Evaluation of the Neo Municipal Edition Information System used at the Belmopan City Council

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Abstract

Management Information Systems is the main component to enable and attain effective and efficient results in an organization. Even though, there has been many studies conducted on the use of information systems. This research provides the first everempirical test on the adaptation of the Delone & McLean IS Success model conducted on the Neo Municipal Edition Information System. The Neo System was implemented in 2014 and takes into account all the operations of the Council such as trade licenses, property tax, driver licenses just to name a few. The purpose of this research is to evaluate the effectiveness & efficiency of the Neo System to the Council in achieving its goals & objectives. Data was collected using structured questionnaires distributed to 31 employees of the Belmopan City Council's Revenue, Transport and Valuation Department. Based on the data gathered, the results showed that the use of the system is a success based on all dimensions of the Delone and McLean IS Model.

Keywords: Neo Municipal Edition System, IS Success Model, Belmopan City Council

Introduction

It is hard to imagine business growth without the use of information technology. Organizations across the world have been investing heavily in information and communication technology in order to support their different business functions. Information technology allows business to conduct operations more effectively and efficiently, which has influenced the development of management information systems. Today's management information systems rely largely on technology to compile and present data. A management information system is the study of people, technology and organizations (Eller College of Management). It is a set of systems and procedures that gather data from a range of sources compile it and present it in a readable format (Ingram, 2018).

With the help of a management information system, information can flow seamlessly across organizations. Everyone who works in business, from someone who pays the bills to the person who hires and fires uses information systems (Eller College of Management). Currently the Belmopan City Council uses the Neo Municipal Edition System as their information system. The Revenue, Transport & Valuation Departments of the Council, mainly uses this system. The purpose of the Neo system is to provide real time data to management, report writing capabilities and invoices to all customers (Depaz, 2018). This is the first research to be perform on the Belmopan City Council Neo System. The purpose of this research is to determine whether the Neo System is effective or not in achieving the goals and objectives of the Council.

The main goal of this research is to gather information about the Council employee's perspective on their use of the Neo System. By using the IS Success Model implemented by William H. DeLone and Emphraim R. McLean in 1992.

Literature Review

Running a successful business requires quality information systems to process all the data and statistics, both financially and organizational. Minimizing human error and maximizing work efficiency are the essential goals of any company. However, it is not achievable without an excellent information system that is capable of providing the necessary data needed. Investing in business information systems is crucial for every professional organization. Quality information systems should feature MIS (Management Information System) designed to organize the database and thereby improve the productivity of your company. The MIS can provide you with past, present and prediction information by using software that relies on every necessary resource in the system (Inspired Techs). Businesses need to use information systems for their operational excellence, new products, services and business models, customer/supplier intimacy, improved decision-making, competitive advantage and the day-to-day survival (Eternal Sunshine of the IS mind).

Information systems enables companies to react, respond, cater, store, retrieve, disseminate and control their new valuable asset that is information. According to Daniel Parker (1968), the need for information by administrative levels of municipal governments has created the need for a management information system. David H. Olsen (2001) suggested although IS usage is pervasive in both the public and private sectors and continues to experience exponential growth, there is still much we don't know about how municipalities can maximize the benefits of IS. There have been a number of phenomena reports concerning public sector IS usage that seem to mirror the private sector. The major determining factor in the extent of IS adoption is city size. Larger cities have greater needs for advanced computer systems than smaller cities.

The significance of information management systems (MIS) in all organizations has amplified due to the growing importance of information stored in them, particularly in decision-making. According to Ghorab (1999), the increased competition between organizations and the size and complexity of their work have increased the importance of information systems. The high rates of environmental and technical change and the widespread use of information technology making it an ideal tool for data processing, which led to increased attention to management information systems and increased importance of their role in the work of the organization and its decisions

As defined by DeLone & McLean "IS success is an IS theory that seeks to provide a comprehensive understanding of IS success by identifying, describing, explaining the relationships among the most critical dimensions of success along which IS are commonly evaluated".

There has been significant numbers of research on the methods, techniques and knowledge for the design and development of MIS. However, according to (Adeoti-Adekeye, 1997) a few articles cover the impact of Management Information Systems on planning strategies and decision-making. There are no universally accepted definitions of MIS and those that exist in literatures are just prejudices of the researchers. Lee, (2001) defined MIS as "a system or process that provides information needed to manage organizations effectively".

More recently, an article by Adebayo (2007) explains the existence of MIS improve and enhance decision making on the issues affecting human and material resources.

Although there is more positive articles regarding MIS, this research has noted negative articles on MIS such as Keen (1980) who states that the lack of the scientific basis in IS research and also argues that mandatory variables (e.g., user satisfaction, usage) would continue to mislead researchers and dodge the information theory issue.

However, Rhodes argument contradicts the statement of Keen and makes his point by stating, "In lending voice to the discussion of how MIS affects decision-making, management information system gives managers quick access to information. This can include interaction with other decision support systems, information inquiries, cross-referencing of external information and potential data mining techniques.

From the literatures presented, it is easily perceive that the importance to evaluate MIS systems within an institution is of great importance. Since these Information management systems hold vital information of an organization in them, especially that their role in the work of the organization is important for decision-making.

To see the relationship and trends, this literature review will be focusing on the Success of the Neo Municipal Edition System at the Belmopan City Council. The effectiveness and the efficiency by the council training methods that has an effect on the overall performance of the council staff and customers.

Methodology

The Neo Municipal Edition System is currently utilized by only three departments of the Council, namely the Revenue, Transport and Valuation Department to carry out their daily duties such as generating statements, bills, receipts, tracking payments for violation tickets and gathering information for different customers. Top management such as the Mayor, City Administrator, Directors and Managers also use this system for decision-making.

The survey comprises the six different dimensions from the Information System Success Model (Delone and McLean, 2003) which applies to researches of this type. The six interrelated dimensions are:

- 1. Information Quality, which will mainly focus on the information, system output and how helpful it is to its users.
- 2. System Quality will ask employees how easy it is for them to use based on its interactive features and if it is user friendly.
- 3. Service Quality, will evaluate how updated the system is, how quickly issues are resolved if the system encounters problems.
- 4. User Satisfaction, will evaluate how satisfied are the users with the system, their experience when using it and if the system meets their expectations.
- 5. Use, will focus on the overall usage of the system and
- 6. Perceived Net Benefits, will focus on how beneficial is the system to the Council.

The Delone and McLean IS Success Model allows us to encapsulate information on each dimensions interrelationship. According to Delone and McLean, quality has three dimensions that are associated with use and user satisfaction. In this analysis, the three dimensions of quality are information, system, and service. Lastly, based on the results of the Use and User Satisfaction, we should notice some influence on Perceived Net Benefit.



Figure 1. Modified Research Model

Figure 1 shows the modified six dimensions of the Delone and Mclean research model inclusive of an additional dimension, which is the Complementary Technology Quality, utilized to validate this research.

This study attempted to expand the Delone and Mclean IS success model to the Emerging and competitive world by adding the additional dimension and hypothesis:

Hypothesis

(H1.) Complementary technology quality will definitely impact system quality.

(H2.) System quality will definitely impact user satisfaction.

(H3.) Information quality will definitely impact user satisfaction.

(H4.) Service quality will definitely impact user satisfaction.

(H5.) Use will definitely impact user satisfaction.

(H6.) Information quality will definitely impact use.

(H7.) System quality will definitely impact use.

(H8.) Service quality will definitely impact use.

(H9.) User satisfaction will definitely impact perceived net benefit.

(H10.) Use will definitely impact perceived net benefit.

Description of Participants

The Belmopan City Council has approximately 100 staff employees as of April 2018. Of this total, only 31 employees have access to the Neo System. Hence, this research uses only on these amounts of participants. The study utilizes a quantitative questionnaire.

Instrument

The instrument used for the quantitative study was a questionnaire. The questionnaire addresses active users of this information system. The researchers utilized the six dimensions of the DeLone and McLean Model to test the efficiency and effectiveness of the Neo Municipal Edition Information System.

Attached in the Appendix, a sample questionnaire used to collect data from the respondents. The questionnaire was structured and steered specifically towards assessing the effectiveness of the Information System. The questionnaire consisted of eight (8) sections, which gathered participants' demographic information, information quality, system quality, complementary technology quality, service quality, user satisfaction, use and perceived net benefits.

Construct Measurement

The measurement items used were as follows: information quality, system quality, service quality, use, user satisfaction, and perceived net benefit. The questions were measured by a seven-item scale developed by Bailey and Person (1983), which is a recognized and a standard instrument in the IS field. Instruments were measured using a 7-point scale ranging from strongly agree (7) to strongly disagree (1).

Data Analysis

The aim of the study conducted was to evaluate how successful the Neo system is in achieving the goals and objectives of the Belmopan City Council. The questionnaire used had a total of thirty (30) questions with ratings from one (1) which is strongly disagree, four (4) being neutral and seven (7) being strongly agree. The researcher's present results with the use of Bar Graphs.

Information Quality

Based on Figure 2. Below, it is evident that the quality of information provided by the Neo System to its users seems to be very efficient. Thirty-nine (39%) percent of respondents agreed with a rating of scale six whilst fifteen (15%) percent of the respondent rated the quality of information as neutral at N4.





System Quality

Figure 3. Below shows that respondents consider that system quality is excellent. It was rated with the highest scales of seven (7) i.e. forty-one (41%) percent. Whilst three (3%) rated it as inefficient on two of the lowest scales i.e. two (2) and three (3). Respondents agree that this system is easy to use, user friendly and are satisfied with its overall interactive features.



Figure 3

Service Quality

The quality of service was rated as reliable by eighty five (85%) percent of respondents as shown in Figure 4. thus, concluding that the support staff of the Neo System keeps software up to date, promptly responds to users queries and efficiently addresses issues with the system and resolves them on a timely manner.





Users Satisfaction

Thirty-four (34%) percent of respondents selected scale six (6) as their highest rating in Figure 5. This was followed by scale five (5) with twenty-nine (29%) percent and scale seven with twenty-four (24%) percent. Over all users are satisfied with the system; they have a positive experience when using it and the system has met their expectations.



Figure 5

Use

Figure 6. Below, displays a very high usage of the Neo System. Seventy eight (78%) percent of respondents agree that they have a high dependency on the system to complete their daily duties, are knowledgeable on its use and seem to not require any assistance to complete their tasks on the system as rated on the two highest scales which are six (6) and seven (7). Four (4%) percent of the respondents seem to need training and constantly require assistance to use the system as they selected the three lowest scales from one (1) to three (3).





Perceived Net Benefits

When measuring the net benefit of the Neo System as shown in Figure 7 the same percentage of respondents selected scales six (6) i.e. thirty two (32%) percent and seven (7) i.e. thirty two (32%) percent

as their highest rating . This totals to sixty-four (64%) percent of respondents who believes that the system improves their job performance, saves cost, assist the Council in achieving their goals and objectives, increases their productivity and enhances customers satisfaction.



Figure 7

Average Based on Questionnaire Sections

Figure 8 below shows a complete picture of the respondent's response to the Information Quality, System Quality, Service Quality, User Satisfaction, Use and Perceived Net Benefits. The respondents choose to grade all sections of the questionnaire utilizing the scale from five (5) to seven (7) i.e. strongly Agree. In conclusion based on the average of all sections chart below the respondents are very much satisfied with the functions of the Neo System. Therefore, the researcher's hypothesis is accurate.





Limitations

A basic research shows the effectiveness of the Neo System to the Council but researchers faced many challenges whilst carrying out this study, which are:

- 1. Due to time constraints, information gathered was through a quantitative survey.
- 2. The sample size used for this research was only for a group of thirty-one (31) employees of the Belmopan City Council which is thirty (30%) percent of the entire staff. Which does not reflect a complete picture of the use of the system.
- 3. Some users preferred to remain neutral with their responses.
- 4. Not all departments of the Council utilize the Neo System, thus giving us a limited sample size to work with.

Results

In accessing how successful a management information system is based on several different factors, which Delone and McLean stated in their 2003 updated information system Successful Model. In the assessment of the Belmopan City Council's Neo Municipal Edition System, results showed that the use of the system is a success based on all dimensions of the Delone and McLean IS Model. Figure 2. on information quality shows that eighty five (85%) percent of respondents believe that the quality of the

information is exactly what they need. Figure 5. Show that eighty-seven (87%) percent of respondents are satisfied with the use of the system. Finally Figure 7 shows that eighty-nine (89%) percent of respondents believe that the Neo System is beneficial to them and the Council. An overall histogram chart was prepared on the average of all sections on the quantitative survey. This histogram chart reflects a better picture of the respondent's response to Information Quality, System Quality, Service Quality, User Satisfaction, Use and Perceived Net Benefits, it is clearly observed that the Neo System is providing its users the right tools to perform their duties effective and efficiently. As well as it provides the Belmopan City Council the tools to meet their goals and objectives.

Conclusion

In conclusion, the average responses for all categories agree that the Neo System in terms of quality, user interaction and over all benefits is very high. Results reflect that employees are generally satisfied with the system, with a few employees being the exception. The implementation of this system for the Council has allowed information to be readily available and accessed. The Neo Municipal Edition was implemented in 2014 and although being a quit a new system, its capabilities has provided the Council with the necessary tools to carry out its daily functions more efficiently and effectively. As all systems, changes & improvements are required and the Neo System is currently being evolve to better suite customers and users need.

Recommendation

Whilst conducting the research it was observe that the Neo System could be improve in the two (2) following ways:

- 1. The Accounts Department utilizes two separate systems, which are Quick Books, and Morgan's payroll system to carry out their daily functions. However, by integrating both systems to the Neo system, they will all read as one and this will facilitate the department to have access to information required (Depaz, 2018).
- 2. Insert Drop Box capabilities to the Neo System to allow receipts to differentiate different forms of possible payment options i.e. Cash, Cheques, and Credit Card Payment. This will enable the revenue department job to be a little easier and less time consuming. As well as not having customers getting flustered when making payments (Depaz, 2018).

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Appendix

Questionnaire I - "SUCCESS OF THE NEO SYSTEM" (Employees Users)

Purpose

This research is required for the CMPS3012 MIS course at the University of Belize. This questionnaire asks for information about yourself and how often you use the NEO System in your daily activities. The data gathered will be analyzed to determine the success of the Neo System at the Belmopan City Council.

Please answer each question based on your use of the Neo System. Your individual responses to the questionnaire will be strictly confidential and used solely for this research.

Instructions

 $\frac{1}{4^{4}}$ This is a survey, not a test; there are no right or wrong answers. Please tick the boxes to mark your answers.

1. Background Information	Answers:
Please indicate your gender:	Male 🔲 Female 🔲
Please indicate your age:	<25 25-35 38-45 48-55 >55
Please indicate how many years you have been employed at the Belmopan City Council.	1 Year 🛄 2-5 Year 🛄 8-10 Year 🛄 >10 Year
Please indicate your working experience:	<5 5-10 11-15 >15
Indicate the department you fall under	Revenue Valuation Transport

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

2. Information Quality	DisagreeAgree
IQ1: The Neo System provides information that is exactly what you need	1 2 3 4 5 6 7 7
IQ2: The Neo System provides information you need at the right time	1 2 3 4 5 6 7 7
IQ3: The Neo System provides information that is relevant to your duties	1 2 3 4 5 6 7
IQ4: The Neo System provides sufficient information	1 2 3 4 5 6 7
IQ5: The Neo System provides information that is easy to understand	1 2 3 4 5 6 7
IQ6: The Neo System provides up-to-date information	1 2 3 4 5 6 7
IQ7: The Neo System provides sufficient information	1 2 3 4 5 6 7

3. System Quality	DisagreeAgree
SQ1: The Neo System is easy to use	1 2 3 4 5 6 7
SQ2: The Neo System is user-friendly	1 2 3 4 5 6 7
SQ3: The Neo System provides interactive features between users and the system	1 2 2 3 4 5 6 7 7
4. Complementary Technology Quality	DisagreeAgree
CTQ1: The computer (desktop, laptop, mobile device) you normally use to access the Neo System is adequate	1 2 3 4 5 6 7
CTQ2: The computer (desktop, laptop, mobile device) you normally use to access the Neo System has a fast and reliable internet connection	1 2 2 3 4 5 6 7 7
5. Service Quality	DisagreeAgree
SV1: The support staff keep the Neo System software up to date	1 2 3 4 5 6 7
SV2: When users have a problem, the Neo System support staff show a sincere interest in solving it	1 2 3 4 5 6 7
SV3: The Neo System support staff respond promptly when users have a problem	

SV4: The Neo System support staff tell users exactly when services will	1 2 3 4 5 6 7
be performed	
6. User Satisfaction	DisagreeAgree
US1: Most of the users have a positive attitude of the Neo System.	1 2 3 4 5 6 7
US2: You think that the utility of the Neo System is high.	1 2 3 4 5 6 7
US ₃ : The Neo System has met your expectations.	1 2 3 4 5 6 7
US4: You are satisfied with the Neo System.	1 2 3 4 5 6 7
7. Use	NeverOften

U1: Your frequency use of the Neo System is high	1 🛄 2 🛄 3 🛄 4 🛄 5 🛄 6 🛄 7 🛄
U2: You depend upon the Neo System	1 2 3 4 5 6 7
U3: You were able to complete a task using the Neo System 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 Neo System	1 2 3 4 5 6 7
8. Perceived Net Benefits	NeverOften
NB1: The Neo System helps you improve your job performance	1 2 3 4 5 6 7
NB2: The Neo System helps the organization to save cost	1 2 3 4 5 6 7
NB3: The Neo System helps the organization achieve their goals	1 2 3 4 5 6 7
NB4: Using the Neo System improves the organizations objectives	1 2 3 4 5 6 7
NB5: Using the Neo System in the organization increases your productivity	1 🛄 2 🛄 3 🛄 4 🛄 5 🛄 6 🛄 7 🛄
NB6: Overall, using the Neo System enhances customer satisfaction	1 🛄 2 🛄 3 🛄 4 🛄 5 🛄 6 🛄 7 🛄

Please return this survey to the person who gave you the form.

Thank you for your participation.

Success of the Neo System at the Belmopan City Council