Evaluating the Effectiveness of the Management Information System Moodle at the University Of Belize.

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Abstract

*While a considerable amount of research has been conducted on information system success models, little has been done to test the effectiveness of these system. Moodle is a learning platform designed to provide educators, administrators and learners with a secure and integrated system to create personalized learning environment. The general purpose of the research is to investigate the Management Information System at University of Belize and to identify customer's behavior. The group will also underline the benefits of the system as per the customer's perspective and indicate what the MIS is. This research is focused on the convenience of any issues related to the MIS that they may experi*ence

Keywords: Moodle, Management information system, success Model

Introduction

Background

The business process at the University of Belize is defined as tradition business systems and is employee driven. This has been the standard operations as far as the introduction of business in Belize. Our objective is to focus on the technological advancement of Management information systems and the effects of improve service for the customers. We will look at the University of Belize's information system (Moodle), and the customers' perception of this service as a method of the enrollment, registration and financial process. Throughout the last two decades, the growth in service delivery technology has been quite impressive. Service companies are investing in technology to improve their operations and allowing consumers to be self-reliant. In addition, many consumers are becoming increasingly with the use of

technology (Wallace, 1995). Indeed, we have come a long way with technology services in Belize. Technology self-service includes on-site, options such as touch screens, information kiosk and barcode scanners in supermarkets. There are also offsite options such as telephone banking, online and electronic shopping on the internet (Dabholkar, 1994). Research has found that some clients prefer technology-based service to traditional services because it is more convenient and it avoids human contact (Dabholkar P. A., 1996). The role of information systems (IS) in providing business a competitive edge. The improvement of information system through enhancing information quality; perceived usefulness; service quality and perceived ease of use will foster user involvement; behavioral intention and user satisfaction. (Zaied, An Integrated Success Model for Evaluating Information System, 2012). One of the objectives in this study is to fill this gap in the literature in context of the present traditional versus technology review.

University of Belize

The University of Belize (UB) is an institute for higher education, and the national university of the Belize. The institution offers certificates, diplomas, associate degrees, bachelor degrees, and a graduate degree. The UB Central Campus is in Belmopan City. UB now offers programs from its main campus in Belmopan, and from three other locations: Belize City campus, Central Farm campus, and from its southern campus in Punta Gorda. (Sankat)

UB Website

A Web-based information system which uses Internet web technologies for delivering information and services to all stakeholders. The website provides news & events updates, admission quick links, social media, student portal and Moodle. (Ub Website, n.d.)

Moodle

Moodle is a learning platform designed to facilitate educators, administrators and learners with a single, secure and integrated system to create personalized learning environments. It is powered by tens of thousands of learning environments globally, Moodle is trusted by institutions and organizations large and small, including Shell, London School of Economics, State University of New York, Microsoft and the Open University. Moodle's worldwide numbers of more than 90 million users across both academic and enterprise level usage makes it the world's most widely used learning platform. (https://moodle.org/)

Literature Review
Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) and DeLone & McLean update IS success model (D&M) model for evaluating information systems success in this research. Technology Acceptance Model (TAM), is used for modeling user acceptance and attitude of information systems. The theory of TAM begin by proposing external variables as the basis for tracking the impact of external factors on two main internal beliefs, which are perceived usefulness and perceived ease of use, while perceived ease of use also affects perceived usefulness over and above external variables. These two beliefs both influence users' attitude toward using IS. Attitude toward using IS. In these manner it has influence on behavior intention to use, which is the key factor for determining actual conditions of system use. (Davis, 1989). (Mclean, 1992) Conducted a comprehensive review of IS success literature and proposed a model of IS success. This model provided a good indicator of the success factors of information systems by emphasizing on six interrelated dimensions of IS success: 'System Quality', 'Information Quality', 'Use', 'User Satisfaction', 'Individual Impact' and 'Organizational Impact'. Later, DeLone and McLean in 2003 revisited their own model and made minor modifications to it. They defined their updated model dimension as: Systems quality, Information quality, Service quality, Use, User satisfaction, and Net benefits.

In accordance with (TAM) and D&M updated model, this study proposes an integrated model for evaluating IS success. Based on these changes ten dimensions were proposed for measuring information system success: Behavior intention; Information quality; Management support; Perceived ease of use; Perceived usefulness; Service quality; System quality; Training; User satisfaction; and User involvement. The model assumes that information ease of use which have a positive effect on behavior intention and user satisfaction. (Zaied, 2012)

The core attitudinal model is a framework that was adapted from (Dabholkar, 2002) study. A review of the literature shows that "ease of use," "usefulness," and "enjoyment" are important determinants of customer's attitude in the technology acceptance model (TAM). These three factors capture customer perception of Technology-based self-service. Other researchers have also found factors that are similar to ease of use and fun to be relevant for technology adoption. (Szymanski, 2002) Found "convenience" to be an important factor in e-satisfaction and defined convenience in terms of ease in getting things done, which is similar to the "ease of use" dimension. "Fun" was found to be important in determining the use of technology by customers in a study by (Webster, 1993).

Information and Communication Technological (ICT)

Information and Communication Technological (ICT) has "evolved from stand - alone legacy systems to complex networks connecting customers to suppliers and businesses. Hence, in this dynamic environment, ICT has become a key business enabler (Gottschalk, 2002)". The advent of Information technology enables businesses to facilitate and address global merchants, customers and suppliers on a mutual ground. Advancement of ICT has created an enabling environment for companies to be hands-on and re-align their business processes to strategy. "Anticipating change, managing, and gaining a competitive advantage in the market place is the one of the issues faced by management. The Internet revolution has helped companies to implement change in a cost - effective manner" (al, 1999). Even though information systems bring about many amazing opportunities for both businesses and individuals, "they are also a source of new problems, issues, and challenges for managers (Laudon, 2000)

During recent years companies started giving importance to new technologies to deliver their services. Over time this has led to the development of self-service technologies. "In self-service technology the word technology is crucial; because self-services are related with technological aspects where companies have to strive on to improve their technological features that will increase the quality level in delivering the services. Today, customers can choose between varieties of technological options to perform services for themselves (Zinn, 1993)." Simultaneously, companies "employ technology at various stages in the service delivery process and in services support operations to improve the quality and productivity of their service offering (Blumberg, 1994)"

The literature in this study has focused mostly on the interpersonal dynamics of service encounters. It is evident that there is much to be learned about the organizations interactions and Management information systems. In this research, the authors describe the results of a critical incident study based on more than 800 incidents involving Self-service Technology (SSTs) sent to customers through a Web-based survey. The authors categorize these incidents to discern the sources of satisfaction and dissatisfaction with SSTs. The authors present a discussion of the resulting critical incident categories (CIT) and their relationship to customer attributions, complaining behavior and word of mouth. (Bitner. Booms, 1990) Emphasized on customer-employee interactions in restaurants, hotels, and airlines. They find that factors affecting the evaluation of the service encounter can be classified into three main categories: (1) employee response to service delivery failure. (2) Employee response to customer needs and requests, and (3.) unprompted and unsolicited actions by employees. (Fisk, 1997) Also use CIT to examine factors that lead to dis/satisfactory evaluations of interpersonal service encounters. In each study, the set of factors that leads to satisfying encounters also leads to dissatisfying ones. What it takes to satisfy some customers is dissatisfying for others. In other words, the incident categories for satisfactory and dissatisfactory encounters were mirror images of each other. For example, in the study employee's response to customer needs and requests could lead to customer's dissatisfaction and satisfaction, depending on the nature of the employee response. Although these studies explore important determinants of dis/satisfaction in an interpersonal setting, we can use them to investigate factors that are important when customers use service through a technological interface. This can help us to assess whether the sources of dis/satisfaction are also important in technology- based encounters. In addition, we could determine if the same set of factors leads to both satisfactory and dissatisfactory encounters (Wolfinbarger, 2003).

Local Data

According to the University of Belize, one of their goals is 'to ensure the highest standard of service to their valued customers'. The institution continued its effort to engage with their students by polling their feedback on its service delivery. They placed emphasis on using electronic communication to facilitate more immediate and direct contact with customers. E-mails are used for sending bills and payment reminders. Customers have responded very positively to these and, by the end of the year, the number of customers using Moodle and the school email had increased by 50%.

University of Belize offers customer the option view their bills online, register and get updates. "With Moodle you are able to access all your account information from the comfort of your home or whilst travelling abroad" Apart from University of Belize, there are other companies in Belize who utilizes the MIS. For example, Belize Electricity Limited and BTL.

Hypothesis / Research Model

In 1992, DeLone and McLean proposed that the dependent variable for information system research is Information System Success. The Information Success Model is a concept that provides comprehension of IS success by determining six of the most important components (DeLone & McLean, 1992, 2003, 2004). The framework is one of the most cited and talked about models in IS history. As technology evolves, the framework has been improved to meet the change in demand of several information systems. Throughout 2002 and 2003, DeLone and McLean reassessed the model's current components namely: systems quality, information quality, service quality, use, user satisfaction, and net system benefits.
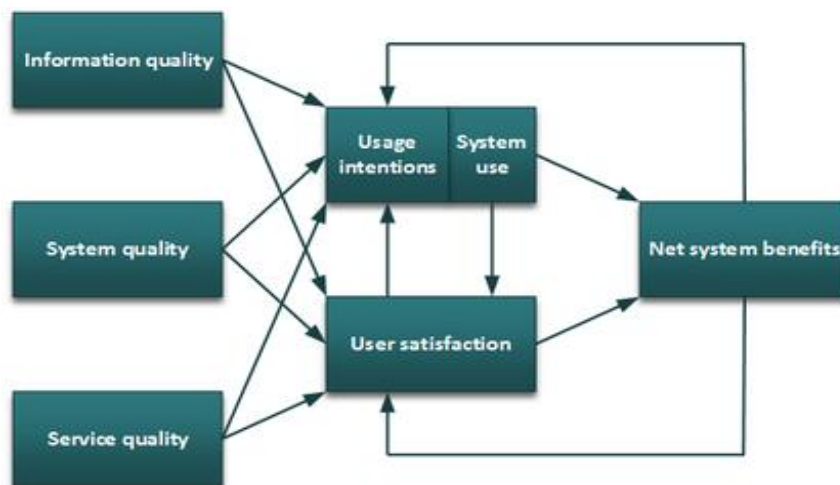
Figure 1. Information Success Model

"Systems quality" are the characteristics of an information system based on its performance. It can include: adaptability, availability, reliability, response time, and usability (Alshibly, 2011). "Information quality" refers to the type of information that the system is able to produce or provide. It encompasses measures such as: completeness, ease of understanding, personalization, relevance, and security (Bailey & Person, 1983). "Service quality" represents the support that users obtain such as assurance, empathy, and responsiveness (Chang et al, 2009).

The components "use" and "user satisfaction" are interrelated as it embodies how the information system is utilized and the degree of pleasure that is realized from such interaction (Rai et all, 2006). Some underlying activities of "use" comprise of the nature, navigation patterns, number of site visits etc. (Balaban et al., 2013). On the other side of the spectrum, "user satisfaction" would commonly entail features like repeated purchases and repeated visits (Seddon Yip, 1992). "Net benefits" is the degree to which the information system can influence the accomplishment of goals within the organization (Ashibly, 2011). Ultimately, net benefits can be gained through cost savings, expanded markets, time savings, and so on (Tansley et al, 2009).
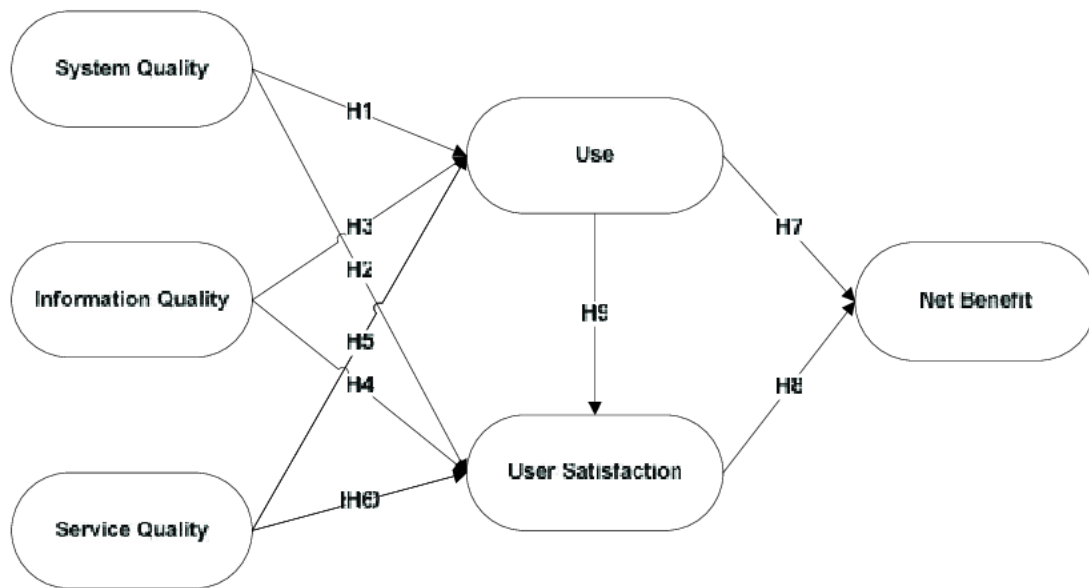
Figure 2. DeLone and McLean Information System Success Model

Commensurate to the D&M Model, the study presents the following eleven (11) hypotheses:

H1. Complementary technology quality will positively impact user satisfaction. H2. Complementary technology quality will positively impact system use.

H3. Computer self-efficacy will positively impact system use.

H4. System quality will positively impact user satisfaction.

H5. Information quality will positively impact user satisfaction. H6. Service quality will positively impact user satisfaction.

H7. Information quality will positively impact use.

H8. System quality will positively impact use.

H9. Service quality will positively impact use.

H10. User satisfaction will positively impact perceived net benefit. H11. Use will positively impact perceived net benefit.

Methodology

To ensure the content validity of scales, the group used instruments such as anonymous questionnaire and pencils to measure and analyze quantitative data. To collect the data a sample size of 35 students were randomly selected from the University of Belize FMSS campus and were asked to fill out 35 questionnaire. Students were given a reasonable time to fill out the questionnaire and then collected back the same day.

Sample Size

The sample size used for the research are 35 students enrolled at the University of Belize, Belize campus, semester 2019-1. The research was done through the use of a quantitative questionnaire. A total of 35 students were chosen randomly. The method of sampling is "random sampling".

Instrument

Five of the dimensions of the DeLone and McLean Model were used in order to test the effectiveness of Moodle at the University of Belize

One (1) structured questionnaire (See Appendix) was used to collect data from the respondents. The questionnaire was structured and steered specifically towards the usage of Moodle and its user success. The questionnaire consisted of seven (7) question sections, which gathered participants' demographic information, service quality, system quality, information quality, usage intentions, user satisfaction and technology in school.

Construct Measurement

In efforts to ensure research validity and reliability, the measurement scales for the quantitative data collection of four (4) sections were measured by a seven-item scale from Bailey and Person. All the items were measured using a 7-point Likert Scale with anchors ranging from Strongly Disagree (1) to Strongly Agree (7), rated from Very poor (1) to Outstanding (7), and rated from Never (1) to Often (7).

Time

This research was conducted using a cross-sectional research mainly because of the limited time available for this course.

Data Analysis

It should be noted that all the measurement of the graphs are shown on a scale of 5 as it doesn't exceeds 5.
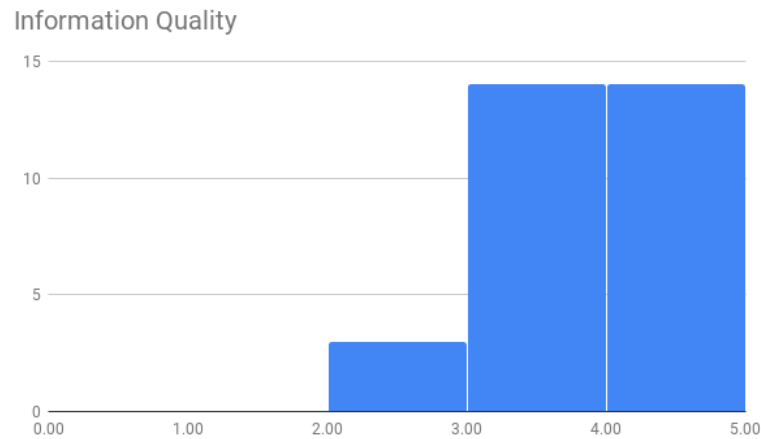

Histogram 1. Information Quality

From the data collected from the survey, 14 participants believed that the information quality of Moodle is fully satisfactory. Followed by another 14 believing the information quality is good falling within the 4th measure on the scale. On the hand, only 3 participants in the middle of the scale of 5. This means that only 3 participants were not satisfied with the information quality of the Moodle.
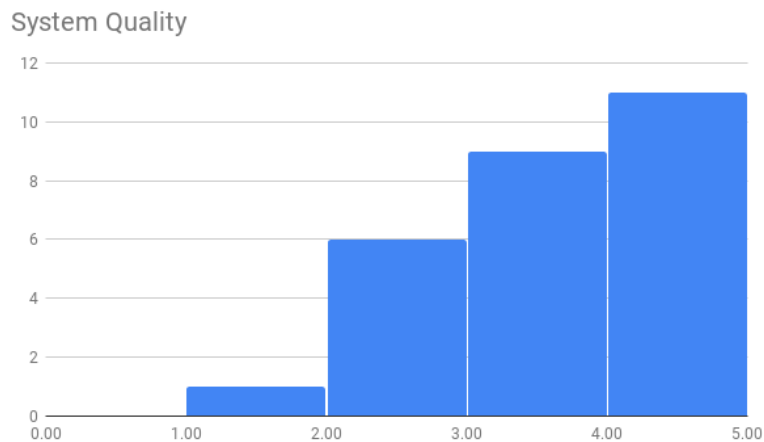

Histogram 2. System Quality

In regards to the system quality of Moodle, 11 participants measured 5 being the most satisfied of Moodle's system quality. Followed by 9 measured within 4 scale of satisfaction. On the other hand, 6 participants measured 3rd on the scale of satisfaction that could be interpreted as board line satisfactory. However, one participant isn't satisfied with the system quality of Moodle.
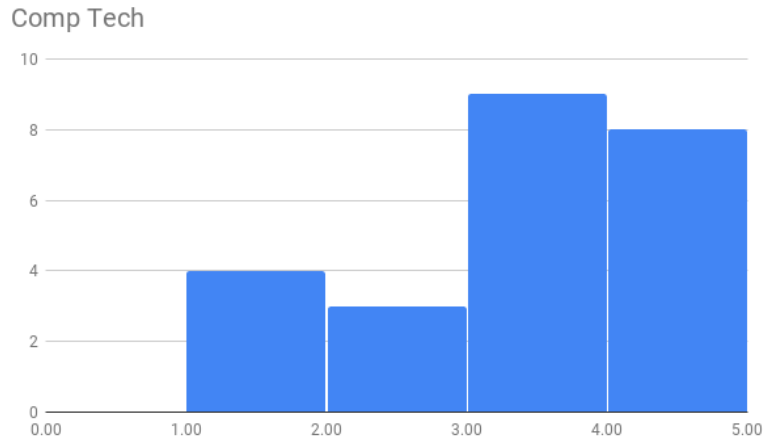
Histogram 3. Computer Technology

In regards to the computer technology used at the University of Belize to use Moodle is overall spread out in terms of satisfaction. For instance, 8 participants measured fully and 9 participants behind them ranking 4th of the five. The other 7 participants, fall within 1st-3rd of 5, with 4 of them falling between 1st and 2nd, 3 participants between 2nd and 3rd.
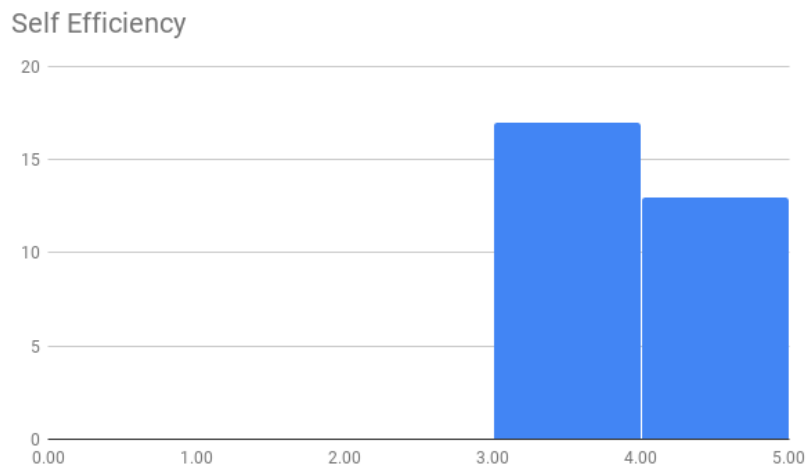

Histogram 4. Self-Efficiency

In regards to the self-efficiency of the use of Moodle, majority of the participants are able to use the services provided on Moodle fairly and without any major help. This was noticed as 17 participants fall within the 4th and 5th scale. While the other 13 fall within 4th and 5th being the highest level on the scale.
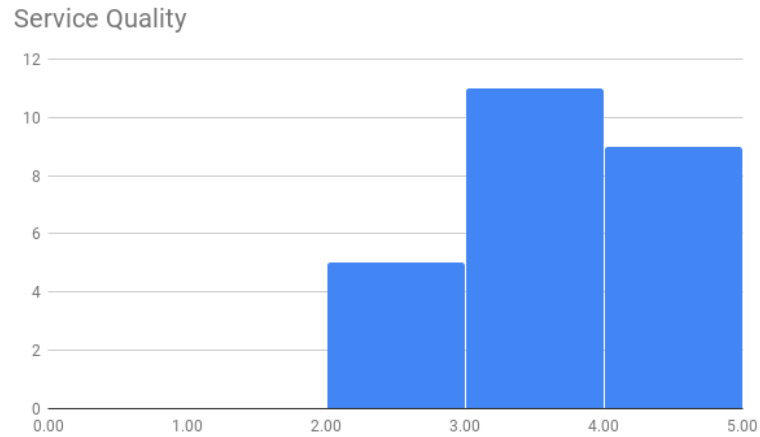
Histogram 5. Service Quality

In regards to the service quality of Moodle, 5 participants fall within the 2nd and 3rd scale. Followed by 11 participants fall within the 3rd and 4th measurement of satisfaction. Leaving the last 9 participants being fully satisfied with the service offered from Moodle.
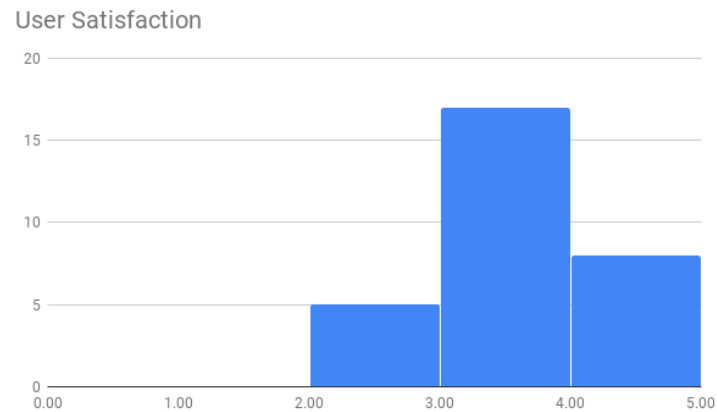
Histogram 6. User Satisfaction

In regards to the students satisfactions of the use of Moodle is overall satisfied. Being that the majority falls with 3rd and 5th on the scale being 17 participants falling within the 4th rank and 8 within the 5th rank. Leaving 5 participants in the 3rd point on the scale of satisfaction.
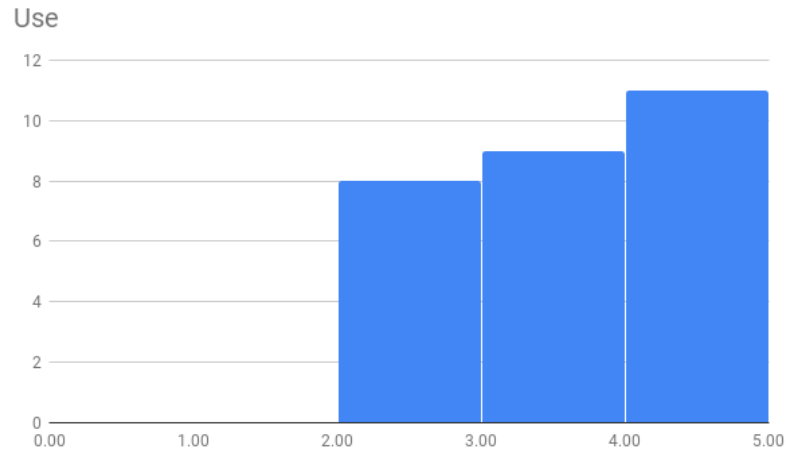
Histogram 7. Use

In regards to the use of the Moodle, the use is highly satisfactory as 20 of the participants fall within the higher end of the scale being within the 3rd and 5th. In other words, the use of Moodle system is easy or simple to use while the other 8 participants find few difficulties using the services of Moodle.

Discussion

After the data has been gathered from the survey and placed into a database to be transformed into graphs. It could be noted that the overall user satisfaction was an estimate 3.78 out of a scale of 5. The user satisfaction was measured by the quality categories of the survey. Which were as followed, Information quality scoring approx. 3.97; System Quality scoring 3.89; and Service quality an estimate score of 4.1. This means that the score of 3.78 for User Satisfaction shows that the students aren't fully satisfied with the quality of the Moodle but it's efficient to get their work done. While the net benefit of Moodle is an average of the Use and User Satisfaction that expresses if the information system is beneficial to the institution. The estimate score of the net benefit of Moodle is 4.23, meaning Moodle is beneficial to the University of Belize. However, it could be noted that the net benefit is higher than the average of user satisfaction and the use of Moodle.

On another note, the technology used to access Moodle scores an estimate of 4.01 meaning that the students are satisfied with the technology provided on campus or other services provided to access Moodle. For instance, the internet range/ speed provided and the information system compatibility on different technology. While in regards to the self-efficacy of the student to use Moodle without any help scored an estimate of 4.08, meaning that without any help, the student is more than likely to understand how to use the services offered on Moodle.

Comp Tech	Self-Efficacy	Information Quality	System Quality	Service Quality	User Satisfaction	Use	Net Benefits
4.014285714	4.077142857	3.971428571	3.885714286	4.1	3.778571429	4.035714286	4.233333333

Table 1. Overall Satisfaction
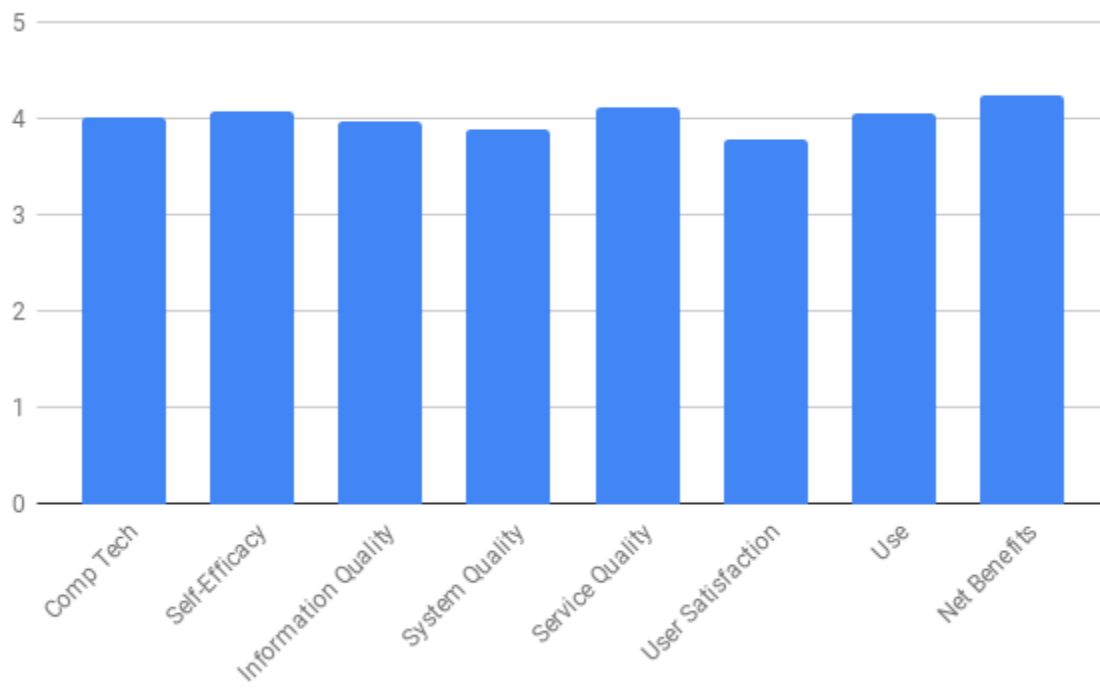
Histogram 8. Net Benefit

Conclusion

The research conducted strived to measure the level of success of the University of Belize's information system (Moodle), and the customers' perception of this service as a method of the enrolment, registration and financial process. In order to measure the Information System's success, an existing model created by Delone and Mclean (2003) was selected. The model takes a glance at the dimensions that mainly contribute to the system implementation; this framework is generally used to judge and operationalize the level of success of the Information System. Moreover, self-efficacy and complimentary technology quality measure were added in order to get more viable data to support the research. the re-specified IS success models exaggerated to distinguish the meaningful factors for acceptance of web based learning powers the systems at the University of Belize. 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. This study proposes an integrated model for evaluating IS success.

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. 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 participated were not really satisfied with the service, We surveyed first year Associate's Degree students and Bachelor's Degree Students because they were the students to use the e-learning system at University Of Belize. User Satisfaction shows that the students aren't fully satisfied with the quality of the Moodle but it's efficient to get their work done and complete their degree so they were comfortable using the service. To be able to use Moodle effectively there has to be a highly dependable internet service, as recommended by several student, so as a part of the recommendation it is highly recommended that the University of Belize utilizes the best internet provider, so as to ensure students are satisfied when using Moodle. With everything "progress usually tends to bring problem" as the saying goes, keeping this in mind we have hope of Moodle being improved over the years and become more effective and efficient for future users.

Appendix

(n.d.). Retrieved from Ub Website: https://www.ub.edu.bz/about-ub/#ourstory

al, W. e. (1999). Integrated and decoupled corporate social performance: Management commitments, external pressures, and corporate ethics practices. *Academy of Management Journal*.

Bitner. Booms. (1990). *Self-Service Technologies:*.

Blakstad, O. (2008). from Explorable.com: https://explorable.com/ethics-in-research.

Blumberg, D. F. (1994). Strategies for improving field service operations productivity and quality. *The Service Industries Journal*.

Dabholkar. (2002). An attitudinal model of technology-based self-service: moderating effects of consumer traits and situational factors. Journal of the academy of marketing science.

Dabholkar, P. A. (1996). "Consumer evaluations of new technology-based self-service options: an investigation of alternative models of service quality.". *International Journal of research in Marketing*.

Davis. (1989). technology acceptance model .

Fisk. (1997). The impact of other customers on service experiences: a critical incident examination of "getting along. *Journal of retailing*.

Gottschalk. (2002). Key issues in IS management in Norway: An empirical study based on Q methodology. *Information Systems Evaluation Management*.

Greener, D. J. (2015). An Introduction to Business Research Methods.

https://moodle.org/. (n.d.). Retrieved from https://moodle.org/

Johnson, B. M. (1995). Why Conduct Action Research?. .

Laudon, K. &. (2000). Management Information Systems. *Organisation and Technology, 4lhed.Prentice Hall.* .

Martelli, J. &. (2015). An Introduction to Business Research Methods,.

Mclean, D. a. (1992). Technology acceptance model.

Sankat, P. C. (n.d.). *University of Belize*. Retrieved from https://www.ub.edu.bz/about-ub/#ourstory

Saunders. (2009).

Saunders. (2012). Doing research in business & management. *An essential guide to planning your project*.

Szymanski. (2002). David M., and Richard T. Hise. "E-satisfaction: an initial examination. *ournal of retailing* .

Wallace. (1995).

Webster. (1993). "The dimensionality and correlates of flow in human-computer interactions. *Computers in human behavior*.

Wolfinbarger, M. &. (2003). Measuring and Predicting Detail quality. *Journal of retailing*.

Zaied, A. N. (2012). *Journal of Emerging Trends in Computing and Information Sciences*.

Zaied, A. N. (2012). An Integrated Success Model for Evaluating Information System. *Journal of Emerging Trends in Computing and Information Sciences*.

Zinn, L. (1993). "Retailing Will Never Be the Same,. *Business Week,* , 54-60.