Success of Information System: MIND BILLING SYSTEM

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Abstract

While a great amount of research has been done on Information Systems success, minor research has been conducted on the MIND Billing System success within organizations.

This study provides factual analysis on Delone and McLean's MIND Billing System Information System success model. The model consists of 8 dimensions which are: Information quality, System quality, Complementary Technology quality, Service quality, User satisfaction, Use, Perceived Net Benefits, and Average Response. The data collected by survey is from 30 employees from different BTL branches across Belize City. The hypothesized relationship, if MINDBil is a success, is shared between the 8 success variables are significantly supported by data. The findings provide several important implications for the Billing System. This paper concludes by discussing the limitations of the study, and the improvement that can be made and should be addressed in future research. The outcome of the Information System was successful within BTL as the users were satisfied which made us meet all of our objectives and hypothesis correct. From the data analyzed, it was consistent with an average 5 out of 7. This information will be helpful to MINDBil as it is valuable feedback that can help them improve in some areas.

2. Introduction

According to 'spiceworks,' organizations in recent years have heavily invested in information and communication technology for the support of different business functions. A major part of these functions are the Human Resource (HR) which is no exception. Being able to work more effectively and efficiently with the combination of technology, which is developing and growing each day, makes organizations success rate grater states DiscoverTec in their article about the Evolution of Technology.

MIND Billing & UC Analytics is a Real- Time Billing Customer Care and Unified Communication Analytics. They provide product based solutions to the telecommunication carriers (BTL) and enterprises for over 20 years. The Enterprise UC Analytics simplifies the monitoring, analysis and management of communication services within organizations. The enterprise solutions enable organizations of any size to manage their telecom costs, monitor quality of service and detect misuse and fraud for multiple communication services such as audio, video, conference calls, IM and more. The Billing and Customer Care, which is most important, are for service providers to enable telecom operators to rapidly deploy services such as voice, data, content, video, mobile, cable, satellite, prepaid and postpaid. The solution includes provisioning, mediation, support automated business processes such as order fulfillment, billing cycles etc. and sophisticated business models.

This research is important because it is a tool for building knowledge and facilitating learning It is required not just for students and academics, but for all professionals and nonprofessionals. It is also important for budding writers, both offline and online. For nonprofessionals who value learning, doing research equips them with knowledge about the world and skills to survive and improve their lives. It's a means to understand various issues and increase public awareness. By public awareness, it means to have everyone interested in this research aware of what's going on inside and outside of the organization. Also, research is important because it is a way to prove and support, analyzing and sharing valuable information, and lastly, which is most important, is an aid to business success. The hypothesis, "is the Information System (MINDBill) utilized by BTL successful".

What is known about MINDBill is that BTL uses it only for their Customer Service in their various branches and it is private information so permission from the HR was needed. Most of the information needed for this research was attested by the survey questions we handed out to the BTL Staff after permission was granted. The objectives of this research were:
Gain permission from the HR for the surveys to be handed out, analyze the information provided within the survey, gather the information for our research paper, come to the conclusion about the success of the Information System based on results and analytics, and access improvements that can be made.

3. Literature Review

Over time, organizations are increasingly depending on technology so much so that recognizing the value of IT is seen as a critical factor for success (Gabriel-seow, 2018; Peppard & Ward, 2016). This is evident in two of the world's largest retailer organizations, Walmart and Amazon, who have both invested significantly in their digital growth and have recorded billions in profit (Morgan, 2019). On the other hand, organizations such as

Blockbuster and Toys R Us who were once successful major companies met their demise due to their lack of innovation and inability to incorporate technology (Cole, 2019).

As a result, it is imperative that organizations understand how IT adds value to their operations. Information Systems have become an integral part of the working world and the technology-centric age. Over the past two decades there has been a drastic influx of tools and software that has been introduced to bolster the operations of businesses and enterprises around the world (DeLone & McLean, 2003). Information systems span various fields, and their usability makes them an important part of the work that is done every day.

In Belize, Digi, the leader operator of telecommunications services and products have seen the signs of the times and have opted to adopt numerous Information Systems over the years. According to Dominguez, et al, (2018), "In business and human resource management "faculty and staff use PeopleSoft to access their benefits, pay check, and update their contact information" (Klaus et. al, 2000). BTL integrates the software into its human resource management system. They have transitioned from the dependency on the PeopleSoft Information System and has adopted the program MIND billing software.

Their constant iteration to business models not only makes them competitive locally, but also strengthens their standing on the regional level. Strategic alignment of IS/IT strategies to their business strategy not only bolsters success, but also facilitates a competitive advantage. This is particularly true in an era where "improved and efficient" services are crucial for any organization to survive (Elmorshidy, 2013).

Delone and Mclean (2003) argued that there were six major factors in IS success, specifically: the quality uniqueness of the IS itself (system quality), the quality of the productivity of the IS (information quality), utilization of the output of the IS (use), the IS user's response to the IS (user satisfaction), the effect of the IS on the behavior of the user (individual impact) and the effect of the IS on organizational performance (organizational impact). The global implications that this accounting software, MIND, has had is impactful because each of the above factors to success has been apparent in the usage of the systems. The uniqueness of these Information Systems provides institutions with a sense of viability to adapt the software and tailor it to the needs of the institution.

The literature has been clear about the negative implications that these accounting information systems that Digicel is implementing may have on the security of the users and the potential damage to national security they may cause. With the increase of the wider population using the internet comes an increasing concern of the safety of digital information. Technology and social media are fairly new paradigms in education and has seen a dramatic increase in the past two decades. New technologies have the potential to revolutionize the society, as well as the way Information Systems are used. As is characteristic of many countries in the Caribbean, Belize has very little, enforced regulations when it comes to the

protection of privacy and sensitive information such as passwords, financial information and demographic information.

The current laws and regulation regarding the protection of privacy is dated and archaic as it makes no provision for the protection of digital profiles or regulation of the online ecosystems that Digi's MIND software facilitates. Every information system currently employed in education, social science and business puts its users at risk of personal attacks and a slew of cybercrimes (Quinn, 2003). Most of these systems have built in protections that safeguards user information but there is still a risk of information leaks. "Advancements in technology are taking place so swiftly that statutory and case law are continually developing and striving to keep the pace" (Quinn, 2003).

As with most research that involves information systems, the theoretical framework this hinges on is the 1992 and 2003 Delone and McLean IS Success Model. These chosen frameworks have been the foundational pillars of information systems study over the years and have consistently been the outline for strong research standard when analyzing and synthesizing data regarding IS use in business and customer service.

Of note, in their book "The Innovation Paradox"; Cirera and Maloney postulates that developing countries are behind in a "wide range of capabilities" that are critical for developing countries to bridge the gap between themselves and developed countries. Filling this gap comes at the confluence of utilizing innovation to improve business performance and achieving competitive advantage. These capabilities include an organization's capacity "to respond to market conditions, identify new technological opportunities, develop a plan to exploit them, and then cultivate the necessary human resources" (Cirera & Maloney, 2017). This has been an expert skill that Digi has had over the years, making its financial impact significant.

4. Methodology

Research Approach

The I nterpretivist research approach delineates a process by which the researcher focuses on meaning, employing multiple methods to reflect on varying aspects of an issue (Walsham, 1995). This is the method that will be employed in this research, which will be governed with the deductive approach. This approach will entail a significant amount descriptive study and extensive observation of the organizations belonging to the sample population. Integration of varying methodology to garner information, followed by synthesis of the primary and secondary data, will be integral.

The participants for the research will be employees of Belize Telemedia Limited. This is inclusive of management and auxiliary staff within the organization. The approximate, average age of the participants is expected to be 25-35. The sampling population will comprise of both male and female employees and will be from the geographical location of Belize City. The sample size of the sampling population will be comprised of at least 30

participants. The sampling population will be determined using the stratified random sampling technique.

Sampling Method

The sample frame will be selected from a staff list provided to us by the management of BTL. A letter will be given to each respondent requesting their participation in the research study. Approved permission slips will be attached to each survey and those who have granted permission will be the only ones considered. The sample population will be determined using the type of probability sampling method called the stratified random sampling. The stratified random sampling method involves the division of a population into smaller groups known as strata. The stratified random sampling will be achieved by dividing the entire population into homogeneous groups.

Instrument

The instrument to be utilized to gather information from the respondent is a self-administered questionnaire. The survey to be administered to employees will be facilitated by members of the research group. These questionnaires consist of a total of thirty (30) questions which are divided into two (2) sections. These sections consist of demographic information gathered from employees and questions to determine the perception and uses of the MIND Information System at BTL. Within the demographic section; questions are close ended and gathers information pertaining to age, gender, and educational background. The second section comprises of open-ended and closed ended questions. This section assesses the business' strategies, techniques employed in the use of IS in the business, as well as the employee perception of the MIND software.

The research method being used in the instrument is qualitative, one that is characteristic in this format of questionnaires. This approach will provide descriptive data that will be gathered through the questionnaire and converted into descriptive statistics.

Procedures

All pertinent documents will be on hand so as to maintain transparency and professionalism when conducting the surveys. In administering the survey, everyone will introduce themselves to the participant and provide a short explanation of the research. The participants will be asked to submit a completed consent form before proceeding with the self-administered questionnaire. The respondents will be cordoned into a section of a facility where they can complete the survey in privacy. Group members will be on standby to provide assistance and clarification if there are any questions that are vague or require further clarification. The participants will be expected to complete the questionnaire within 10 to 15 minutes. Furthermore, after completing the survey, the team will collaborate in recording and tabulating the participants' responses from the questionnaire. The data will be inputted into Excel spreadsheets which can later be compiled in tables.

5. Data Analysis and Results

MIND Billing System has been focused on retaining its existing support base, but lacks understanding of how comprehensive they are. To be able to continue its work, the organization requires research into ways they can improve.

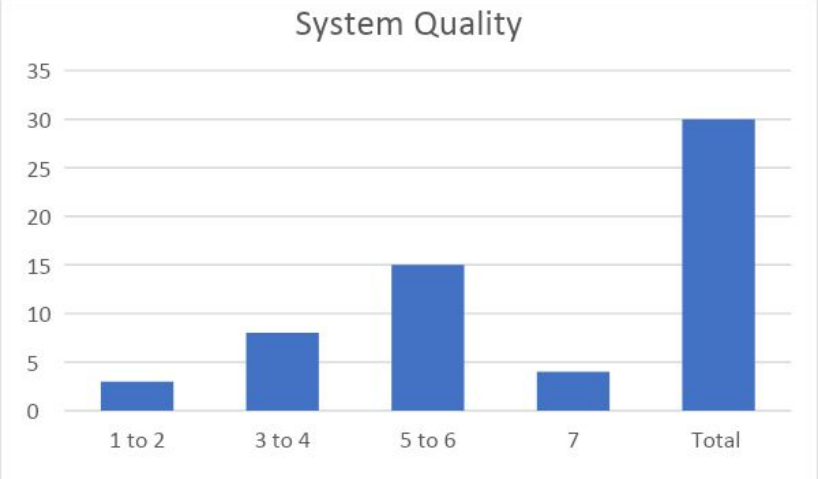
This model allows us to measure the effectiveness of this system by focusing on seven key areas of the information system which are: Information Quality, System Quality, Complementary Technology Quality, Service Quality, User Satisfaction, Use, and Perceived Net Benefits. Realizing what area is not working up to standard we can see what area exactly needs to improve and what area exactly is doing excellently.

From the data collected we separated these by the seven areas. The following are the results of the seven areas.

Information Quality

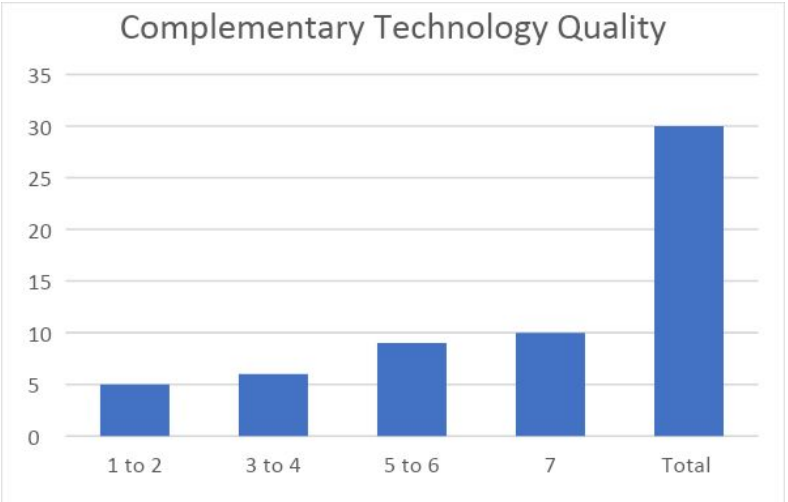
This area focuses on the quality of the content of information systems. This looks at whether it is necessary, efficient, and relevant sufficient, understandable, up to date, and sufficient. The graph above is from the average answers from the respondents for the specific area. For this we see that majority of the numbers are from averages of 5 and 6 where we got a total of 17. For this we also can point out that the smallest amount of numbers from the averages came from 1 and 2 where we had a total of 3. This area is doing okay however it can afford to do better. To eliminate the few problems, it can ask the users what made them unhappy and offer to fix the problems.

System Quality



This area focuses on the condition of the system itself. This looks at whether it easy to use, user friendly or whether it has features that are interactive. The graph above is from the average answers from the respondents for the specific area. For this we see that the majority of numbers came from averages of 5 and 6 where we have a total of 15. Also we can see that the least numbers came from averages of 1 and 2 with a total of 3 respondents. We can say that this area is doing okay however there is an area for improvement.

Complementary Technology Quality



This area focuses on the interrelated devices that is necessary for the MIND system to function. These devices are such as desktops, laptops, mobile devices etc.). This area looks at how adequate the device is and if the internet connection is fast and reliable. The graph above is from the average answers from the respondents for the specific area. For this we see that majority of numbers came from the average of 7 where we had a total of 10. For this we see

the least amount of numbers coming from the average of 1 and 2 with a total of 5. We can say that this area is doing well as majority of respondents are satisfied. There are still some areas to improve however as there is still a huge number of individuals who are not satisfied.

Service Quality

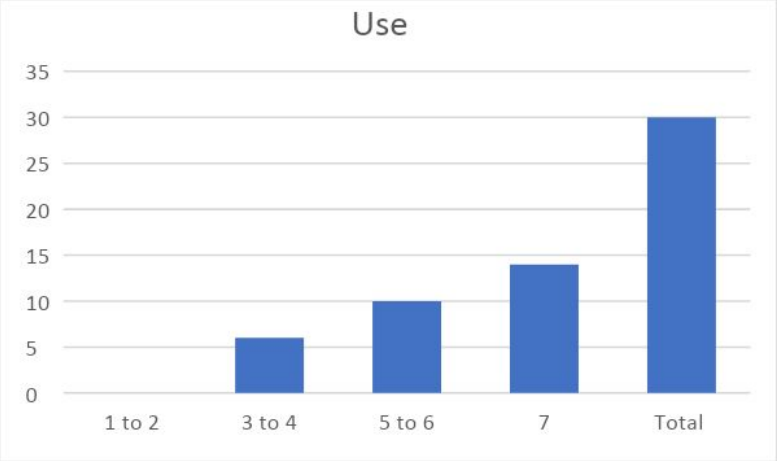
This area focuses on the quality of the service that the information system gives along with the IT personnel's. This looks at if the software is up to date, if the support staff is solving problems effectively, inform users of problems and inform users exactly when services will be provided. The majority of numbers comes from averages of 3, 4, 5 and 6 which has 22 in total. The lowest amount of numbers comes from the averages of 1 and 2 which is 0. For this area we can say that they're doing well but not as well. There can be improvements with the service as it seems to not be as up to excellence.

User Satisfaction

This measures the satisfaction of the respondents. This proves how well the users' attitude towards the MIND Information System. This looks at the attitude of users, the utility of the system, whether the expectations of the system have been met and measures the satisfaction of the system. The graph above is from the average answers from the respondents for the specific area. For this we can see majority of numbers coming from the averages of 5 and 6

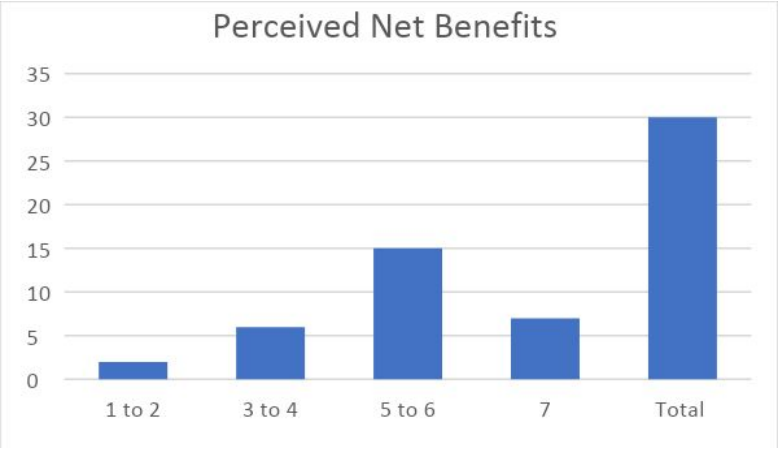
which have a total of 15. For this we can also see that the least amount of numbers coming from the averages of 1 and 2 which have a total of 2. For this we can say this area is doing well as more respondents were satisfied than dissatisfied however there is still some area of improvements.

Use



This area measures how the organization utilizes the MIND Information System. It measures the frequency of use, the dependency, skills, and knowledge. The graph above is from the average answers from the respondents for the specific area. For this we can see majority of members coming from the average of 7 having a total of 14 respondents. For this we see least amount of numbers coming from averages of 1 and 2 having a total of 0. For this we can say that this area is performing well and doesn't have much area for improvement.

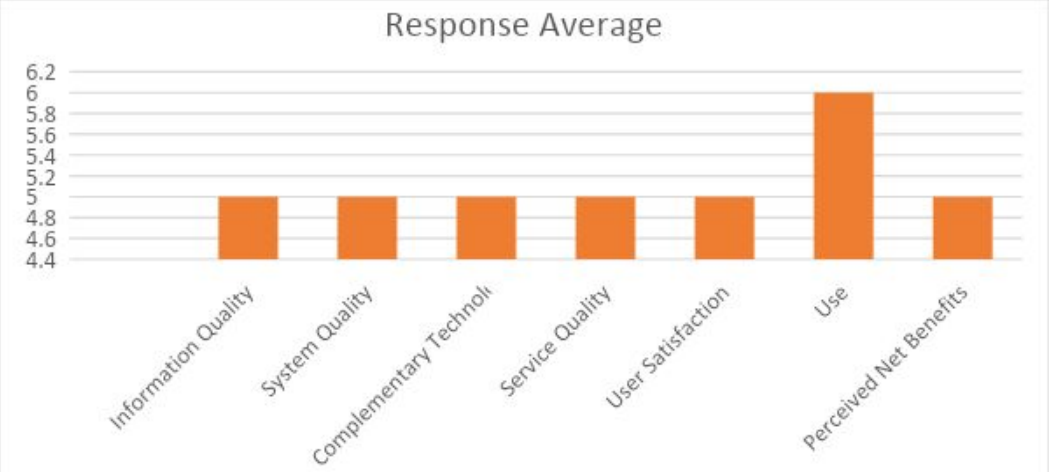
Perceived Net Benefits



This area measures how the MIND information system benefits the organization. Its measures how the MIND information system improve performance, saves cost, achieve goals, improves learning and training, increase productivity, and performance. The graph

above is from the average answers from the respondents for the specific area. For this we can see that majority of numbers comes from averages of 5 and 6 which have a total of 15. For this we can also see that the least numbers come from averages of 1 and 2 which have a total of 2 respondents. For this we can say that there is not much area to improve but still improvements to be made.

Average Response



To sum up data found from all 7 areas we found their average response which gives you an idea of what is the stand point to each data. All areas except use have an average response of 5 and the area focusing on the use has an average of 6. These areas are doing well almost reaching the maximum satisfaction of 7. There is little area to improve which shouldn't be hard to fix.

Suggestions for Improvement.

After looking at each of the seven areas we came up with improvements that MIND Billing system can do such as follows:

I. Provide necessary information about the information system.
II. Solve problems that may arise as quickly as possible and as effective as possible.
III. Try to meet the needs of the specific users to satisfy them better.
IV. Update the information system as often as possible to ensure that users get the maximum benefit from it.
V. Ensure that the devices used are up to date to allow the information system to work as adequately as it should.

6. Conclusion

MIND Billing System is working at an acceptable manner for Digi however there is still some areas they can improve in. Respondents were satisfied with the information system but there were specific areas that they weren't satisfied with fully. More so they were satisfied for

the most part due to the high numbers as their response. We were able to achieve our objectives where we found out that the MIND Billing System was successful and the users at DIGI were satisfied with the system. As mentioned previously the information system still has some areas to work on to reach maximum satisfaction. The implication of this study is that the MIND Billing System will take into consideration the improvements that can be made and better off the system for the DIGI organization. From the data we analyzed it was consistent with an average of 5 out of 7. This research, we have provided information that is helpful to the MIND Company in giving them valuable feedback that is necessary to provide the best service to their customers.

Limitation and

- There are several branches of Digi all over the country and to find them all was a task in order to receive 30 responses.
- There were several employees who has had less than five years of work experience and may have not been comfortable with the system.
- Employees may have not felt comfortable to respond to us.
- Due to the COVID 19 outbreak responses were low and hard to receive. .

Recommendation

- Have surveys handed out well ahead of time as employees are busy and cannot respond urgently. It takes a week or two to receive back surveys from one branch.
- Do a lot of research on your topic as it helps you to understand your assignment and conduct the research thoroughly.
- Ensure all group members are on the same page as that can cause conflicts.
- Don’t wait last minute to do the important stuffs.

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Appendix

Appendix A
Research Letter

To:
DIGI
Human Resources Manager
St. Thomas Street
Belize City Belize

From:
Kieran Ryan
cc:
Mr. Steven Lewis
Chair, MPIT Department UB
Date:
1/28/2020
Re:
University of Belize Research
Dear sir/madam,

Good day, my name is Kieran Ryan. I am an Assistant Professor at the University of Belize, Faculty of Science and Technology and I teach business students a course called Management Information Systems. The course requires students to complete a research paper as their final project.

The research is to measure the success of a functional information system at an organization. It asks users of the system about their attitudes towards the system utilizing a survey. No confidential information will be collected. Students need to collect between thirty and fifty surveys. The feedback of the research can be presented to you or your organization. It would inform your organization if the users believe the system is successfully meeting their needs and if not how it can be improved.

Thank you for your time.
Sincerely,

Kieran Ryan

Assistant Professor
University of Belize
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Appendix B
Survey Question

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 MIND Billing System at Digi Belize. The data gathered will be analyzed to determine the success of the Information System.
Please answer each question based on your use of MIND Billing 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 your education

High School and less Associates B.A Masters
Please indicate your working experience:

<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: The MIND system provides information that is exactly what you need
1 2 3 4 5 6 7
IQ2: The MIND system provides information you need at the right time.
1 2 3 4 5 6 7
IQ3: The MIND system provides information that is relevant.
1 2 3 4 5 6 7
IQ4: The MIND system provides sufficient information.
1 2 3 4 5 6 7
IQ5: The MIND system provides information that is easy to understand.
1 2 3 4 5 6 7
IQ6: The MIND system provides up-to-date information.
1 2 3 4 5 6 7
IQ7: The MIND system provides sufficient information.

1 2 3 4 5 6 7
3. System Quality

Disagree ----------Agree

SQ1: The MIND system is easy to use.
1 2 3 4 5 6 7
SQ2: The MIND system is user-friendly.
1 2 3 4 5 6 7
SQ3: The MIND system 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, laptop, mobile device) you normally use to access MIND is adequate.
1 2 3 4 5 6 7
CTQ2: The computer (desktop, laptop, mobile device) you normally use to access MIND 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 MIND system software up to date.
1 2 3 4 5 6 7

SV2: When users have a problem the MIND system support staff
show a sincere interest in solving it.
1 2 3 4 5 6 7

SV3: The MIND system support staff respond promptly when users
have a problem.
1 2 3 4 5 6 7

SV4: The MIND system support staff tell users exactly when services will

be performed

1 2 3 4 5 6 7

6. User Satisfaction

Disagree ----------Agree

US1: Most of the users have a positive attitude of MIND.

the Moodle system function.

1 2 3 4 5 6 7

US2: You think that the utility of the MIND system is high.

1 2 3 4 5 6 7

US3: The MIND system has met your expectations.

1 2 3 4 5 6 7

US4: You are satisfied with the MIND system.

1 2 3 4 5 6 7

7. Use

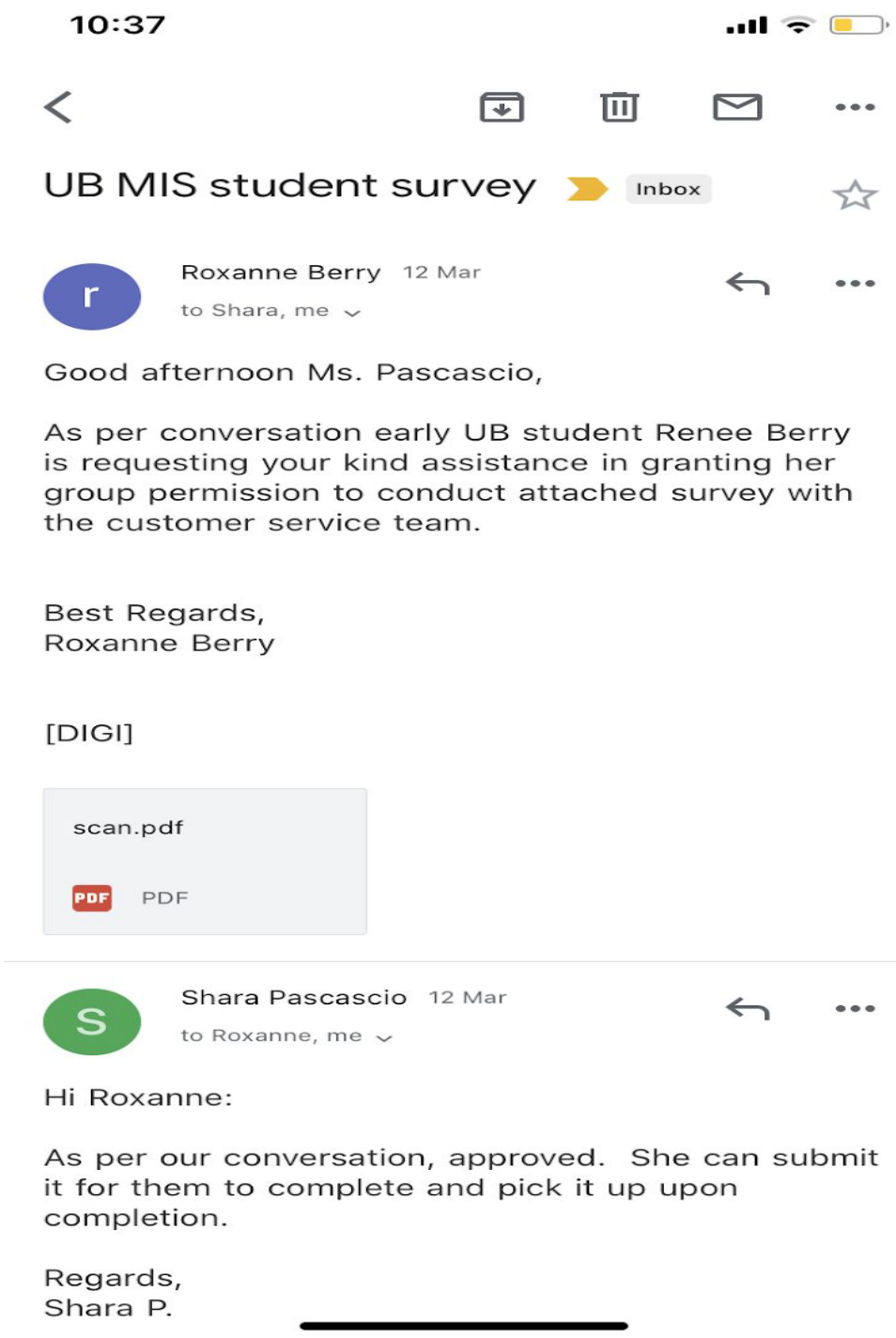
Never ----------Often
U1: Your frequency of use of the MIND system is high.
1 2 3 4 5 6 7
U2: You depend upon the MIND system.
1 2 3 4 5 6 7
U3: You were able to complete a task using MIND even when there was no one around to tell you what to do.
1 2 3 4 5 6 7
U4: You have the knowledge necessary to use the MIND system.
1 2 3 4 5 6 7
8. Perceived Net Benefits

Never ----------Often
NB1: The MIND system helps you improve your work performance.
1 2 3 4 5 6 7
NB2: The MIND system helps employees save costs.
1 2 3 4 5 6 7
NB3: The MIND system helps you achieve your work goals.
1 2 3 4 5 6 7
NB4: Using the MIND system improves learning and training.
1 2 3 4 5 6 7
NB5: Using the MIND system at work increases your productivity
1 2 3 4 5 6 7
NB6: Overall, using MIND enhances employees performance
1 2 3 4 5 6 7

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

Thank you for your participation.

Appendix C
Response Email



Appendix D
Demographics

Characteristics	Number	Percentage
Gender		
Male	3	10%
Female	27	90%
Age		
Less than 25	13	43%
From 25 to 35	8	27%
Over 35 to 45	9	30%
Over 45 to 55	0	0%
Older than 55	0	0%
Education		
High Schooland less	8	27%
Associates	10	33%
Bachelors	12	40%
Masters	0	0%
Working Experience		
Less than 5 years	19	63%
5-10 years	5	17%
11-15 years	2	7%
More than 15 years	4	13%