

Measuring the Effectiveness of Belize Telemedia Limited's services in Belize

Timothy Uwaje

University of Belize
Hummingbird Avenue, Belmopan
2014111810@ubstudents.edu.bz

Shandira Urbina

University of Belize
Hummingbird Avenue, Belmopan
20171217664@ubstudents.edu.bz

Hesmir Cawich

University of Belize
Hummingbird Avenue, Belmopan
2017117463@ubstudents.edu.bz

Angie Rivas

University of Belize
Hummingbird Avenue, Belmopan
2017116017@ubstudents.edu.bz

Abstract

This research paper will be providing 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 forty nine surveys that were distributed among students of the University of Belize as well as other work professionals, all forty nine 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.

Keywords: Belize Telecommunication, Customer satisfaction, Net perceived benefits.

Introduction

The reaches of human consciousness have always found expression in new technologies and how to communicate with each other by using these new technologies. That being said communication technology is one of the most important facilities of information technology (IT) for the people around the world. Not to mention that technology has it facilitated the level of interaction from one person to another despite there being considerable distance between the

communicators. In addition, technology has made an enormous impact on the way a business operates causing the nature of business itself to change, develop and evolve by continuously innovating and using communication technology in a manner that yields greater benefits for the organization.

The benefits of communication technology has especially benefited developing countries like Belize bringing about service providing companies like Belize Telecommunication Limited (BTL) and Smart, however ever since BTL was established in 1972 it soon became Belize's leading communication provider soon after their success in the industry they opened a wireless division in the year 2009 which is now commonly referred to as Digicell.

The company has expanded its mission to go beyond just providing telephone service to providing telecommunications solutions for its residential, business and government customers. BTL operates an extensive network of telecommunication services in wireline, mobile, data, Internet and value added features. Each offers a full range of products and services that include fixed line telephone service, fixed wireless, national and international mobile services, high speed data services and national and international data networks.

The purpose of this research paper is to verify where the division stands in terms of the quality of service they provide, pointing out areas that could have weakened their standings among the customers. By obtaining basic information from the surveys issued, the primary objective of the research should be to make recommendations pertaining as to where the company can improve in order to keep growing as business while providing outstanding services to its customers.

Literature Review

This Literary review aims to provide past evidences and studies that supports the theoretical and methodological framework used in effective service and system quality provided by the Belize Telecommunication services in order to maximize customer's welfare and satisfaction. The various analysis of this review would provide an insight as to the different models and measuring instruments that is very essential to the foundation of this research study.

According to Pitt, Watson & Kavan (1995) in their study argued that there is a danger of Management Information system measurement because commonly information system effectiveness focused more on service products rather than the services of the Information

system function. "SERVQUAL" an instrument which was developed in the study as an assessment package measures service dimensions of reliability, responsiveness and assurance which are very much relevant to attaining organizational objectives.

The study of Orlikowski & Iacono (2001) showed that Information system research employs a "proxy view" of technology, which has lost its connection to the field's core subject matter therefore identifying the dimensions of the Information system artefact that shape quality can provide this connection. Researchers have now focused on perceptions related to Information system use and although such perceptions have been important in explaining usage of information system they are somewhat abstract and as a result provide a limited guidance for system designers. Adams, Nelson & Todd (1992).

It is important to note that organizations in today's world have several stakeholders according to Cameron & Whetton (1983) Hannan & Freeman (1977) which include customers, investors with diverse goals and opinions of varying time and horizons therefore measuring the success of various organizations can be problematic because there is rarely a single common objective for all stakeholders.

According to (DeLone and McLean, 1992) multiple measures are required as information system effectiveness is a multidimensional construct which led to the development of a highly successful model categorizing the measures into various groups which looks at the impacts of information quality, system quality and service quality to provide better use and user satisfaction of information system for both individual and organizational benefits. This highly developed model was widely accepted as an upgrade on a previous study Shannon & Weaver's (1949) "theory of communication" which was only product oriented where only the system quality outlines the measures of the information processing system.

Pitt, Watson & Kavan (1995) in their review further claimed that users are heavily dependent on information system to convert their needs into an organized system. Information system can be an important tool to shape the users expectation during system development. As a dependent variable Goodhue, D.L (1995) noted that user's evaluation of information system attribute can provide a basis for the determination of Information system value. In their study Nelson, Todd & Wixom (2005) argued that there are four goals for the set of determinants that

shape quality and these dimensions should be complete, be relatively parsimonious, enhance understanding of the multifaceted nature of information and system quality and be actionable, in the sense that the dimensions can be influenced through system design or managerial intervention.

Service Quality is founded on a comparison between what customer feels should be offered and what is being offered which in summary is the difference between customer's perception and expectation which was well argued in Parasuraman, et al. (1985) (Gronroos, 1982; Sasser, et al., 1978). According to Rushinek & Rushinek (1986) a fulfilled customer or user's expectation will ultimately lead to an overall satisfaction. If Information system is to provide some clarity and address this difference then there is a need to assess the customer's perception and expectations. Which was further defined in the study of Zeithaml et al (1990) where it defined service quality as the degree to which Service well exceeds customer's expectation.

Parasuraman, et al. (1985) put into use their conceptual model of service quality by following the framework of Churchill (1979) for developing measures of marketing constructs. They started by first making extensive use of focus groups, who identified 10 potentially overlapping dimensions of service quality. These dimensions were used to generate 97 items. Each item was then turned into two statements-one to measure expectations and one to measure perceptions. Parasuraman, et al.'s work resulted in a 45-item instrument "SERVQUAL" which was used in assessing customer expectations and perceptions of service quality in service and retailing organizations.

The customary objective of an information system organization is to maintain and operate information delivery systems however users expect and efficient and effective delivery system but the main goal of the user is not in the delivery system but what information it can provide. The DeLone & McLean, 1992 model still remains the most universally acceptable model for measuring the various dimensions of information system since it is a multi-dimensional construct but the Parasuraman, et al. (1985) conceptual model of service quality demonstrated that "SERVQUAL" can be an important tool in information system for measuring service quality which is an important basis of the DeLone & McLean, 1992 model which presents a logical model for user's expectations and also giving some directions for future research study.

Research Methodology

Belize Telemedia Limited is one of the two companies that offers communication services to the nation of Belize having coverage of almost all its territory. Information obtained at the branches available in each town represents whether the service provided in each area is reliable or if there are any damages to the equipment infringing with communication to occur in society. There are six interrelated dimensions of success in the original Mclean and Delone model which are:

System Quality, Information Quality, Use, User Satisfaction, Individual Impact, and Organization Impact. These dimensions were used to measure the success of the communication company which is Belize Telemedia Limited. The original Mclean and Delone IS model specifically the dimension of Information Quality which focused on the Belize Telemedia Limited output is a vital factor in the decision making of the company itself and the users. Measures of Belize Telemedia Limited as a communication company is the System Quality which in effect contributes in knowing whether the company is up to such standards. User Satisfaction is the contribution of the employees to the company and making it the best communication company in the whole nation of Belize. Determining Information Systems success according to the original Mclean and Delone model is having high numbers in user satisfaction for them to be able to know how the employees use the system and how they can better off by using it.

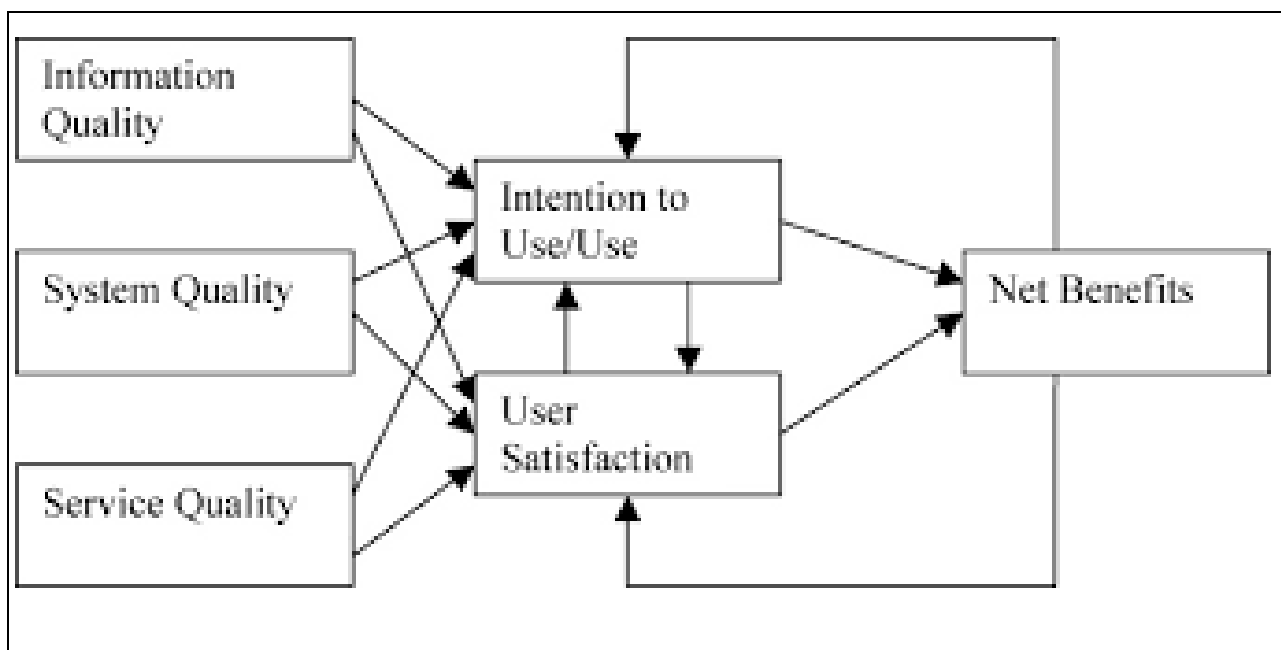


Figure 1. Modified Research Model
--

The hypothesized relationship between BTL variables are based on the work reported by DeLone and McLean . The study hypothesized the following hypotheses tested:

- H1. Information Quality will positively impact User Satisfaction.
- H2. System Quality will positively impact User Satisfaction.
- H3. Service Quality will positively impact User Satisfaction.
- H4. Use will positively impact User Satisfaction.
- H5. User Satisfaction will positively impact Use.
- H6. Information Quality will positively impact Use.
- H7. System Quality will positively impact Use.
- H8. Service Quality will positively impact Use.
- H9. Use will positively impact Perceived Net Benefits.
- H10. User Satisfaction will positively impact Perceived Net Benefits.

Construct measurement

Table 1. The measurement items for questioners.

Construct	Survey Questions	Source
Information Quality	IQ1: How long have you been with BTL? IQ2: Which type of BTL user are you? IQ3: Which BTL service do you prefer using?	
System Quality	SQ1: After you purchase text bundles, how long does it last? SQ2: Approximately how much credit do you use for a period of one month? SQ3: How comforting do you feel using BTL services?	

Service Quality	SV1: After purchasing data, approximately how long does it take in order for you to have access to it? SV2: Have you experienced any signal loss? SV3: Are the customer service agents willing to assist with issues faced?	
User Satisfaction	US1: Have you had any issues with BTL services? US2: Rate the services BTL offers. US3: Rate the customer service agent's response at customers issue faced.	
Use	U1: Are you a data user? U2: How much data do you purchase? U3: How often do you use data? U4: Do you use more data than text bundles? U5: How much text bundles do you use?	
Perceived Net Benefits	NB1: For what do you use data mostly? NB2: How had BTL services impacted your communication? NB3: How efficient is BTL services in saving time and cost at accessing information?	

Sampling and data collection

The purpose of this research was to rate the telecommunication services offered by Belize Telemedia Limited in the country of Belize. The base of the finding was to know if customers/users are satisfied with the services provided. This research was conducted in a quantitative method and a total of 49 random respondents were asked to answer the surveys. The following methods were used in the research to obtain data:

Primary data: Surveys were used to gather data from BTL users across the country. Respondents were chosen randomly and were issued a survey to answer.

Secondary data: Data from the internet was utilized for further research.

Out of 49 surveys that were handed out, 49 were given in returned but not all questions was answered.

Characteristics of Respondents		
Characteristics	Number	Percentage
Age		
15 -19	15	31%
20 - 24	20	41%
25 - 29	7	14%
30 +	7	14%
Gender		
Male	27	55%
Female	22	45%
Occupation		
Student	35	71%
Business	5	10%
Professional	3	6%
Service		-
other	6	13%

Analysis Data and Research Results

The following data was gathered from the surveys and are depicted in histograms. As a result, these are the totals of each section when tallied.



Figure 2. Illustrates that BTL users do use most of the services offered and are user for a more than 2 years.

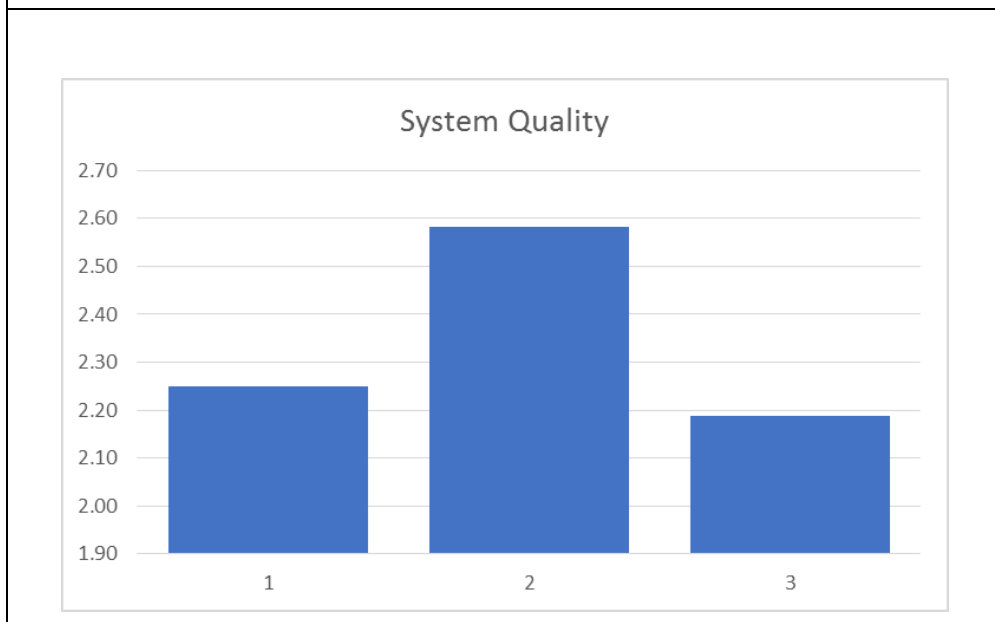


Figure 3. Illustrates that BTL users are satisfied with the system quality.

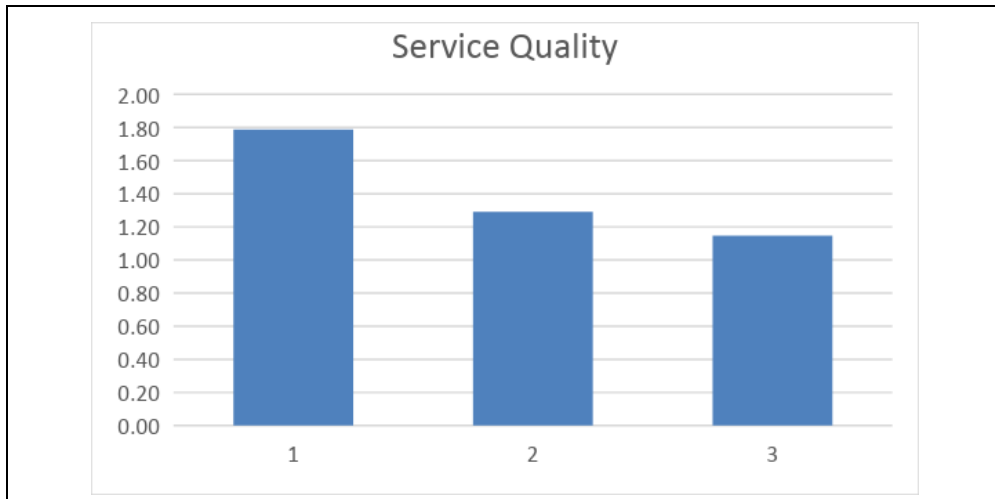


Figure 4. Illustrates that BTL's service quality is accurate and user are satisfied with it.

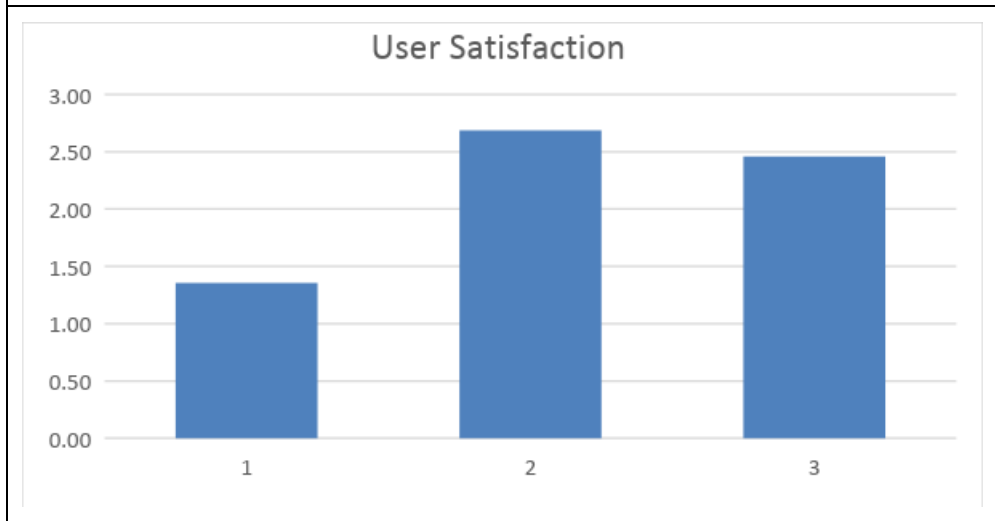


Figure 5. Illustrates that the services to correspond to user's use. They are satisfied with the services they individually use.

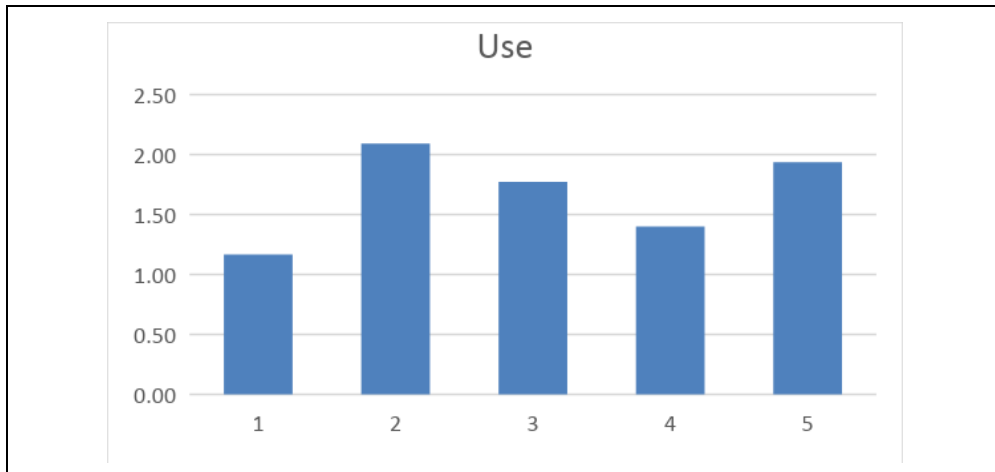


Figure 6. Illustrates that respondents use BTL's services often.

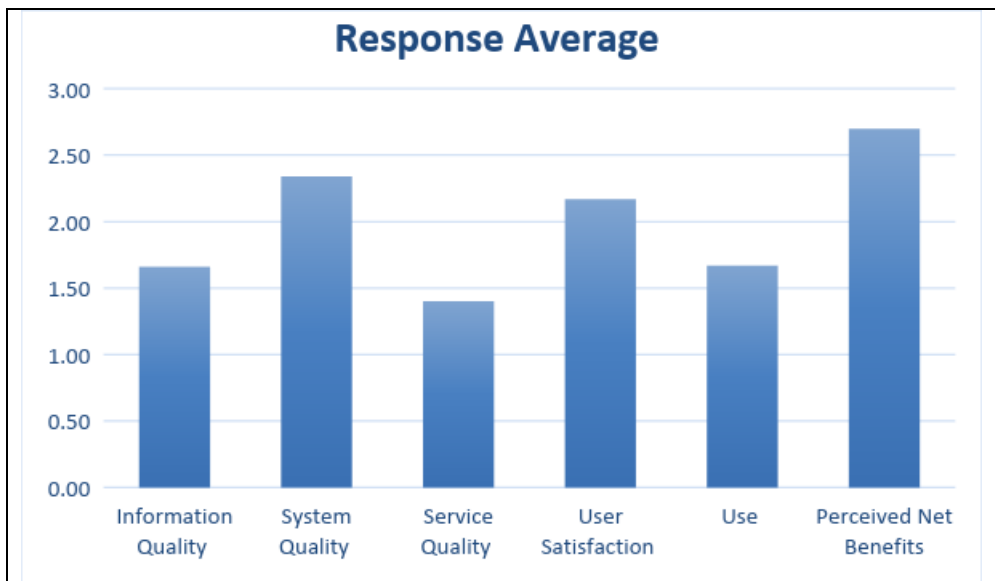


Figure 7. Illustrates the average response of BTL users.

Conclusion

Implications

This research was based on the experiences we've had as Digicell users upon their information systems which are their Data Packages, Call Coverage and Text bundles. This communication service is popularly used in our modern era since most of the population own a smart phone. Users use Belize Telemedia Limited's (BTL) information systems to interconnect with others

from a different village, town, district, or country. The results show that the use of information quality, system quality, user satisfaction, service quality, and perceived net benefit. Based on the analysis of the findings, the six dimensions model of Delone and Mclean illustrates the objective of the findings. The perceived net benefits proved that users are satisfied with the services offered by BTL but their information system needs some improvement.

The key of the Delone and Mclean model is perceived net benefits and this research provides information that is necessary to BTL's organization. This research will serve them as a guide or rate as to how convenient their services are. The other five dimensions in the model; Information Quality, System Quality, Service Quality, User Satisfaction, and Use all contribute to the end result of the sixth dimension, perceived net benefit.

Since no interviews were conducted, surveys were distributed to some BTL users from different districts. This is one of the main objectives of the research since coverage is the major aspect of their telecommunication services. Without signal, text bundles and data packages are useless. Throughout the research, users were complaining about the services. Smart phones users complained about the use of data. BTL has recently updated their information system where they send you a text based on how much data you have used and have available the time the message was generated. Another was that as the data was purchased and use once, a message was sent saying that they have used half of their data. While people from the outskirts of the districts complained about the coverage. Certain areas do not have signal and people are unable to make calls, send texts or access their data. These are the major complains that were heard during the survey distribution.

A way in which BTL can solve these complaints is by improving or fixing their programming system in the generation of texts when users have consumed half of their data as a result to increase the perceived net benefits. In terms of their signal issues, BTL can invest in installing coverage towers in the outskirts of districts where users are affected.

BTL's information systems needs to be either improved or fixed because they provide the country with a demanding service which is telecommunication. This service is important in society for the reason that everyone including business firms, ambassadors and local people use it to make important calls or transfer information from one place to the other. Without telecommunication, these people will not be able to work and be informed on what is happening.

The main issue affecting part of BTL's success within the information system is their service quality. Most of the respondents uses data packages as a vital source for either communication or social media. The generation of data usage texts is the issue that awakens the complaints. These users are not greatly satisfied with the present services offered by BTL but think that their telecommunications services can be improved.

Limitations

The researchers encountered one limitation during the process of distributing the surveys for the final research project. After the surveys were answered and handed back over to the researchers, some questions were left unanswered. This affected the analysis of some questions that was supposed to be filled. Although some questions depended on the type of service the responder uses.

Future research

The research group have some recommendations so that if anyone decides to further investigate about BTL's services. Future researchers should schedule their survey distribution time, carefully review the questions and analyse that the questions can be related to the findings objective and can be answered reasonably. If the researcher(s) choose to interview or distribute surveys to the employees, the survey questions will be different from users since they are internally part of the firm. Finally, obtain as much information as possible about the services offered. The researcher(s) can go the extra mile and investigate on BTL's only competitor, Smart. They can reach out to Smart users or employees and ask about Smart's services and compare it in the final analysis. Using the Delone and Mclean (2003) model, researchers can analyse the findings and conclude which firm's perceived net benefits is higher. Further research will be needed to make the findings precise.

Acknowledgments

We would like to thank all respondents who took time to accurately answer our survey questions. Also we would like to thank our lecturer, Ms. Vernelle Sylvester for guiding us through this research processes.

References

- Adams, D. A., Nelson, R. R., & Todd, P. A. (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. *MIS quarterly*, 227-247.
- Belize Telemedia Limited (2017) Our History retrieved from:
<https://www.belizetelemedia.net/en/belize-telemedia-limited/our-company/our-history>
- Cameron, K.S. and Whetton, D.A. (1983) Organizational Effectiveness: A Comparison of Multiple Models, Academic Press, New York, NY,
- Churchill, G.A. February (1979) "A Paradigm for Developing Better Measures of Marketing Constructs," *Journal of Marketing Research* (16), pp. 64-73
- DeLone, W.H. and McLean, E.R. March (1992) "Information Systems Success: The Quest for the Dependent Variable," *Information Systems Research* (3:1), pp. 60-95.
- Goodhue, D. L. (1995). Understanding user evaluations of information systems. *Management science*, 41(12), 1827-1844.
- Gronroos, C. (1982) Strategic Management and Marketing in the Service Sector, Swedish School of Economics and Business Administration, Helsingfors, Finland
- Hannan, M.T. and Freeman, J. (1977) "Obstacles to Comparative Studies," In *New Perspectives on Organizational Effectiveness*, P.S. Goodman and J.M. Pennings (eds.), Jossey-Bass, San Francisco, CA, pp. 106-131.
- Nelson, R. R., Todd, P. A., & Wixom, B. H. (2005). Antecedents of information and system quality: an empirical examination within the context of data warehousing. *Journal of management information systems*, 21(4), 199-235.
- Orlikowski, W., and Iacono, (2001), C.S. Research commentary: Desperately seeking the "IT" in IT research—A call to theorizing the IT artifact. *Information Systems Research*, 12, 2 121-134.
- Parasuraman, A., Berry, L.L., and Zeithaml, V.A.(1991) "Refinement and Reassessment of the SERVQUAL Scale," *Journal of Retailing* (67:4), Winter, pp. 420-450.
- Pitt, L. F., Watson, R. T., & Kavan, C. B. (1995). Service quality: a measure of information systems effectiveness. *MIS quarterly*, 173-187.
- Quinn, R.E. and Rohrbaugh, J. March (1983) "A Spatial Model of Effectiveness Criteria: Towards a Competing Values Approach to Organizational Analysis," *Management Science* (29:3), pp. 363-377.
- Reeves, C, and Bednar, D.A. (1994), Defining quality: Alternatives and implications. *Academy of Management Review*, 19, 3 419-445

Rushinek, A. and Rushinek, S.F. July (1986) "What Makes Users Happy?" *Communications of the ACM* (29:7), pp. 594-598.

Shannon, C. E., & Weaver, W. (1949). *A Mathematical Model of Communication* Urbana.)(IL: *University of Illinois Press, 1949*).

Zeithaml, V.A.; Parasuraman, A.; and Berry, L.L.(1990) *Delivering Quality Service*. New York: Free Press.

Appendix

Questionnaire I – “Improving Belize Telemedia Limited (BTL) Services”

Purpose

This questionnaire asks for information about BTL services. It includes the data packages, SMS bundles and signal coverage in some locations.

4. Service Quality	Tick one
After purchasing data, approximately how long does it take in order for you to have access to it?	Instantly <input type="checkbox"/> 2 minutes <input type="checkbox"/> 5 minutes <input type="checkbox"/> more than 10 minutes <input type="checkbox"/>
Have you experienced any signal loss?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Are the customer service agents' willing to assist with issues faced?	Yes <input type="checkbox"/> No <input type="checkbox"/>

Please answer the questions in relation to BTL services. 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 print in the spaces provided and tick the boxes to mark your answers.

1. Personal Background	Tick one
Age:	15-19 <input type="checkbox"/> 20-24 <input type="checkbox"/> 25-29 <input type="checkbox"/> 30+ <input type="checkbox"/>
Gender:	Female <input type="checkbox"/> Male <input type="checkbox"/>
District:	Toledo <input type="checkbox"/> Cayo <input type="checkbox"/> Stann Creek <input type="checkbox"/> Belize <input type="checkbox"/> Orange walk <input type="checkbox"/> Corozal <input type="checkbox"/>
Occupation	Student <input type="checkbox"/> Business <input type="checkbox"/> Professional <input type="checkbox"/> <input type="checkbox"/> Services <input type="checkbox"/> Other <input type="checkbox"/>

2. Information Quality	Tick one
How long have you been with BTL?	Less than a year <input type="checkbox"/> 2-5 years <input type="checkbox"/> more than 5 years <input type="checkbox"/>
Which type of BTL user are you?	Prepaid <input type="checkbox"/> Post paid <input type="checkbox"/>
Which BTL services do you prefer using?	Data packages <input type="checkbox"/> Text bundles <input type="checkbox"/> Calls <input type="checkbox"/>

3. System Quality	Tick one
After you purchase text bundles, how long does it last?	3-5 days <input type="checkbox"/> one week <input type="checkbox"/> More than a week <input type="checkbox"/>
Approximately how much credit do you use for a period of one month?	\$1-\$5 <input type="checkbox"/> \$10-\$20 <input type="checkbox"/> \$30-\$40 <input type="checkbox"/> \$50+ <input type="checkbox"/>
How comforting do you feel using BTL services?	Not so much <input type="checkbox"/> Moderate <input type="checkbox"/> Very comforting <input type="checkbox"/>

6. Use	Tick one
Are you a data user?	Yes <input type="checkbox"/> No <input type="checkbox"/>
How much data do you purchase?	\$2 (one day) <input type="checkbox"/> \$4 (two days) <input type="checkbox"/> \$10(one week) <input type="checkbox"/> \$30(one month) <input type="checkbox"/>
How often do you use data?	Everyday <input type="checkbox"/> Every week <input type="checkbox"/> Every month <input type="checkbox"/>
5. User Satisfaction	Tick one
Do you use more data than text bundles?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Have you had any issues with BTL services?	Yes <input type="checkbox"/> No <input type="checkbox"/>
How much text bundles do you use?	Small (60 texts) <input type="checkbox"/> Medium (150 texts) <input type="checkbox"/> Large (1100 texts) <input type="checkbox"/>
Rate the services BTL offers.	Bad <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very Good <input type="checkbox"/>
Rate the Customer service agent's response at Customers issues faced?	Bad <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very Good <input type="checkbox"/>

7. Perceived Benefits	Tick one
For what do you use data mostly?	Business <input type="checkbox"/> Social Media <input type="checkbox"/> Communication <input type="checkbox"/> Research <input type="checkbox"/>
How has BTL services impacted your communication?	Bad <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very Good <input type="checkbox"/>
How efficient is BTL services in saving time and cost at accessing information?	Bad <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very Good <input type="checkbox"/>

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

Thank you for your participation.