction	**Disagree ----------Agree**
US1: Most of the users have a positive attitude of Moodle. The Moodle system function.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
US2: You think that the utility of the Moodle system is high.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
US3: The Moodle system has met your expectations.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
US4: You are satisfied with the Moodle system.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
7. Use	**Never ----------Often**
U1: Your frequency of use of the Moodle system is high	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
U2: You depend upon the Moodle system	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
U3: You were able to complete a task using Moodle even when there was no one around to tell you what to do	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
U4: You have the knowledge necessary to use the Moodle system	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
8. Perceived Net Benefits	**Never ----------**
NB1: The Moodle system helps you improve your academic	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB2: The Moodle system helps students save costs	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB3: The Moodle system helps you achieve your academic goals	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB4: Using the Moodle system improves assessment and teaching	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB5: Using the Moodle system at school increases your academic productivity	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB6: Overall, using Moodle enhances student performance	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐