

**PUBLIC E-SERVICE DEVELOPMENT IN BTCL:
A STRATEGY TO OVERCOME CHALLENGES AHEAD**

**Dissertation submitted in partial fulfillment of the requirement
for the degree of MA in Governance and Development**

Submitted by

MD. ABDUS SALAM

ID No. 12172024

MAGD 4th batch

MA in Governance and Development Programme 2012-2013



Institute Of Governance Studies, BRAC University, Dhaka

Date of Submission 20 May 2013

**PUBLIC E-SERVICE DEVELOPMENT IN BTCL : A
STRATEGY TO OVERCOME CHALLENGES AHEAD**

**In partial fulfillment of the requirement for the degree of MA in
Governance and Development**

A dissertation by

MD. ABDUS SALAM

ID NO. 12172024 MAGD 4TH BATCH

Approved by

**Shah Mohammad Sanaul Hoque, PhD
Supervisor**

&

Visiting Faculty Member, IGS, BRACU

&

**Partnership Specialist (Training)
Access to Information (A2I) Programme
Prime Minister's Office**



Institute Of Governance Studies, BRAC University, Dhaka, Bangladesh

*Dedicated.....
To my mother who always thinks of me
and
my father who used to inspire me to be what I want to be.*

STATEMENT OF THE CANDIDATE

I hereby declare that I am the sole author of this dissertation. I authorize the Institute of Governance Studies (IGS) of BRAC University to lend this paper to other institutions or individuals for the purpose of scholarly research.

I further authorize the Institute of Governance Studies (IGS) of BRAC University to reproduce this dissertation by photocopying or by other means, in total or in partially at the request of other institutions only for assisting the academic research.

(Md. Abdus Salam)

ID # 12172024

MAGD 4th batch

IGS, BRACU, Dhaka

TABLE OF CONTENTS

DEDICATION.....	II
STATEMENT OF THE CANDIDATE	III
TABLE OF CONTENTS	IV
LIST OF TABLES	VI
LIST OF FIGURES	VII
LIST OF ACRONYMS AND ABBREVIATIONS	VIII
ACKNOWLEDGEMENT	X
ABSTRACT.....	XI
CHAPTER-1 : INTRODUCTION.....	1
1.1 BACKGROUND	1
1.2 STATEMENT OF PROBLEM	2
1.3 OBJECTIVE OF THE RESEARCH.....	3
1.4 RESEARCH QUESTION	3
1.5 RATIONALE OF THE RESEARCH.....	4
1.6 ANALYTICAL FRAMEWORK	4
1.6.1 <i>Measurable Indicators for Independent Variables</i>	5
1.7 SCOPE & LIMITATIONS OF THE DISSERTATION	5
1.8 RESEARCH METHODOLOGY.....	6
1.8.1 <i>Methods</i>	6
1.8.2 <i>Sources of Data</i>	6
1.8.3 <i>Data Collection Technique</i>	7
1.8.4 <i>Sample selection</i>	7
1.8.5 <i>Sample Size</i>	7
1.8.6 <i>Data Validation</i>	7
1.8.7 <i>Data Analysis Tools/ Technique</i>	7
1.9 COMPOSITION OF THE DISSERTATION	7
CHAPTER-2 : REVIEW OF RELATED LITERATURE	9
2.1 CONCEPT AND DEFINITION OF E-SERVICE	9
2.2 E-SERVICE DOMAIN	10
2.3 MAJOR E-SERVICE TERMINOLOGY.....	10
2.4 COMPONENTS OF E-SERVICE.....	12
2.5 TYPES OF E-SERVICE	13
2.6 EFFECT OF PUBLIC E-SERVICES	14
2.6.1 <i>Function Implementation effects</i>	14
2.6.2 <i>Quality effects</i>	14
2.6.3 <i>ICT process effects</i>	15
2.7 CHALLENGES/BARRIERS OF DEVELOPING E-SERVICE	16
2.7.1 <i>Architectural Barriers</i>	16
2.7.2 <i>Technological and security barriers</i>	16
2.7.3 <i>Financial & Policy barriers</i>	16

2.7.4	<i>Organizational barriers</i>	17
2.8	POSSIBILITIES OF PUBLIC E-SERVICE	17
2.8.1	<i>Engineering Possibilities</i>	17
2.8.2	<i>Operations and optimization possibilities</i>	17
2.8.3	<i>Virtual Possibilities</i>	20
2.9	SUMMARY OF LITERATURE REVIEW	21
CHAPTER-3 : OVERVIEW OF BTCL		22
3.1	ORGANIZATIONAL PROFILE	22
3.1.1	<i>Background</i>	22
3.1.2	<i>Present State</i>	23
3.2	SERVICES PROVIDED BY BTCL	24
3.2.1	<i>Telephony (PSTN) service</i>	24
3.2.2	<i>Internet/Data Link service</i>	24
3.2.3	<i>IN (Intelligent Network) Service</i>	24
3.2.4	<i>Web Service</i>	25
3.2.5	<i>Transmission Service</i>	25
3.2.6	<i>ICX (Inter-operator Connection Exchange) service</i>	25
3.2.7	<i>Gateway Service</i>	25
3.3	EXISTING E-SERVICES IN BTCL.....	25
3.4	TREND OF TELEPHONE & INTERNET CONNECTION OF BTCL DURING LAST DECADE.....	26
3.4.1	<i>Trend of Telephone connection</i>	26
3.4.2	<i>Trend of Internet connection</i>	27
3.5	SUMMARY OF THIS CHAPTER.....	27
CHAPTER-4 : DATA ANALYSIS & FINDINGS		28
4.1	PRIMARY DATA PRESENTATION & ANALYSIS.....	28
4.1.1	<i>Composition of Respondents for Questionnaire Survey</i>	28
4.1.2	<i>Data obtained from BTCL officials (Questionnaire-1)</i>	28
4.1.3	<i>Data obtained from Customer (Questionnaire-2):</i>	39
4.2	FINDINGS OF THE SURVEY	41
4.2.1	<i>Current status of e-service(s)</i>	41
4.2.2	<i>Prospective e-service(s)</i>	42
4.2.3	<i>Impact of adopting e-service</i>	43
4.2.4	<i>Barriers/challenges of e-service adoption</i>	43
4.3	SUMMARY OF THE CHAPTER	44
CHAPTER-5 : CONCLUSION & POLICY IMPLICATION		45
5.1	CONCLUSION.....	45
5.2	POLICY IMPLICATION	46
5.3	SCOPE FOR FURTHER RESEARCH.....	48
REFERENCES		49
APPENDIX-A: QUESTIONNAIRE-1 FOR OFFICIALS [ENGLISH]		53
APPENDIX-B: QUESTIONNAIRE-2 FOR SUBSCRIBERS [ENGLISH].....		57
APPENDIX-C: QUESTIONNAIRE-2 FOR SUBSCRIBERS [BANGLA].....		60

LIST OF TABLES

Table-1: Indicators for Independent Variables	5
Table-2: Public e-Service Categorization	13
Table-3: Determinants and Definitions.....	18
Table-4: Composition of Respondents for Questionnaire Survey.....	28
Table-5: Distribution of Respondents by Age(N=27).....	29
Table-6: Computer Competency Level.....	30
Table-7: ICT Training.....	31
Table-8: Faster & Convenient	34

LIST OF FIGURES

Figure-1: Analytical Framework.....	4
Figure-2: Determinants of service, marketing, design and delivery.....	20
Figure-3: Trend of Telephone Connection in BTCL.....	26
Figure-4: Trend of Internet Connection in BTCL.....	27
Figure-5: Adequacy of Infrastructure & Logistics.....	29
Figure-6: Level of Computer Competency.....	30
Figure-7: Training in ICT.....	31
Figure-8: Existence of Office Database.....	31
Figure-9: Existence of Customer Database.....	32
Figure-10: Utilization of ICT in Office.....	32
Figure-11: Sufficiency of ICT Laws.....	33
Figure-12: Evaluation of e-readiness.....	33
Figure-13: Faster & Convenient Service.....	34
Figure-14: Reduced Corruption.....	35
Figure-15: Bureaucracy to Service Provider.....	35
Figure-16: Allocation of Budget & Finance.....	36
Figure-17: Lack of Infrastructure & Logistics.....	36
Figure-18: Trade Unionism, a barrier of implementing e-service.....	37
Figure-19: Lack of Top Level management Initiatives.....	37
Figure-20: Limited Cross-agency Collaboration.....	38
Figure-21: Absence of Database (Office & Customer).....	38
Figure-22 : Quality of traditional Services provided by BTCL.....	39
Figure-23: Intensity of Using Internet.....	39
Figure-24: Urgency of Adopting E-service.....	40
Figure-25: E-service is corruption & hassle free.....	40
Figure-26: E-service could be a tool of encouraging customer.....	41

LIST OF ACRONYMS AND ABBREVIATIONS

ADSL	Asymmetric Digital Subscriber Line
ANS	Access Network Service
BCube (B ³)	Best Business Brains
BI	Business Intelligence
BPR	Business Process Re-engineering
BPSC	Bangladesh Public Service Commission
BTCL	Bangladesh Telecommunications Company Limited
BTRC	Bangladesh Telecommunication Regulatory Commission
CBA	Combined Bargaining Association
CRM	Customer Relationship Management
CSR	Customer Service Representative
DDN	Digital Data Network
DNS	Domain Name System
E-ISD	Economy ISD
FAQ	Frequently Asked Question
FPS	Toll Free Phone Service
IC	In Computing and technology
ICT	Information and Communication Technology
ICX	Inter-Connection Exchange
IGW	International Gate Way
IIG	International Internet Gateway
IP	Internet Protocol
IPLC	International Private Leased Circuit
IPTV	Internet Protocol TV
ISD	International Subscriber Dialing
ISDN	Integrated Service Digital network
MPLS	Multi-Protocol Label Switching

MSU	Main Switching Unit
NMC	Network Management Center
NMS	Network Management System
OFC	Optical Fiber Cable
PPS	Pre-Paid card Service
PPT	Pre-Paid Telephony
QoE	Quality of Experience
QoS	Quality of Service
RSU	Remote Switching Unit
SDH	Synchronous Digital Hierarchy
SPSS	Statistical Package for the Social Sciences
URL	Uniform Resource Locator
VAS	Value Added Service
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network
VAS	Value Added Service

ACKNOWLEDGEMENT

At first, I express my wholehearted gratitude to Almighty Allah who provided me the opportunity to participate 4th MAGD program and helped me to prepare this dissertation paper.

My sincere gratitude goes to my supervisor Shah Mohammad Sanaul Hoque, PhD, visiting faculty member IGS, BRAC University & Partnership Training(Specialist), AZI Programme, Prime Minister's Office. I am humbly thank him for being a source of great inspiration to write this dissertation. I also express my gratefulness towards him for his overwhelming contribution in preparation of this dissertation paper. I have also been graced by Professor Salahuddin M. Aminuzzaman, Dhaka University and Dr. Rizwan Khair, Director, IGS, BRAC University who greatly inspired my epistemological curiosity to learn, think, experiment, and analyze critically on the research topic. I also thank Dr. Johurul Islam, Course coordinator, 4th MAGD program who guided me providing technical support with his profound knowledge and special care. All through this research work, he provided me immeasurable counseling.

MD. ABDUS SALAM

ID # 12172024, MAGD 4th Batch

IGS, BRAC University, Dhaka.

ABSTRACT

Rapid development of Information and Communication Technology (ICT) creates extensive opportunities for efficient and cost effective public service delivery. The use of ICT has been a core element used by the government as a communication way to its citizen. E-service(s) delivery is present in developing countries but the erudition is still in immaturity level. Most local governments only provide published information and downloadable forms. Most local government sites provide only informational and one way communications. All are still at the basic level of publishing information online. Two way interactive e-services have already been introduced with limited extent by some institutions in our country like online application of university admission, online job application to BPSC and Banks etc. Before implementing and developing any e-services, the authorities should know the expectation to the service from the users and it is also important to know the usability of the e-service in order to develop it with more usability function so that the users might satisfy by using the service. This study has attempted to assess the current standings of e-service(s) and what would be the prospective e-service(s) provided by BTCL. It has also endeavored to identify the barriers/challenges to adopt public e-service(s) in BTCL. Due to time and resource constraints only selective areas of Dhaka city has been surveyed.

The study is based on both literature review and questionnaire survey. Two types of questionnaire were prepared. One for supply side i.e. for officials of BTCL and another was for demand side i.e. customer of BTCL. Questionnaire survey was conducted on total 52(fifty two) respondents. Of them, 27(twenty seven) was officials and the rest 25(twenty five) was subscribers of different areas of BTCL in Dhaka city. A literature review covers theoretical tools to define effective e-service and to identify hindrance in implementing e-service(s) in BTCL. The study has identified some prospective public e-services that BTCL should attain to retain its existence. It has also identified the possible barriers for implementing e-service(s). The perception of the officials and subscribers about prospective e-service(s) and hindering factors of e-service implementation is somewhat similar. The hindering factors are categorized in three types, organizational, procedural and technological. Finally, the study comes up with some recommendations to overcome the barriers or challenges in adopting public e-service(s) in BTCL.

Key Words: Digital divide, e-readiness, e-service, interactive, navigability, transaction, web presence.

CHAPTER-ONE

INTRODUCTION

The first chapter is intended to give background information to the area of research. First, a brief background discussion regarding to public e-service(s) development in Bangladesh Telecommunications Company Limited(BTCL). Then the statement of the problem, leading to the objective, research questions, rational of the research, and finally scope & limitation of this dissertation has been described.

1.1 Background

The advancement in ICT has added new dimensions to the service arena and the concept of e-service has gained much focus in the discourse of service delivery. Bangladesh is no exception to the global trend of inclination towards ICT and e-service has become an area of concern within the country of late. With the ease of connectivity, ICT is defusing every aspect of our life. Integration of ICT in all spheres reshapes our political, social, and economical environment. In this process, ICT as a tool for service leads to the concept of e-service. In the present global scenario, service incorporates ICT to ensure transparent, efficient, prompt, and equitable service delivery up to grass root level. ICT has proven to be the corner stone for good governance by bridging digital divide, empowering citizens, creating business opportunities, and alleviating poverty and corruption. Now a days people increasingly demand more accountability and transparency from government, more power both at the national and local level, more independence to express their demands, and more attention to citizen's voice.

Better public service requires a thorough rethinking and re-engineering of the structure of public services and then to exploit possibilities of creating value by working across boundaries and jurisdictions to foster potential gains of redesigned services in terms of speed and cost (Fountain, 2007). The 'e-service framework' could allow BTCL to achieve such gain using ICT. BTCL has its own website, but only a very few informational & one way interactive online services are introduced for citizens. In this regard, it is to be mentioned that an accessible website can help citizens more effectively interact with e-service. On the other hand, the absence of a standard database management(Both for office and subscriber), inadequate infrastructure & logistics as well as legal regulations yet does not support online application, online customer care service, online payment system and transactional e-service development. As a result, citizens are not

getting rid of sufferings from traditional way of having services delivered by BTCL. Consequently, subscribers are being encouraged to switch from state owned BTCL to private mobile operator despite of high call rate. At this moment, Land telephone market has no competency to compete with mobile phone market. BTCL has become a weaker organization than before and the continued same strategy would make it the weakest in very near future. So, it is very essential to take a strategic action of giving citizens' services through all types of e-services without any delay for its survival.

This study would try to assess the current status of e-service(s) in BTCL, and the barriers & challenges of prospective e-service(s) adoption in BTCL in terms of some predefined variables in accordance with the analytical framework.

1.2 Statement of Problem

During Last decade BTCL has been confronted by a series of new demands due to heavily proliferation of mobile phone over the country. Society has been transformed by the influence of new technologies. Nowadays, there is no doubt that to survive in modern telecom societies in Bangladesh is much more competitive than before a decade, when BTTB(Now BTCL) was used to run in monopolistic style. Introducing of ICT has enabled an association to renovate many of its services from physical service to electronic services, i.e. e-services (Li & Zhao, 2003). The main cause of this revolution in public e-service is due to a faster development of the society in terms of an open-mind and a very advanced technology (Kotler, 1999). Basically, e-service excellence in public sector is predicated on the reunion of the three key criteria viz. standardized customer groups, definable responsibilities and quantifiable outcomes. However, the problem appears when the e-service is only based on expressing contents instead of giving the physical service as well (Li & Zhao, 2003). For instance, customers of BTCL can download application forms, monthly telephone/internet bills and necessary documents but it is not possible to do online application or upload any documents or online payment. So, the physical access to BTCL office is primary and online access is secondary so far.

The rising ease of use of ICT has provided an occasion for the public sector to make the process easier. However, achievement in the online services depends on strategic use of ICT in association with a talent to reorganize back-office and inner processes successfully (Ibid). This strategic vision could have many conventional

assumptions about how to use the online atmosphere to move up profits by dropping costs through mechanization and amplified competence, and by intensifying revenues through attractive service quality and building lucrative customer relationships (Riel & Liljander & Jurriens, 2001). Meanwhile citizens, predisposed by private sector experiences, are expecting public e-services that are not only of high quality but also incorporated across different public bodies and agencies (Hazzlet & Hill, 2003). It is vital to investigate what kinds of factors persuade customer attitudes and behaviors in adopting e-service.

Aspects of e-service pertinent in this background contain consumer perception of safety and levels of trust, response period, navigability of the website, download time, fulfillment of the service promised, timely updating of information and site helpfulness and functionality (Hazzket & Hill, 2003). Furthermore, in order to make certain highly quality services upcoming, the only applicable question for citizens interacting with online agencies is whether “*You have solved the right problem*” or “*You have helped me to solve it*”(Ancarani, 2005).

1.3 Objective of the research

Considering the above problem statement, the objectives of this dissertation remain as follows:

- “To assess the current status of e-services delivered by BTCL; and
- To identify the barriers and challenges towards adoption of further e-services by BTCL”.

1.4 Research Question

In order to gain the knowledge necessary for accomplishing the stated objective, this study addressed the following question:

1. What e-services are currently available in BTCL?
2. What are the prospective services could be transformed into e-services in BTCL?
3. What are the barriers/challenges of adopting e-service in BTCL?
4. What would be way forward to overcome the barriers/challenges?

1.5 Rationale of the research

ICT is self-propelling, self-replicating and self-sustainable driver of welfare and development. ICTs and related e-applications are key instruments in improving governance and quality service. The recent consciousness about ICT would be able to pave the path for considering e-service as a development for BTCL. Public e-services, if successfully adopted in BTCL, will not only make the government processes effective and efficient, but it would also facilitate transparency, accountability of all the counterparts. Above all it would be able to deliver quality online services that the citizens expect. It will ensure citizens' participation in the decision-making process. To successfully do so, an assessment of the prospective e-services provided by BTCL is a true necessity. This study aims at finding some key aspects of public e-service development in terms of some predefined criteria. It also intends to way out some policy actions in order to meet the challenges and barriers in introducing prospective e-service in BTCL.

1.6 Analytical Framework

In this part, it would be tried to point out how the theoretical concepts have been conceptualized and how these concepts relate to each research question. An integrated approach of e-service development in BTCL that is implied in this dissertation has been demonstrated through an analytical framework presented in figure-1, which emphasizes five independent variables that may possibly affect the only dependent variable '*e-service adoption*'. Independent variables are: 1) Infrastructure and Logistic support, 2) Human resource development, 3) Technology, 4) Citizens' value, and 5) Policy and legal issue.

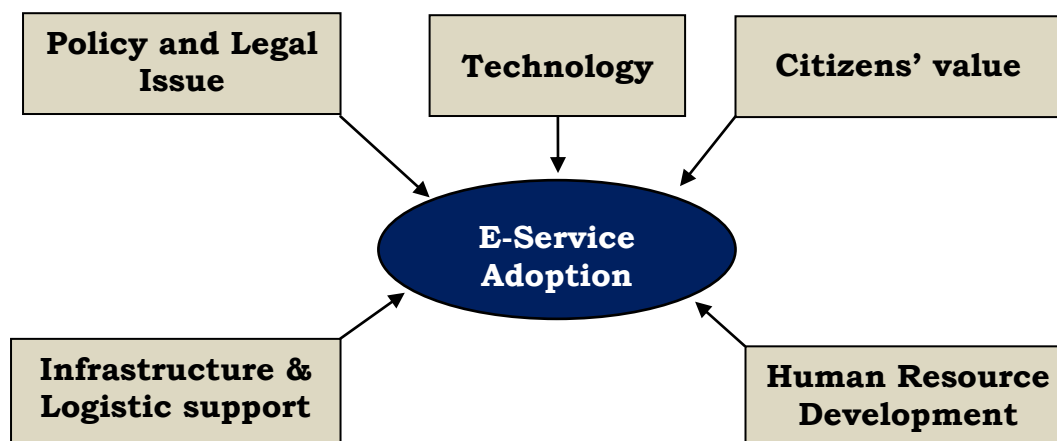


Figure-1: Analytical Framework

1.6.1 Measurable Indicators for Independent Variables

Keeping in mind the objective and research questions possible indicators of the respective variables are considered to carry out the research efficiently that are mentioned below.

Table-1: Indicators for Independent Variables

SL.	Independent Variables	Indicators
1	Infrastructure and Logistic Support	1. Intra and Inter Connectivity and Data Processing Infrastructure. 2. ICT supportive equipment at workplace.
2	Human Resource Development	1.Training on ICT 2.Internet accessibility 3.Competency of using computer and internet 4.Incentive(Both tangible and intangible)
3	Technology	1. Introducing office and subscriber database. 2. Unified portal for information access to citizens. 3. Privacy & Security standard 4. Cross-agency Collaboration
4	Citizens' value	1. Service quality 2. Utilization of existing ICT facilities 3. Satisfaction and retention 4. Civic participation in decision-making
5	Policy and Legal Issue	Adequacy of ICT related Laws/Rules/Regulations

1.7 Scope & Limitations of the dissertation

The concept of e-service is reasonably new in the context of Bangladesh and there has not been much study in this area. There are a number of issues to adopt e-service in BTCL. However, due to resource and time constraints, it has not been possible to survey BTCL officials as well as customers outside of Dhaka. Only selected areas of BTCL within Dhaka city such as Mirpur, Gulshan, Shere-bangla Nagar and Mohakhali are administered. The questionnaire interview covers the 27(Twenty seven) officials of different BTCL offices and 25(Twenty five) service seekers or customers of the respective areas. Aforementioned areas bear almost all levels of customers. So, the selection of the study areas deserves strong justification.

1.8 Research Methodology

Research methodology is the functional action strategy to carry out the research in the light of the theoretical/analytical framework and guiding research questions and or the proposed hypotheses (Aminuzzaman, 1991). According to Creswell (2003) there are three types of methodologies to carry out any research. These are quantitative, qualitative and mixed methodology.

In the present study, data was collected using quantitative methodology through structured questionnaire. After analyzing the data, interpretation had made by using qualitative methodology. Hence, to accomplish this study both quantitative and qualitative methodology had been used.

1.8.1 Methods

Assessing the e-service development and identifying the influencing factors is a matter of qualitative judgment. However, to prioritize actions to enhance such preparedness deserves some sort of quantitative evaluation. Therefore, a combination of qualitative and quantitative approach is used to attain the objectives of this study. For the purpose of this study, two methods are used namely

- a) Literature Review;
- b) Questionnaire Survey.

Literature Review: This includes collecting related information and data from all relevant books, documents, published and unpublished research works available, online articles, Journals, notes etc.

Questionnaire Survey: This survey is conducted to gather primary data regarding introducing e-service(s) in BTCL with a semi-structured questionnaire.

1.8.2 Sources of Data

The data for this study were collected both from primary and secondary sources. Secondary data were drawn from the existing literatures like books, previous research works, Journals, seminar papers, reports etc. Primary data were collected through questionnaire survey. The respondents included the officials of BTCL and subscribers of BTCL at different areas in Dhaka city.

1.8.3 Data Collection Technique

To collect data, in-depth interviews were conducted through open ended semi structured questionnaire. Two sets of questionnaire had been used to collect primary data, one for the officials and the other for the customers of BTCL.

1.8.4 Sample selection

Due to resource and time constraints, *Stratified Random Sampling* was deliberately used to choose the respondents (officials) for the purpose of the questionnaire (Questionnaire-1) survey. Apart from the officials working at BTCL, some service seekers were also covered through another questionnaire (Questionnaire-2). Two types of respondents (Officials & Customer) were taken into consideration, because officials refer to the supply side and the customers refer to the demand side of the service(s) provided by BTCL.

1.8.5 Sample Size

A total of 52 (Fifty two) respondents were purposively selected for conducting the questionnaire survey. Of them 27(twenty seven) respondents were officials i.e. service providers and the rest 25(Twenty five) were the service seekers.

1.8.6 Data Validation

The collected data have been validated through cross checking with each other and with the secondary sources.

1.8.7 Data Analysis Tools/ Techniques

The collected data were processed and analyzed using statistical techniques and instruments. For the purpose of analyzing, the data Statistical Package for the Social Sciences (SPSS), Microsoft word and Microsoft Excel have been used.

1.9 Composition of the Dissertation

This dissertation consists of five chapters. By now, the reader is already familiar with the content of *chapter-1(Introduction)* which consisted of a background discussion followed by a statement of the problem, objectives, research questions, rational of the research, analytical framework, scope & limitations of the study and research methodology.

Chapter Two : Review of Literature: This chapter will provide with an overview of previous studies relevant to this dissertation's objective.

Chapter Three : Overview of BTCL: This chapter will give an idea of services delivered to its customer.

Chapter Four : Data analysis and Findings: This chapter will process the collected empirical data with help of SPSS and MS Excel. Then the analyzed data will be compared with the concepts outlined in analytical framework.

Chapter Five : Conclusion and Policy implication: The final chapter will draw some conclusions about the study according to the findings of data analysis with reference to the research objectives and research questions. Also, it will discuss necessary policy implications in order to overcome the challenges/barriers to introduce e-service in BTCL based on findings of the research and finally draws attention to the scope of further research.

CHAPTER-TWO

REVIEW OF RELATED LITERATURE

This chapter will present previous research and studies relevant to the objective and research questions outlined in the first chapter. First of all, general discussions on e-service will be put forth. This is connected to the second research question concerning the barriers/challenges toward adoption of e-service. Then in subsequent section, the research will discuss about the possibilities of public e-service.

2.1 Concept and Definition of e-service

E-Service (or 'e-Service') is a highly generic term, usually referring to the provision of services via the Internet. It is a piece of software that is part of the Government web system and whose aim is to automate or partly automate one particular administrative process. This process can be triggered by a request from a citizen (www.emacao.gov.mo).

The concept of E-service represents one prominent application of utilizing the use of ICTs in different areas. It refers to any service that is provided by any electronic means e.g. Internet/website, mobile devices or kiosk. E-service means that an external user (a citizen) interacts through a user interface of a public IT system based on web technology. Rowley (2006, p.339-359) defined e-service as: *“deeds, efforts or performances whose delivery is mediated by information technology (including the Web, information kiosks and mobile devices). Such e-service includes the service element of e-tailing, customer support and service delivery”*.

As an extension of the 'do-it-yourself' trend, customers are now increasingly demanding 'do-it-for me' services, supplementing as well as cannibalizing on existing service delivery formats. Consequently, banks, airlines, car rental companies, management consulting companies and educational institutions are increasingly opting for online service delivery to meet e-customers demand (Forest Mizerski, 1996). Several conceptualizations of e-service have been offered in, primarily electronic, papers (Poulin, 1999; Hamilton, 1999; Porteus, 1999; McCarthy, 1999; Marianko, 1998; Durr, 1998; Aberdeen Group, 1999; University of Minnesota, 1999). A recurring theme in the conceptualizations of e-service is integration, the seamless incorporation of technology and customer-oriented functions within the firm. Earle (1999, p. 2) provides a good example that illustrates this theme: “What if you had an e-service that did travel planning for

you and you could go to a single Website and do all of those activities from one place? And then, for example, if you were booked on American Airlines and your flight got cancelled (a plausible scenario). You'd have to move to another airline. The system would automatically adjust everything else in your travel plan to accommodate to the fact you were on a different airline and you were arriving two hours later. Your car would be held for you, your hotel notified, and your dinner reservation rescheduled”.

Aforementioned issues lead us to compose the following conceptualization of e-service: “*E-service is an interactive, content-centered and Internet-based customer service, driven by the customer and integrated with related organizational customer support processes and technologies with the goal of strengthening the customer-service provider relationship*”. The rapid growth and proliferation of e-services highlights the potential of this emerging area of services. In order to turn this potential into realizable organizational benefits, customers will have to adopt and actually use e-service. It seems, therefore, imperative to know what factors influence customer attitude and behavior towards this e-service.

2.2 E-service domain

The term ‘E-service’ has many applications and can be found in many disciplines. The two dominant application areas of e-services are:

E-Business (or E-Commerce): e-services mostly provided by businesses or Non-government Organizations (NGOs) (private sector).

E-government: e-services provided by government to citizens or business (public sector is the supply side). The use and description of the e-service in this dissertation will be limited to the context of e-government only where of the e-service is usually associated with prefix “public”: Public e-services.

2.3 Major e-Service Terminology

A considerable amount of research efforts already exists on the subject matter exploring different aspects of e-service and e-service delivery; one worth noting effort is Rowley’s study (2006) which reveals that there is need to explore dimensions of e-service delivery not focusing only on service quality. Some of the major keywords of e-service as found in the e-government research are as follows:

Demand side

It refers to the citizens, who are not mere service seekers from BTCL rather active contributors to BTCL as well as government.

Supply side

It refers to the workforce of BTCL who are the main drivers of delivering service(s) being employed in the supply chain of public utilities and services.

Acceptance

User acceptance of technology is defined according to Morris (1996, referred by Wu 2005, p. 1) as “the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support”.

Accessibility

Users’ ability to access to the e-service is important theme. For example, Huang (2003) finds that most of the websites in general fail to serve users with disabilities. Recommendation to improve accessibility is evident including Jaeger (2006) who suggests to improve e-services’ accessibility like: design for accessibility from the outset of website development, Involve users with disabilities in the testing of the site ...Focus on the benefits of an accessible Web site to all users.

Benchmarking

This theme is concerned with establishing standards for measuring e-services or the best practices within the field. This theme also includes the international benchmarking of e-government services (UN reports, EU reports); much critic has been targeting these reports being incomprehensive and useless. According Bannister (2007) “... benchmarks are not a reliable tool for measuring real e-government progress. Furthermore, if they are poorly designed, they risk distorting government policies as countries may chase the benchmark rather than looking at real local and national needs”

Digital divide

Digital divide is considered one of the main barriers to implementing e-services; some people do not have means to access the e-services and some others do not know how to use the technology (or the e-service). According to Helbig et al. (2009), “we suggest E-Government and the digital divide should be seen as complementary social phenomena (i.e., demand and supply). Moreover, a serious e-government digital divide is that services mostly used by social elites.”

E-readiness

E-readiness, as the Economist Intelligence Unit defines, is the measure of a country’s ability to leverage digital channels for communication, commerce and government in order to further economic and social development. Implied in this measure is the extent to which the usage of communications devices and Internet services creates efficiencies for business and citizens, and the extent to which this

usage is leveraged in the development of information and communications technology (ICT) industries.

Efficiency

As opposed to effectiveness, efficiency is focused on the internal competence within the government departments when delivering e-services. There is a complaint that researchers focus more on effectiveness “There is an emerging trend seemingly moving away from the efficiency target and focusing on users and governance outcome. While the latter is worthwhile, efficiency must still remain a key priority for e-Government given the budget constraints compounded in the future by the costs of an ageing population. Moreover, efficiency gains are those that can be most likely proven empirically through robust methodologies”

Security

Security is the most important challenge for the implementation of e-services because without a guarantee of privacy and security citizens will not be willing to take up e-government services. These security concerns, such as hacker attacks and the theft of credit card information, make governments hesitant to provide public online services.

Usability

In the context of biometric identification, usability referred to the smoothness of enrollment and other tasks associated with setting up an identification system. A system that produced few false matches during enrollment of applicants was described as usable. Another meaning of usability is related to the ease of use of an interface.

2.4 Components of E-service

Three main components of e-service are:

- a) The service provider;
- b) The channels of service delivery;
 - i) Main channel (i.e., Internet),
 - ii) Classic channel (i.e., telephone, call center, public kiosk, mobile phone, television).
- c) The service receiver.

As concerned to public e-service, public agencies are the service provider and citizens as well as businesses are the service receiver. The channel of service delivery is the third requirement of e-service.

2.5 Types of e-Service

There are various types of public e-services from simple information dissemination to highly sophisticated automated e-service. Goldkuhl (2006a, 2006b) explained some of the prescribed models to guide and evaluate the maturity or growth of e-services. Such models facilitate categorizing the public e-services that are described in Table-2 as follows:

Table-2: Public e-Service Categorization

Phase	E-service Level	E-service Characteristic	Example
1	Informational 1 (Online)	Information for the service is available in website.	Organizational information in website
2	Interactive (One way)	1)Downloadable forms available 2) No authentication required.	Downloadable official forms
	Interactive (Two way)	1)Online information exchange, online feedback etc. 2) High degree of authorization required.	Electronic Official forms, uploading of application forms or online submission, etc.
3	Transactional 1	1)No paper work i.e. full electronic case handling, decision and delivery, 2)Required transactional infrastructure, 3)Legal issues considered, 4)Real-time response, 5) Require e-ID.	Online application for passport and NICs(National ID Cards), online bill payment, online ticket purchase, etc.
4	Collaborative (Pro-active automated)	1)Fully collaborated electronic procedures where applicant receives the service automatically based on the previous registration of an event, 2)No need for user to request service, 3) Re-use of available data.	Child allowance in Sweden: Automated social security service (When child is born, hospital sends birth certificate to Swedish tax agency for registration and Swedish insurance agency pays the child allowance to the parents automatically).

2.6 Effect of public e-services

2.6.1 Function Implementation effects

The implementation of e-service extends the variety of options for clients and the use of an improved service portfolio may pick up the value of a relationship with a meticulous company for the customer (Alsop, 1999 in Ruyter & Wetzels & Kleijnen, 2001). Four effects have been recognized for assessing e-service applications from a provider's view point. E-service function (F) is concerned with the ability and quality of the e-services. E-service cost(C) is the expenses incurred in adopting e-services. E-service benefit(B) is concerned with the remuneration gained through employing e-services, which growth attribute takes into account the strategies, policies and types of companies involved when developing e-service(D) applications(Lu & Zhang, 2003).

2.6.2 Quality effects

According to Van Riel *et al.* (2001) in Santos (2003), five mechanisms can be proposed related to the improvements of quality in public e-service:

1. The center service (Ibid).
2. Facilitating service (Ibid).
3. Supporting service (Ibid).
4. Complementary service (Ibid).
5. The user service. Through which the customer accesses the services (Ibid).

According to Yang (2001), the following potential effects of online service quality can be proposed:

- 1) *Reliability*: This includes the rightness of order fulfillment, punctual delivery, and billing precision; this definition clearly excluding an information-only site (Ibid).
- 2) *Responsiveness*: This includes prompt response to customers' investigation, calls, or e-mails (or response to customers within a promised time border), information retrieval, search speed and search friendliness (Ibid).
- 3) *Access*: This includes the catalogue of the company's street and e-mail address, phone and fax numbers, ease of access of service representatives, availability of chat room, and other message channels (Ibid).

- 4) *Ease of use*: This is related to an easy-to-customer URL address, well-organized, well-structured, and easy-to-follow catalogues, site navigability, and concise and understandable contents, terms and conditions (Ibid).
- 5) *Attentiveness*: This consists of individualized interest, personal thank-you notes from online retailers, and availability of a message area for customer questions or observations (Ibid).
- 6) *Credibility*: This refers to the business times past of online retailers, special rewards or discounts and referral banners on other Web sites (Ibid).
- 7) *Security*: This includes security of private information and smallest online purchase risks (Ibid).

E-service quality can not only suggest online commercial company's competitive advantages in the market place but also involve customers in the product development process, through rapid feedback and superior customer relationships (Santos, 2003).

2.6.3 ICT process effects

E-government is ICT applied to ordering at least three kinds of processes (Ciborra, 2005):

- ☞ First, it attends to the relationship (Transaction) between the administration and the citizen (Customer) and related re-engineering of the manners internal to the administration (Bellamy and Talor, 1998 in Ciborra, 2005).
- ☞ A second level regards the method in which the limitations between the state and the market are redrawn, by the formation of an electronic, minimal state, more transparent, agile and responsible (Heeks, 1999 & Stiglitz *et al.*, 2000 in Ciborra, 2005).
- ☞ A third level deals with the idea of assisting policies expected at introducing e-government into developing countries. Better accountability and improved clearness are the description of high-quality governance (Ciborra, 2005).

In e-service, the customer's contact or contact with the organization is through the ICT itself. This remote service encounter afterwards has developed into a self-service experience (Dabhoolkar, 2000 in Surjadjaja & Ghosh & antony, 2003). However, self-service experience and e-service experience are rather different. In self-service operations, a customer has to go to the ICT center (for example, cash

points) to receive a service whereas, in e-service, a customer can suitably receive the service through the Internet at home or other spaces.

2.7 Challenges/barriers of developing e-service

Considering how the barriers toward adoption of public e-service can be explained, it has been focused on four different barrier levels as suggested, Ebrahim & Irani (2005) and Lam (2005). The reason to why we focus on it is that it supplies a good base to know the barriers of public e-service are emerging and how the barriers can be described in our data collection.

2.7.1 Architectural Barriers

- 1) Not allowed citizens to do some e-operations as to vote;
- 2) Changes in infrastructure provoke confrontation;
- 3) Problem to reinforce IC within organization;
- 4) Business and technical knowledge requested at the same time;
- 5) Integrated e-services to connect public zones;
- 6) Divided databases and not connected with other departments;
- 7) Costly, incompetent and ineffective infrastructure.

2.7.2 Technological and security barriers

- 1) Deficiency of IT skills;
- 2) Need of more and highly trained technical staff;
- 3) Ensure adequate security and privacy in public e-service and e-transaction;
- 4) Opposition of workers;
- 5) High cost of sophisticated hardware/software;
- 6) Inflexibility of legal systems regulated by laws;
- 7) Incompatible data standards.

2.7.3 Financial & Policy barriers

- 1) Difficulties in obtaining the funds requested;
- 2) Problems about how funds are managed and released;

- 3) Very defensive sharing data with other government agencies;
- 4) Lack of central government financial support.

2.7.4 Organizational barriers

- 1) No conversation between internal and external environment;
- 2) Government is not ready for novel technologies;
- 3) Non-existence of a total successful resolution model;
- 4) Legal government processes, recognized over many years.

2.8 Possibilities of Public e-service

2.8.1 Engineering Possibilities

There is an urgent need for a comprehensive methodology for planning, designing and implementing e-governance services, which should be able to accomplish the following (Sexena, 2005):

- Ensure excellence by being citizen-centric as a goal.
- Facilitate performance measurement planning and design, and help it embed within the service delivery system.
- Ensure that the system supports the broader end-to-end e-governance process which may involve several departments or agencies.
- Help design a technology architecture that matches with the business process architecture and functionality.
- Facilitating planning and design of performance monitoring and concurrent auditing of the entire government process.

2.8.2 Operations and optimization possibilities

As the customers' expectation of e-service quality is incessantly increasing (Curtis & Zeithaml, 2002), more and more quality features need to be included to satisfy their e-service requests. As a consequence, a number of determinants need to be incorporated in e-service operations to produce a delightful online experience for potential and existing customers. Several essential determinants of e-service operations are identified (Surjadajaja *et al.*, 2003 in Ghosh & Surjadajaja &

Antony, 2004, pp.618). These determinants and their definitions are provided in Table-3.

Table-3: Determinants and Definitions

Determinants (Supporting references)	Definitions
Trust service (Barua <i>et. al.</i> , 2001a,b; Ridley, 2001)	Exact delivery of promised service.
Responsive (Voss, 1999; Clark, 2001; Meuter <i>et. al.</i> , 2000)	Lead time, accuracy, and consistency of response.
Site effectiveness and functionality (Saenz, 2001; Voss, 1999; Dicksteen, 2001)	Effectiveness of web functions such as: help desk, search engine, FAQ section.
Customer Service Representative (Clark, 2001; Dicksteen, 2001)	Availability and helpfulness of CSR.
Fulfillment (Curtis, 2000; Saenz, 2001; Ridley, 2002)	Delivery of products/services on time and as specified.
External communication (Durado, 2002; Barua <i>et. al.</i> , 2001b)	Building a positive image of a service provider towards the existing and potential customers.
Interactivity (Smith and Wallace, 2002; Sterne, 2002)	Web-enabled interaction between customers, between customer and a service provider, and customers' direct interaction with products/services.
Up to date information (Barua <i>et. al.</i> , 2001a; Zemke and Connellan, 2002)	Keep customers updated with latest information on services/products.
Systems Integration (Mottl, 2000; Barua <i>et. al.</i> , 2001b)	Integration of operational systems within a company.
Personalization (Dourado, 2002; Cook, 2002)	One-to-one interaction, personalized services to individual customers.
Navigability (Meuter, <i>et. al.</i> , 2000; Barua <i>et. al.</i> , 2001b; Voss, 1999)	Ease of finding products/services.
Availability (Barua <i>et. al.</i> , 2001a; Sterne, 2002)	24/7 access to website and services.
Convenience (Fellenstein and Wood, 1999; Kalakota and Robinson, 1999)	Elimination of physical restrictions such place and trading hours.

Determinants (Supporting references)	Definitions
Security (Fellenstein and Wood, 1999; Barua <i>et. al.</i> , 2001a,b; Ridley, 2001)	Safety provided by technology against fraud/hackers during online transaction.
Return process (Baird,2001; Strauss and Hill, 2001)	Return policies and procedures.
Supply chain integration (Diese <i>et. al.</i> ,2000;Barua <i>et. al.</i> , 2001b)	Close relationship with business partners.
Internal Communication (Mitchell, 2001; Barua <i>et. al.</i> , 2001b)	Dissemination of information within a company.
Customization (Peppers and Rogers, 1999; Wind and Rangaswamy, 2001)	Providing facility for customers to modify/adjust the system according to their specific requirements.
Service recovery (Bates, 2001; Cook, 2002; Zemke and Connellan, 2002)	Providing an alternative service to the satisfaction of the customer and/or readdressing loss to the customers in the event of a failure of service process.
Price (Burton, 2001; Kalakota and Robinson, 1999)	Competitive pricing of products/services.

All of the determinants are imperative to any e-service experience. Consequently, these determinants can be grouped into three main service processes (Ghosh & Surjadajaja & Antony, 2004):

- i) *Service marketing*: Involves matching market needs and firm's resources ability (Meredith, 1992). It mainly focuses on determining the marketing mix of product (Palmer, 2001).
- ii) *Service design*: Refers to the design of facilities, servers, equipment, and other resources needed to produce services. It includes blueprint of service system, specifications, procedures and policies (Meredith, 1992).
- iii) *Service delivery*: At the front-end operations, the main function of service delivery is to deliver the core products/services to the customers (Slack *et al.*, 2001).

By using a Van diagram and applying set theory, each segment and its representing determinants are established as follows in figure-2.

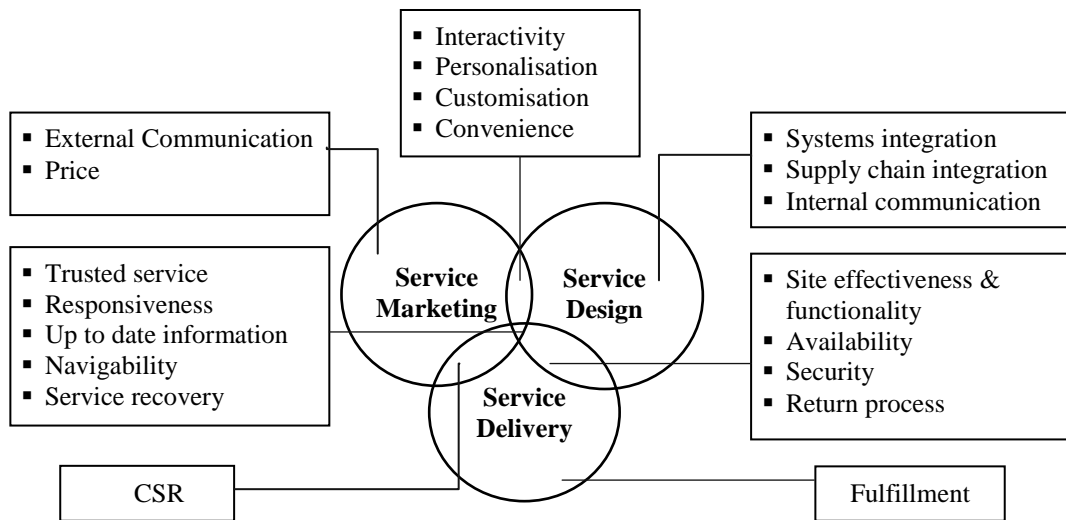


Figure-2: Determinants of service, marketing, design and delivery

As the CRM system is based on customer's profile and transaction history, the company needs to collect information about its customers. The implementation of CRM procedures requires the existence of historical data that is used to identify the main market segments and create an accurate customer profile (Ibid).

2.8.3 Virtual Possibilities

Gartner Group (Baum and Di Maio, 2000) proposed a four-staged model involving web presence, interaction, transaction, and transformation relating to possibilities for improving a virtual e-service. The descriptions of the four stages are (Siau & Long, 2005):

1. *Web presence:* In this stage, agencies provide a web site to post basic information to public.
2. *Interaction:* In this stage, users are able to contact agencies through web sites (e.g. e-mail) or do self-service (e.g. downloaded document).
3. *Transaction:* In this stage, users (customers and businesses) can complete entire transactions (e.g. Bill payment) online.
4. *Transformation:* In this stage, governments transform the current operational processes to provide more efficient, integrated and personalized service.

2.9 Summary of Literature review

The second chapter of this dissertation has provided a review over the previous studies or research work. This includes conceptual evolution of e-service, effective public e-service delivery, challenges and possibilities of public e-service. The contents of this chapter will be helpful for analysis of empirical data. The upcoming chapter will discuss the overview of BTCL.

CHAPTER-THREE

OVERVIEW OF BTCL

Bangladesh Telecommunications Company Limited (BTCL) is a 100% state owned telecommunication company since July 01, 2008. A state owned premier telephone company providing almost all type of basic telephony services except mobile telephony. The aim of BTCL is to serve the nation with the latest telecom services at a cheaper cost without compromising the quality. This chapter will present the current status of BTCL. First of all, organizational profile and services provided by BTCL will be discussed. Then it will be put forth the existing e-services that is concerned with the research question no.-1. Finally it will show the trend of telephone and internet connection during last decade by BTCL.

3.1 Organizational Profile

3.1.1 Background

The Telegraph branch under the Posts and Telegraph Department was created in 1853 in the then British India and was regulated afterwards under the Telegraph Act, 1885. The Telegraph branch was reconstructed in 1962 in the then East Pakistan as Pakistan Telegraph and Telephone Department. In 1971, after the independence of Bangladesh, Bangladesh Telegraph and Telephone Department was set up under the Ministry of Posts and Telecommunications. This was converted into a corporate body named 'Telegraph and Telephone Board' by promulgation of Telegraph and Telephone Board Ordinance, 1975. In pursuance of the ordinance No. XII of 1979 promulgated on 24th February 1979, Telegraph and Telephone Board was converted into “Bangladesh Telegraph and Telephone Board (BTTB)”, as a Government Board. In pursuance of “Bangladesh Telegraph and Telephone Board(Amendment) ordinance, 2008” dated 01 June, 2008,(Later on Bangladesh Telegraph and Telephone Board(Amendment) Act, 2009) a company namely “Bangladesh Telecommunications Company Limited (BTCL)” was incorporated and registered in Bangladesh under the companies Act, 1994 as a public limited company. The entire undertaking (As per Sec 5A of said ordinance) of the BTTB was transferred to BTCL through a Deed of Agreement between Ministry of Post & Telecommunications and BTCL signed on 30 June, 2008. From 1st July, 2008, BTCL started its journey.

3.1.2 Present State

Telecommunication is a very fast growing and faster improving sector in the world. Advancements in telecommunication & ICT sector have done more than anything else to drive the last decade's economic boom as the telecommunications play vital role in the development of ICT driven society. BTCL, the only public sector fixed telephone service provider, is trying to do the best with its limited resources to provide most advanced telecom service to its valuable subscribers. It has the largest telecom infrastructure comprising of copper cabling, microwave links, satellite links, optical fiber networks etc.

Digitalization of BTCL network started back in 1983. Since then BTCL has been maintaining a consistence policy to digitalize its entire network at the earliest. Including all the district headquarters about 477 upazillas have already been equipped with digital exchanges. These exchanges are also capable of providing narrowband internet services. Digitalization of BTCL network will help achieving goals of vision 2021 of Bangladesh Government. Again remaining upazillas will have digital exchange very soon. BTCL is now providing land telephone (PSTN) service to about 1 million telephone subscribers down to upazilla (Thana) and growth centre level. Apart from narrowband internet service, it has started introducing ADSL (Broadband Internet) service and the users are very happy with this service. But still it is seen that the growth is quite slower than expected. BTCL declares ADSL as its pride project and eliminate all bottlenecks and takes it closer to the people.

In the age of ICT, a robust and efficient national transmission system is required to support voice and data communication as well as to boost up the ICT activities of country. In view this, BTCL is gradually installing and expanding its Optical Fiber Cable(OFC) network and SDH microwave links through the country to reduce digital divide. Installation of OFC network in 1000 union in under process and another project proposal to installing OFC network in more 1000 unions has been prepared by BTCL. At present, BTCL has OFC network in 121 upazillas and installation of OFC network in 71 upazillas is under process while another project proposal to installing OFC network in the rest 290 upazillas has been prepared by BTCL.

The call rates and internet rates are cheaper than those of other operators. But unfortunately, BTCL could not be able to attain the Goal and Mission according to its vision despite its skilled technical hands. During last decade, BTCL has been

facing huge challenges due to proliferation of countrywide mobile Telephone and traditional poor way of service delivery.

3.2 Services provided by BTCL

BTCL is committed to deliver almost all types of telecommunication services like, PSTN Telephony, Dial-up & Broadband Internet service, Data communication service, different Value Added Services, Interconnection service, Transmission Bandwidth, International carrier service, IPLC local service etc. except Mobile Telephony. All the services provided by BTCL are briefly mentioned in the following sub-sections:

3.2.1 Telephony (PSTN) service

This is a simply traditional land telephone service through copper cable, available in all districts and almost upazillas in the country. Presently there are about 700 digital telephone exchange having capacity of 1.4 million lines and 1.0 million subscribers. PSTN service includes as following:

- 1) National, ISD, E-ISD & ISDN
- 2) Fax
- 3) Value added services (VAS): Call barring, Call waiting, Wake-up call, Abbreviated call, Conference call, Subscriber absence message, Don't disturb message, Call forwarding, Hot line etc.

3.2.2 Internet/Data Link service

Different internet/data link services provided by BTCL are as follows:

- Click2Net or Dial-up(Regular & Premium) internet
- BCube or Broadband(ADSL)
- Leased Line connectivity
- IPLC (International Private Leased Circuit)
- Blink or DDN(Digital Data Network)
- IP VPN or Point to Point data Link Connectivity
- MPLS VPN

3.2.3 IN (Intelligent Network) Service

Free Phone Service (FPS): This is BTCL's toll free phone service. FPS subscribers pay bills of incoming calls. So, the callers can make free call to an FPS number. This service is suitable for different service providers, enterprises, customer care centers and call centers, where people can make calls free of cost.

Pre-Paid Telephony (PPT): The PPT service enables the subscriber to transfer the balance of a pre-paid card to the account of a telephone number. When subscriber makes pre-paid phone call by this telephone, the call will be charged to the pre-paid account of this telephone number.

Pre-Paid card Service (PPS): The PPS service allows a user to make a call (National or International) from any telephone set by using a scratch card. This call will be charged to the card number (account number in IN system) and will not be included in telephone bill.

3.2.4 Web Service

BTCL is the only provider of web services that are pointed out below:

- Web hosting
- DNS(Domain Name System) parking
- Dot bd(.bd) domain registration

3.2.5 Transmission Service

- Inter-Operator Connectivity
- Co-location service
- International bilateral Voice Carrier Service etc.

3.2.6 ICX (Inter-operator Connection Exchange) service

BTCL provides ICX services to route domestic inter-operator calls.

3.2.7 Gateway Service

IGW (International Gateway): BTCL has been working as the international voice carrier and operating international gateways. The legitimate voice calls originated from and terminated to the Access Network Service (ANS) providers' network are exchanged through BTCL IGW.

IIG (International Internet Gateway): ISPs are connected through optical fiber with BTCL IIG nodes for providing internet transit facility. The same infrastructures are being used to provide higher bandwidth to different organizations.

3.3 Existing E-services in BTCL

To deliver/receive any service, it has to maintain a systematic procedure. If the system is followed physically, it would be called p-service. And if the same is followed electronically i.e. through ICT, it would be called e-service. At present,

some informational and one way interactive services that are being delivered electronically through BTCL's website are mentioned below:

- I. Citizen charter;
- II. Updated service information;
- III. Downloadable forms to get any service from BTCL;
- IV. Up to date tariff of services;
- V. Monthly downloadable telephone/internet bill;
- VI. Instant service interruption message.

So, it could be said that BTCL provides fragmented e-services. It could not be able to provide any complete & efficient e-service for its customer till now.

3.4 Trend of Telephone & Internet connection of BTCL During last decade

The statistics of telephone and internet connections has been collected from BTCL's Annual reports of the year 2000-2001 to 2011-2012. Unfortunately the statistics of the year 2006-2007 has not found. The trends of land phone and internet connections are shown graphically in the following sections.

3.4.1 Trend of Telephone connection

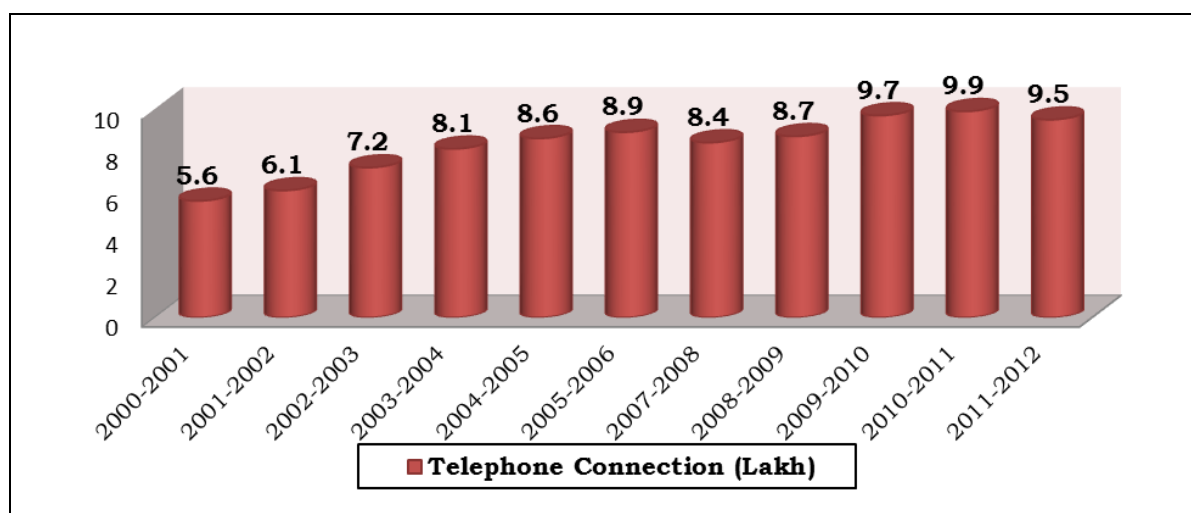


Figure-3: Trend of Telephone Connection in BTCL

From figure-3, it is seen that number of telephone connections are in increasing order at a nominal rate up to 2005-2006. Slightly decreasing trend is noticed from 2007 to 2009. Again upward trend is seen in 2009 to 2011. Afterwards the number of telephone connections of BTCL is remaining almost stable.

3.4.2 Trend of Internet connection

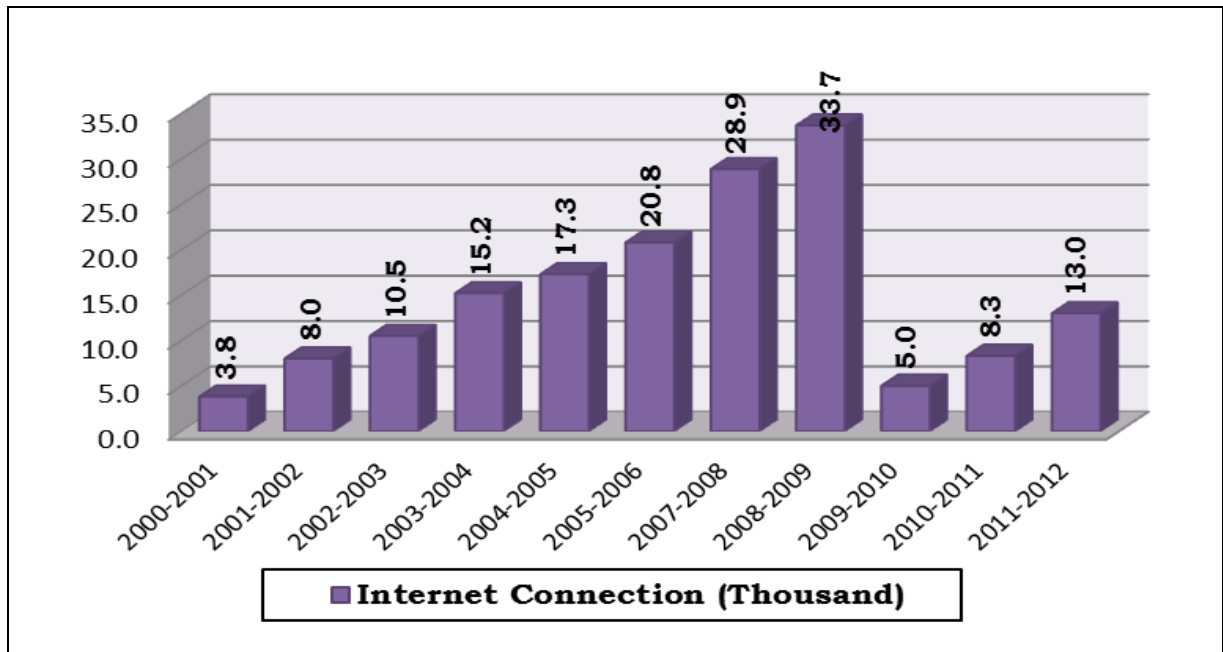


Figure-4: Trend of Internet Connection in BTCL

In figure-4, up to 2008-2009, it has been showed dial-up internet connection and the rest are ADSL connection. Because ADSL connection started from 2009-2010 and since then 100% telephone connections belong to dial-up internet facility. Due to this, after 2008-2009, only ADSL connection has been showed in figure.

3.5 Summary of this chapter

In this chapter, organizational profile of BTCL, all the traditional services, & existing e-services have been discussed. The chapter also shows the trend of fixed telephone and dial-up & ADSL (Broadband) internet service. Considering the subject matter of this chapter, the upcoming chapter will analyze the collected data, and then based on analysis findings will be come out.

CHAPTER-FOUR

DATA ANALYSIS & FINDINGS

In this chapter, collected data will be presented and analyzed in the light of objective, research questions & analytical framework. The respondents were given an abundance to express their interest regarding e-service adoption in BTCL. This measures the respondents' perception of expectations and necessity of e-services with more elaborative way.

4.1 Primary Data Presentation & Analysis

The empirical data collected in order to find the answer of the research questions will be presented in this chapter.

4.1.1 Composition of Respondents for Questionnaire Survey

The composition of respondents for the questionnaire survey was as stated in the Table-4. There was a one questionnaire for the officials of BTCL (Appendix-A) and another was used for service seekers (Appendix-B & C).

Table-4: Composition of Respondents for Questionnaire Survey

SL. No.	Questionnaire	Category of Respondents	Number of Respondents
1	Questionnaire-1	Officials of BTCL	27
2	Questionnaire-2	Subscribers of BTCL	25
Total			52

4.1.2 Data obtained from BTCL officials (Questionnaire-1)

In questionnaire-1, there were 04(Four) parts. First part included respondents' personal affair, 2nd part general question, 3rd part impact evaluation and the last part i.e. 4th part included evaluation of barriers of developing e- service in BTCL. The questionnaire belonged to total 43 questions. 27(Twenty seven) officials of BTCL were interviewed distributing questionnaire to conduct the survey.

In part-2 there were 21 general questions. Some of them are analyzed one by one as follows.

Distribution of respondents

Table-5: Distribution of Respondents by Age(N=27)

Age Group	Frequency	Percent (%)
26~35	6	22
36~40	10	37
41~50	9	33
50+	2	7
Total	27	100

From the above distribution (Table-5), it is found that most of the respondents (37%) fall in the age group 36 to 40 years and the least (7%) of them are of 50+ years. And 33% are in age group of 41~50. So, greater parts (70%) of the respondents are in the age group 36~50 who are very rational.

Adequacy of ICT Infrastructure & Logistics

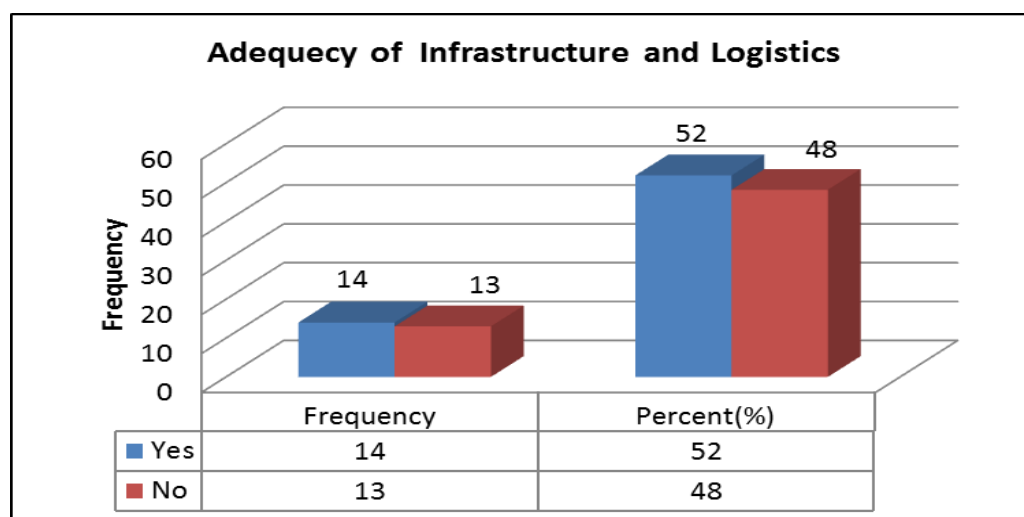


Figure-5: Adequacy of Infrastructure & Logistics

Figure-5 depicts that out of 27, 14(52%) respondents opine that ICT infrastructure and logistics to adopt e-service in BTCL are adequate. On the contrary, 13(48%) respondents are not agreed with this opinion. So, overall scenario is not satisfactory.

Level of computer competency of the officials

Table-6: Computer Competency Level

Competency Level	Frequency	Percent (%)
Poor	1	4
Fair	2	7
Good	9	33
Very Good	11	41
Excellent	4	15
Total	27	100

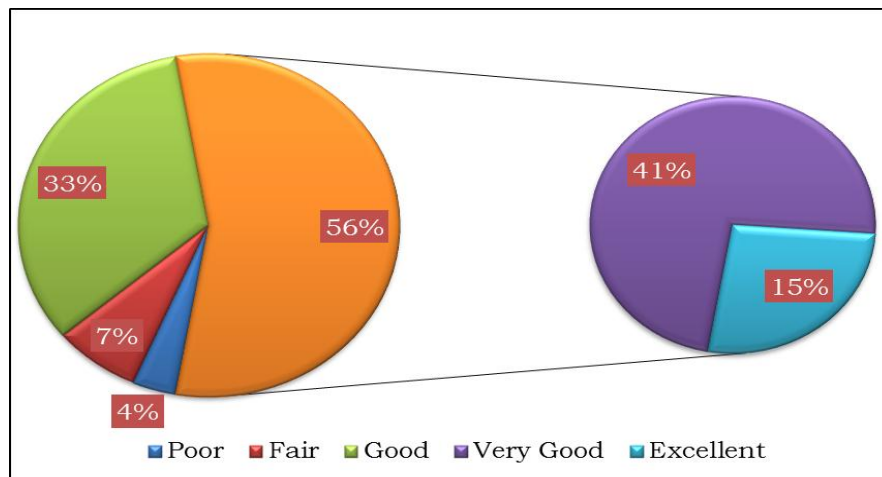


Figure-6: Level of Computer Competency

According to the assessment of the respondents themselves about their level of computer competency, the response is quite mixed. It is seen that most of the respondents (41%) are very good in computer competency, a significant number is good (33%) and a remarkable number of respondents (15%) are excellent. Only a few numbers (11%) are less competent. The distribution is given in Table-6 & Figure-6. In a word, computer competency of the respondents is very much appreciable.

Respondents trained in ICT

Table-7: ICT Training

Training in ICT	Frequency	Percent (%)
Yes	10	37
No	17	63
Total	27	100

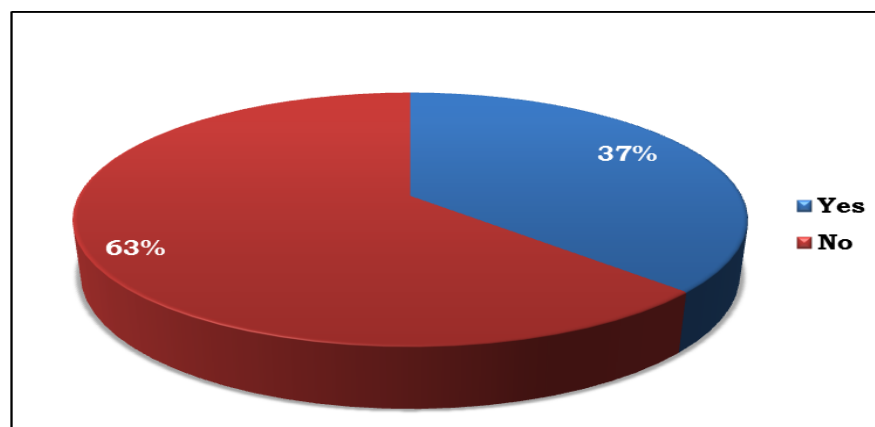


Figure-7: Training in ICT

Table-7 and Figure-7 illustrate that 63% respondents have no ICT training. Only 37% have their ICT training. So, a greater part of the officials of BTCL have no ICT training which is not favorable in implementing efficient e-service.

Existence of Office database

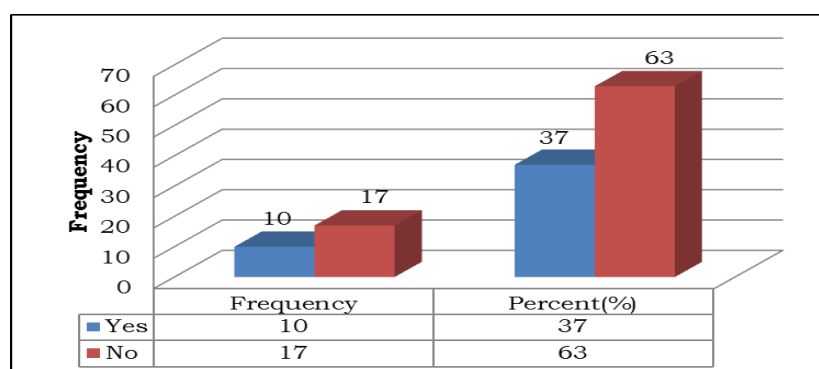


Figure-8: Existence of Office Database

Regarding the existence of office database, 63% expressed that there is no office database in their offices. Office database is essential for introducing ICT. Figure-8 illustrates the expression.

Existence of Customer database

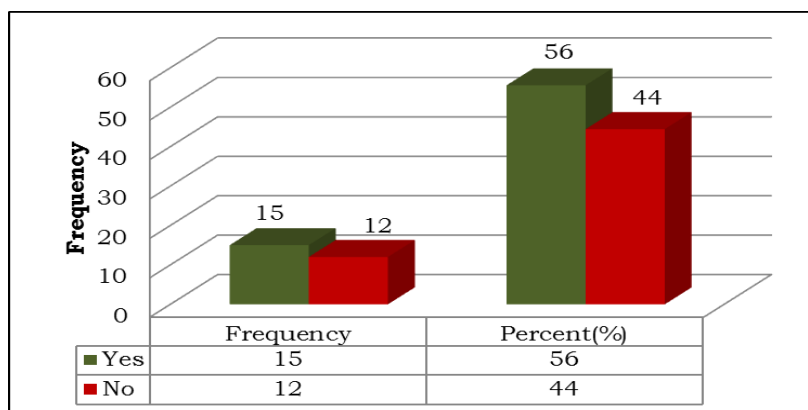


Figure-9: Existence of Customer Database

Figure-9 illustrates the existence of customer database in the BTCL offices. It is observed that 56% respondents are of the opinion that their offices belong to customer database and the rest have not. Customer database in the precondition of implementing e-service in BTCL. So, It is imperative to have 100% customer database for providing e-service.

Utilization Level of ICT in office

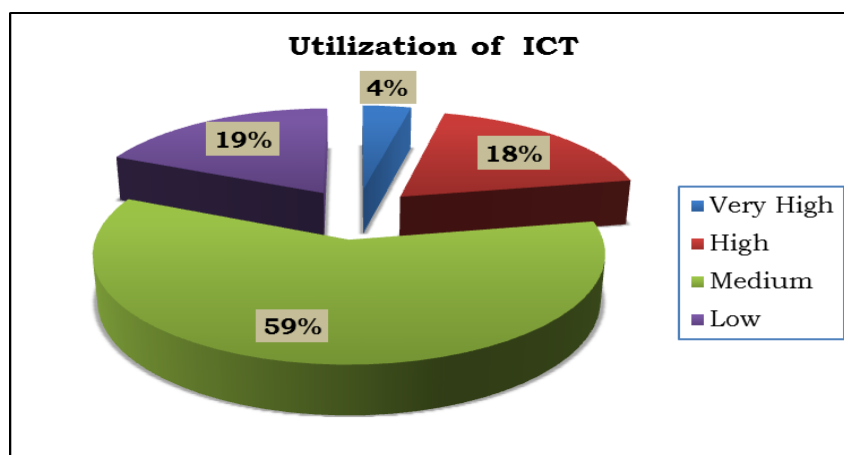


Figure-10: Utilization of ICT in Office

In terms of assessing the utilization level of ICT at the office, the scenerio is pretty ordinary. Majority(59%) of the respondents has evaluated that the utilization level of ICT in service delivery is very much limited. Furthermore, 19% of the respondents evaluate this as low, 18% as high and only 4% as very high. Overall backdrop of ICT utilization is not good enough for introducing desired e-service. The observstion is shown in a pie chart in figure-10.

ICT Related Laws/Acts

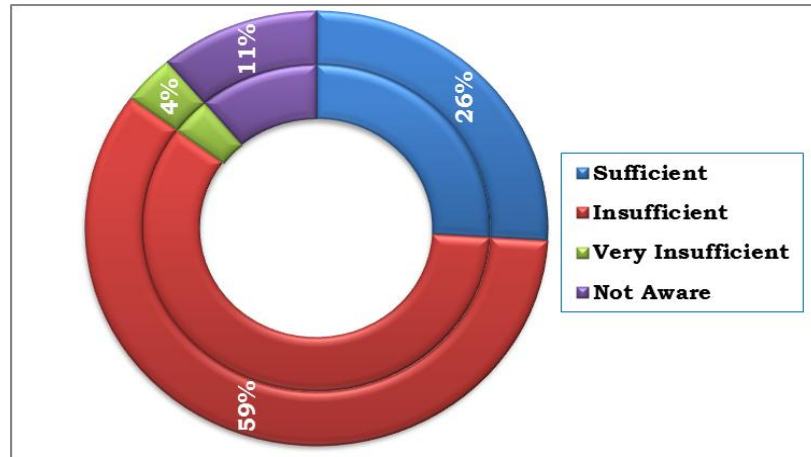


Figure-11: Sufficiency of ICT Laws

To assess the views of the respondents regarding ICT laws/Acts, it is found that the existing ICT related laws/acts are not sufficient as per a large part (59%) of the respondents. Only 26% respondents have voted in favor of sufficiency of ICT laws/Acts. Many others are not aware of this. The assessment is plotted in figure-11.

E-readiness

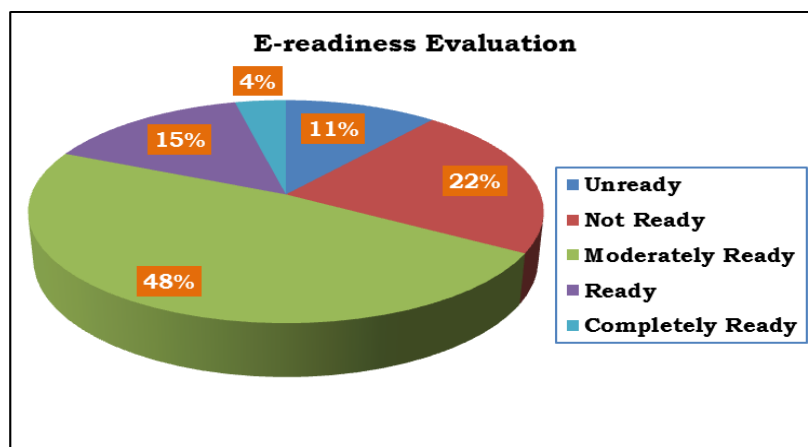


Figure-12: Evaluation of e-readiness

To formulate the view of e-readiness at BTCL, the response got is quite mixed. The survey results are figured out in figure-12. The primary data reveals that 48% of the respondents term the e-readiness level as moderate. However, the rest 52% of the respondents express different views. Of them, 22% rated as not ready, 15% ready, 11% unready and 4% rated as completely ready. So, overall scenario is optimistic.

Impact of Adopting e-Service

In part-3 of the questionnaire-1, there were 10(Ten) statements regarding the level of impact of adopting e-service on efficient and effective citizen centric public service. Respondents were requested to indicate their opinion based on their experience on scale 1 to 5. Some observations are analyzed by turns. Statements carry the value of e-service as compared to existing traditional service.

Table-8: Faster & Convenient

Faster & Convenient	Frequency	Percent (%)
Not Agree	0	0
Moderately Agree	3	11
Agree	3	11
Strongly Agree	10	37
Extremely Agree	11	41
Total	27	100

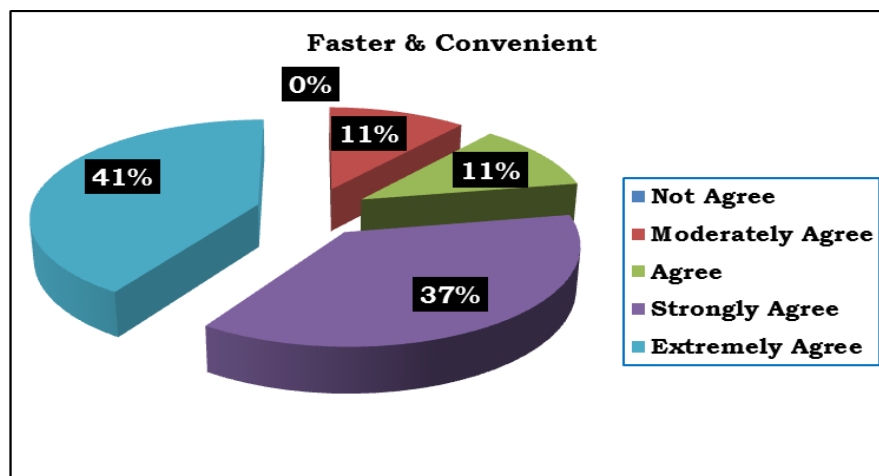


Figure-13: Faster & Convenient Service

To interpret the perception '*e-service would be faster & convenient*', major part(41%) of the officials indicate their opinion as 'extremely agree', 37% as 'strongly agree' and the remaining parts are equally(11%) 'agree' & 'moderately agree'. Interestingly, nobody is against of this statement. The rating is graphically presented in figure-13.

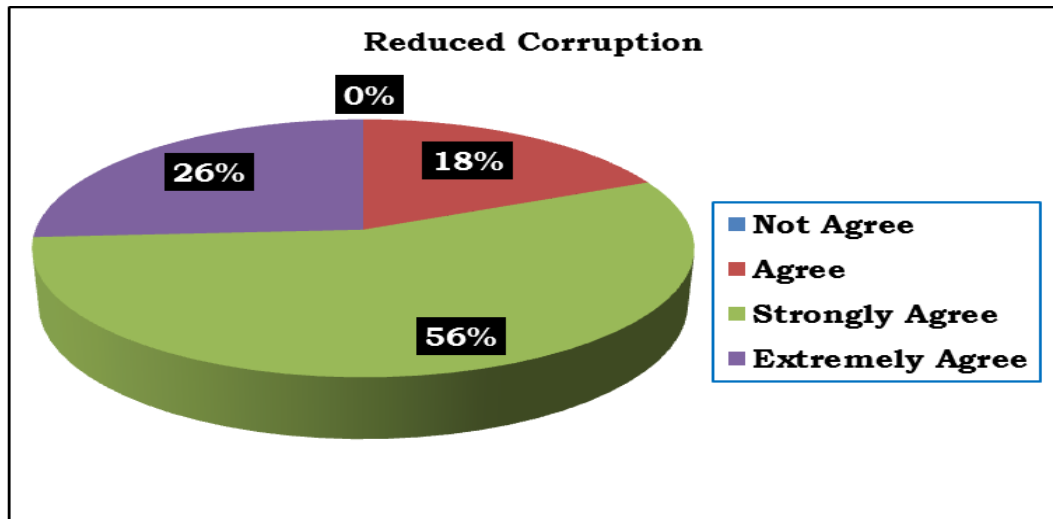


Figure-14: Reduced Corruption

To evaluate the statement ‘e-service could reduce corruption and ensure more accountability’, more than half(56%) of the total officials strongly agreed, 26% extremely agreed, and the rest 18% only agreed the statement. None was in opposition. The response is graphically presented in figure-14.

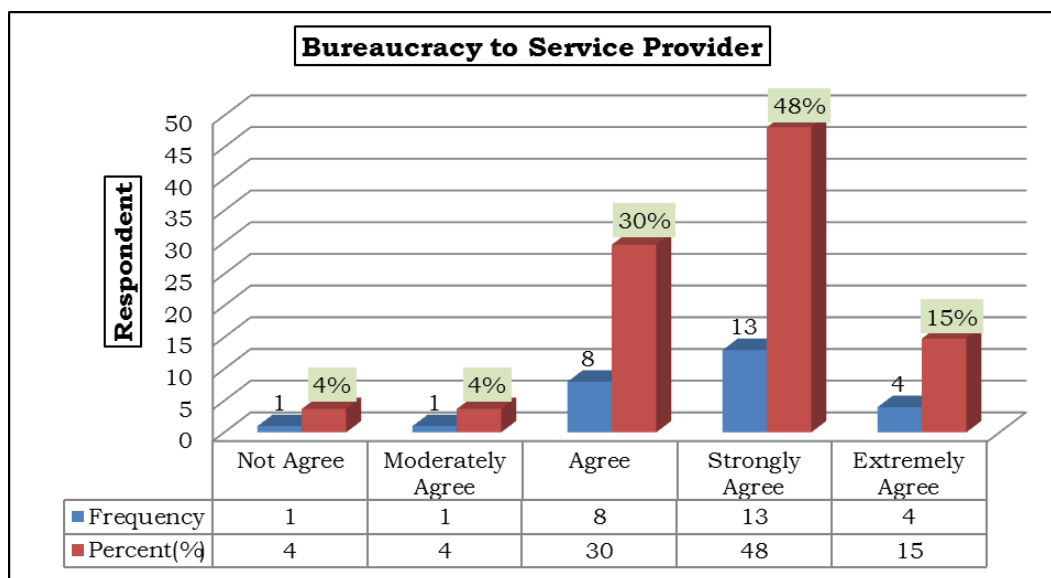


Figure-15: Bureaucracy to Service Provider

Figure-15 illustrates the statement ‘e-service could be a tool for transformation of public administration from bureaucracy to service provider’. To give the evaluation on the statement, 48% of the respondent strongly agreed upon the statement which is imperative to implement e-service. Besides, 15% officials extremely agreed upon the statement and 30% agreed as well, whereas only 4% respondents disagreed on that.

Barriers of Introducing E-service

In part-4 of the questionnaire-1, there were statements regarding the barriers of introducing e-service in BTCL. Officials were asked for to mark their opinion based on their experience on a scale 1 to 5. The statements were categorized into three sections viz. organizational, procedural and technological. Some very much essential statements from each category have been taken into consideration for analysis. Few observations of the considered statements are clarified by turns as follows.

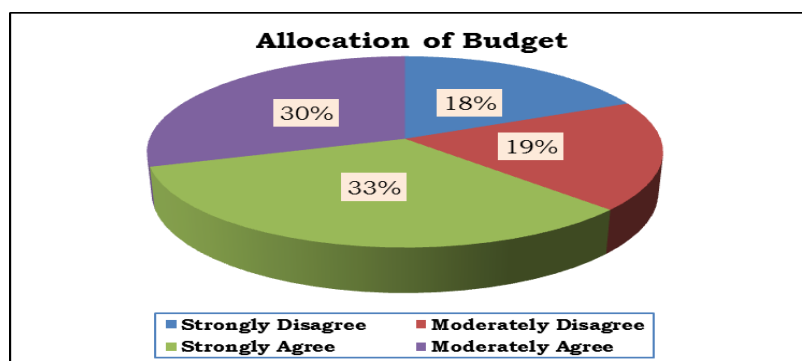


Figure-16: Allocation of Budget & Finance

The respondents' perception regarding the statement '*Insufficient allocation of budget and finance is a barrier of introducing e-service in BTCL*' has been figured out in figure-16. It is seen that 63% respondents agreed the statement with different scale, where 33% are strongly agreed and 30% are moderately agreed. On the contrary, 37% respondents refused the statements from their point of view, where 18% respondents are strongly disagree and 19% are moderately disagree with this.

Lack of Infrastructure

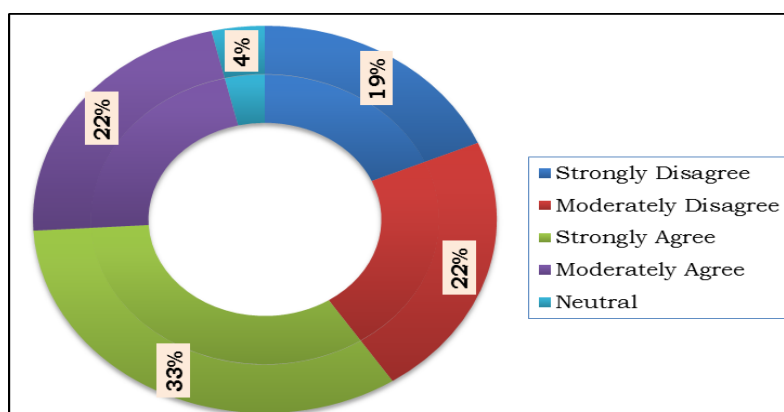


Figure-17: Lack of Infrastructure & Logistics

Figure-17 presents the perception regarding the statement '*Lack of Adequate Infrastructure and Logistics is one of the barriers of introducing e-service in BTCL*'. 55% of the total respondents agreed the statement, where 33% are strongly agreed and 22% are moderately agreed. On the contrary, 41% respondents disagreed the statement from their point of view, whereas 19% respondents strongly disagreed and 22% moderately disagreed with this. Among the respondents 4% kept themselves neutral in this regard.

Trade Unionism

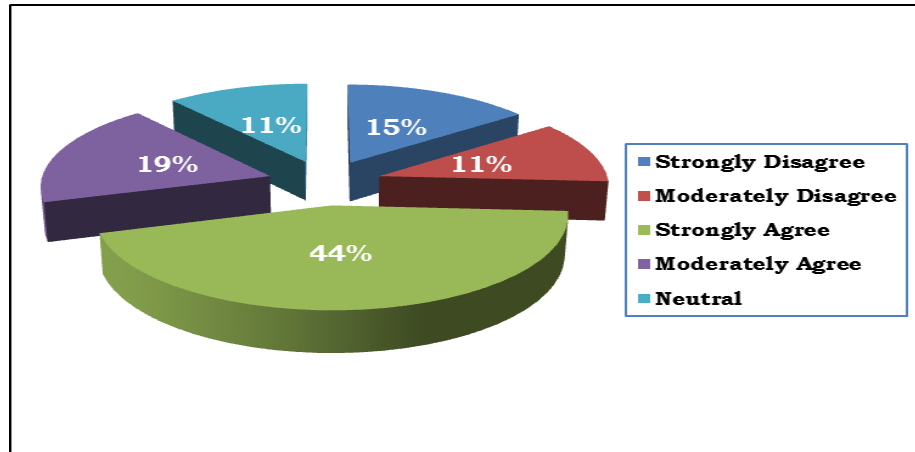


Figure-18: Trade Unionism, a barrier of implementing e-service

It is well known that trade union is a very powerful laborer association in BTCL. Figure-18 illustrates the respondents' views regarding the statement '*Trade Unionism could be an obstacle of introducing e-service in BTCL*'. It is seen very mixed reaction among the respondents. 63% of the respondents agreed the statement of which 44% strongly and 19% moderately agreed. On the contrary, 26% of them disagreed of which 15% strongly and 11% moderately disagreed with the statement. Besides, 11% of the respondents kept themselves Neutral of giving any comments.

Lack of Top Level Management Initiatives

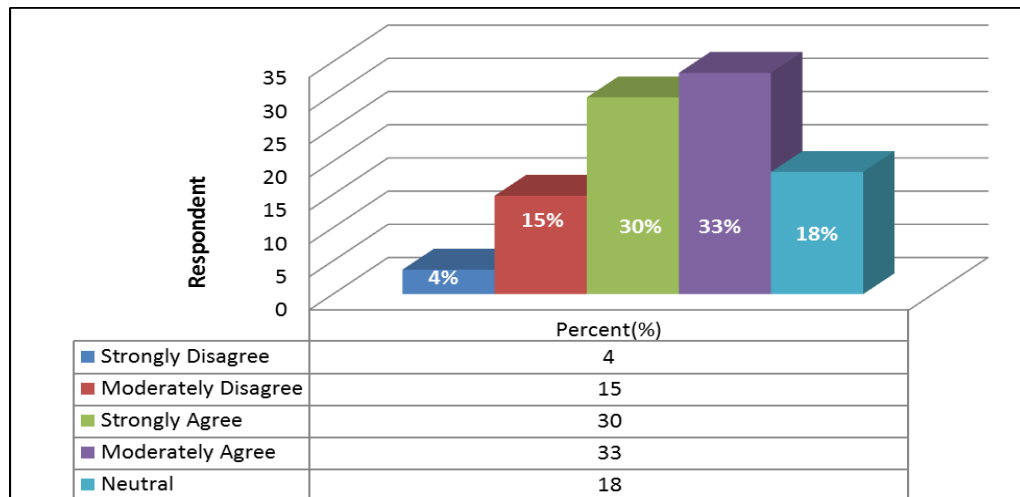


Figure-19: Lack of Top Level management Initiatives

The respondents expressed their opinions on the statement '*Lack of Top Level Management Initiative is a key barrier of introducing e-service in BTCL*'. 63% respondents gave their consent in favor of the statement, where 30% strongly agreed and 33% moderately agreed. On the contrary, only 19% respondents were against of this, where 4% respondents were strongly disagreed and 15% were moderately disagreed with this. Among them a remarkable part (18%) of the respondents refrained themselves doing any comments in this regard. The perception is graphically represented in figure-19.

Limited Collaboration

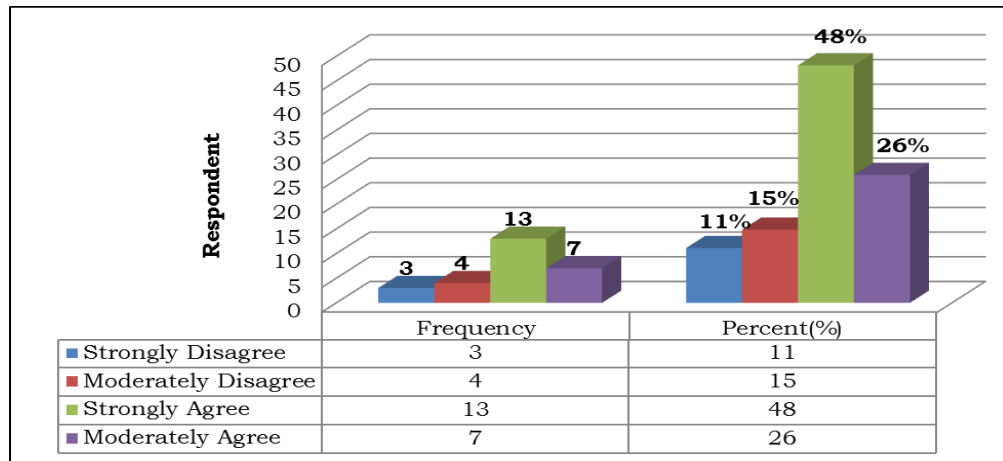


Figure-20: Limited Cross-agency Collaboration

The respondents’ perception regarding the statement ‘*Limited Cross-agency Collaboration is a barrier of introducing e-service in BTCL*’ has been figured out in figure-20. It is seen that 74% respondents agreed the statement with different scale, where 48% strongly agreed and 26% moderately agreed. On the contrary, 26% respondents disagreed the statements, where 11% respondents strongly and 11% moderately disagreed with this.

Absence of Database (Office and Customer)

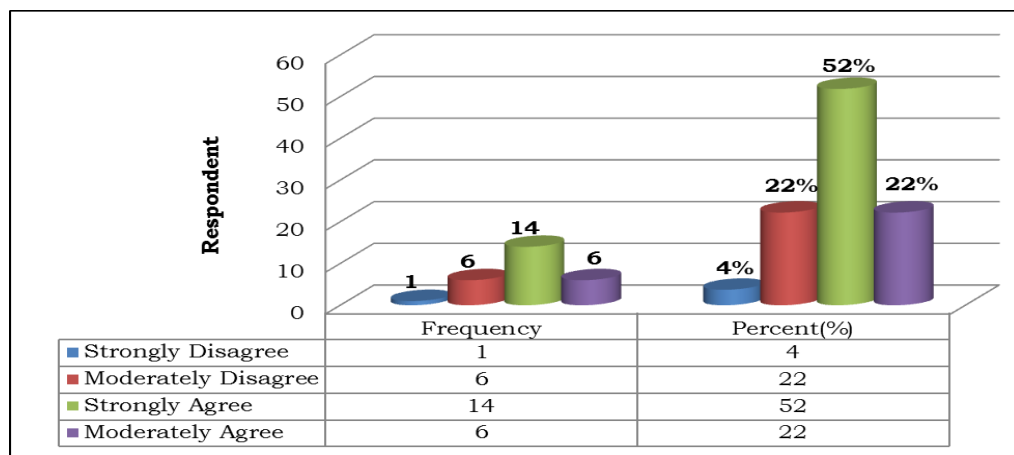


Figure-21: Absence of Database (Office & Customer)

Figure-21 illustrates the respondents’ opinion regarding the statement ‘*Absence of Office and Customer database is one of the vital hindrances of introducing e-service in BTCL*’. Majority (52%) of the respondents strongly agreed and 22% moderately agreed the statement. On the contrary, 26% respondents disagreed the statements from their point of view, where only 4% respondents were strongly disagree and 22% were moderately disagree with this. So, it is imperative to have databases in adopting e-service.

4.1.3 Data obtained from Customer (Questionnaire-2)

In questionnaire-2, there were 03(Three) parts. First part included respondents' personal affair, 2nd part general question, and 3rd part included evaluation of the given statement regarding impact of adopting e-service in BTCL. The questionnaire belonged to total 26 questions. 25(Twenty five) customers were interviewed distributing questionnaire to conduct the survey.

In part-2, there were 16 general questions. Some important of them are analyzed one by one as follows in graphical format:

Quality of Traditional Services

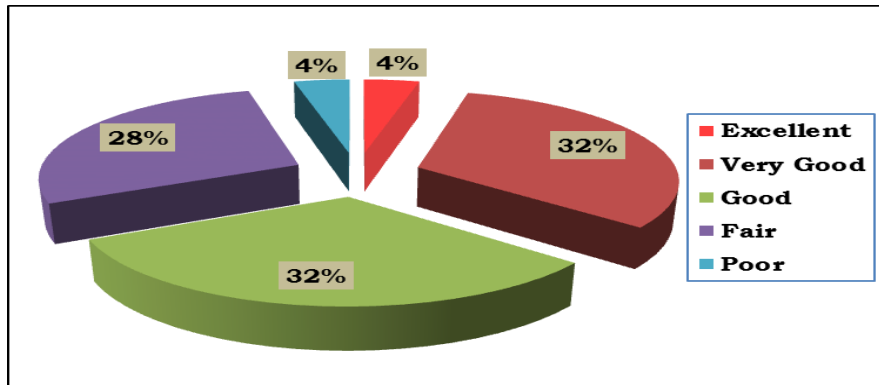


Figure-22 : Quality of traditional Services provided by BTCL

While conducting the survey the respondents rated their overall satisfaction about the quality of traditional services provided by BTCL. According to the assessment, it is found that 32% of the respondent rated their level of satisfaction as good and very good equally and 28% rated it as fair. On other hand, 4% rated as excellent and poor equally. The distribution is shown in graphical format in Figure-22.

Intensity of Using internet

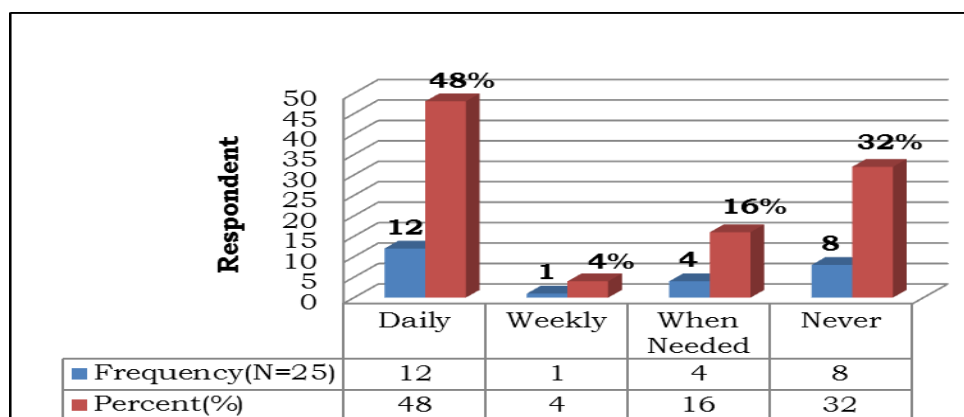


Figure-23: Intensity of Using Internet

Figure-23 illustrates the intensity of using internet of the respondents i.e. how often the customer use internet for their own purpose. Observation reveals that most(48%) of the customers use internet daily, 16% use when it is needed and 4% use this weekly. It is noticeable that a significant portion (32%) of the respondent never avail internet service.

Urgency of Implementing E-service

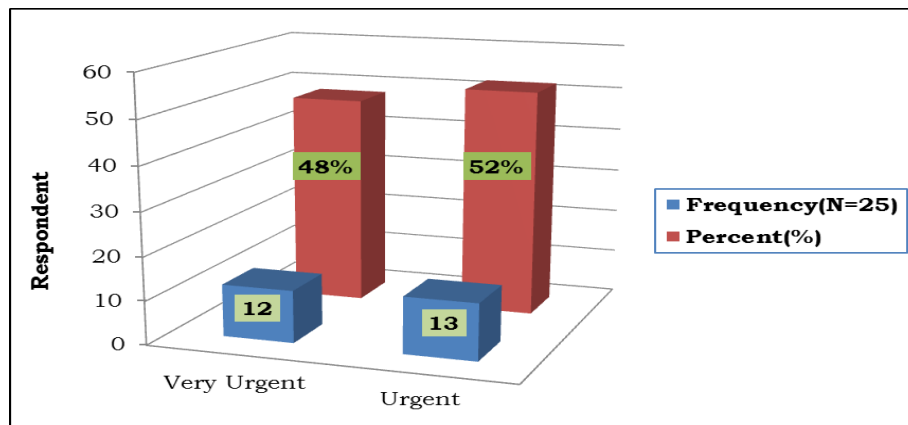


Figure-24: Urgency of Adopting E-service

In response of the urgency of adopting e-service in BTCL, all the respondents gave their opinion in favor of implementing e-service for the sake of both citizen and BTCL. To express the level of intensity, 52% of the respondents opined that it is urgent and the rest 48% opined it as very urgent. Figure-24 illustrates the observation.

Evaluation regarding prospective e-service(s)

In part-3 of the questionnaire-2, there were 10(Ten) statements regarding prospective e-service(s) in BTCL. Respondents were requested to indicate their evaluation on a scale 1 to 5. Some observations are analyzed by turns. Statements carry the comparative advantage of e-service.

E-service is corruption and hassle free public service

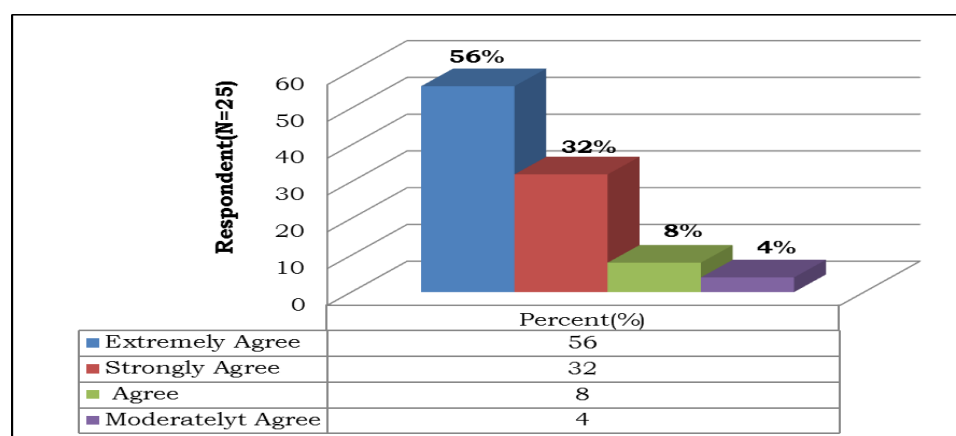


Figure-25: E-service is corruption & hassle free

To interpret the perception ‘e-service would be corruption and hassle free’, major part(56%) of the customers termed their evaluation as ‘extremely agree’, 32% as ‘strongly agree’ and the remaining parts were ‘agree’ & ‘moderately agree’ by 8% and 4% respectively. Nobody disagreed the statement. The rating is graphically presented in figure-25.

E-service , a tool of encouraging customer

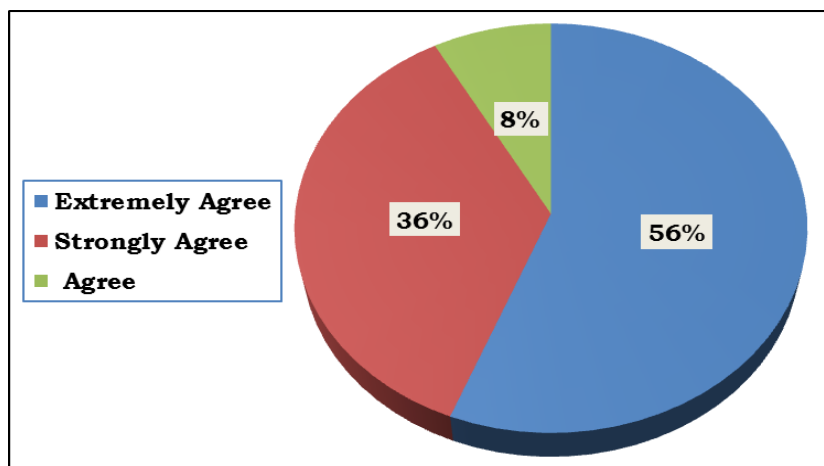


Figure-26: E-service could be a tool of encouraging customer

Figure-26 illustrates the statement ‘*E-service could be a tool of encouraging customer*’. To give the evaluation on the statement, 56% of the respondent extremely agreed and 36% strongly agreed upon the statement which is imperative to implement e-service. Besides, 8% customer rated as agree on the statement. No indication on disagree found on the statement.

4.2 Findings of the Survey

The research questions posed in chapter-1 will be answered through the findings; therefore fulfilling the stated purpose with the study. Each of the research questions will be answered in separate sections as follows.

4.2.1 Current status of e-service(s)

While conducting the survey, the customers raised questions with the quality of service delivered by BTCL. They expressed their feelings of harassments in case of land telephone service. Due to poor delivery of land phone service, high speed and comparatively cheaper rated internet service of BTCL is not getting popularity. Also officials of BTCL confessed their dissatisfaction with the quality of service delivery. A major part of the respondents agreed upon the fact that in this era of mobile phone, traditional service of land phone is not time befitting at all. To keep up with the cell phone service, conventional way of providing service by BTCL should be replaced by implementing e-service(s). In the question of currently

availability of any e-service by BTCL, the respondents mentioned some e-service(s) discretely. To summarize the opinions of the respondent regarding current status of e-service in BTCL relating to research question-1, it is stated that only Informational and one way interactive e-service are available in BTCL website such as:

- Downloadable forms of new connection;
- Information about the service(s);
- Citizen charter;
- Monthly telephone/internet bill delivery.

Two way interactive, Transactional, and collaborative e-service are not exercised.

4.2.2 Prospective e-service(s)

All the services (Art.3.2) delivered by BTCL are not directly related to customer (Individual/business). Of them Land Telephone service and Internet service are directly associated with customer. So, these services should be transformed into e-services. Taking into cognizance, the respondents were requested to mention the prospective e-service(s) concerning research question-2 during conducting the survey so that BTCL might attain citizens' satisfaction up to the mark. The summarized prospective e-services are stated below:

- Application system for all sorts of services
- Maintaining Customer as well as Office database system
- 24/7(twenty four hours a day/seven days a week) one stop customer care service
- All kinds of payment system
- Acknowledgement and feedback system
- Grievance handling
- Detail bill supplying system
- E-information center
- Up-gradation of customer's status
- E-office management system
- Automated customer bill generation

4.2.3 Impact of adopting e-service

The respondents were found more or less very much aware of the modern telecommunication system. They are able to realize the advantage of e-service over traditional service delivery that they have been enjoying for a long period of time. All the respondents agreed in different scale upon the impact of e-service(s) adoption in BTCL that are mentioned below:

- 1) Reduce costs for individuals and business;
- 2) Provide faster, more convenient public service;
- 3) Reduce corruption and ensure more accountability;
- 4) A tool for transformation of public administration from bureaucracy to service provider;
- 5) E-service leads to good governance;
- 6) Provided more efficient and effective customer service;
- 7) Analyze information to improve decision-making;
- 8) Improve employee cross-functional skills;
- 9) Improve employee productivity;
- 10) Reduce operational expenses.

4.2.4 Barriers/challenges of e-service adoption

During conducting the questionnaire survey, the respondents gave their earnest opinion for implementation of e-service. Also they agreed upon some prescribed barriers with this which are concern to the research question no-3. Three types of barriers are identified that are briefly pointed out as follows:

Organizational barrier:

1. Lack of adequate Infrastructure and Logistics;
2. Insufficient allocation of Budget and Finance;
3. Negative Trade Unionism;
4. Lack of Top level management initiatives;
5. Lack of Technical Skill of the Officials;
6. Weakness of Policy and Regulatory Framework.

Procedural barrier:

1. Limited cross-agency collaboration;
2. Lack of redefined business processes;
3. Internal politics.

Technological barrier:

1. Lack of technology interoperability;
2. Absence of office and customer database.

4.3 Summary of the chapter

Empirical data collected from the respondents of the study area are presented and analyzed in this chapter. From the analyzed data, some findings concerning objective and research questions have been pointed out. Based on this findings, it has been drawn a conclusion and kept some important policy implication to face the challenges and barriers to adopt e-service(s) in the next chapter.

CHAPTER- FIVE

CONCLUSION & POLICY IMPLICATION

This chapter will draw a conclusion about the research according to the findings of data analysis with reference to the research objectives and research questions. The research question enquires the prospective e-service analyzing the current standings of BTCL and tried to find out possible hindrances to implement public e-services. Therefore along with the concluding remarks, some policy implications are discussed in connection with the hindrances to public e-service(s) implementation in BTCL and finally recommendation for further research has been included.

5.1 Conclusion

As Telecommunication market is becoming increasingly competitive, the ability to react quickly and decisively to market trend and to tailor products and services to individual customers is being more critical than ever. BTCL has highly skilled and experienced technical work force and also has vast opportunity. But due to poor service delivery, it is loosing citizens' confidence. It is now passing a dull and gloomy situation and has to deploy its full strength and endeavors to overcome it to retain its existence. Due to this, BTCL needs to take strategic management planning and to commence its present subscriber base. There should have change in service design, service marketing, and service delivery (As shown in figure-2 in chapter-2, art.2.8.2).

In the course of this study, it is observed that subscribers have begun to realize the importance of ICT. Even the common people who do not have much formal education let alone technical knowledge, have started to recognize the importance of adopting e-service(s) in case of un-interrupted, effective and efficient service delivery. Both the customers and officials of BTCL have posed a great expectation for online service delivery. But some sorts of challenges are identified in developing e-service(s) that should be overcome very soon. Sophisticated use of Business Intelligence (BI) could be helpful to reduce costs, understand customer's preferences and behaviors, identify sales and marketing opportunities, optimize pricing and ultimately, increase revenues etc.

In order to move towards a better future that ensures a competitive, socially responsible, vibrant, and dynamic telecom company in Bangladesh, the company needs to bridge the gap between the services promised and services offered. For

this, it is necessary to have efficient collaboration of the e-service components i.e. the service provider, the channels of service delivery, and the service receiver (As shown in Art.2.4). And to conclude, “*Delivering service without measuring the impact on the customer is like driving a car without a windshield*”(Maran et al. (2004).

5.2 Policy Implication

This section states some important policy implications to overcome the barriers and challenges to public e-service adoption in BTCL based on the major findings of the study which is concerned to the answer of the research question no.4. At this juncture, a few recommendations have been outlined based on findings of survey results:

Organizational

- First and foremost, it should be concentrated on developing and expanding the infrastructures that are required for uninterrupted e-service implementation. Such as, country wide copper cable network needs to be replaced by optical fiber network with utmost priority;
- There should have adequate allocation of budget and financing to establish network infrastructure and human development;
- Top level management should have an initiative to be implemented and establish the strategy and goals that is aimed at accomplishing through this initiative. The commitment of top level management acts as the “*green light*” to go ahead with the implementation;
- Professional ICT training should be introduced to increase skills and abilities of the employees. The trainings must be as purposive as possible;
- The officials may be offered some sorts of incentive packages for additional contribution in e-service implementation. This might have a positive impact on motivation and satisfaction of the employees;
- There should have provision in the policy to control/ban negative trade unionism which causes adverse effect in implementing e-service;
- Regulations regarding the allocation of national internet bandwidth need to be revisited so that common people can have access to internet at a much less cost with higher bandwidth. This would ensure greater internet penetration throughout the country;
- To accommodate the growing demand of technological advancements and accomplish public expectations, transparent policies along with certain strategies and goals should be specified as per current circumstance. In

view of this, the ICT Act,2009 must be amended to provide data privacy & security provisions so that the subscribers could transact online in a secured manner;

- There should be a provision of citizens' participation and empowerment in service concerning decision making process;
- The right to information Act, 2009 must be put into action using enabling ICT tools so that customers could access to information quickly and efficiently.

Procedural

- Cross- agency collaboration with like and auxiliary organizations should be entertained in order to furnish all types of Telecom & ICT services like PSTN, Data(Internet), domestic and International cable services under the same umbrella;
- Front and back end automation and integration including Business Process Re-engineering (BPR) that would allow for a one-stop web portal that could provide multiple services to subscribers;
- De-politicization is necessary to adopt effective and efficient e-service. Due to conflicting informal internal politics, e-service adoption process is interrupted even may not be possible at all;
- To build up Customer Relationship Management (CRM) to provide the necessary information, procedures and strategy for designing, implementing and managing the required level of e-service quality on long term basis.

Technological

- Uninterrupted and dynamic technological interoperability is inherently required. Through this, an intra and inter network could be built up among main switching unit(MSU), remote switching unit(RSU) and network management center(NMC) so that e-office management system might be introduced;
- Development of customer and office database management system with guarantee of privacy & security is a pre-condition of e-service adoption. It could be able to establish a secured network and central database for more efficient and cooperative among different BTCL offices and customers;
- To maintain Quality of Service(QoS) and Quality of Experience(QoE) by provisioning Network Management System(NMS);

- Value Added Services(VASs) need to be populated and well defined through different media;
- 3G(Third Generation) wire line/optical fiber network could be set up;
- To develop connectivity with mobile phone operator and online service providing banks so that subscribers could pay the all kinds of payments through online;
- Triple Play Service (VoIP, Broadband Internet and IPTV) should inevitably be introduced. To accomplish this, MPLS technology might be deployed for quality performance.

5.3 Scope for further research

The findings of this research depict that subscribers are not satisfied with the traditional service from BTCL that shows need for e-services. And with the time being the expectation of the subscriber will be changed. By revising this paper, it is possible to propose new things for near future. Due to time and resource constraints, only selective areas of Dhaka city were considered for conducting survey. This is why some associated factors might be out of consideration. Further research is needed to identify other related factors that might be overlooked through this study.

References

- Aberdeen Group, (1999), *E-Service: Using the Internet to Manage Customers*, <http://www.servicesoft.com/presskit-whitepaper.html>, Service soft Technologies Inc., (January).
- Ancarani, A. (2005). Towards quality e-service in the public sector: the evaluation of web sites in the local public service sector. *Journal Of Managing Service Quality*. Volume 15, Issue 1, pp. 6-23. MCB UP Ltd Publisher Anchor Desk, (January).
- Annual Report, (2000-2001 to 2011-2012), Bangladesh Telecommunications Company Limited(BTCL)
- Axelsson, K, Melin, f, Lindgren, I, (2009) DEVELOPING PUBLIC E-SERVICES FOR SEVERAL STAKEHOLDERS – A MULTIFACETED VIEW OF THE NEEDS FOR AN E-SERVICE. 17th European Conference on Information Systems
- Aziz, Mamun Monzurul “Future of Landline Telephone”, Teletech 2012, pp.91
- Baharul, A.K.M Golam “BTCL: Strategies need to implement for survival”, Teletech 2012, pp.67
- Bannister F. (2007). The curse of the benchmark: an assessment of the validity and value of e-government comparisons, *International Review of Administrative Sciences*, 73 (2), 171-188
- Bhuiyan, M. Shakhawat Hossain. Public sector E-Service development in Bangladesh: Status, Prospects and challenges, E-Government –Master Program, Swedish Business School, Orebro University, Sweden, 2010.
- Buckley, J. (2003). E-service quality and the public sector. *Journal of Managing Service Quality*. Volume 13, Issue 6, pp. 453-462. MCB UP Ltd publisher
- Burger., (2005), ‘e-Citizen Charter’, Version 2.1
- Earle, N. (1999), *Chapter 2 of the Internet: New E-Services Promise a “Do-it-for-me” World*, http://www.products.novell.com/lead_stories/1999/feb25/index.html, Novell Inc.
- Ebrahim, Z. & Irani, Z. (2005). E-government adoption: architecture and barriers. *Business Process Management Journal*. Volume 11, Issue 5, pp. 589-611. Emerald Group Publishing Limited
- Forest, E. and Mizerski, R. (1996), *Interactive Marketing, the Future Present*, American Marketing Association, Chicago, IL.
- GAO.(2002). E-Government: Proposal addresses Critical Challenges. U.S General Accounting Office, Govt of the USA
- Goldkuhl, G. & Persson, A. (2006a). *Characteristic of Public E-services: Investigating the E-diamond Model*. Accepted to the First International Pragmatic Web Conference, September 21-23 2006, Stuttgart, Germany.
- Goldkuhl, G. & Persson, A. (2006a). *From E-ladder to E-diamond- Re-conceptualising Models for Public E-services*. Accepted to the 14th European Conference on Information Systems(ECIS2006), June 12-14 2006, Goteborg, Sweden.

- Grönlund, Å., Hatakka, M. and Ask, A. (2007) ‘ Inclusion in the E-Service Society – Investigating Administrative Literacy Requirements for Using E-Services’. 6th International Conference (EGOV 2007, Regensburg, Germany), 4656
- Gurau, C. (2003). Tailoring e-service quality through CRM. *Journal of Managing Service Quality*. Volume 13, Issue 6, pp. 520-531. MCB UP Ltd Publisher
- h Annual Conference on World Wide Web Applications, Port Elizabeth, 2–4 September
- Hamilton, A. (1999), *Master Customer Service E-mail*, <http://www.anchordesk.com>, ZDNet
- Haroon Shahzad & Waqas Younus Sandhu, “e-Government Service in Pakistan” Master’s Thesis, Lulea University of Technology, 2007-2006
- Hasan, Md. Rokon-ul “E-governance Preparedness of Bureaucracy: A Case Study of Office of the Deputy Commissioner, Dhaka”, 2011
- Hazlett, S.A. & Hill, H. (2003). E-government: the realities of using IT to transform the public sector. *Journal of Managing Service Quality*. Volume 13, Issue 6, pp. 445-452. MCB UP Ltd Publisher
- Helbig, N; Gil-García, J ; Ferro, E (2009). Understanding the complexity of electronic government: Implications from the digital divide literature. *Government Information Quarterly*, 26(2009), 89–97
- <http://en.wikipedia.org/wiki/e-service>
- <http://www.btcl.gov.bd>
- <http://www.emacao.gov.mo/project/background/main.html>
- Huang, C.J. (2003). Usability of E-Government Web Sites for People with Disabilities, In Proceedings of the 36th Hawaii International Conference on System Sciences (HICSS’03), IEEE Computer Society, 2003
- Islam, Targhibul “Business Plan for BTTB: Need of the Hour”, Teletech 2004, pp.88
- Jaeger, P.T. Assessing Section 508 compliance on federal e-government Web sites: A multi-method, user-centered evaluation of accessibility for persons with disabilities. *Government Information Quarterly* 23 (2006) 169–190
- Kaur, Roslind (2006). Malaysian e-Government Implementation Framework
- Kotler, Philip. (1999) *Direction de marketing*. Prentice-Hall
- Lam, W. (2005). Barriers to e-government integration. *Journal of Enterprise Information Management*. Volume 18, Issue 5, pp. 511-530. Emerald Group Publishing Limited
- Li, E.Y., Zhao X. (2003), From p-services to e-services. *International Journal of Service Industry Management*. Volume 14, Issue 5, pp. 480-482. MCB UP Ltd Publisher
- Lu, J. & Zhang, G. (2003). Cost benefit factor analysis in e-services. *International Journal of Service Industry Management*. Volume 14, Issue 5, pp. 570-595. MCB UP Ltd Publisher

- Maran K., Madhavi C., and Thilagavathi K. (2004) 'Customers Perception of Telephone: A study with Special Reference to Chennai City', Journal of Marketing Management, ICFAI Press.
- Marianko, G. (1998), *E-service: Next Vista for E-businesses*, <http://www.progstrat.com/e-service/index.html>, Progressive Strategies.
- Matin, Md. Rafiqul "Business Intelligence for Achieving Competitive Advantage in Telecom Industry", Teletech 2009, pp.73
- McCarthy, V. (1999), *HP Splits in Two to Focus on Enterprise, E-services*, <http://www.hpworld.org/hpworldnews/hpw903/news/01.html>
- Moqaddem, Md. Abdul "How to overcome Challenge ahead", Teletech 2012, pp.57
- Porteus, K. (1999), "Servicesoft technologies deliver benefits of e-service", *Support Product*
- Poulin, C. (1999), *E-service in the Virtual Working Place*, <http://www.chaningt看imes.com/Review>, May.
- Rowley, J. (2006) An analysis of the e-service literature: towards a research agenda. *Internet Research*, 16 (3), 339-359
- Santos, J. (2003). E-service quality: a model of virtual service quality dimensions. *Journal of Managing Service Quality*. Volume 13, issue 3, pp. 233-246. MCB UP Ltd Publisher
- Saxena, K.B.C (2005). Towards excellence in e-governance. *International Journal of Public Sector Management*. Volume 18, Issue 6, pp. 498-513. Emerald Group Publishing Limited
- Shah Mohammad Sanaul Hoque "E-Governance in Bangladesh: Initiatives and Challenges", PhD research, chap.1, art.1.3.1&1.3.7
- Shalini, R. (2009). Are Mauritian ready for e-Government services?. *Government Information Quarterly* 26 (2009) 536-539
- Siau, K. & Long, Y. (2005). Synthesizing e-government stage models- a meta-synthesis based on meta-ethnography approach. *Journal of Industrial Management & Data Systems*. Volume 105, Issue 4, pp. 443-458. Emerald Group Publishing Limited
- Surjadjaja et al. (2003) in Ghosh & Surjadjaja & Antony (2004), pp.618
- Surjadjaja, H. & Ghosh, S. & Antony, J. (2003). Determining and assessing the determinants of e-service operations. *Journal of Managing Service Quality*. Volume 13, Issue 1, pp. 39-53. MCB UP Ltd publisher
- Tahmina, Rownak "Governance through ICT: Journey towards e-Governance in Bangladesh", Teletech 2012, pp. 73.
- University of Minnesota (1999), *Defining Electronic Commerce*, <http://www3.extension.umn.edu/mainstreet/curriculum/ecommerce/ec-def.html>, University of Minnesota.

- Van Riel, C.R.A. & Liljander, V. & Jurriens, P. (2001). Exploring consumer evaluations of e-services: a portal site. *International Journal of Service Industry Management*. Volume 12, Issue 4, pp. 359-377. MCB UP Ltd Publisher
- Zhang, J. & Dawes, S. & Sarkis, J. (2005). Exploring stakeholders' expectations of the benefits and barriers of e-government knowledge sharing. *Journal of Enterprise Information Management*. Volume 18, Issue 5, pp. 548-567. Emerald Group Publishing Limited

APPENDIX-A: Questionnaire-1 for Officials

Public e-Service Development in BTCL: A Strategy to overcome challenges ahead

[N.B: The answers given to these questions will be used for academic research only. Your sincere cooperation will add a lot of value to the research]

Part-1

Name :

Designation :

Work Place :

Role in office :

Educational qualification: HSC Bachelor's level Master's level
 PhD level

Age Group : 20~25 26~35 36~40 41~50 50+

Gender : Male Female

Contact No. : E-mail: Date :

Part-2

(Please put the tick(✓) marks in the box)

1. Does your office have ICT infrastructure adequately? Yes No
2. What is your level of competency in using computer?
 Poor Fair Good Very good Excellent
3. What type of official work do you have in computer daily?
 Word processing Data entry Programming Other
4. Do you have an access in internet at your office?
 Yes No
5. What sort of internet connection do your office belong?
 Dial-up ADSL Broadband through network
6. How often do you use internet?
 Daily Weekly Monthly When needed Never
7. Do you have any formal ICT training?
 Yes No

8. Do you have any incentive for your ICT knowledge?
 Yes No
9. Does your office maintain any office database management system?
 Yes No
10. Does your office maintain any customer database management system?
 Yes No
11. Do you think that ICT related training is essential for better & efficient performance?
 Yes No
12. What is the utilization level of the existing ICT facilities at your workplace?
 Very High High Medium Low Very Low
13. Do you think that BTCL should adopt more e-service(s) for its subscriber?
 Yes No
14. Mention the prospective traditional services that should be transformed into e-services, you think.
- 1.
 - 2.
 - 3.
 - 4.
 - 5.
15. Does your organization have an official website?
 Yes No
16. If the answer is 'Yes', please mention the followings:
- I. Write web address:
 - II. Language support in the website:
 English Bengali Other (Please mention)
 - III. How website is being maintained and updated?
 By internal ICT professional Outsourcing Both
 - IV. How frequent the website is being updated?
 Daily Weakly Monthly Occasionally Never updated Not known
17. If answer is 'No', is there any plan to launch a website for the organization in near future?
 Yes No
18. What is your opinion about sufficiency of ICT related laws, Acts, rules or regulations?
 Complete Sufficient Insufficient Very Insufficient Not Aware

19. To keep up with upgraded rising technology, existing traditional service delivery should be replaced by e-service delivery. What is your opinion?

Not agree moderately agree agree extremely agree

20. Do you think that citizens' participation and empowerment is necessary in decision making process?

Yes No

21. What is your evaluation about e-service readiness of your office? (0=Completely unready... 5 = Completely ready)

0 1 2 3 4 5

Part-3

Read the statements below and indicate your opinion based on your experience by ticking a number on a scale between 1 to 5.

Scale for assessment : (1~5)

1=not agree

2=moderately agree

3=agree

4=strongly agree

5=extremely agree

SL	What would be the level of impact of adopting e-services on efficient and effective citizen centric public service?	1	2	3	4	5
1	Reduce costs for individuals and business.					
2	Provide faster, more convenient public service.					
3	Reduce corruption and ensure more accountability.					
4	Tool for transformation of public administration from bureaucracy to service provider.					
5	E-service leads to good governance					
6	Provide more efficient/effective customer service					
7	Analyze information to improve decision-making					
8	Improve employee cross-functional skills					
9	Improve employee productivity					
10	Reduce operational expenses					

PART-4

Please read the statements below and indicate your opinion based on your experience by ticking a number between 1 to 5.

Scale for assessment : (1~5)

1 = Strongly Disagree 2 = Moderately Disagree 3 = Strongly Agree
 4 = Moderately Agree 5 = Neutral Effect

SL	What are the barriers of introducing e-service in BTCL?	1	2	3	4	5
1	Organizational					
	a) Insufficient allocation budget and finance					
	b) Lack of adequate infrastructure and logistics					
	c) Resistance to change by CBA					
	d) Lack of top level management initiatives					
	e) Lack of technical skill of the officials					
	f) Weakness of policy and regulatory framework					
2	Procedural					
	a) Internal politics					
	b) Limited cross-agency collaboration					
	c) Lack of redefined business processes					
3	Technological					
	a) Lack of technology interoperability					
	b) Absence of office and customer database					
	c) Technical complexity					

APPENDIX-B: Questionnaire-2 for Subscribers [In English]

Public e-Service Development in BTCL: A Strategy to overcome challenge ahead.

[N.B: The answers given to these questions will be used for academic research only. Your sincere cooperation will add a lot of value to the research]

Part-1

Name :

Address :

Age Group : 20~25 26~35 36~40 41~50 50+

Educational qualification: HSC Bachelor's level Master's level
 PhD level

Occupation :

Gender : Male Female

Telephone /Mobile phone No. : Date :

Part-2

1. What sort of services do you avail of yourself from BTCL?
 Telephone Internet Both Other service
2. What is your level of satisfaction of the quality of traditional service of BTCL?
 Excellent Very Good Good fair Poor
3. If the answer is 'Not satisfied', mention some demerits of BTCL service.
 - 1)
 - 2)
 - 3)
 - 4)
 - 5)
4. Do you think that ICT can be used to provide the services by BTCL?
 Yes No
5. If answer is 'No', do you think that ICT should be adopted in BTCL services?
 Yes No Unknown

6. Do you have any e-mail account?
 Yes No
7. How frequent do you use internet?
 Daily Weekly Monthly When needed Never
8. Have you ever taken any e-service delivered by BTCL?
 Yes No
9. If answer is 'Yes', please mention the name of e-service(s).
1)
2)
3)
4)
5)
10. Do you think, the traditional service delivery system is time befitting with respect to present era.
 Yes No
11. If 'No', is it necessary to transform traditional services into e-service(s).
 Yes No
12. If the answer is 'Yes', mention the name of expected e-service(s) below.
1)
2)
3)
4)
5)
13. What could be the level of urgency to adopt e-service(s) in parallel with traditional service(s) considering present state of BTCL, do you think?
 Very urgent Urgent Not urgent
14. How reasonable is the peoples' participation in decision-making regarding public service, do you think?
 Highly reasonable Reasonable Not so Not at all
15. Do you have any idea of ICT related laws, Acts, rules or regulations of Bangladesh?
 Yes No
16. If the answer is 'Yes', then what is your opinion about the existing laws, Acts, rules or regulations?
 Complete Sufficient Insufficient Quite insufficient

PART-3:

Please read the statements below and give your opinion on the response towards adopting e-service delivery in BTCL by ticking a number in a scale 1 to 5.

Scale for assessment :(1~5)

1 = Strongly agree 2 = Agree 3 = Moderately agree 4 = Not agree 5 = Disagree

SL.	Please mark your evaluation on the statements stated below regarding prospective e-service(s) in BTCL.	1	2	3	4	5
1	Tendency of the officials to use ICT is remarkable in service delivery					
2	Skills of the officials to use ICT tools/techniques is high					
3	Facilities of Infrastructures & logistics in adopting e-service are adequate					
4	Information related to public service is well organized and time befitting in BTCL website					
5	E-service is more uninterrupted and citizen centric as compared to traditional service in modern era					
6	Possibilities to provide the best service(s) is more in case of individual/business through e-service					
7	E-service can play a vital role in delivering corruption and hassle free public service(s)					
8	E-service can reduce operational expense & time (for both service provider and service receiver)					
9	E-service can be a tool for BTCL in encouraging new customer to avail its service					
10	Trade unionism(CBA) could be an obstacle in adopting e-service in BTCL					

APPENDIX-C: Questionnaire-2 for Subscribers [In Bangla]

Public e-Service Development in BTCL: A Strategy to overcome challenges ahead

(বিঃদ্র: প্রশ্নপত্রে প্রদত্ত উত্তরসমূহ কেবলমাত্র গবেষণার জন্য ব্যবহৃত হবে। আপনার সানুগ্রহ সহযোগিতা গবেষণায় মূল্যবান অবদান রাখবে)

১ম অংশ

নাম :
ঠিকানা :
বয়স গ্রন্থপ : ২০-২৫ ২৬-৩৫ ৩৬-৪০ ৪১-৫০ ৫০+
শিক্ষাগত যোগ্যতা : উচ্চ মাধ্যমিক স্নাতক লেভেল স্নাতকোত্তর লেভেল
পিএইচডি লেভেল
পেশা :
লিঙ্গ : পুরুষ মহিলা
টেলিফোন/ মোবাইল ফোন নং : তারিখঃ

২য় অংশ

১। আপনি বিটিসিএল-এর মাধ্যমে কি সেবা গ্রহণ করে থাকেন?

টেলিফোনিক ইন্টারনেট উভয় অন্য সেবা

২। বিটিসিএল-এর প্রচলিত সেবার গুণগত মান আপনার নিকট কতটা সন্তোষজনক?

অতি উত্তম উত্তম সাধারণ চলনসহ নিম্নমানের

৩। উত্তর “সন্তোষজনক না” হলে, নেগেটিভ দিকগুলো উল্লেখ করুন।

১।

২।

৩।

৪।

৫।

৪। আপনি উক্ত সেবা প্রদানে তথ্য-প্রযুক্তির ব্যবহার হয় বলে কি আপনি মনে করেন?

হ্যাঁ না

৫। উত্তর “না” হলে, আপনি কি মনে করেন এ সেবায় তথ্য-প্রযুক্তির ব্যবহার থাকা উচিত?

হ্যাঁ না জানা নেই

৬। আপনার কি ই-মেইল একাউন্ট আছে?

হ্যাঁ না

৭। আপনার ইন্টারনেট ব্যবহারের মাত্রা কতটুকু?

প্রতিদিন সাপ্তাহিক মাসিক প্রয়োজন মাসিক কখনই না

৮। আপনি কি কখনো বিটিসিএল-এর কোন ই-সেবা গ্রহণ করেছেন?

হ্যাঁ না

৯। উত্তর “হ্যাঁ” হলে, অনুগ্রহপূর্বক সেবা সমূহ উল্লেখ করুন।

১।

২।

৩।

৪।

৫।

১০। বিটিসিএল সরবরাহকৃত প্রচলিত সেবা কি বর্তমান প্রেক্ষাপটে সময়োপযোগী বলে আপনি মনে করেন?

হ্যাঁ না

১১। উত্তর “না” হলে, প্রচলিত সেবা কি ই-সেবায় রূপান্তরিত করা উচিত?

হ্যাঁ না

১২। উত্তর “হ্যাঁ” হলে, প্রত্যাশিত ই-সেবা সমূহের নাম উল্লেখ করুন।

১)

২)

৩)

৪)

৫)

১৩। বর্তমান প্রেক্ষাপটে প্রচলিত সেবা পদ্ধতির পাশাপাশি সকল ক্ষেত্রে ই-সেবা চালুকরণ কতটা জরুরী বলে আপনি মনে করেন?

অতীব জরুরী জরুরী জরুরী নয়

১৪। জনসেবা সংক্রান্ত সিদ্ধান্ত গ্রহণের ক্ষেত্রে নাগরিক অংশগ্রহণ কতটা যৌক্তিক বলে আপনি মনে করেন?

অত্যন্ত যৌক্তিক যৌক্তিক খুব একটা যৌক্তিক নয় কোন যৌক্তিকতা নেই

১৫। বর্তমানে বাংলাদেশে বিদ্যমান তথ্য-প্রযুক্তি সংক্রান্ত আইন, বিধি বা নির্দেশনা সম্পর্কে আপনার কোন ধারণা আছে কি?

হ্যাঁ না

১৬। উত্তর 'হ্যাঁ' হলে বিদ্যমান তথ্য-প্রযুক্তি সংক্রান্ত আইন, বিধি বা নির্দেশনা সম্পর্কে আপনার মতামত কি?

পরিপূর্ণ পর্যাপ্ত অপরিপূর্ণ অত্যন্ত অপরিপূর্ণ

৩য় অংশ

অনুগ্রহ পূর্বক নিম্নবর্ণিত বিবরণ সমূহ পড়ুন এবং বিটিসিএল-এ ই-সেবা চালুকরণ সংক্রান্ত বিষয়ে যথাস্থানে টিক(✓) চিহ্ন দিয়ে আপনার মতামত দিন।

মূল্যায়নের জন্য স্কেল ১ থেকে ৫।

১ = অতি সম্মত ২ = সম্মত ৩ = মোটামুটি সম্মত ৪ = চলনসহ ৫ = নিম্নমানের

ক্রমিক নং	বিটিসিএল-এর সেবা সংক্রান্ত প্রদত্ত বিবরণীতে আপনি কতটা সম্মত; আপনার মূল্যায়ন দিন	১	২	৩	৪	৫
১	সেবা প্রদানকারী কর্মকর্তা/কর্মচারীদের তথ্য-প্রযুক্তি ব্যবহারের প্রবণতা আছে					
২	সেবা প্রদানকারী কর্মকর্তা/কর্মচারীদের তথ্য-প্রযুক্তি ব্যবহারের দক্ষতা আছে					
৩	ই-সেবা চালুকরণের জন্য বিদ্যমান অবকাঠামোগত ও তথ্য-প্রযুক্তি সুযোগ-সুবিধা পর্যাপ্ত					
৪	বিটিসিএল-এর ওয়েব সাইটে জনসেবা সংশ্লিষ্ট প্রয়োজনীয় তথ্যাবলী সুবিন্যস্ত ও সমন্বিত					
৫	বর্তমান প্রেক্ষাপটে প্রচলিত সেবার তুলনায় ই-সেবা অধিকতর নিরবচ্ছিন্ন ও জনমুখী					
৬	ই-সেবার মাধ্যমে ব্যক্তি বা ব্যবসা পর্যায়ে সর্বোত্তম সেবা প্রদান সম্ভব					
৭	ই-সেবা দুর্নীতি ও জনদুর্ভোগমুক্ত জনসেবা প্রদানে সহায়ক ভূমিকা পালন করতে পারে					
৮	ই-সেবার মাধ্যমে অপারেশনাল ব্যয় ও সময়(সেবা গ্রহণকারী ও সেবা প্রদানকারী উভয়ের) কমবে					
৯	ই-সেবা নতুন গ্রাহকদের উদ্বুদ্ধকরণে গুরুত্বপূর্ণ অবদান রাখতে পারে					
১০	ই-সেবা চালুকরণের ক্ষেত্রে শ্রমিক ইউনিয়ন-এর প্রতিবন্ধকতা থাকতে পারে					