Assessing the success of SmartStream Enterprise Level Application used by the Government of Belize (GOB) for its finance, accounting, personnel and payroll processes.

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Abstract

The SmartStream system, implemented by the Central Information Technology Office (CITO), is used in the Public Sector under four different Government functions; namely, Accounting, Finance, Personnel and Payroll. The main purpose of this study was to assess the success of the information system in the Public Sector using the DeLone and McLean IS model and to determine if the model is effective in measuring its success. In order to gather data, a twenty-seven-question survey was distributed to employees that had the first-hand experience with the SmartStream system, these included employees from six different ministries: Ministry of Transport and NEMO; Ministry of Education; Ministry of Health; Ministry of Public Service; Energy and Public Utilities; Ministry of Security and Defence and Sub-Treasury San Ignacio. Results indicate that the SmartStream system is effective and efficient meeting users' expectations, therefore users view it as beneficial and successful. Moreover, these results indicate that the researchers eleven initial hypotheses were valid.

Keywords: D&M model, SmartStream, public sector, Information quality, System quality, Service quality, User satisfaction, Use, Complimentary Technology Quality, Perceived Net Benefits

Introduction

Technological advancements have become an imperative change in the way government processes are coordinated. The Central Information Technology Office (CITO) was established in 2004 from the Belmopan Computer Center which had been re-organized in 1999 under the FMDP Project (1997) to provide Management, Administration and Support for the newly implemented Government of Belize Wide Area Network (GoB WAN) and its Enterprise Applications. As the organization responsible for making the Public Service of Belize one of the world leaders in using information and communication technologies in the delivery of its service, CITO operates the SmartStream system.

SmartStream is an information system the provides real-time transaction lifecycle management including enterprise-wide. The Government of Belize uses the SmartStream system as an Enterprise Level Application for its finance, payroll, personnel and accounting processes. SmartStream features includes: Active access to SmartStream, Workflow, Integration and Drill-down capabilities, Fast, Flexible implementation, Standardized Application Services, Application Services and Architecture and Technical Architecture.

Management Information Systems (MIS) deals with both the technical and behavioural aspect surrounding the development, use, and impact of information systems used by managers and employees in the organization (Laudon & Laudon, 2016). This research paper intended to understand MIS impact towards the overall performance of the Public Sector. Thus, the main purpose of this paper is to measure the effectiveness of the SmartStream information system using the updated DeLone and McLean model. This widely accepted updated model consists of six dimensions: information quality, system quality, service quality, usage intentions, user satisfaction and overall system benefits.

Specifically focusing on the Public Sector, the following six (6) ministries were fundamental on the data collection for this research paper: Ministry of Transport and National Emergency Management Organization (NEMO); Ministry of Education; Ministry of Health; Ministry of Public Service; Energy and Public Utilities; Ministry of Security and Defence and Sub-Treasury San Ignacio and Belmopan.

Due to its highly important role in managing the finance, payroll, personnel and accounting aspect of government, the need arises to understand if such information system is being successful achieving its intended goals. Based on the research conducted, there has not been previous studies in Belize regarding the SmartStream system. Therefore, this research intended to fulfill this knowledge gap. Data analysis was conducted in a quantitative method using Microsoft Excel.

Literature Review

As the demand and pressure increase for the Public Sector, the information systems (IS) management is gaining importance (Nandi & Nayak, 2008). Consequently, the Public Sector organizations have been trying to implement the IS practices of the private sector in order to achieve the performance objectives established by their respective departments (Nandi & Nayak, 2008). Information Systems have drawn attention by researchers and numerous studies have been conducted to measure the success of these systems. The main purposes of this study were to assess the success of the information system in the Public Sector using the DeLone and McLean Information System model and determine if the DeLone and McLean model is effective in measuring its success. Three peer-reviewed studies were selected between the years 2008 to 2012. These studies were conducted in Taiwan and Egypt.

The DeLone and McLean (D & M) Information System model was introduced in 1992, and since then it has been widely used in research studies. Since its launching, the model has been updated once. To clarify, the first model consisted of six dimensions; namely, system quality, information quality, use, user satisfaction, individual impact and organizational impact (Muller & Urbach, 2011). Ten years after the model's first publication, DeLone and McLean proposed an updated model consisting of three primary changes. These changes are; namely, the addition of service quality to reflect the importance of service and support in successful e-commerce systems; the addition of intention to use to measure user attitude as an alternative measure of use; and the collapsing of individual impact and organizational impact into a more parsimonious net benefits construct. Therefore, the updated model consists of six interrelated dimensions of IS success: information, system, and service quality; (intention to) use; user satisfaction; and net benefits (Mueller & Urbach, 2011).

Despite numerous researches in information systems, there has been little focused on e-government context (Wang & Liao, 2008). Wang and Liao study provides the first empirical test of an adaptation of DeLone and McLean's IS success model in the context of Government to Citizen (G2C) e-government. By using the DeLone and McLean model, the study's main purpose was to assess e-government success from a citizen's perspective. Data was obtained through the distribution of questionnaires to 119 users of G2C e-government in Taiwan. Based on the results, the success model dimensions were a valid measure of e-government system success. Notably, Perceived Net Benefit has been considered a closer measure of government success than the other five success measures. In fact, Net Benefit is developed through the formation of perceived quality, system use, and user satisfaction is appropriately managed. Furthermore, system use was found to have the strongest direct and total effects on Perceived Net Benefit in the model. Additionally, the findings clearly supported the total effects of Information Quality on Use, User Satisfaction and Perceived Net Benefit are substantially greater than those of System Quality and Service Quality (Wang & Liao, 2008). However, due to the study being the pioneer on assessing

e-government systems and focusing on a specific citizen group, its results cannot be generalized. In addition, further study needs to be done to evaluate the validity of the investigated model.

Chyi-Lu Jang conducted a study in Taiwan that measure the success of the electronic Government Procurement (eGP). Using the updated D&M Information System Success model, the study focused on exploring how three dimensions of information quality, system quality, and service quality influence net benefits through the usage and user satisfaction with an e-GP system (Jang, 2010). In addition to the model, the study seeked to propose the level of a user's computer self-efficacy may affect the factors that determine the success of an e-GP system. Data was collected from a mail survey of 650 public employees and suppliers who had experience utilizing the e-GP system in Taiwan. From the 650 surveys, 361 valid surveys were returned where 47.2 percent were from public agencies and 52.8 percent from private firms. The results obtained indicated that information quality, system quality, and service quality had a significant effect on individual performance through the usage and user satisfaction with an e-GP system (Jang, 2010). User efficacy did act as a situational component that moderated the relationships among quality-perception dimensions, user satisfaction, system usage, and net benefits.

Furthermore, studies have intermixed the D & M success model with other models. To illustrate, Abdel Zaied (2012) conducted a study in Egypt using an integrated model on applying the Technology Acceptance Model (TAM) and the DeLone and McLean success model. This new model resulted on ten dimensions; namely, Behaviour intention; Information quality; Management support; Perceived ease of use; Perceived usefulness; Service quality; System quality; Training; User satisfaction; and User involvement. The proposed model was adopted for assessment of the critical success factors affecting information systems in public sector in Egypt to demonstrate how the proposed model can be applied and supporting decision makers in evaluating and developing the information systems (Zaied, 2012). A sample of 320 participants expressed their opinions about the proposed dimensions. Based on the results, more than 75% of the participants believed that model dimensions had a high impact on IS success. The results also showed the most important dimension was information quality and the least was user involvement. The results indicated that information quality has a strong significant influence on IS success (81.9%), followed by behavioural intention (80.2%), and perceived usefulness (78.2%). Limitations to the study were due to cultural differences. However, the results cannot be generalized because the relationships of the dimensions were analysed at the individual level instead of the organizational level.

The literature consisted of two research studies conducted in Taiwan and one in Egypt. These countries are categorized by the United Nations as having developing economies (United Nations, 2014). There is no doubt that Belize is young and small in comparison to developed nations which includes the use of technology. To illustrate, this study's information system being analysed, SmartStream, is a newly introduced system by the Central Information Technology Office (CITO). SmartStream system is used by the Government of Belize for its finance, accounting, personnel,

and payroll process. Thus, this study will provide the first empirical test of this information system used by the Government of Belize. Furthermore, studies in the past focus on citizens and employees of both the public and private sector. This research seeks to focus solely on public sector employees who work with the SmartStream system. The importance of Information Systems in the Public Sector is on the rise, thus, assessing the success of SmartStream in a Caribbean country such as Belize, is important as it serves as an umbrella for processing of critical government business functions.

Methodology

Research Model and Hypothesis

The updated DeLone and McLean Information Success model was used to measure the effectiveness of the SmartStream system. The model was developed by William H. DeLone and Emphraim R. McLean in 1992. After its introduction, the model received many criticism and in 2003, the model was updated. The research was carried in a quantitative method and focused on six government ministries. The survey used for this research, incorporated the following measurement items from the D&M IS model:

- **Information quality**: This emphasizes the excellence of the system formation, plus if its helpfulness for the Smart Stream users. Also, is measures if the information is available to them when needed, and if it is sufficient in order to perform their task.
- **System quality:** It reflects functionality, performance attributes, usability, user-friendliness, easy to use, and interactive feature among user and the system.
- **Service quality:** This deals with the service provider and their inclusive support actions whenever raising problem could be with the Smart Stream system. The success construct encompasses properties such as aptitude of the staff member, dependability, compassion, and receptiveness.
- **User satisfaction:** This deals with the user's sentimental attitude towards the system. This measure the overall satisfaction of the user, in terms of the utility of the system, and meeting the user's expectation.
- **Use:** Measures the perceived actual use of Smart Stream and its users.
- **Complimentary Technology Quality:** Measures the adequateness and reliableness of technology when the user access the Smart Stream System.
- **Perceived Net Benefit:** Measures the productivity, job improvement, attainment of the objectives and achievement of end-user goals from using the Smart Stream System. It also implements qualities such as quality development, and job competence.
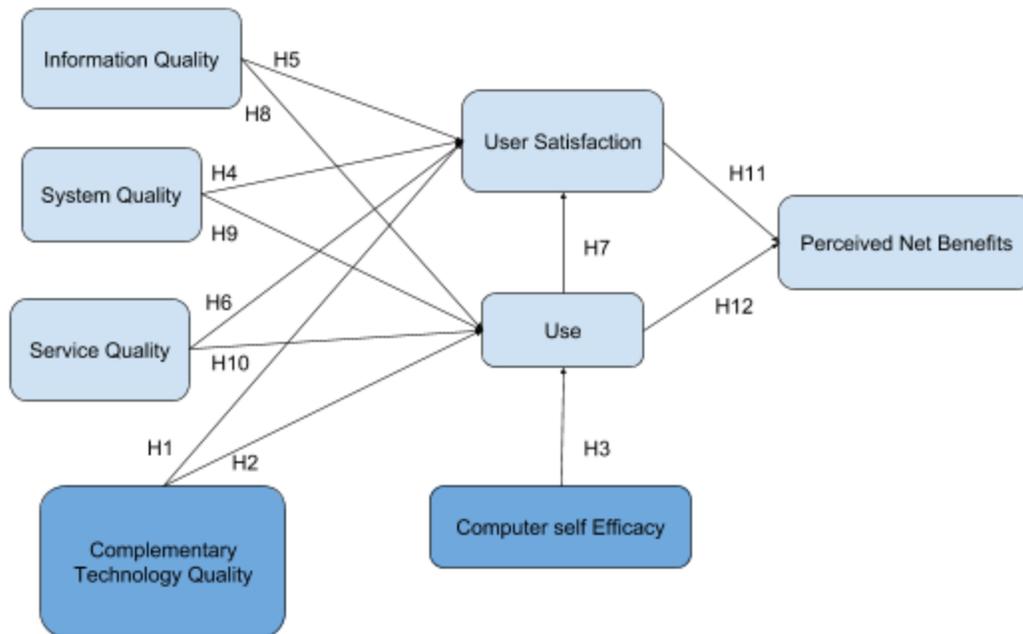
Figure 1: DeLone and McLean updated Information System Success Model

Figure 1 above, illustrates the six interrelated dimensions from the updated DeLone and McLean Information Success Model. This DeLone and McLean Model (2003) creates a theorized relationship between the SmartStream system and the IS success measurement items. Therefore, the following eleven hypotheses were determined:

H1. Complementary technology quality will positively impact user satisfaction.
H2. Complementary technology quality will positively impact system use.
H3. System quality will positively impact user satisfaction.
H4. Information quality will positively impact user satisfaction.
H5. Service quality will positively impact user satisfaction.
H6. Use 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 the perceived net benefit.
H11.Use will positively impact the perceived net benefit.

Description of Participants

"SmartStream is the Enterprise Level Application used by the Government of Belize (GoB) for its finance, accounting, personnel, and payroll processes." ("Database | Central Information Technology Office", 2019). Therefore, in order to evaluate the effectiveness of this system and its processes, the participants for this research were employees that have first-hand experience with Smart Stream. Research data was collected from employees from six (6) different ministries: Ministry of Transport and NEMO; Ministry of Education; Ministry of Health; Ministry of Public Service; Energy and Public Utilities; Ministry of Security and Defence and Sub-Treasury San Ignacio and Belmopan.

Construct Measurement

A questionnaire was developed for the data collection for this research. In order to ensure that this research is effectively carried out, our questions are based on the successful model developed by Delone and McLean (2003). The measurement items are as follows: information quality, system quality, complementary technology quality, service quality, user satisfaction, use, and perceived net benefit.

In order for us to correctly suit the framework of the Smart Stream System, adjustments were made to the questionnaire. The **Information Quality** was measured by a six-item scale from Bailey and Pearson (1983). The **system quality** construct was evaluated by a two-item scale previously applied by Alshibly (2011). **Complimentary Technology Quality** with only a two-item scale (Teece, 1988). **Service quality** was estimated using a four-item scale by Chang et al (2009). **User Satisfaction** was measured by a four-item scale; which recognizes the attitude of the ministries' employees toward the Smart Stream System. **Use** was evaluated by a four-item measure adapted from previous studies (Balaban et al., 2013; Rai et al., 2002). **Perceived Net Benefits** was measured with a five-item scale (Alshibly, 2011; Tansley et al, 2001). Each measurement items were rated by using a 7-Likert Scale ranging from Agree/Often (7) to Disagree/Never (1).

Measurement Items	Survey Questions
Information Quality	IQ1: Does Smart Stream provides information that is exactly what you need. IQ2: Does Smart Stream provides information you need at the right time. IQ3: Does Smart Stream provides information that is relevant to your job. IQ4: Does Smart Stream provides sufficient information.

	IQ5: Does Smart Stream provides information that is easy to understand. IQ6: Does Smart Stream provides up-to-date information.
System Quality	SQ1: Is Smart Stream a user-friendly system. SQ2: Does Smart Stream provides interactive features between users and the system.
Complementary Technology Quality	CTQ1: The computer (desktop, laptop, mobile device) you normally use to access Smart Stream is adequate. CTQ2: The computer (desktop, laptop, mobile device) you normally use to access Smart Stream has a fast and reliable internet connection.
Service Quality	SV1: The support staff keep the Smart Stream software up to date. SV2: When users have a problem the Smart Stream support staff show a sincere interest in solving it. SV3: Does Smart Stream support staff tell users exactly when services will be performed. SV4: The Smart Stream support staff respond promptly when users have a problem.
User Satisfaction	US1: Most of the users have a positive attitude of Smart stream. US2: Do you think that the utility of the Smart Stream is high. US3: Does Smart Stream has met your expectations. US4: Are you satisfied with the Smart Stream System.
Use	U1: How frequent do you use the Smart Stream system. U2: You depend upon the Smart Stream system. U3: you were able to complete a task using Smart Stream even when there was no one around to tell you what to do. U4: You have the knowledge necessary to use the Smart Stream system.

Perceived Net Benefits	NB1: Does Smart Stream system helps you improve your job performance. NB2: The Smart Stream system helps save costs. NB3: The Smart Stream system helps you achieve your job performance. NB4: Using the Smart Stream system improves government efficiency. NB5: Using the Smart Stream system increases your job productivity.

Table 1: Measurement Items for Questionnaire

Table 1 above includes the various measurement items and its specific survey questions related to the Smart Stream System.

Data Analysis

Demographics

The research sampling method used was quota sampling where fifty-three surveys (53) were distributed in the Public Sector; specifically, Ministry of Transport and NEMO; Ministry of Education; Ministry of Health; Ministry of Public Service; Energy and Public Utilities; Ministry of Security and Defence and Sub-Treasury San Ignacio and Belmopan. These departments are located in two districts, Cayo and Belize City. From the fifty-three surveys distributed, forty-four (44) were collected making it a response rate of 83%. The user's valuation of the SmartStream system was valued under the eight dimensions of the DeLone and McLean model: information quality, system quality, service quality, complementary technology quality, computer efficacy measure, user satisfaction, use and perceived net benefits. All surveys were constructed using a 7-point Likert Scale ranging from 1 (Disagree) to 7 (Agree).

Table 2: Demographic characteristics of respondents		
Gender		
Male	14	32%
Female	30	68%
Age		
<25	4	9%
25-35	18	41%
36-45	11	25%
46-55	11	25%
>55	0	0%
Position		
First level	19	43%

Middle level	21	48%
Top level	4	9%
Field		
Accounting	30	68%
Finance	5	11%
Personnel	6	14%
Payroll	3	7%
Experience		
<5	10	23%
5-10	17	39%
11-15	9	20%
>15	8	18%

Table 1 illustrates the demographic profile of the respondents.

Table 1 above illustrates the demographic characteristics of the respondents surveyed. As observed, majority of the respondents were females with a 68% of the total sample. Males had a smaller percentage of 32% being less than half of the sample size. Most respondents were on the age range of 25-35 years (41%) and the least fell less than 25 years (9%). In terms of position, most employees were under the middle level management (48%) of the organization. Respondents form each of the four sectors that SmartStream is used for comprised of the following descending order: Accounting being the highest at 68%, Personnel consisting of 14%, Finance was 11% and the least being Payroll with 7%. Moreover, most employees had a 5 to 10 years' experience (39%) and a minority surpassed more than 15 years' experience (18%).

The subsequent tables and graphs illustrate the average responses under each dimension and a graphical representation of the results, respectively. Percentages have been rounded to the nearest whole number.

Information Quality

Table 3: Information Quality		
Disagree- Agree	Number of Respondents	Percentage
1	1	2%
2	2	5%
3	1	2%
4	2	5%
5	11	25%
6	18	41%
7	9	20%
TOTAL	**44**	**100%**

Table 2 shows the average responses report for the Information Quality dimension.

Bar Chart 1: Information Quality (Average Responses)
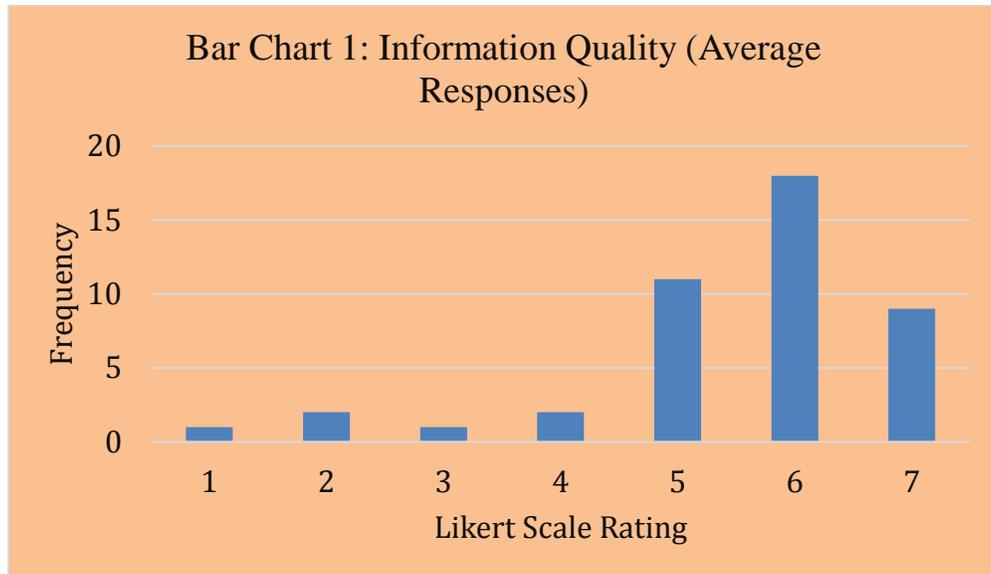
Bar Chart 1 above illustrates the results from the Information Quality dimension.

As observed in Bar chart 1 above, most employees agree that the SmartStream system provides information that is accurate, relevant, sufficient, easy to understand and is updated. Likewise, in table 2 above, 41% of the respondents gave a 6 from the 7 Likert Scale (Agree) to the dimension of Information Quality. A very low percent of 2% to 5% of the respondents disagreed.

System Quality

Table 4: Systems Quality		
Disagree- Agree	Number of Respondents	Percentage
1	3	7%
2	1	2%
3	2	5%
4	4	9%
5	10	22%
6	18	41%
7	6	14%
TOTAL	**44**	**100%**

Table 3 shows the average responses report for the Systems Quality dimension.

Bar Chart 2: Systems Quality (Average Responses)
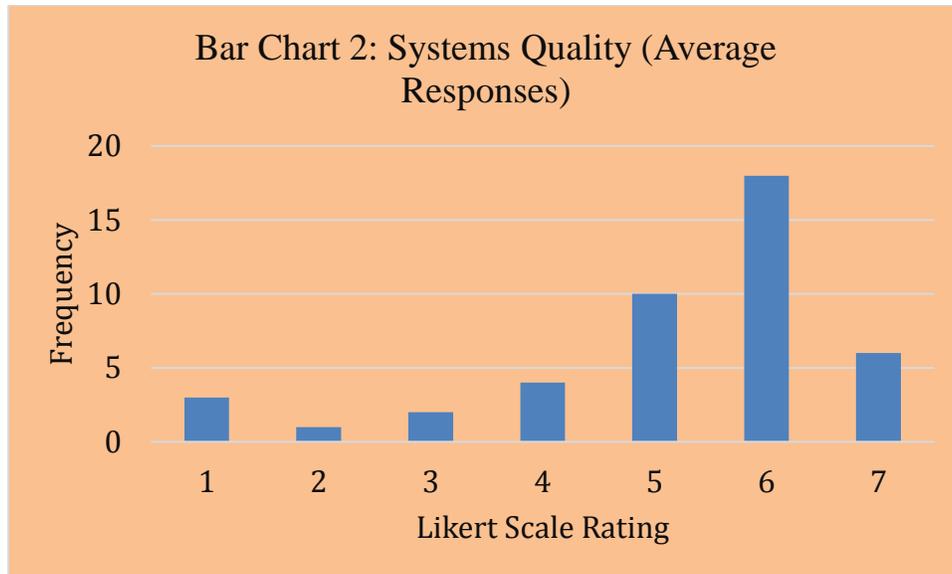
Bar Chart 2 above illustrates the results from the Service Quality dimension.

Likewise, Service Quality received a favourable response. Bar chart 2 above shows that majority of the average responses categorized this dimension by a 6 on the Likert Scale Rating comprising of 41% of the total sample size as shown on Table 3. Therefore, employees evaluate the SmartStream system to be both user friendly and consisting of interactive features between users and the system.

Complementary Technology

Table 5: Complementary Technology		
Disagree- Agree	Number of Respondents	Percentage
1	3	7%
2	1	2%
3	1	2%
4	3	7%
5	9	20%
6	15	34%
7	12	28%
TOTAL	**44**	**100%**

Table 4 shows the average responses report for the Complementary Technology dimension.

Bar Chart 3: Complementary Technology (Average Responses)
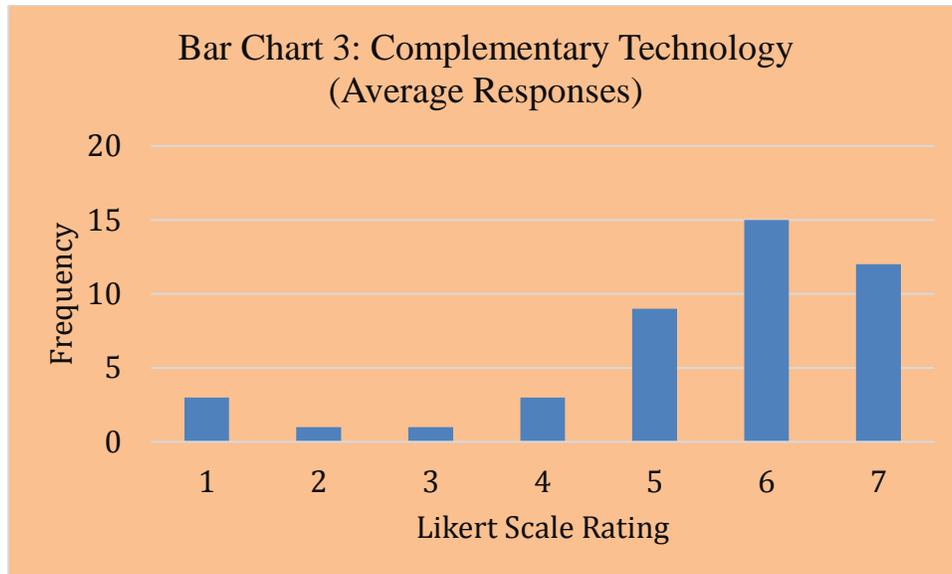
Bar Chart 3 above illustrates the results from the Complementary Technology dimension.

Complementary Technology average responses continued the similar trends as the previous dimensions. As observed in Bar chart 3 above, the highest in the Likert Scale rating were 6 and 7. Likewise, as noted in table 4 above, both hold the highest percentage, 34% and 28% respectively. This indicates that the complimentary technologies associated with the SmartStream system are both adequate and aligned network.

Service Quality

Table 6: Service Quality		
Disagree- Agree	Number of Respondents	Percentage
1	2	5%
2	2	5%
3	2	5%
4	5	11%
5	9	20%
6	14	32%
7	10	22%
TOTAL	**44**	**100%**

Table 5 shows the average responses report for the Service Quality dimension.

Bar Chart 4: Service Quality (Average Responses)
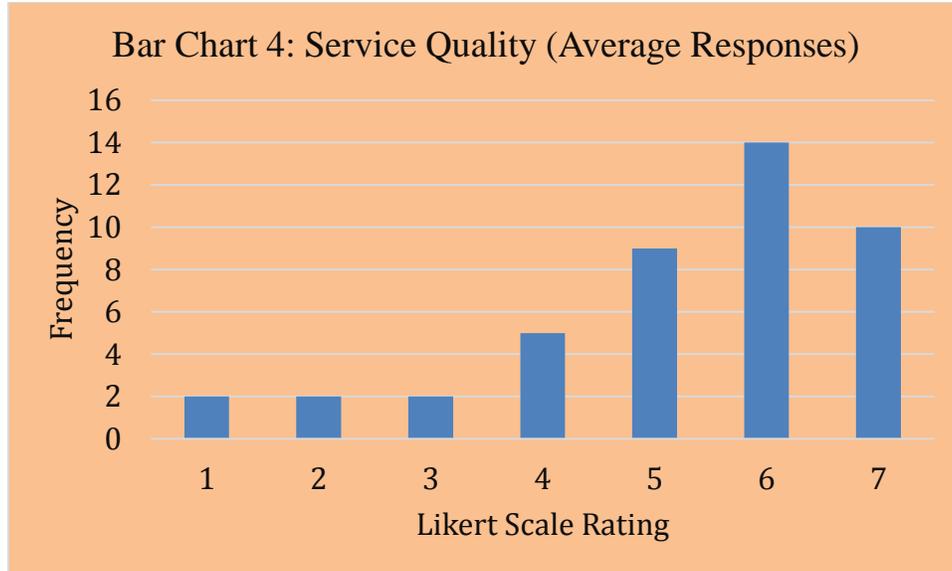
Bar Chart 4 above illustrates the results from the Service Quality dimension.

Bar Chart 4 above, graphical represents that the highest rating for Service Quality dimension are 6, 7 and 5. Therefore, table 5 above supports this by showing that the highest percentages are for this with 20%, 32% and 22% respectively. Thus, in terms of Service Quality, the SmartStream system support staff ensures that the system is up-to-date, they are willing to resolve any problem encountered with the system and they respond promptly. All geared towards the efficiency of the software.

User Satisfaction

Table 7: User Satisfaction		
Disagree- Agree	Number of Respondents	Percentage
1	2	5%
2	1	2%
3	2	5%
4	5	11%
5	10	22%
6	17	39%
7	7	16%
TOTAL	**44**	**100%**

Table 6 shows the average responses report for the User Satisfaction dimension.
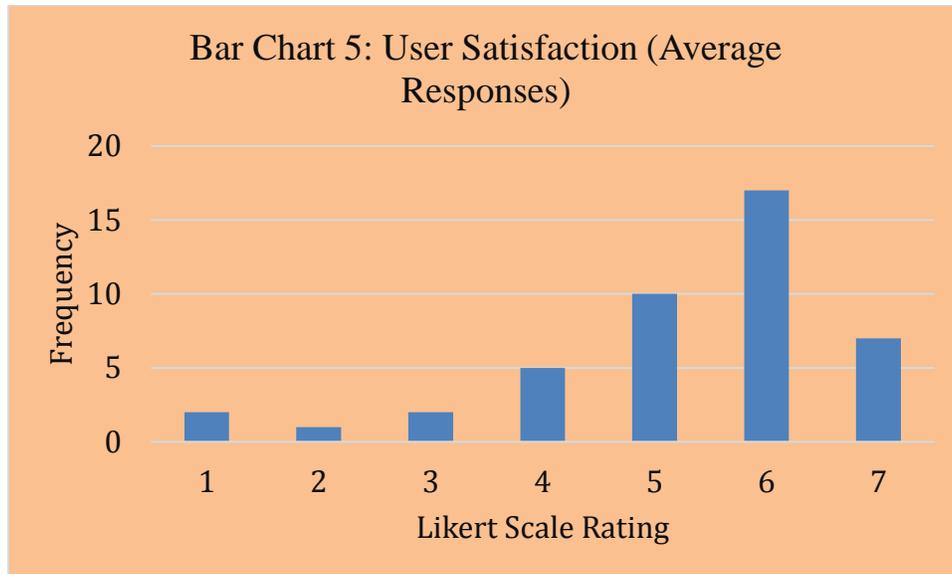
Bar Chart 5 above illustrates the results from the User Satisfaction dimension.

User Satisfaction, as shown in Bar Chart 5 above, is rated at a point 6 in the Likert Scale Rating. This also holds a highest 39% in table 6 above, illustrating a correlative effect from the previous dimensions. All other previous have been rated at 6, consequently User Satisfaction shows that the users have a positive attitude and greater utility towards the SmartStream system. Thus, the system does meet their expectations and they are satisfied.

Use

Table 8: Use		
Disagree- Agree	Number of Respondents	Percentage
1	0	0%
2	0	0%
3	1	3%
4	2	5%
5	3	7%
6	7	15%
7	31	70%
TOTAL	**44**	**100%**

Table 7 shows the average responses report for the Use dimension.
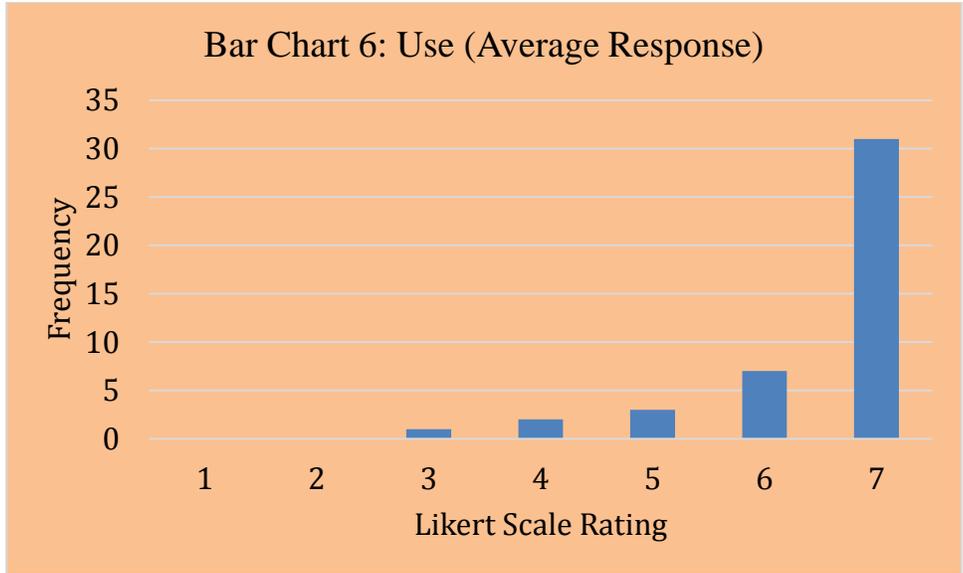
Bar Chart 6 above illustrates the results from the Use dimension.

Use dimension, as shown in Bar Chart 6 above, has been rated the highest (7). Under this dimension, a noticeable zero percent can be observed for 1 and 2 in the Likert Scale. A whopping 70% represent this average response in table 7 above. In other words, the SmartStream system is frequently used, there is high dependability on the system and users are knowledgeable in using the system.

Perceived Net Benefits

Table 9: Perceived Net Benefits		
Disagree- Agree	Number of Respondents	Percentage
1	1	2%
2	1	2%
3	2	5%
4	2	5%
5	8	18%
6	14	32%
7	16	36%
TOTAL	**44**	**100%**

Table 8 shows the average responses report for the Perceived Net Benefits dimension.

Bar Chart 7: Perceive Net Benefits (Average Response)
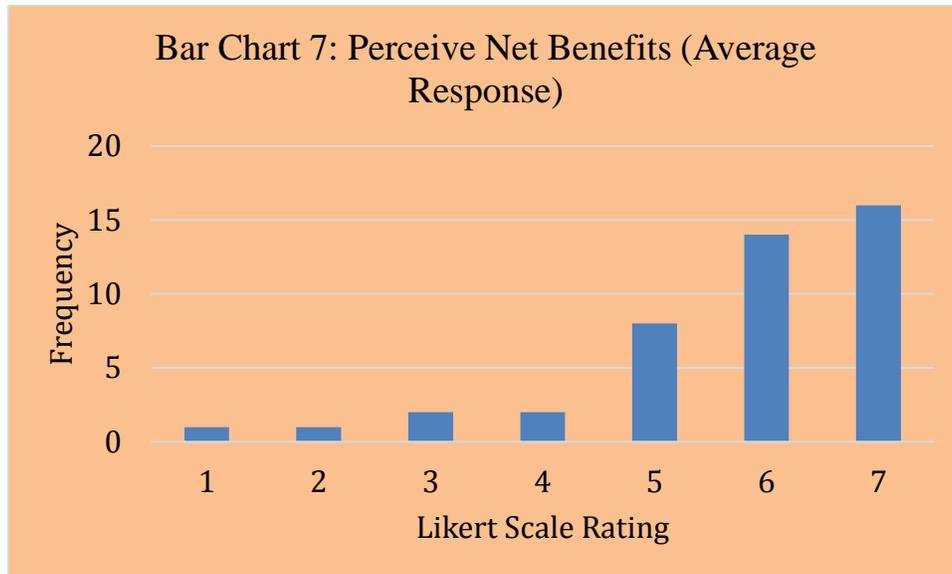
Bar Chart 7 above illustrates the results from the Perceived Net Benefits dimension.

As shown in Bar Chart 7 above, Perceived Net Benefits has received favourable rating as the previous dimensions. At point 6 and 7 of the Likert Scale consisting of 32% and 36% as shown in table 8 above. Therefore, SmartStream system provides the following benefits: improves job performance, help save costs, improves government efficiency and increases job productivity.

Overall average responses for each dimension

Bar Chart 8: Average Responses for each dimension
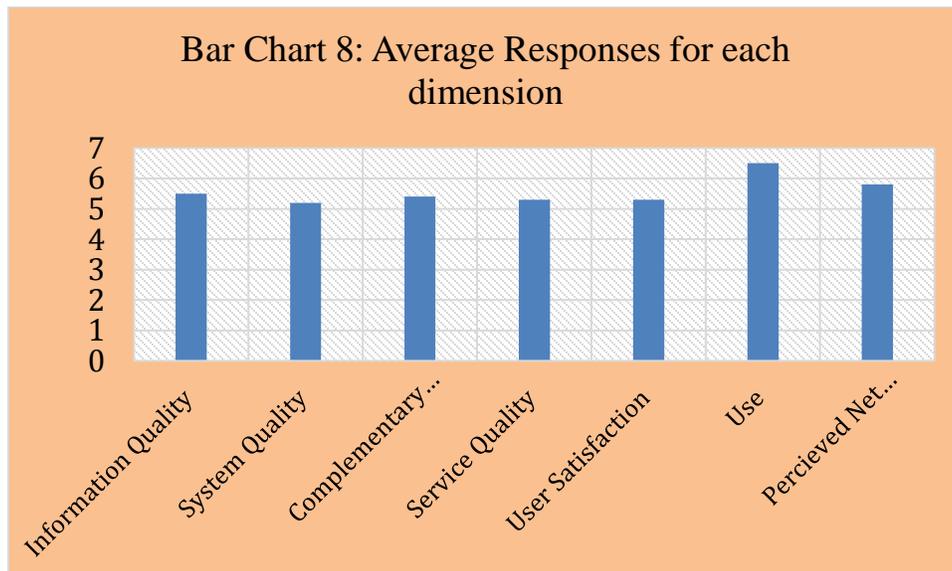
Bar Chart 8 above illustrates the results from the overall average responses for the seven dimensions.

As can be observed in Bar Chart 8 above, the SmartStream system highest average rate was a 6 point in the Likert Scale in the Use dimension. This was subsequently followed by Perceived Net Benefits with a 5.8 and Information Quality at 5.5. It is important to note that the lowest rate was a 5.2 in the System Quality. Thus, based on the results it is noted that the SmartStream system is viewed by users as beneficial and successful.

Discussion, limitations and further research

The three quality dimensions: Information quality, Systems quality and Service quality should be measured separately because singularly or jointly they will affect subsequent "use" and "user satisfaction" (DeLone & McLean, 2003). Based on the D&M model, there is a closely interrelation between the "use" dimension and "user satisfaction" dimension. In a process sense, the "use" must precede the "user satisfaction"; on the other side of the spectrum, in a casual sense, the "use" will lead to a greater "user satisfaction" (DeLone & McLean, 2003). Similarly, "user satisfaction" will lead to increased "intention to use" and thus "use". Ultimately, "use" and "user satisfaction" will result in "net benefits" (DeLone & McLean, 2003).

The individual average results (Bar Chart 1 to 7) of the dimensions obtained in this research support this interrelation between these dimensions and can be further explained in three steps. First, Information quality, Systems quality, and Service quality obtained a consistent high Likert Scale Rating of 6 out of 7 being the highest to Agree. Second, a correlative effect is observed in obtaining a high rate in the three preceding quality dimensions yielding a high rate in return for both "use" and "user satisfaction"; where "use" obtained the highest rate of 7 and "user satisfaction" has 6. Hence, supporting the assumptions in the preceding paragraph. Third, a high rate of "use" and "user satisfaction" contribute to users' high attainment of "perceived net benefits". The latter obtained the highest rating of 7. Similar trends were observed in the overall average responses (Bar Chart 8) from all the dimensions. These results indicate that the researchers eleven initial hypothesis were valid.

Notwithstanding the positive results, the study had various limitations. First, from the total survey of 53 only 44 were received, implying that a greater knowledge based could have been obtained if the full 100% of surveys distributed were returned. Second, based on the demographic profile of respondents, majority were females. Third, the main limitation was time. Only two of the six districts the survey was carried out. A better perspective could have been obtained if employees in the Public Sector from the all six districts would have participated. Moreover, there was an imbalance in employees from the four sectors where SmartStream is implemented. That is, most of the respondents belong to the Accounting department with a 68% while the other three Finance, Personnel and Payroll had 11%, 14% and 7% respectively. Therefore, further research is necessary to obtain a more accurate percentage of each function.

For further research it is highly recommended that studies consist of data obtained from all government ministries rather than only six as per this research. Also, further studies should focus on surveying the six districts and not only two. As noted, there was an unbalance distribution among the four sectors; therefore, it is highly recommended that future research would distribute equally among these departments as views can differ based on the employees' area of expertise.

Conclusion

The main purpose of this paper is to measure the effectiveness of the SmartStream information system using the updated DeLone and McLean model. Based on the study conducted, most users of Smart Stream are from middle management sector working in the accounting department at the Treasury Department in San Ignacio Town and Belize City. Using the Delone and McLean model, the elements incorporated in this study are information quality, system quality, complementary technology, service quality, and user satisfaction. All of these elements were basically on the same level; users gave a rate of point 6 on the Likert Scale Rating. Therefore users agreed that the system is user-friendly, provides accurate information, and most importantly, the system allows them to work effectively and efficiently. Furthermore, based on the chart 6 and 7 analysis, the Use and perceived benefits were the highest rated by its users. Meaning that Smart Stream is highly used and dependable; in addition, the system improves job performance, is cost efficient and ultimately increases the Government of Belize's productivity and efficiency. With this said, we concluded that the implementation of Smart Stream Accounting Software by the Government of Belize for its finance, payroll, personnel and accounting processes has been successful. Throughout the research, the DeLone and McLean model aided with the proper evaluation of Smart Stream and to determine the current state in which the information system is and how it can be improved for better user experience in the upcoming years. Inclusively, all eleven hypotheses were valid.

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Annex

Questionnaire I – "Smart Stream System"

Purpose

This research is required for the CMPS3012 MIS course at University of Belize University. This questionnaire asks for information about yourself and how often you use the Smart Stream System. The data gathered will be analyzed to determine the effectiveness of Smart Stream system under Government.

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

Instructions

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 ☐ 36-45 ☐ 46-55 ☐ >55 ☐
Please indicate what is your current position at your work place:	First Level ☐ Middle Level ☐ Top Level ☐
Please indicate under which process you are currently working:	Accounting ☐ Finance ☐ Personnel ☐ Payroll ☐
Please indicate your working experience using Smart Stream system:	<5 ☐ 5-10 ☐ 11-15 ☐ >15 ☐

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

2. Information Quality	Disagree --------------------------------Agree
IQ1: Does Smart Stream provides information that is exactly what you need	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
IQ2: Does Smart Stream provides information you need at the right time	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
IQ3: Does Smart Stream provides information that is relevant to your job	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
IQ4: Does Smart Stream provides sufficient information	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
IQ5: Does Smart Stream provides information that is easy to understand	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
IQ6: Does Smart Stream provides up-to-date information	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
3. System Quality	Disagree --------------------------------Agree
SQ1: Is Smart Stream a user-friendly system	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
SQ2: Does Smart Stream provides interactive features between users and the system	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
4. Complementary Technology Quality	Disagree --------------------------------Agree
CTQ1: The computer (desktop) you normally use to access smart stream is adequate	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
CTQ2: The computer (desktop) you normally use to access Smart Stream has a fast and reliable network	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
5. Service Quality	Disagree --------------------------------Agree
SV1: The support staff keep the Smart Stream software up to date	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
SV2: When users have a problem the Smart Stream support staff show a sincere interest in solving it	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
SV3: Does Smart Stream support staff tell users exactly when services will be performed	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐

SV4: The Smart Stream support staff respond promptly when users have a problem	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
6. User Satisfaction	**Disagree --------------------------------Agree**
US1: Most of the users have a positive attitude of Smart Stream.	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
US2: Do you think that the utility of the Smart Stream is high.	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
US3: Does Smart Stream has met your expectations.	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
US4: Are you satisfied with the Smart Stream System.	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
7. Use	**Never ---------------------------------Often**
U1: How frequent do you use the Smart Stream system	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
U2: You depend upon the Smart Stream system	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
U3: You were able to complete a task using Smart Stream 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 Smart Stream system	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
8. Perceived Net Benefits	**Never ---------------------------------Often**
NB1: Does Smart Stream system helps you improve your job performance	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
NB2: The Smart Stream system helps save costs	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
NB3: The Smart Stream system helps you achieve your job performance	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
NB4: Using the Smart Stream system improves government efficiency	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐
NB5: Using the Smart Stream system increases your job productivity	1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐

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

Thank you for your participation.