Evaluation of the Migration Information Data Analysis System at the Department of Border Management and Immigration Services

Alleen Juarez
University of Belize,
Cirsto Rey Village,
Cayo District
2013110883@ubstudents.edu.bz

Kaila Escalante
University of Belize,
Orange Walk Town
2017116030@ubstudents.edu.bz

Rafael Kus
University of Belize,
Punta Gorda Town
2005113334@ubstudents.edu.bz

Wilmer Cocom
University of Belize,
Benque Viejo Del Carmen
2011110276@ubstudents.edu.bz

Abstract

This research studies the success of MIDAS System at the Department of Border Management and Immigration Services in relation to performing its duties at its maximum capabilities and as expected. MIDAS System is an Information System that used to enter passenger's information at the different checkouts, to access passenger's information at any checkout, and to provide any passenger's history records. The Immigration Department has been using the MIDAS System for about six years. The aim of this research is to determine if the MIDAS System has performed its duties successfully at the Department of Boarder Management and Immigration Services. This research was conducted through questionnaires, which was distributed to forty employees. The data analysis was made using the SPSS. The data was analyzed and it was determined that the MIDAS System was successful at performing its duties and using its maximum capabilities as it was expected.

Keywords: Information System, MIDAS, Immigration Department, Success

Introduction

Belize is a developing country which relies on tourism its main economic activity. Hence, the Department of Border Management and Immigration Services in Belize needs to keep up with the amount of individuals coming in and out of the country. Information system, an integrated set of components for collecting, storing, and processing data and for providing information, knowledge, and digital products (Zwass, 2016). Migration Information and Data Analysis System (MIDAS), is the information system that the

Department of Border Management and Immigration Services is using in order to give the department the operational means to manage migration

MIDAS is a border management software program that has been designed by the International Organization for Migration OIM to be compliant with International standards and is currently operational in 19 countries. It also enables the production of real-time reporting over the 1.5 million border transactions per year in Belize. MIDAS automatically checks all recorded entry and exit data in the border points across Belize, it allows the collection of biometric data and more accurate capture of information.

The Department of Border Management and Immigration Services implemented the MIDAS as its information system on July 2013. On May 25th 2015 it was upgraded to the version 4.0. The MIDAS system was put into place to help facilitate passenger's records and to allow the process to be faster to avoid congestion. MIDAS helps employees perform their jobs quicker, efficient and effective. It also allows employees to obtain passengers information at any checkout point or immigration department. MIDAS was put into place to facilitate the duties of the employees. Since, there are many individuals entering and exiting the country every day. MIDAS allows passengers information to be available and accessible at any checkout point and immigration department. The MIDAS system is a secure information system that contains all the passenger's information. It also allows the immigration department to have this information. Proper security procedures are in place to provide security for the information.

Purpose

The purpose of this research was designed to evaluate the success of the MIDAS System at the Department of Border Management and Immigration Services. Hence, it is important to find if the MIDAS system is performing as it is expected and if it is being helpfully to achieve the goals and objective of the immigration department. If a new system or a new upgrade is required. Since, the tourism industry is growing, there are more passengers arriving and leaving every day. Hence, is the MIDAS System able to keep with the everyday duties in relation to the increase of passengers and employees? Moreover, has the MIDAS system been successful over the years and will continue being successful.

Statement of the problem

Belize is a growing and developing country therefore, there is always individuals entering and exiting the country. Hence, an effective information system needs to be put in place to avoid congestions. This research will be able to assess the successfulness of the MIDAS System at the Department of Border Management and Immigration Services if it is performing to its maximum capability.

Research Questions

The purpose of this research was to determine if the MIDAS System has been performing successfully. In order, to answer this question, the primary research question was divided into sub questions to be analysed.

a) Is gender a factor for when it comes to employees utilizing MIDAS?
b) Are employees receiving adequate training to equip them to maximize the usage of MIDAS?
c) Does MIDAS provide quality information?
d) Does MIDAS provide system quality?
e) Does complementary technology positively impact system quality?
f) Does MIDAS provide good service quality?
g) Are employees satisfied with the use of MIDAS?
h) Do employees use MIDAS regularly?
i) Is there a net benefit employees perceived when utilizing the MIDAS system?

Literature Review

Information systems have been making life much easier for lower level employees straight up to CEOs by processing a company's data inputs into useful outputs. This section reviews past researches about the effectiveness of Information Systems (IS) used within organizations.

History has proved that information systems have been in existence for years now just that in modern society it has become far more advanced. Information systems can offer more complete and more recent information, allowing companies to operate more efficiently (Markgraf, 2018). When companies have accurate, up-to-date information, choices can be made with confidence (Markgraf, 2018). Without these information systems in place it would take a lot of time to go into customer's records to find information that can be easily gathered with the help of these systems. The information system stores documents and revision histories, communication records and operational data (Markgraf, 2018). Therefore, since companies invest a large amount of money on information systems it is important to exploit all its abilities in order to get the most out of it. This can be achieved by making use of existing information and using it in new ways or by adding more data to gain more outputs.

In this digital age with fierce competition, it is essential that managers within organizations be completely aware and receptive to evolving changes (Prachi, 2018). Therefore, it is the organization's responsibility to develop strategies which can use information systems to increase the overall productivity of the business. Different organizations require different types of information systems. Some are used to for sales transactions, some for cash transaction and others for making decisions. Nevertheless, the decision making systems are mainly used by top level management. According to Prachi, "Organizations use information systems to achieve its various strategy as well as short-term and long-term goals". With correct development, deployment and usage of information systems, organization can achieve lower costs, improved productivity, growth in top-line as well as the bottom-line and competitive advantage in the market (Prachi, 2018).

On 9th July 2018, Border Migration Management Assessment (BMMA) Consultancy implemented BMMA (similar to MIDAS) to analyse national migration control system for Mwami/Mchinji border. The system was relevant to verifying legislation, procedures, passport and travel documents, visa issuance, entry and exit controls, monitoring and reporting to ensure compliance with international standards. (IOM 2018) the Midas system is used likewise to monitor and report of procedures, passport and travel documents, visa issuance, entry and exit controls. Belize have recently joined The UN Migration Agency (IOM) to automatically check recorded entry and exit data in the border posts, allows the collection of biometric data and capture more precise information. (CHUC 2017)

In conclusion, the above literatures explored the importance of effective information systems used within organizations which also helps in providing decision makers with facts, which consequently support and enhance the entire decision making process from the lower level employee up to the C.E.O.

Methodology

Construct of Measurement

This research used the questionnaire as an instrument to gather its data. The questionnaire is composed of closed ended questions. The study used quantitative and qualitative method to obtain its information data. The questionnaire was used to evaluate if the MIDAS System at the Department of Boarder Management and Immigration Services was successful in achieving its maximum capability. The model that they used were divided into 8 sub- groups in order to determine the success of information System. They are: Information Quality, System Quality, Complementary Technology Quality, User Satisfaction, Use and Perceived Net Benefits. The measure that was used was a Linkert Scale, where the rating was from (1) strongly disagree to (7) strongly agree.

Sampling data collection

To gather this information the questionnaire was given to these 40 participants. The participants in this survey included 40 employees from the department of Border Management and Immigration Services from 4 entry point namely the Belize Northern Border Station, Philip Goldson international Airport, San Pedro, Belize Western Border Station and the headquarter in Belmopan. A random sample was done in order to select the participants who are currently stationed at these entry points and make use of the MIDAS system on a daily basis to execute their duties.

The Data was analysis using a Statistical Package for the Social Science (SPSS) Software that provided a quantitative report.

The Research Model

The research model that this research is using is the one from DeLone and McLean which is the D&M. The original of this model included the System Quality, Information Quality, Use, User Satisfaction, Individual Impact, Organizational Impact but was then updated to the following: Information Quality, System Quality, Service Quality, Use, User Satisfaction and Net Benefits.

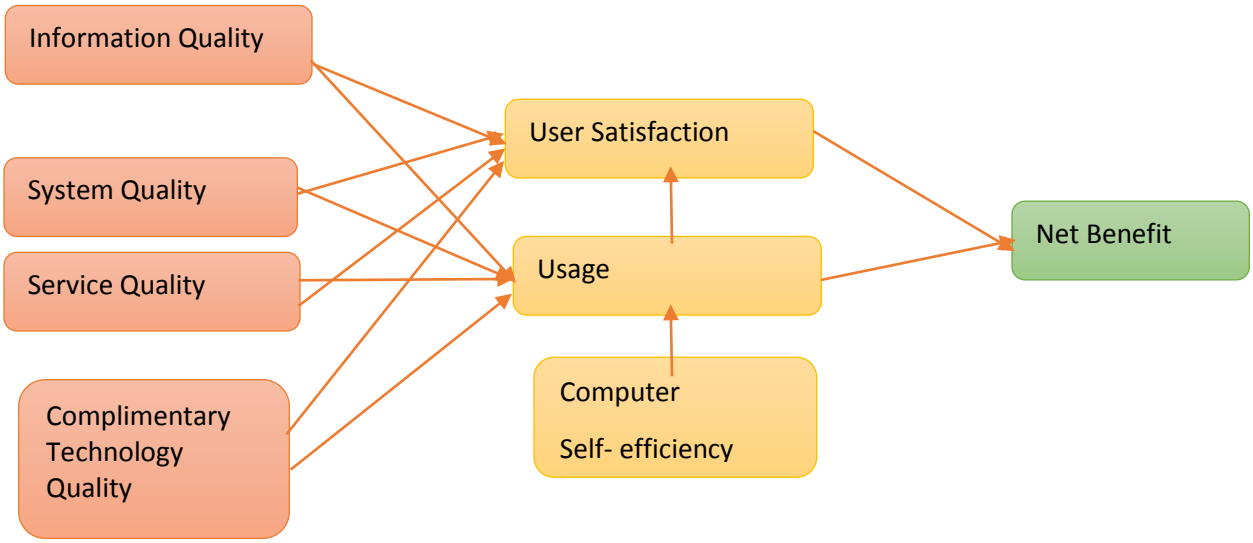
According to DeLone and McLean (2003), System Quality, Information Quality, and Service Quality should be measured separately because if joined, they will affect Use or User Satisfaction. System Quality is measured in terms of ease-of-use, functionality, reliability, flexibility, data quality, portability, integration, and importance. System Quality is a vital variable in User Satisfaction and Use. Information Quality is measured in terms of accuracy, timeliness, completeness, relevance, and consistency. Service Quality is measured in terms of tangibles, reliability, responsiveness, assurance, and empathy. Service Quality is an important measure for IS Success.

The D&M IS Success Model, is shown below, it proposed associations among success dimensions. It also contains the hypotheses of the study being conducted.

Hypothesis

Each research questions were tested utilizing the following Hypotheses:

H1 - Gender is not a factor when it comes to employees utilizing MIDAS.
H_2 - Employees receive adequate training to equip them to maximize the usage of MIDAS.
H_3 - MIDAS provide quality information.
H_4 - MIDAS provide system quality.
H_5 - Complementary technology positively impact system quality.
H_6 - MIDAS provide good service quality.
H_7 - Employees are satisfied with the use of MIDAS.
H_8 - Employees use MIDAS regularly.
H_9 - There is a net benefit employees perceived when utilizing the MIDAS system.



Data Analysis and Results

The information was gathered through the use of questionnaires. 40 questionnaires were distributed which had 8 questions group based on the Model. This System is being used by internal users and not by external users. The result was based on the Model the research choose to use.

Table 1 and Table 2 show the background information of the participants who participated in survey. Table 1 show a cross tabulation between Gender and Age. It shows that most of the persons that work in each department are Males at the of 26 – 35. Table 2 shows a cross tabulation between working experience against station. Cayo District has more employees with experience from 5 to 10 years working at the same Department.

Table 1 Number of male and female respondents.

Male/Female * Age Crosstabulation

Count

		Age				
		20-25	26-35	36-45	46-55	Total
Male/Female	Males	7	10	6	2	25
	Females	4	9	0	1	14
Total		11	19	6	3	39

Table 2 Working experience employees have.

Working Experience * Station Crosstabulation

Count

		Station				
		Corozal	Orange Walk	Cayo	San Pedro	Total
Working experience	less than 5	3	0	3	0	6
	5-10	6	1	8	1	16
	11-15	3	0	5	1	9
	More than 5	0	0	6	1	7
Total		12	1	22	3	38

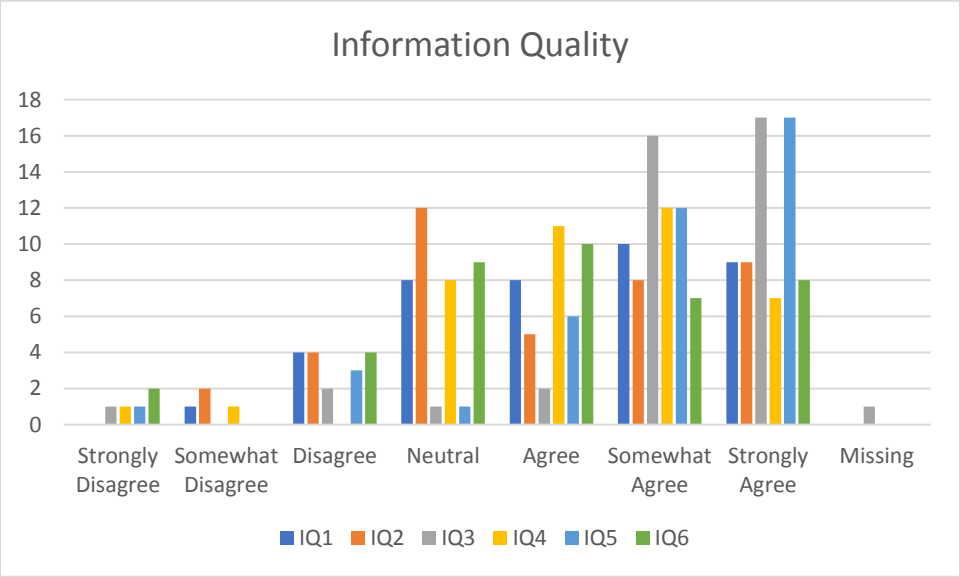


Figure 1 Information Quality

Figure 1 above shows the result for the Information Quality section. Question 3 and 4 has the highest score of 16.5 stating that they strongly agree that the MIDAS System provides them with adequate information. Other questions have a lower scoring but the lowest score was 1 where some of the participants selected strongly disagree.

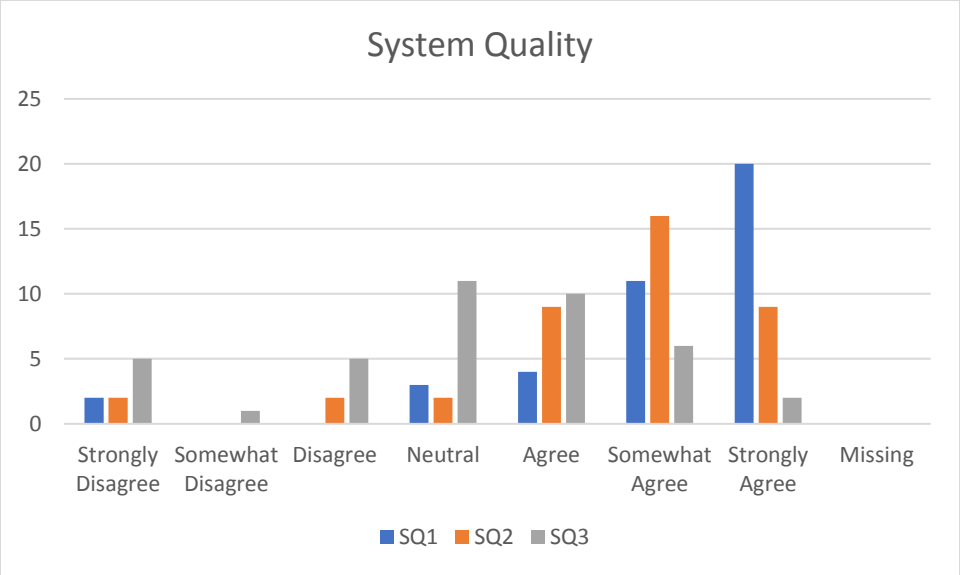


Figure 2 System Quality

Figure 2 above shows the System Quality for MIDAS that was made into three sub questions SQ1, SQ2, SQ3. The rating was from strongly disagree to Strongly Agree. The highest score was SQ1 with 20, most of them strongly agree with the System. The lowest was SQ3 with 1 which with rating of somewhat disagree.

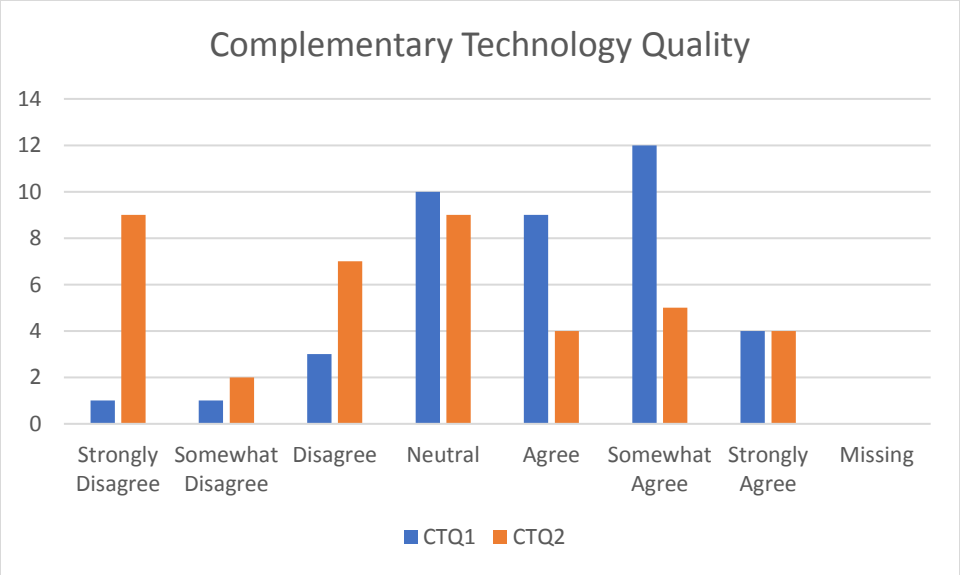


Figure 3 Complementary Technology Quality

Figure 3 above shows the data for Complementary Technology Quality. This was sub divided into two questions in order to determine the results. As shown above the highest was somewhat agree with a rate of 12. This indicate that majority choose the option somewhat agree. The second score was neutral with 10 and the lowest was Somewhat disagree with 1 and 2.

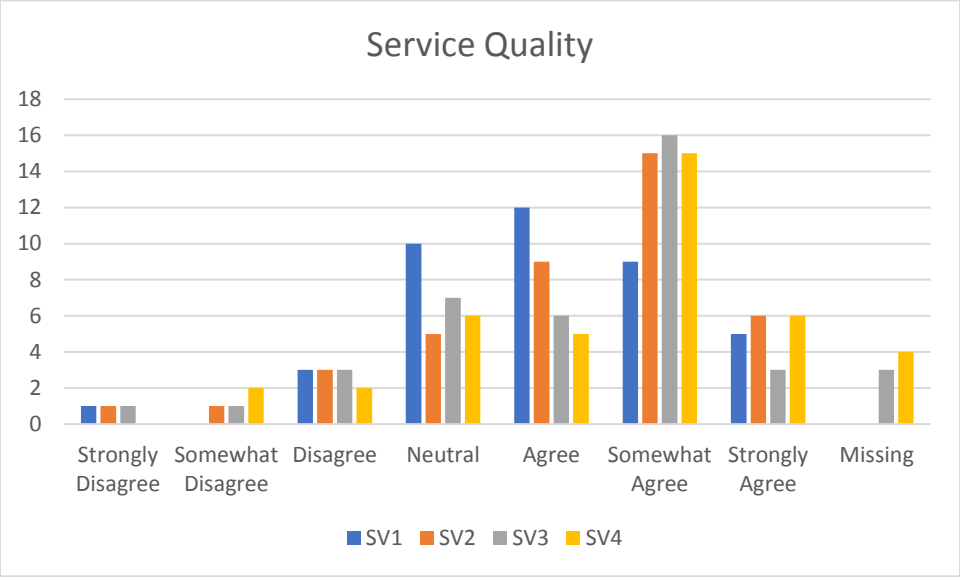


Figure 4 Service Quality

Figure 4 above shows the Service Quality. This question was sub divided into sub questions of 4. The highest score was SV3 with 16. The majority choose somewhat agree.

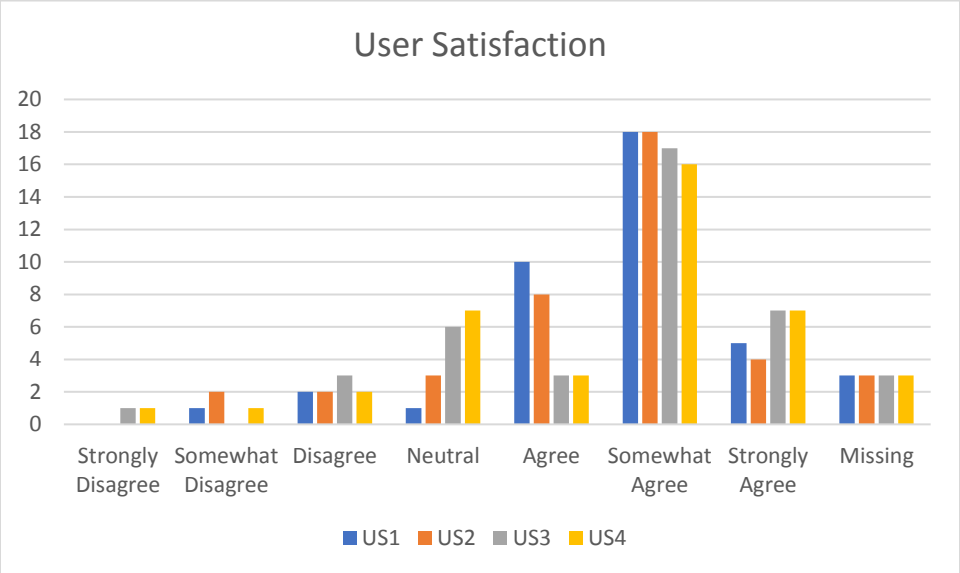


Figure 5 User Satisfaction

The above figure shows the User Satisfaction. It has 4 sub questions. The highest one will 20. The lowest was 1. This shows that majority of the participants somewhat agree with the system.

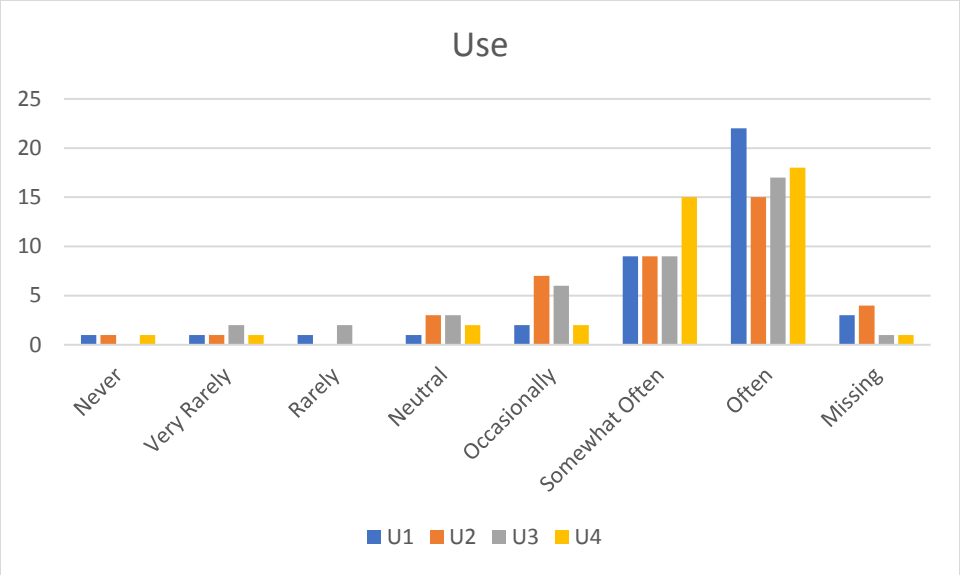


Figure 6 System Use

This Figure 6 above illustrates how often the participant uses the system. The highest on will be U1 with 21.

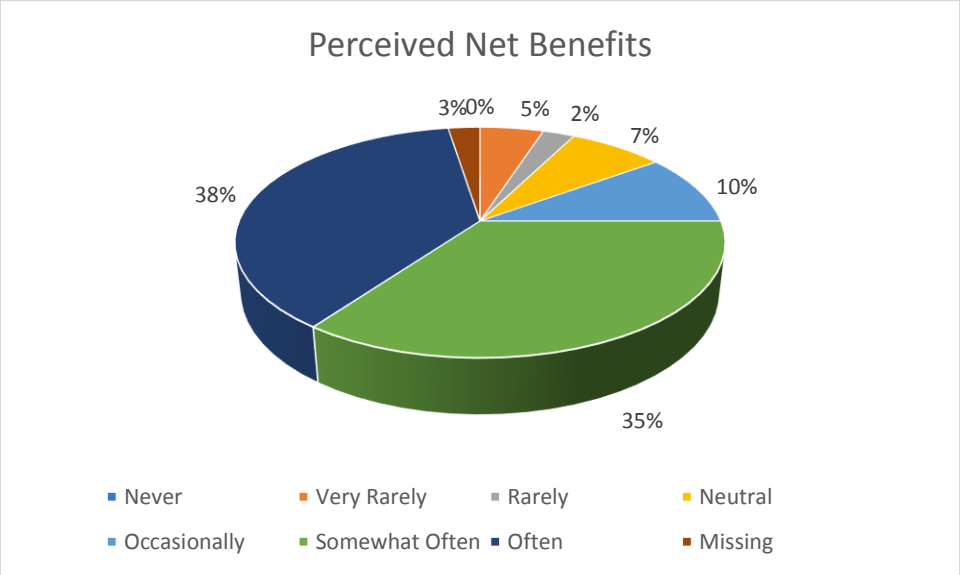


Figure 7 Perceived net Benenfit

Figure 7 above illustrates the perceived net benefits in percentages the highest percentage will be often with 38%. These participants use the system often which means that it is very important that they use it every day in order to perform their tasks. The lowest percentage was rarely with 2% followed by Missing questions left blank is 3%, Very rarely is 5%, Neutral is 7%, Occasionally is 10% and Somewhat often is 35%.

Conclusion, Limitation and Recommendation

The purpose of this research was designed to evaluate the success of the MIDAS System at the Department of Border Management and Immigration Service. The results from the topic of the questions using the model showed that the MIDAS System was successful.

During the research, we faced several limitations while trying to find the successful of the system utilized at the Department of Border Management and Immigration Services. The greatest limitation we encountered was when we were collecting our data through the questionnaires. The reason because most of the users of MIDAS are at entry points as mentioned the Belize Northern Border in Corozal, Philip Goldson International Airport in Belize, San Pedro Station, Belize Western Border Station and Belmopan Headquarter in the Cayo District. As we recall the Department recently did a restructuring of the Department with Civilian public officers working at Belmopan Headquarters and Immigration Officers working only at entry points. This made it difficult for us to get these questionnaires to Immigration officers at these entry points.

During the research, we faced a hug obstacle on how would we get our questionnaires to places like Corozal Border and San Pedro. Our group had to arrange to travel to Corozal and request permission for Port Commander to give officer time to complete the questionnaires. In the case with San Pedro, we had to contact the Port Commander Ms. Lorine Pott who offered her assistance to our group in which she had requested that the questionnaires be email to her and she would distribute to officer under her supervision and would return the questionnaires to us when she came back to San Ignacio.

After overcoming our limitation and obstacle we both faced during the research and putting up all the information together. We would like to give special recognition to the Director of Immigration Ms. Dianna Locke, would did not hesitate to give us the approval from the first instance she was approached by our group members to study the success of the Belize Border Management and Immigration Services system that is utilized to record information of persons entering and exiting Belize. We would also give special thanks to Port Commanders such say Mr. George Renolds, Ms. Vannetta Kerr, Ms. Lorine Pott and all Immigration officers who participated in making our research paper a success.

After gathering and compiling all the necessary information, we found out that the MIDAS system has been proven a huge success at the Department of Immigration under the Border Management and Immigration Services. It is recommended that for future studies of the MIDAS system or any studies conducted at the Border Management and Immigration Services that if any questionnaire are required that the Director of Immigration send those questionnaires to all the Port Commander at entry points, distribute those questionnaires to employees and the responded questionnaires be send to the Director. The reason is that all Immigration Officers would use MIDAS have the opportunity to express their satisfaction or dissatisfaction with the system. This would also allow us to have a larger sample size from all entry points of Immigration Officer that use the system to have a more accurate data. A recommendation by officers is that computers, Scanners, and cameras with make up the MIDAS system should properly be maintained on a monthly bases and not only when the system has a problem.

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Appendix

Questionnaire I – "Success of MIDAS"

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 Migration Information Data Analysis System. The data gathered will be analyzed to determine the success of MIDAS at the Department of Boarder Management and Immigration Service.

Please answer each question based on your use of MIDAS. 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:	20-25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ >55 ☐
Please indicate how long you are working with the Department of Border Management and Immigration Service:	1 -2 Year ☐ 3-4 Year ☐ 5-6 Year ☐ 7-up Year ☐
Please indicate what post you currently hold at the Department of Border Management and Immigration Service:	Port Commander ☐ Immigration Assistant I ☐ Immigration Assistant II ☐ Immigration Officer I ☐ Immigration Officer II ☐
Please indicate your working experience:	<5 ☐ 5-10 ☐ 11-15 ☐ >15 ☐
Please indicate at what District Office or port of entry your currently posted:	Corozal ☐ Orange- Walk ☐ Belize City ☐ Cayo ☐ Stann Creek ☐ Toledo ☐ San Pedro ☐

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

2. Information Quality	Disagree ----------Agree
IQ1: The MIDAS system provides information that is exactly what you need.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ2: The MIDAS system provides information you need at the right time.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ3: The MIDAS system provides information that is relevant to your work.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ4: The MIDAS system provides sufficient information.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ5: The MIDAS system provides information that is easy to understand.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ6: The MIDAS system provides up-to-date information.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
3. System Quality	**Disagree ----------Agree**
SQ1: The MIDAS system is easy to use.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SQ2: The MIDAS system is user-friendly.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SQ3: The MIDAS system provides interactive features between the users and the system.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
4. Complementary Technology Quality	**Disagree ----------Agree**
CTQ1: The computer (desktop, laptop, mobile device) you normally use to access MIDAS is adequate.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
CTQ2: The computer (desktop, laptop, mobile device) you normally use to access MIDAS has a fast and reliable internet connection.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
5. Service Quality	**Disagree ----------Agree**
SV1: The support staff keep the MIDAS system software up to date.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SV2: When users have a problem the MIDAS system support staff show a sincere interest in solving it.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SV3: The MIDAS system support staff respond promptly when users have a problem.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SV4: The MIDAS system support staff tell users exactly when services will performed.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
6. User Satisfaction	**Disagree ----------Agree**
US1: Most of the users have a positive attitude towards MIDAS.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
US2: Do You think that the utility of the MIDAS system is high.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
US3: The MIDAS system have met your expectations.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
US4: You are satisfied with the MIDAS system.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

7. Use	**Never ----------Often**
U1: Your frequency of use of the MIDAS system is high.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
U2: You depend upon the MIDAS system.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
U3: You were able to complete a task using MIDAS 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 MIDAS system.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
8. Perceived Net Benefits	**Never ----------Often**
NB1: The MIDAS system helps you improve your working performance.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB2: The MIDAS system helps the organization save costs.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB3: The MIDAS system helps you achieve the organization's goals.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB4: Using the MIDAS system improves assessments.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB5: Using the MIDAS system at your work increases work productivity.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB6: Overall, using MIDAS enhances the organization.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

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

Thank you for your participation.