Evaluating the Efficiency and Effectiveness of Belize Telemedia Limited Online System

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Abstract

Although a vast amount of research has been conducted on information systems' success of Belize Telemedia Limited, not much has been done to test and measure the use of the service and how effective and efficient it is to customers while performing transactions. The model consists of nine (9) sections: background information, information quality, system quality, complementary technology, service quality, user satisfaction, use, perceived net benefits, and self-efficacy measure. Structure equation modelling techniques were applied to the collected data of the thirty-two (32) questionnaires that were distributed to Belize Telemedia Limited's customers. This study is to hypothesize the relationship between the BEL's Online System service and its customers. Even though the discoveries brought several important allegations, the many limitations for the study hinder much research, hence, much research could be done in the future for future researchers.

Keywords: Online system, BEL, effective, efficient.

Introduction

Digi, formerly known as Belize Telemedia Limited (BTL), is a Belizean Telecommunications conglomerate, headquartered at Saint Thomas Street, Belize City owns and operates an extensive telecommunications network throughout the country of Belize, encompassing landline, mobile, broadband services and business solutions. With over 700 skilled and trained employees and 13 offices countrywide, Digi is focused on developing, engineering, and expanding its state-of-the-art network and technologies to provide optimum telecommunications services to Belizeans. The company offers its expansive range of products and services which include:

- Mobile Voice, SMS and Data services over a 4GLTE Advanced Mobile Network
- Residential & Business Landline telephone service
- National and international call services
- International voice and data roaming
- Residential and Business High Speed Internet service (DSL)
- Fiber-to-the-Home Broadband Services
- National and international data networks

With a focus on the future, the Company is committed to the development of the Belizean community, and the expansion of its product offerings to ensure that the country of Belize becomes a regional leader in telecommunications – as measured by quality of service - by the year 2020.

Hence, the implementation of new services mean that customers must get familiarize with such information system, to be able to use it accordingly. Therefore, this paper focuses on the effectiveness and efficiency of its online system according to its customers (Digi, n.d.).

This research is important, because BEL is the main telecommunication company in Belize, which needs to receive feedback from its customers to understand how effective and efficient their current online information system is being. Furthermore, to identify the gap between what its customers currently know about how the online system works, and what needs to be done to close said gap for better operating its online system.

Hypothesis

Belize Telemedia Limited's online system helps ease the process its customers make when making payments, reviewing financial history, etc. although some customers require assistance in using its online system.

Literature Review

This literacy review purpose is to provide former evidences, researches and studies that support the theoretical and methodological framework used in the effectiveness and efficiency of Belize Telemedia Limited's online system.

Information Systems is important because it makes the interaction between customer and enterprise reliable, accessible, and creates good communication. It also increases effectiveness, and efficiency of productivity among workers (Lippe-Heinrich, n.d.).

Arana, Padron & Young Belize (2018) conducted a study to Telemedia Limited was conducted a study pertaining their Comarch Customer Management that helps communication service providers sell more services, get closer to their customers, and significantly reduce customer churn. The system provides extensive knowledge about customers and employees. The testing was done on eight (8) criterion in relation to the effectiveness and efficiency of this system and how it contributes to the success of the organization. The Comarch Customer Management system is a major contributor to the continuing success of BTL and assists in meeting their goals. Even more, employees are quite satisfied with the system itself and gave positive feedback during the research.

Unlike Comarch Customer Management research who focuses on the employees' overall satisfaction, this study focuses on the satisfaction of the customers, based on how effective and efficient they believe the current online system of Belize Telemedia Limited is. Moreover, it helps understand where the customers stand in their understanding of how the online system operates, and what can be done to minimize the gap, so that customers comprehend BEL's online system, with the purpose of increasing the level of participation in the system as well as customer satisfaction.

Furthermore, a similar study was done to Belize Telemedia Limited by University of Belize student; Timothy Chukwuka (2018). Chukwuka's study focuses on measuring the effectiveness of BEL's Digicell Services to its customers, mainly students at the University of Belize in the Belize district. This study was conducted with the purpose of understanding the needs and wants of students, who in this current era use technology quite a lot. Although understanding their needs and wants is important, the research also focused on what their current experiences are concerning BEL's Digicell services such as mobile data, household internet, among other services.

Even more, Chukwuka's research paper provided an in debt look at how the corporation's BTL's services are viewed through the eyes of the customer in Belize. A questionnaire was used for collecting data, out of the 49 surveys that were distributed among students of the University of Belize as well as other work professionals, all 49 of the surveys we retrieved and completed. The study revealed that majority of the respondents had mobile phones which also had internet and use other services that BTL provides. The study further confirmed that

most of the respondents constantly purchase data (internet) for leisure (social media) and communication. In addition, the study revealed that BTL users are fairly satisfied with the service the company provides. The study recommends that further research should focus on quantitative data in terms of the country's overall benefit by using the service BTL provides (Cawich, Rivas, Urbina, Uwaje, 2018).

Nevertheless, Chukwuka's research focused more on the effectiveness of BTL's services according to University of Belize's students in the Belize district only. Which, unlike this research which focuses on the effectiveness and efficiency of BEL's online system according to its customers at different phases; students, workers, etc, and in various towns and districts. Nonetheless, one of the main limitations that said study encounter was that some of the respondents did not completed the questionnaires, hence, leaving some information out of the loop, hindering the researchers to properly conduct their study.

Even more, in the article *Measuring usability: are effectiveness, efficiency, and satisfaction really correlated?* by Frøkjær, Hertzum, & Hornbæk (2000), highlighted the great importance that the effectiveness, efficiency and satisfaction have when implementing new services. In this case, it proves that the effectiveness and efficiency of BEL's online system on its customers is crucial in order to attain customer satisfaction, which will result in a positive feedback for the company.

In this case, the information system model used for this research was DeLone and McLean. The DeLone and McLean IS success model is an information systems theory that seeks to provide a comprehensive understanding of information systems' success by identifying, describing, and explaining the relationships among six of the most critical dimensions of success along which information systems are commonly evaluated. This information system' success model has been cited in thousands of scientific papers, and is considered to be one of the most influential theories in contemporary information systems research (Research Gate, 1988).

Methodology of the Study

Approach

The population that researchers intend to survey for the purpose of this research will consisted of individuals who are customers of the Belize Telemedia Limited company. The sample group consisted of an amalgamation of both males and females, with no specific age range, education nor work experience. Researchers distributed a total of 32 surveys to 32 different participants who successfully completed the entire questionnaire. The researchers will utilize the cluster sampling method, which consists of various segments of a population are treated as members from each cluster which are randomly selected. It will not divide the population into sub-groups, but rather randomly select participants from already existing

occurring sub-groups of the population. In this case, Belize Telemedia Limited customers within different towns (Study, 2018).

The reason this sampling method is used is because BEL's customers are all around the country, but there was a time limitation to reach out to customers in all the different towns. Hence, the most populated towns were identified and individuals were randomly selected out of the clusters that were formed. This way, information from participants would be easier to retrieved. Even more, individuals were given the option of whether or not they were willing to complete the questionnaire that was being used for the study. Such factor, among others, may influence throughout the selection process, hence, researchers decided it was best to randomly select individuals rather than placing them in specific groups.

Data needs and process

This study, although it has been previously attempted by students of the University of Belize, it did not consist of other important sections that are critical to the full criticism of BEL's customers' understanding the usage of its online system. Hence, a set of questions were constructing which will help the researchers gather the needed data. In this case, the most appropriate method to use were both qualitative and quantitative data, which would provide a better understanding of the topic to the participants. This method seeks to retrieve the current knowledge that customers possess in accordance with BEL's online system.

In addition, the research started out by issuing an authorization letter to Belize Telemedia Limited company, to receive an approval or rejection that researchers could use the company to conduct this study. After approval was received, questionnaires were being issuing randomly to the cluster individuals, who were given a consent and confidentiality statement at the beginning of the questionnaire. The participants willingly decided whether to partake in this study or not. The questionnaire consisted of a total of 9 sections; information background, information quality, system quality, complementary technology quality, service quality, user satisfaction, use, perceived net benefits, and self-efficacy measure, which will take approximately 10 minutes to complete.

Research differentiation

This study is different from the previously mentioned researches done, in a way that one of the previous studies was focusing on BEL employees' satisfaction, while the other was focusing on the University of Belize' students' satisfaction of the Digicell services in the Belize district only.

Unlike those two, this study focuses on the effectiveness and efficiency on BEL's online system according to their customers. This research, contrasting the other two, will portray the current state of the customers' understanding on the use of the BEL's online system and how this system impacts their lives.

The model above shows how the data collected is relevant for the betterment of the company as well as the customers. The customers' background information; the quality of the system, the quality of the information in the online system, and the complementary technology quality that customers own will decipher the quality of BEL's service. Thereafter, BEL's service quality will determine the customers' ability to use system on their own; self-efficacy measure, if the system is financially useful to them; perceived net-benefit, and their consistency in the system's usage; use, that will determine how satisfied the customer is by BEL's online system.

Data Analysis and Results

the model created helped solve the proposed problem in the way that it showed that BEL customers receive quality information, quality system, quality complementary technology, that system is useful, it helps perceive their net-benefits, and has self-efficacy measure. Although the only category which customers are not fully satisfied is with system quality, since most customers claimed that they are not getting the service they deserve.

Nonetheless, out of the 32 participants, 27 individuals stated that they are satisfied with the overall service of the system. Though they claimed that the information system is useful, they could invest more on those customers who may have trouble understanding the system, so that more people know how to manoeuvre themselves around the system, which in return will save them a lot of time.

The problem at hand, was that most people still find it difficult to navigate and use BEL's online system. Hence, there is a slight difference between perceived net-benefits, self-efficacy measure, and usefulness. Meaning, that although the customers may state that the system in fine, there are still things that seem unsatisfied for them that do not match or meets their daily needs and wants.

In this case, the ICT can be used to explain and illustrate a solution for said problem. ICT, or information and communications technology (or technologies), is the infrastructure and components that enable modern computing (Rouse, 2017).

The chart below represents the findings of the research. On the histograms, if respondents answered 4 and below, then it's a negative reply, if it show 4 and above, it shows a positive regard.
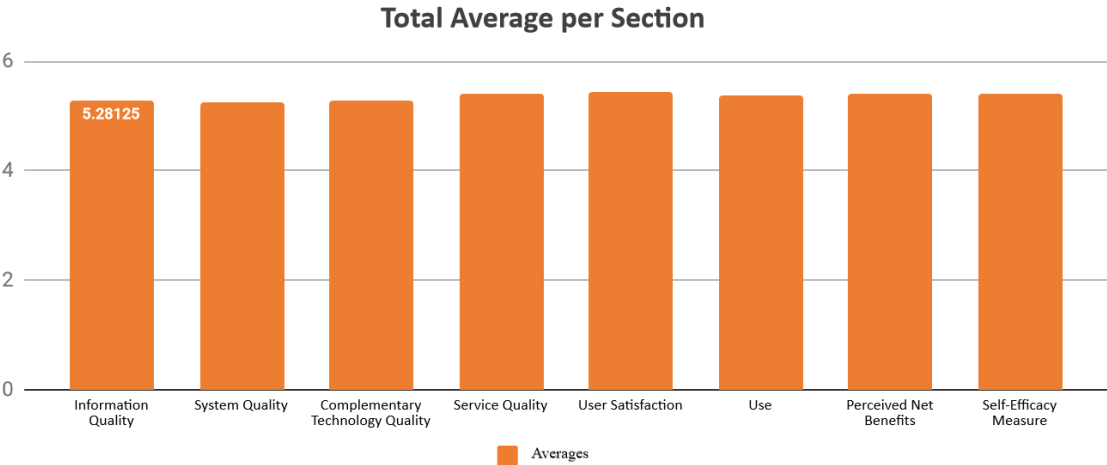
Figure 1: The bar chart shows the total average responses gotten per section during this research.
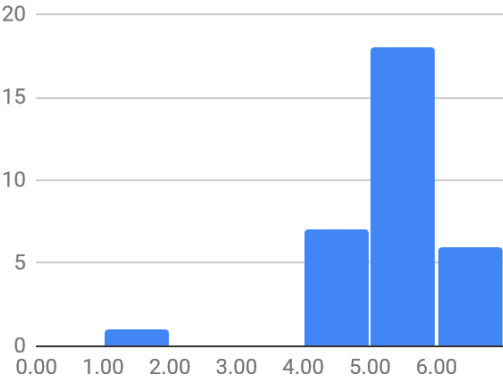
Figure 2: INFORMATION QUALITY HISTOGRAM – shows that majority of the respondents; 26, stated that the online system does provide enough quality information, while the minority; 6, stated that the online system did not.
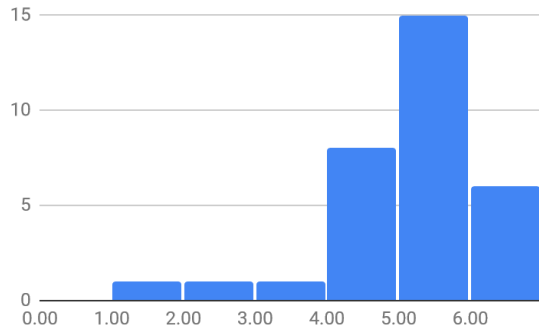
Figure 3: SYSTEM QUALITY HISTOGRAM – shows that majority of the respondents; 21, stated that the online system is fairly easy to navigate, while 11 respondents; minority stated that the online system is not user-friendly.
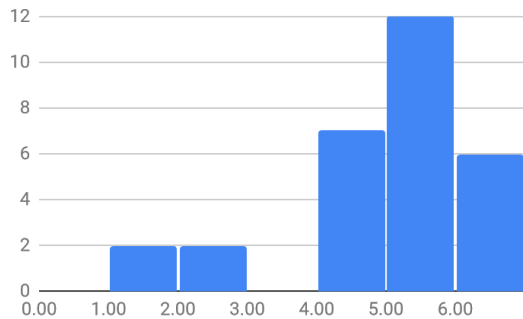
Figure 4: COMPLEMENTARY TECHNOLOGY QUALITY HISTOGRAM – shows that majority of the respondents; 21, stated that their device did help them on the online system, while 11 respondents; minority stated that their technological device did not help them during the process.
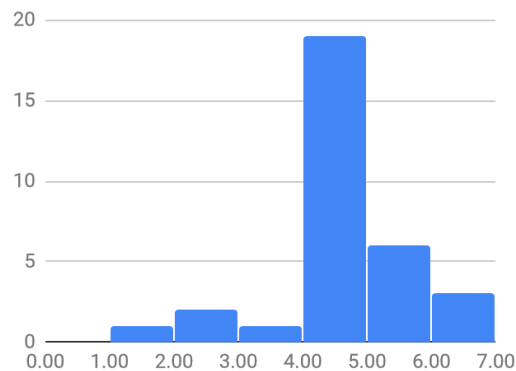
Figure 5: SERVICE QUALITY HISTOGRAM – shows that 20 of the respondents; the majority, stated that they received good service from employees, while 12 respondents stated that they do not receive a good service from employees.
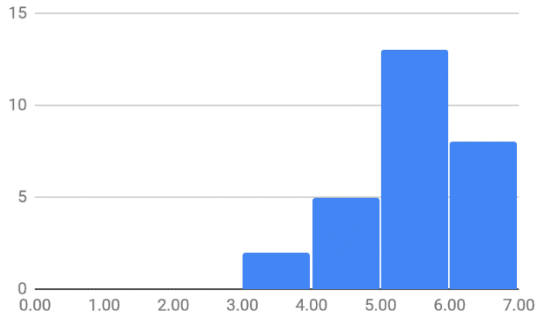
Figure 6: SERVICE QUALITY HISTOGRAM – shows that 20 of the respondents; the majority, stated that they received good service from employees, while 12 respondents stated that they do not receive a good service from employees.
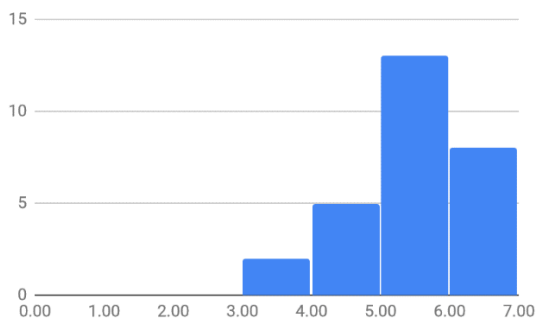
Figure 7: USER SATISFACTION HISTOGRAM – shows that 27 of the respondents; the majority, stated that they are satisfied with the system, while 5 respondents stated that they do not receive a good service from employees.
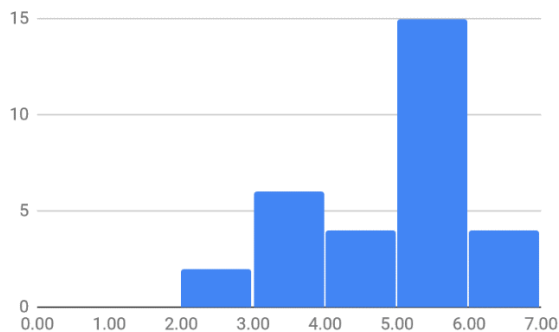
Figure 8: USE HISTOGRAM – shows that 17 of the respondents; the majority, stated that they do use the online system quite often, 5 respondents; minority, stated that they do not use the online system often.
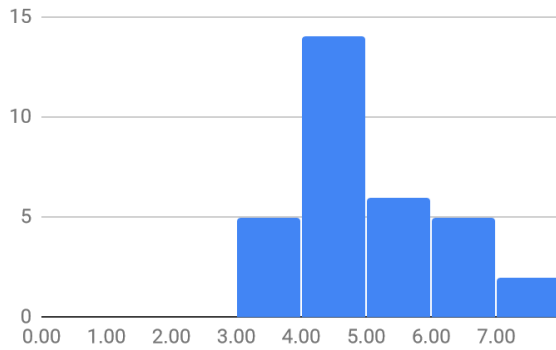
Figure 9: PERCIEVED NET BENEFIT HISTOGRAM – shows that 19 of the respondents; the majority, stated that they benefit quite a lot form the system, 13 respondents; minority, stated that they barely benefit from the online system.
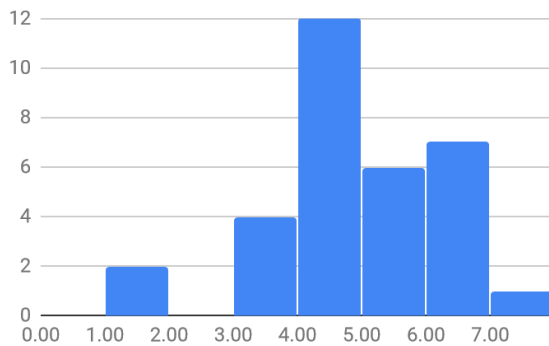
Figure 10: SELF-EFFICIENCY MEASURE HISTOGRAM – shows that 18 of the respondents; the majority, stated that they can complete the tasks using the online system, while 14 respondents; minority, stated that they are not able to complete tasks by themselves on the system.

Conclusion

Overall, Belize Telemedia Limited online system helps its company provide its customers with an easier way to make payments, get news and receipts, right in their cell phones. However, based on the study conducted, the majority or respondents said that they are currently unsatisfied with BEL's customer service, and that it should increase. Most of them also said that although BEL's online system provides quality information, and system, as well as satisfied with the overall performance and relevance, since the information displayed in the system is useful and relevant in their daily lives, that the company should invest more in in is service quality for its employees, to give them better treatment, so as to receive an even bigger positive feedback from its customers in the future. Even more, a follow up study could be done on this same topic to evaluate on whether or not BEL has done something to improved its service quality to its customers.

Some limitations encounter through this study is the lack of people's willingness to contribute to such research, especially those who thought their responses were going to get exposed, regardless of the statement of confidentiality at the beginning of the questionnaire.

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Appendix

Questionnaire I – "Effects of Online Payments" (Belize Electricity Limited (BEL) Customers)

Purpose

This questionnaire asks for information about experience with BEL's online services and how effective it is to you as a user. We would like to measure the use of the service and the effective and efficient it has been to customers in completing their transactions and its effects on the organization's performance.

Please answer the questions in relation to your personal experience. Your individual responses to the questionnaire will be strictly confidential.

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 highest education level attained:	PhD ☐ Masters ☐ Bachelors ☐ Associates ☐ High School ☐ Primary School ☐
Please indicate your working experience (years):	<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: BEL's Online system provides information that is exactly what you need	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ2: BEL's Online system provides information you need at the right time	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ3: BEL's Online system provides information that is relevant to your job	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ4: BEL's Online system provides sufficient information	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ5: BEL's Online system provides information that is easy to understand	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
IQ6: BEL's Online system provides up-to-date information	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
3. System Quality	**Disagree ------------------------------Agree**
SQ1: BEL's Online system is easy to use	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SQ2: BEL's Online system is user-friendly	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SQ3: BEL's Online system provides high-speed information access	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SQ3: BEL's Online system provides interactive features between users and the system	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
4. Complementary Technology Quality	**Disagree ------------------------------Agree**
CTQ1: The software on device (desktop, laptop, mobile device) you normally use to access BEL's Online system is adequate	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
CTQ2: The device hardware (desktop, laptop, mobile device) you normally use to access BEL's Online system has a fast and reliable internet connection	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
CTQ3: The speed of the Internet connection used to access the BEL's Online System is adequate.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

CTQ4: The reliability of the Internet connection used to access the BEL's Online System is adequate.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

5. Service Quality	Disagree --------------------------------Agree
SV1: The support staff keeps *BEL's* Online system software up to date	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SV2: When users have a problem *BEL's* Online system support staff show a sincere interest in solving it	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SV3: *BEL's* Online system support staff respond promptly when users have a problem	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
SV4: *BEL's* Online system support staff tell users exactly when services will be performed	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

6. User Satisfaction	Disagree --------------------------------Agree
US1: You have a positive attitude towards *BEL's* Online system	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
US2: You think that *BEL's* Online system is useful	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
US3: *BEL's* Online system has met your expectations	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
US4: You are satisfied with *BEL's* Online system	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

7. Use	Never ----------------------------------Often
U1: Your frequency of use of *BEL's* Online system is high	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
U2: You depend upon *BEL's* Online system	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
U3: You were able to complete a task using *BEL's* Online 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 *BEL's* Online system.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

8. Perceived Net Benefits	Never ----------------------------------Often
NB1: *BEL's* Online system helps you improve your financial planning	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB2: *BEL's* Online system helps you save time and costs	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB3: *BEL's* Online system helps you achieve your financial goals and transactions	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB4: Using *BEL's* Online system improves your financial budgeting	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
NB5: Overall, using *BEL's* Online system enhances your productivity	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

9. Self-Efficacy Measure	Never ----------------------------------Often
CSE1: You could complete the job using BEL's Online system if no one is around to help you	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
CSE2: You could complete the job using BEL's Online system even if you have not used a similar information system before	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
CSE3: You could complete the job using BEL's Online system if you only have the information system's manual for reference	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
CSE4: You could complete the job using BEL's Online system if you had seen someone else use it before.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
CSE5: You could complete the job using BEL's Online system if you could call someone for help if you got stuck.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
CSE6: You could complete the job using BEL's Online system if someone else had helped you get started.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
CSE7: You could complete the job using BEL's Online system if you had a lot of time to complete the job for which the Online system was provided.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
CSE8: You could complete the job using BEL's Online system if you had just had the 'built-in' help facility for assistance.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

CSE9: You could complete the job using BEL's Online system if someone showed you how to do it first.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐
CSE10: You could complete the job using BEL's Online system if you had used a similar Online system before this one, to do the same job.	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

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

Thank you for your participation!