

**STUDY OF THE EFFICIENCY AND EFFECTIVENESS OF THE
MOODLE SYSTEM –
SACRED HEART COLLEGE – HIGH SCHOOL DIVISION**

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ABSTRACT

Moodle is a learning platform used for distance education, flipped classroom and other e-learning projects in schools, universities, workplace and other sector. With customizable management features, it is used to create private websites with online courses for educators and trainers to achieve learning goals. The purpose of this study was to see if the implementation of Moodle was a success and if the MIS was benefiting the students from the SHC. When conducting our study, we had 30 participants, 13 males and 17 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, which means that there is still some improvements that can be done to the system so as to meet the needs and requirements of students from the sacred heart college.

INTRODUCTION

Management information system (MIS) broadly refers to a computerized database systems that provides managers with the tools to organize, evaluate, and efficiently manage departments within an organization. (Beal, 2017) Furthermore, 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.

In addition, 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 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. (Augustine , 2016)

Moreover, Sacred Heart College is utilizing information systems for the use of their customers; the students. The Moodle System is designed with dynamic course that extend learning, anytime, anywhere allowing 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. (UM Mass Amherst, 2018)

In conclusion, the purpose of this research is to determine how effective this information system is for the Sacred Heart College (SHC) and its stakeholders (students, faculty, and management). Also, to be able to discover if it is beneficial for SHC to keep investing in such information system and to see which way is best for the organization. The research is also intended to study the effectiveness and success of Moodle and SHC with the intention to improve or maintain the system. The data collected from this study will gain a deeper understanding into the expectations of students in regards to the Moodle system. Since students are the main priority for this institution it is very critical to maintain customer satisfaction at all time.

LITERATURE REVIEW

In order to properly understand the Information System of Moodle which is being utilized at Sacred Heart College, Highschool and Junior College, a research was carried out to have a better understanding of the capabilities and purpose of a Moodle system. There are three literary analysis' which were reviewed, being Sarantos Psycharis, Georgios Chalatzoglidis and Michail Kalogiannakis' "Moodle as a Learning Environment in Promoting Conceptual Understanding for Secondary School Students", Hsiao-hui Hu and Yu-ying Chang's "Extended TAM: Impacts of Convenience on Acceptance and Use of Moodle" and Matthew Perkins and Jay Pfaffman's "Using a Course Management System to Improve Classroom Communication".

In 1992, Delone and McLean recommended that the dependent variable for Information Systems Research is deemed as the Information System Success. Delone and McLean developed the Delone and Mclean (D&M) "IS Success Model". Now, this model specifies six distinct and relevant variables in association with the IS success, these six variables are: 1. System Quality that Focuses on Ease of Use, System Flexibility, System Reliability 2. Information Quality, which Focuses on Relevance, Understandability, Accuracy, Conciseness 3. Use which Measures Amount of Use, Frequency of Use, Nature of Use, Appropriateness of Use, Extent of Use, Purpose of Use 4. User Satisfaction that Measures User Satisfaction, Semantic Differential Scales to Assess Attitudes and Satisfaction with the System 5. Individual Impact 6. Organizational Impact.

Therefore, it can be determined that a distinctive conclusion of this research was that despite the multidimensional and reliant nature of IS success, an effort should be made in trying to reduce the number of different measures being utilized to measure IS success so that research results can be validated. In 2003, Delone and McLean had a ten year update from the original IS, they prompted to propose an additional of another construct- Net Benefits that assesses other important factors that also influences the success of the IS. The other factors are consistent with that of work group impacts, inter-organizational and industry impacts, consumer impacts, and social impacts. To add, it can be stated that the mark of which these constructs are investigated and studied are truly dependent on the nature of the IS system being studied. (Delone, McLean, 2003)

In 2013, Delone, McClean joined up with Petter and did an even bigger update on the original D&M model. This was done in order to regulate the factors directly under management control those impacts IS success. The then purpose of this research was to find out if" the D&M

IS Success Model is a reasonably robust description of the dependent variable of IS research, then what are the independent variables that “cause” IS success?”(Delone, McLean, Petter, 2013 p. 45).

All three articles seem to go hand in hand in regards to keeping up to date education wise, as it pertains to e- learning. According to Matthew Perkins and Jay Pfaffman (Perkins & Pfaffman, 2006), it is their claim that “Moodle has improved and enhanced student performance by promoting and organizing communication among parents, students, teachers, administrators, and the community.” Additionally all articles coincide with, Moodle having allowed students performance to increase efficiency in term of being in sync with work and becoming more tech-savvy individuals in the science department.

Similarly, Matthew Perkins and Jay Pfaffman (Perkins & Pfaffman, 2006) recent study extended on the DeLone and Mclean model based on the success of information systems. This study focuses on the factors of implementing online learning systems and new virtual learning systems within a tertiary educational level. Moreover, within this study, the model implemented DeLone and Mclean in the context of virtual learning and reported how the information quality, service quality and system quality are being utilized in the information systems being offered. Additionally, these learning systems were assessed based on their influence of user satisfaction, intention to use and the actual use of the information system , which according to Perkins and Pfafman (Perkins & Pfaffman, 2006) have acknowledged that incorporating the Moodle system is the best alternative for schools providing that internet services are accessible to sustain an efficient learning system.

Subsequently, not only does the implementation of Moodle help the individuals who are using it, but according to the facilitators it is at a lower cost. It has been acknowledged that incorporating the Moodle system is the best alternative for schools providing that internet services are accessible to sustain an efficient learning system. Hsiao-hui Hu and Yu- ying Chang (Hu & Chang, 2012) states “convenience had a direct effect on perceived usefulness.” Sarantos Psycharis, Georgios Chalatzoglidis and Michail Kalogiannakis (Psycharis, Chalatzoglidis& Kalogiannakis goes on to state that having a blended type of learning environment is not only ideal but essential to facilitate learning in an evolved society with evolving and learning students.

METHODOLOGY

At the Educational Institution of Sacred Heart College (SHC) – Highschool Division it can be determined that a vast majority of the students use the Moodle System to conduct all their class- based work as well as several of the assignments as well, which are dispensed by the lecturer. Needless to say, the nature of these classes would be that of the Electronic Document Preparation and Management (EDPM) and the Information Technology (IT) Fields specifically; this is being that the focus solely at the highschool level. Obviously, the Information System (IS) is very essential and necessary for the further advancement of the students technologically whilst also preparing them for the other IS systems being used at the sixth form and university level. A study was conducted to see how efficient and effective Moodle has actually been to the students and to verify if it has indeed boosted up the productivity of works being done for both the students and staff members i.e the lecturers. This was done via insights of the six success dimensions. So, being that the efficiency and effectiveness of the IS was being evaluated, there are certain other aspects which were also looked at specifically being the complementary technological quality, service quality and the user benefits and satisfaction.

It can be further be determined that the Information quality's main focus is based on Information System output and how it is being implemented and its usefulness and relevance to the students. The complementary technological quality is simply how fast and consistent the internet is whilst using the IS. The system quality evaluates how easy it is to use and operate the IS and how quickly the student was to grasp the IS. Service quality deals with how efficiently the IS responds to its users, how reliable they believe the system to be. In terms of the user satisfaction it is consistent with how well the students recognize the IS and satisfaction with the IS.

So, it can be stated that the study focuses on the SHC's students simply by using the IS success dimensions which are: service quality, complementary quality, system quality, system use, perceived net benefits, user satisfaction and information quality.

DESCRIPTION OF PARTICIPANTS

The participants are students registered at Sacred Heart College – Highschool Division,

which approximately has a population of nine hundred fifty (950) students enrolled. The research data was collected from students from first to fourth form.

POPULATION & SAMPLE SIZE

The population used for this research are the students of Sacred Heart College, the Highschool Division. This is for, the high school was our main focus being that they are the ones who actually use the IS often; particularly whilst taking a mandated course like EDPM and other courses which is inclusive of IT. The research was done via a qualitative survey, a survey whereby the respondents gave feedback by number and in turn was analyzed and compiled into statistical data. In total, thirty (30) questionnaires were conducted at random and completed by the SHC students.

INSTRUMENT

Now, the DeLone and McLean dimension is used in the ability to gather necessary

information based on the efficiency, effectiveness and the success of the IS, being “Moodle”. This was done through a questionnaire to acquire the necessary information from the students of Sacred Heart College. *See Appendix.*

Also, each section of the questionnaire contained questions regarding how well the IS System “Moodle” assists the respondents, this is in an attempt to determine how useful the IS actually is. The questionnaire was separated in eight (8) sections. In each section questions are asked to gather useful information for proper analysis and for the further ability of the study to determine its effectiveness, efficiency and success as an IS.

DATA COLLECTION

To begin with, the students of the Sacred Heart College – High school Division were asked if they wanted to participate in a survey/ questionnaire, in an attempt to gather information based

on the efficiency, effectiveness and success of the Moodle System. Thereafter, if permission was granted the student(s) were given the questionnaire to fill out. After which, it was collected from the students.

The relevant data necessary for this survey was collected through random sampling from a sample of 30 students attending Sacred Heart College. Below are the characteristics of the respondents.

Table 1. Characteristics of Respondents		
Characteristics	Number	Percentage
Gender		
Male	13	43%
Female	17	57%
Age		
Less than 12	4	13%
From 13 to 15	14	47%
From 16 to 20	12	40%
Over 20	-	-
Education Level		
1 st Form	4	13%
2 nd Form	9	31%
3 rd Form	4	13%
4 th Form	13	43%
Field of Study		
Business	19	63%
Science	6	20%
General	5	17%
Not Applicable	-`	-

DATA ANALYSIS AND RESULTS

The main objective of this research was to evaluate the effectiveness and success of Moodle for the students of Sacred Heart College. Through the use of questionnaires, a total of thirty (30)

questionnaires were given for students to participate in the survey. Students were asked to rate the system on effectiveness, one (1) which was “agree” to seven (7) which was “disagree”. The uses of pie charts are used to convey the average results of the system in place.

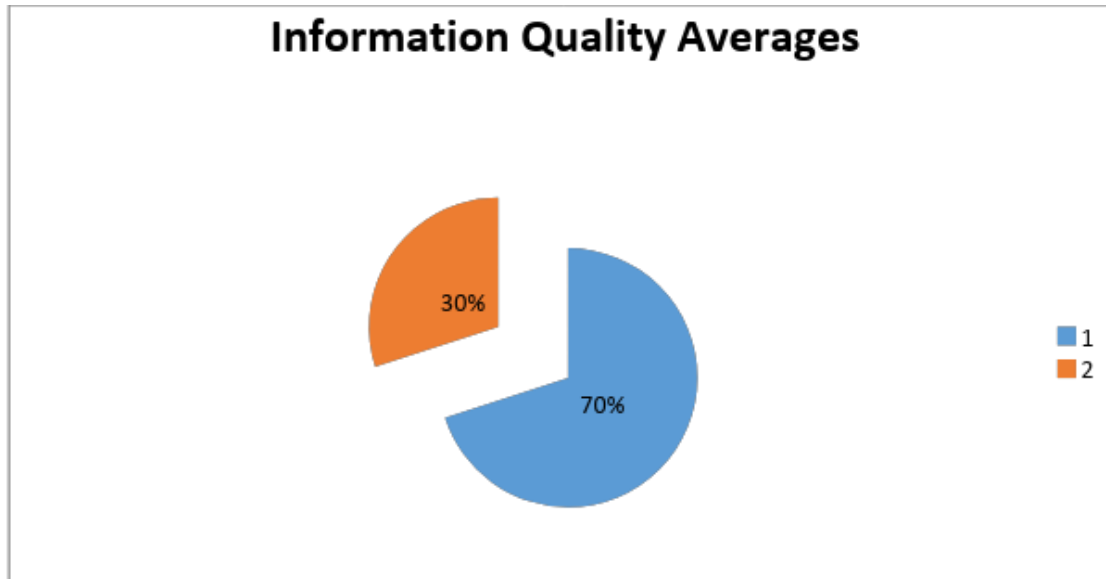


Figure 1 Information Quality

The pie chart above depicts the responses pertaining to the information quality when utilizing Moodle. Based on the results, findings have revealed that overall students agreed to the level of information quality and rated 1, meaning that the information quality of moodle is up to standard, followed by ratings of 2 and 3, respectively.

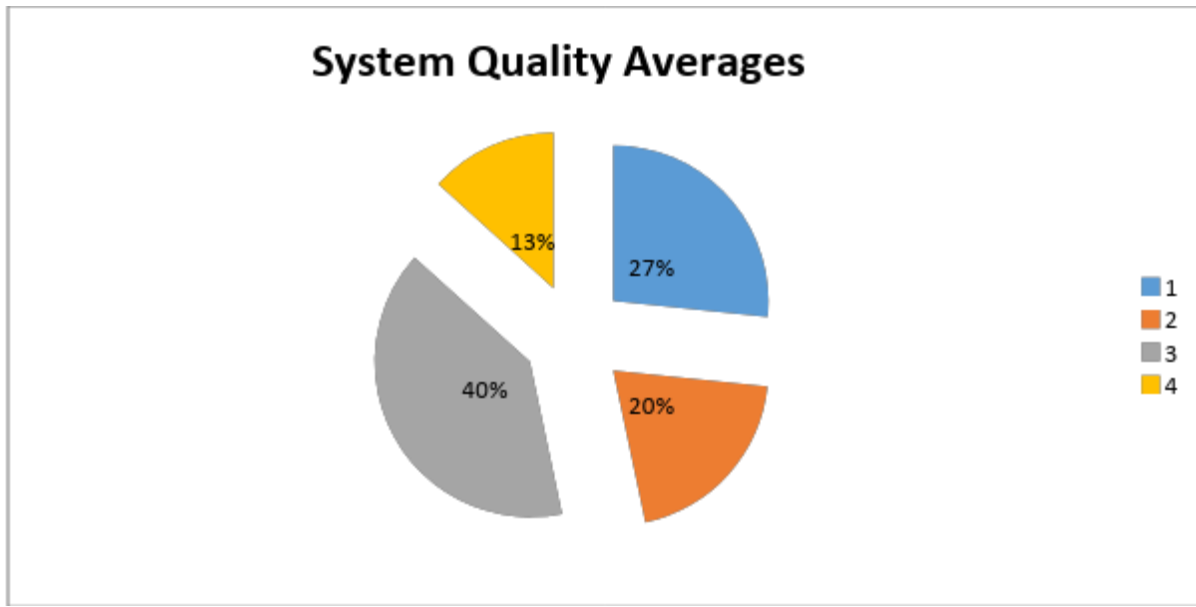


Figure 2 System Quality

The chart above depicts the relevant information collected based on the system quality of Moodle. According to the results, the majority of the results were between the ranges of 1-4; rating 3 being the highest, followed by rating 1 and 2, and rating 3 being the lowest. This reveals that for the most part the students using moodle are moderately satisfied with the system.

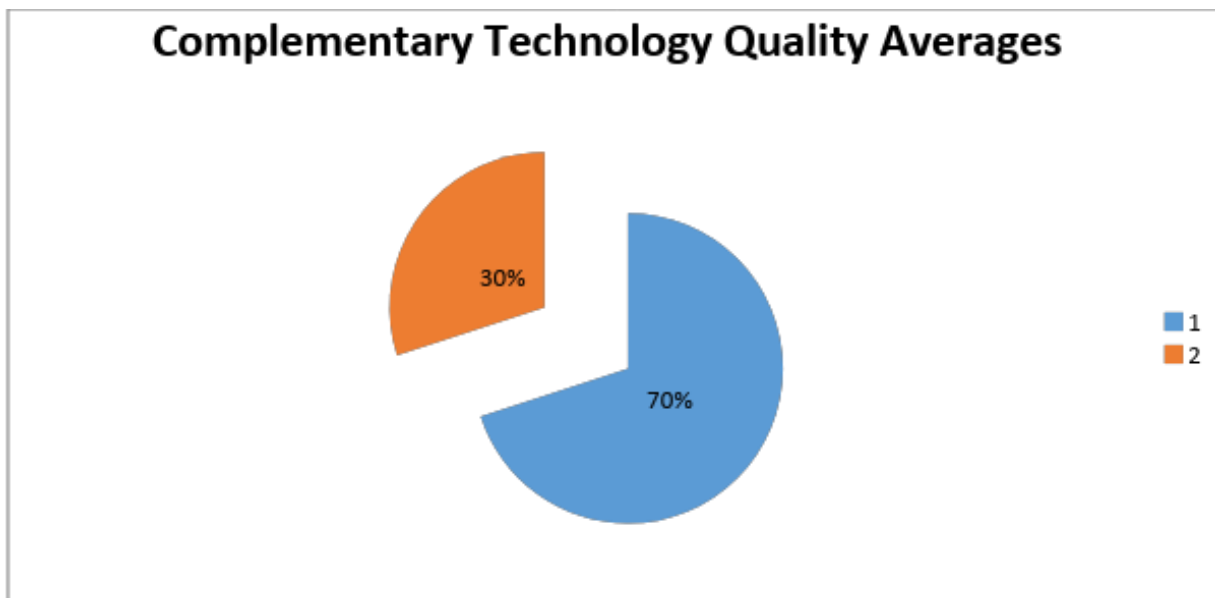


Figure 3 Complementary Technology Quality

Chart 3 above reveals the findings pertaining to the complementary technology quality averages of Moodle. According to the results students rated that overall the majority of the complementary technology utilized are consistent and adequate enough.

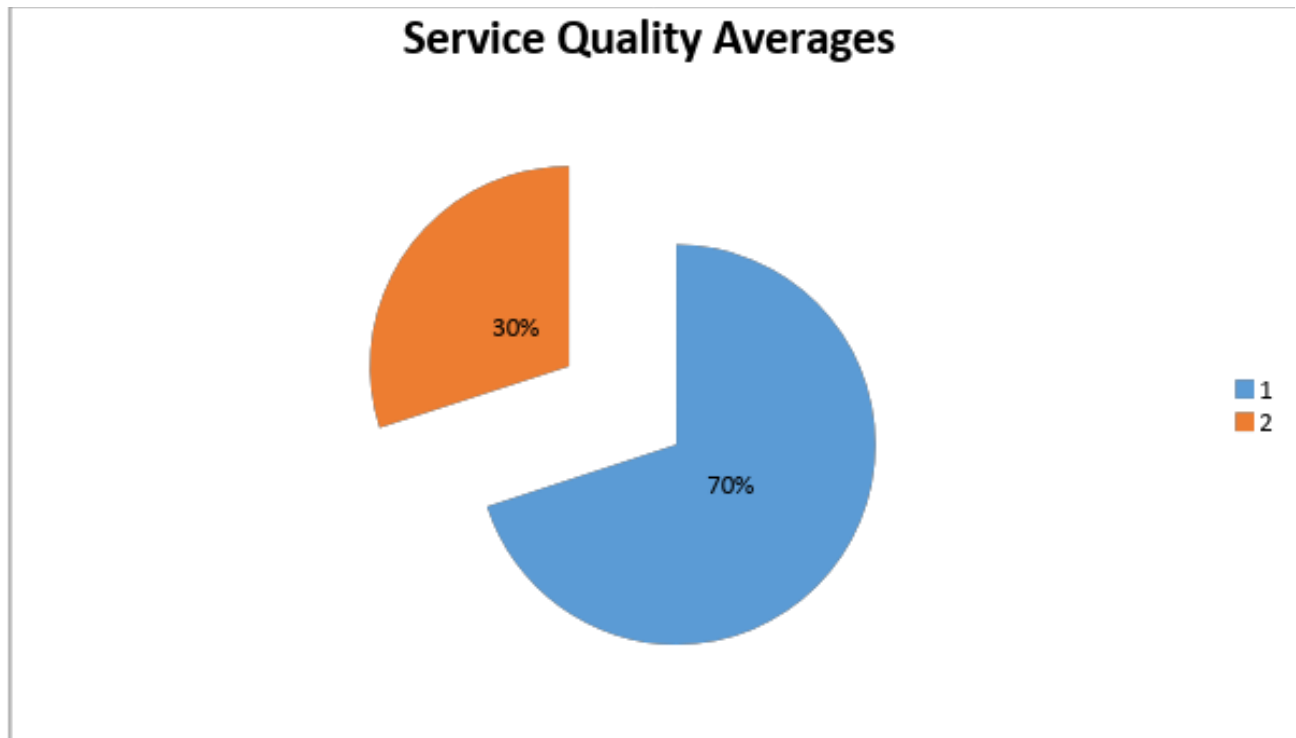


Figure 4 Service Quality Averages

Chart 4 gives a visual representation of the service quality averages of Moodle. In proportion to the responses, majority showed that the service quality was around average for the most part.



Figure 5 User Satisfaction Averages

The pie chart demonstrates the level of user satisfaction that user endure when using the Moodle System. In accordance with the responses, the majority of the participants believed that the moodle was above average in terms of user satisfaction.

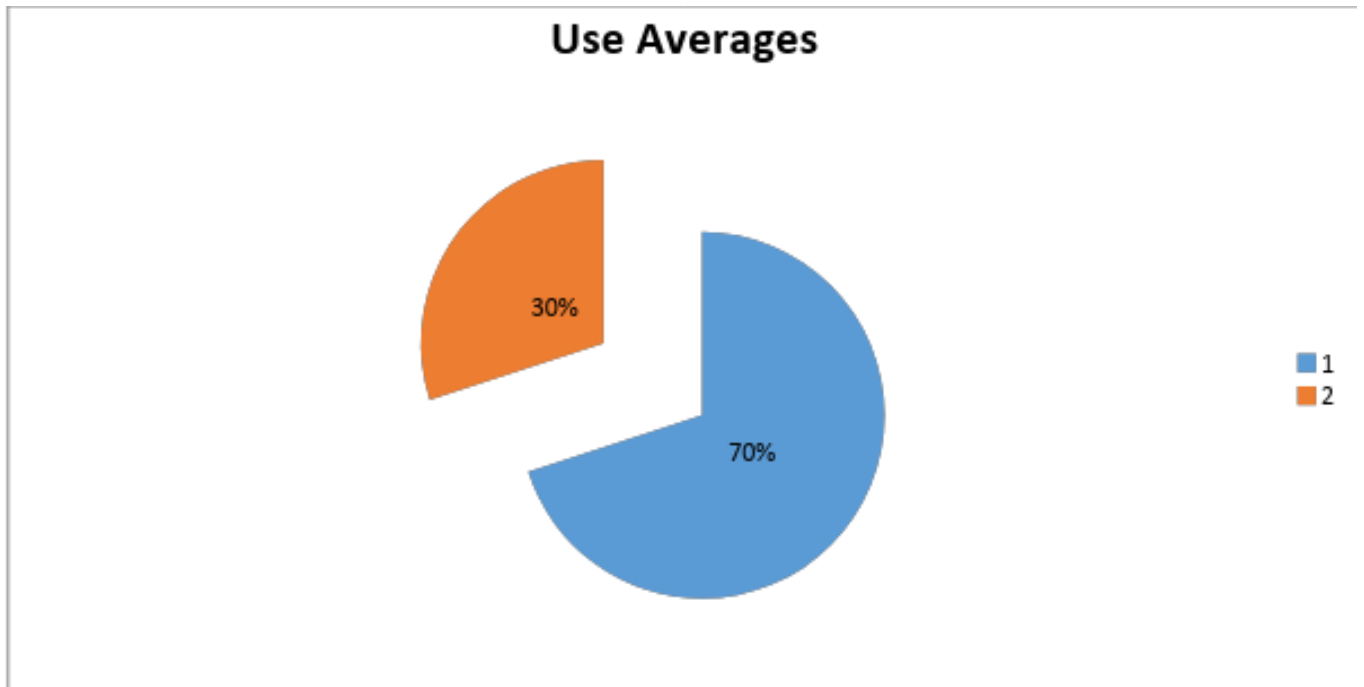


Figure 6 Use Averages

The chart above represents the responses based on the amount of use students use Moodle.

Research reveals that the frequency of students using moodle was above average, which further reveals that students use moodle constantly and independently when deemed necessary.

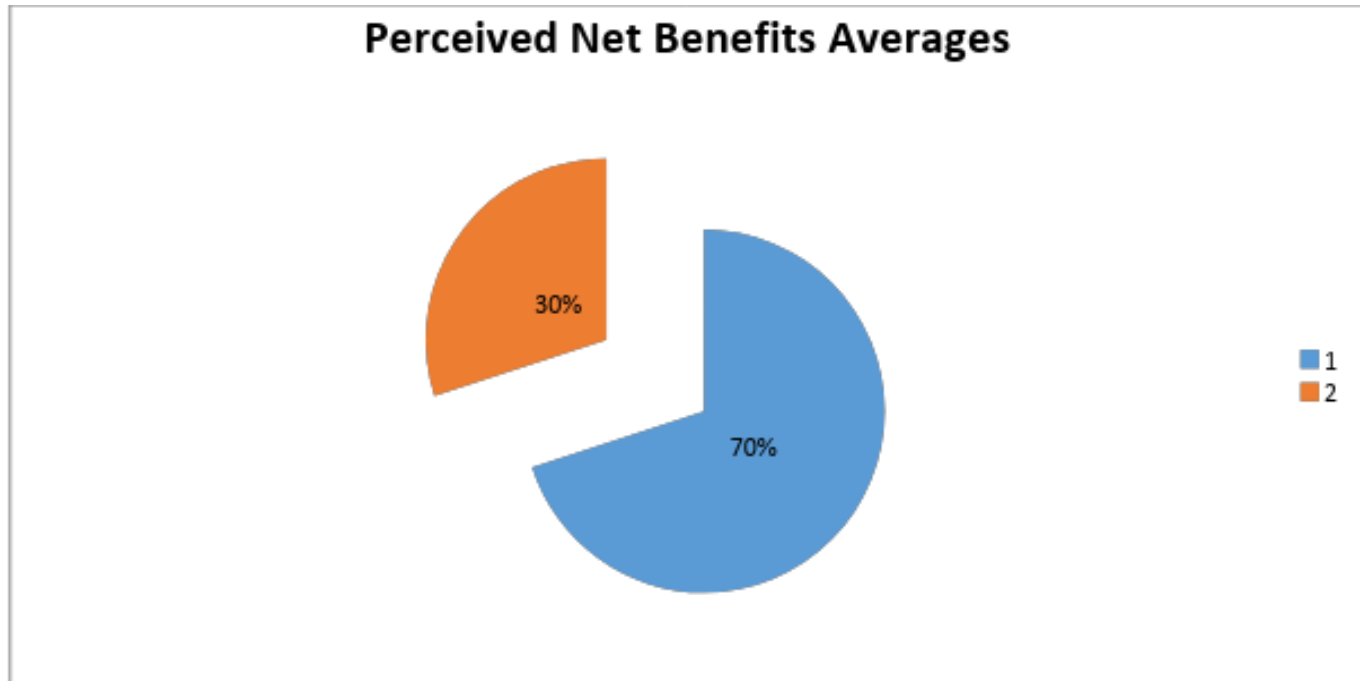


Figure 7 Perceived Net Benefits

In chart 7, it illustrates the perceived net benefits that students consider when using Moodle.

Consistent with the findings, students believed that the perceived net benefits of using moodle was above standards and assisted them in terms of their academic performance.

Overall, all the respondents evaluated the Moodle system at Sacred Heart which resulted in majority of the ratings above 4. From this data, it can be concluded that the level of satisfaction the students are enduring is well above the average level, which therefore demonstrates that the service quality is well aligned with the user satisfaction level.

CONCLUSION

Discussion

In conclusion, from the data gathered it was observed that the information quality had significant positive effects on perceived usefulness, but it had trivial effects on participant's satisfaction. The results show that student's satisfaction 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.

Findings revealed that the information quality was a consequential determinant of perceived usefulness, but had no relationship with the participant's satisfaction. Moreover, the 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 learning. 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 the Sacred Heart College.

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 increasingly prevalent usage of e-learning.

LIMITATIONS

Time Constraints- Teachers may not be able to take time out of their busy work schedule to meet with the researcher, in order to have a productive conversation needed to let students answer the necessary questions required to carry out the research. If the researcher does not acquire the time to hold an interview with the students, then the researcher will be unable to gain the information needed.

Access- If the researcher is denied access to students, there will be no data to input. If the principal does not grant the researcher access to carry out the information, then the researcher will have to go back and rethink about another topic, or another institution to interview.

REFERENCES

- Augustine , G. G. (2016, July 19). *What is Management information (MIS) How it can simply accurate reporting?* Retrieved from bayt:
<https://specialties.bayt.com/en/specialties/q/302949/what-is-management-information-mis-how-it-can-simply-accurate-reporting/>
- Beal, V. (2017, 10 May). *Webopedia*. Retrieved from Management Information System:
<https://www.webopedia.com/TERM/M/MIS.html>
- Hsu, H., & Chang, Y. (2013). Impacts of Convenience on Acceptance and Use of Moodle. Retrieved from
<https://pdfs.semanticscholar.org/a70b/0283b3297fc6e1ae6ea2d5bc4cb82ee840b8.pdf>
- Perkins, M., & Pfaffman, J. (2006, October). *Using A Course Management System to Improve Classroom Communication*. Retrieved from Perkins:
http://20100829131520_6025161.webstarts.com/uploads/moodle_in_20_the_classroom_NSTA.pdf
- Psycharis, S., Chalatzoglidis, G., Kalogiannakis, M. (2013). Moodle as a Learning Environment in Promoting Conceptual Understanding for Secondary School Students. *Eurasia Journal of Mathematics, Science and Technology Education*, 9(1), 11-21.
<https://doi.org/10.12973/eurasia.2013.912a>
-
- UM Mass Amherst. (2018, October 28). *UM Mass Amherst*. Retrieved from Roles in Moodle: <https://www.umass.edu/it/support/moodle/roles-moodle>

APPENDIX

Questionnaire 1 – “Success of Moodle”

Purpose:

The research is required for the CMPS3012 MIS course at the University of Belize. This poll requests data about yourself and how regularly you utilize the Moodle System at SHC. The information accumulated will be broken down to decide the effectiveness of Moodle at SHC.

Kindly answer each inquiry dependent on your utilization of Moodle. Your individual reactions to the survey will be entirely private and utilized exclusively for this examination.

1. Instructions:

Please select the option that best suits you.

Background Information

Answers

Gender Male Female
 Age <12 13-15 16-20 >20
 Field of Study Business Science General Not Applicable
 Indicate grade/form 1st Form 2ND Form 3rd Form 4th Form

2. Information Quality

Agree **Disagree**

IQ1: The Moodle system provides precise and accurate information 1 2 3 4 5 6 7
 IQ2: The Moodle system provides up-to-date information 1 2 3 4 5 6 7
 IQ3: The Moodle system provides information easily accessible 1 2 3 4 5 6 7
 IQ4: The Moodle system provides information easy to understand 1 2 3 4 5 6 7
 IQ5: The Moodle system provides information relevant to the course 1 2 3 4 5 6 7
 IQ6: The Moodle system allows students to revisit past lessons 1 2 3 4 5 6 7

3. System Quality

Agree **Disagree**

SQ1: The Moodle system is easy to navigate 1 2 3 4 5 6 7
 SQ2: The Moodle system is comprehensible 1 2 3 4 5 6 7
 SQ3: The Moodle system is user friendly 1 2 3 4 5 6 7

4. Complementary Technology Quality

CTQ1: Are the resources available adequate for the Moodle system 1 2 3 4 5 6 7
 CTQ2: Are the systems being utilized cohesive 1 2 3 4 5 6 7

5. Service Quality

Agree **Disagree**

SV1: The support staff of the Moodle system replies promptly 1 2 3 4 5 6 7
 SV2: The Support staff keeps Moodle up-to-date 1 2 3 4 5 6 7
 SV3: The Support staff of Moodle informs user of changes in system 1 2 3 4 5 6 7

6. User Satisfaction

Agree **Disagree**

US1: The user is satisfied with the setup of Moodle 1 2 3 4 5 6 7
 US2: The user is comfortable using the Moodle system 1 2 3 4 5 6 7
 US3: The user constantly user Moodle for referencing 1 2 3 4 5 6 7

7. Use

Agree **Disagree**

U1: The user frequently logs in to Moodle 1 2 3 4 5 6 7
 U2: The user can independently use the system 1 2 3 4 5 6 7

U3: The user can use Moodle as a reference when necessary

1 2 3 4 5 6 7

8. Perceived Net Benefits

Agree **Disagree**

NB1: Moodle assists students in academic performance

1 2 3 4 5 6 7

NB2: Moodle is mutually beneficial on and off campus

1 2 3 4 5 6 7

NB3: Moodle helps students to grasp concepts outside the classroom

1 2 3 4 5 6 7

Thank you.