

Assesing Usability of E-government Websites at Shariatpur Region in Bangladesh

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Declaration

In accordance with the rules and regulations of Z.H.Sikder University of Science and Technology, following declarations are made:

We hereby,declare that the thesis has been done by us under the guidance of our supervisor and honorable teachers of Computer Science and Engineering department at Z.H.Sikder University of Science & Technology,Shariatpur.

We also declare that this thesis nor any part of the thesis has been submitted elsewhere for awarding of any degree and any material reproduced in this thesis has been properly acknowledged.

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Abstract

With the widespread adoption of e-governance initiatives, governments are increasingly leveraging websites to provide efficient and accessible public services. In Bangladesh, the implementation of e-governance websites aims to streamline administrative processes and enhance government services to citizens, improved interactions with business and industry and more efficient government management.

This research focuses on assessing the usability of e-government websites in the context of the Shariatpur region of Bangladesh. Using a mixed-methods approach, this study investigates the usability of selected e-government websites in Bangladesh. Additionally, a survey is conducted to gather user feedback and perceptions regarding the usability aspects of these websites. The qualitative analysis includes government officials, IT professionals, and citizens, to gain deeper insights into the usability challenges and opportunities.

The outcomes of this research contribute to the advancement of e-government websites at Shariatpur, Bangladesh by identifying usability issues. The research findings serve as a foundation for informed decision-making and provide practical recommendations for improving the accessibility, efficiency, and overall user satisfaction of e-government websites.

Keywords: e-governance, usability assessment, user-experience, Shariatpur, Bangladesh.

Table of Contents

| | |
|--|-----------|
| List of Tables | ix |
| List of Figures | x |
| 1 Introduction | 1 |
| 1.1 Introduction | 2 |
| 1.2 Related Work | 3 |
| 1.3 Motivation | 4 |
| 1.4 Thesis Objective | 4 |
| 1.5 Organization of the Thesis | 5 |
| 1.6 Discussion | 6 |
| 2 Literature Review | 7 |
| 2.1 Introduction | 8 |
| 2.2 Thesis Literature | 8 |
| 2.2.1 Statistics | 8 |
| 2.2.2 Field of Statistics | 8 |
| 2.2.3 Difference Between E-government and E-governance . . | 10 |
| 2.2.4 Importance of E-government System | 11 |
| 2.3 Discussion | 12 |
| 3 Methodology and Data Analysis | 13 |
| 3.1 Introduction | 14 |
| 3.2 Data Analysis | 14 |
| 3.3 Methodology | 14 |
| 3.3.1 Selected Government Websites | 15 |

| | | |
|----------|--|-----------|
| 3.3.2 | Analysis Methods | 16 |
| 3.3.3 | Multiple Response Analysis | 16 |
| 3.3.4 | Percentage Calculation | 16 |
| 3.4 | Discussion | 17 |
| 4 | Result and Discussion | 18 |
| 4.1 | Introduction | 19 |
| 4.2 | Multiple Response Analysis | 19 |
| 4.2.1 | E-government Services Provided by Govt Employees . . | 20 |
| 4.2.2 | Problems Faced by Govt Employees | 21 |
| 4.2.3 | Harassment Faced by Govt Employees | 22 |
| 4.2.4 | Opinions from Govt Employees | 23 |
| 4.2.5 | Self Service Operators are Taking | 24 |
| 4.2.6 | Services Operators are Providing | 25 |
| 4.2.7 | Ratio of Operators Using Internet Connection | 26 |
| 4.2.8 | Operators Faced Problem | 27 |
| 4.2.9 | Ratio of Facing Harrassment by People | 28 |
| 4.2.10 | Opinions from Operators to Overcome Limitations . . . | 29 |
| 4.3 | Discussion | 30 |
| 5 | Conclusion | 31 |
| 5.1 | Conclusions | 32 |
| 5.2 | Limitations | 32 |
| 5.3 | Future Work | 32 |
| 5.4 | Discussion | 33 |
| A | Appendix | 34 |
| B | Appendix | 36 |

List of Tables

| | | |
|-----|---|----|
| 3.1 | Selected Government Websites | 15 |
| 4.1 | Multiple Response of E-government Service Govt Employees are Providing | 20 |
| 4.2 | Multiple Response for Problems Govt Employees are Facing . . | 21 |
| 4.3 | Multiple Response for harassment govt employees are facing . . | 22 |
| 4.4 | Multiple Response for Problems Govt Employees are Facing . . | 23 |
| 4.5 | Multiple Response for Operators getting Self Service | 24 |
| 4.6 | Multiple Response for Operators are Providing E-government Service | 25 |
| 4.7 | Multiple Response for Problems Operators are Facing | 27 |
| 4.8 | Multiple Response for opinions to overcome the limitations . . . | 29 |

List of Figures

| | | |
|-----|---|----|
| 4.1 | Ratio of Internet Connection Operators Used | 26 |
| 4.2 | Ratio of facing Harassment by People | 28 |

Chapter 1

Introduction

In this chapter we introduced our thesis overview, related work, motivation, objective and organization. In section 1.1 we discussed about thesis introduction; in section 1.2 we discussed about related work; in section 1.3 we discussed about our thesis motivation; in section 1.4 we discussed about our thesis objective; in section 1.5 we discussed about the whole thesis paper organization; in 1.6 we gave a short description about this chapter.

1.1 Introduction

In recent years, the rapid advancement of information and communication technology (ICT) has transformed the way governments interact with citizens, leading to the emergence of e-governance initiatives worldwide. E-government websites serve as crucial platforms for delivering public services efficiently and effectively, enhancing transparency, and fostering citizen engagement. In Bangladesh, the government has made significant efforts to adopt e-governance practices, including the development and implementation of various e-government websites. However, the success of these initiatives largely depends on the usability of these websites. A well-organized and user-centric e-government website can significantly improve citizen-government interactions, promote transparency, and enhance the delivery of public services. By evaluating the usability of these websites, we can identify the strengths, weaknesses, and areas for improvement, thereby contributing to the development of more user-friendly and effective e-governance systems in the region.

E-government Delivery Models:

Government to Citizen (G2C)

G2C refers to the government services which is being shared with citizens. Citizens access such services which is related to their need. Online Payment such as electricity, water tax etc, Online Registration, Download Records, Online Complaint are type of services which are provided by this model.

Government to Business (G2B)

G2B is the connection between the private sector and the government. Industry exchange information via these services. They share information through models like: Collection of taxes, Rejection and approvals of proposals, Tender, Payment Penalty and complaints.[1]

Government to Government (G2G)

G2G refers to the services which are being shared between the governments. There is lots of information that need to be exchanged between various government agencies, department and Ministries. Online Registration, Download Records, Online Complaint are these types of services .[2]

Government to Employees (G2E)

G2E is for the transparency between government and its employee. Employee functioning and working with government needs lot of internal exchange of information. All kind of data submission attendance record, employee record, all kind of rule- regulation and information for employees also, employees can register all kind of forms online.[3]

In this paper we discussed about government-to-business (G2B) and government-to-government (G2G) delivery model after surveying in different sectors at Shariatpur region of Bangladesh and given some possible suggestions to overcome those problems.

1.2 Related Work

Numerous studies have been frequently appearing to the E-government administrations in Bangladesh. In paper[4] authors aimed to evaluate and develop guidelines on the usability status of E-government websites of developing countries like Bangladesh. In another study authors focused on some current constraints of e-governance after surveying in the different sectors of Bangladesh and provided some possible suggestions to overcome those problems [5]. In paper[6] authors introduced over all challenges and opportunities for developing a successful E-government in Bangladesh and hypothesis result shows citizen engagement and empowerment to use of E-Government.

1.3 Motivation

We have discussed some thesis papers related to the usability of E-government websites. All of the previous works mainly focus on identifying factors associated with the problems faced using E-government websites. Some paper focuses on present problems, possible suggestions for future development. [7] We want to make such analyses to identify each and every problems faced by the E-government service providers and computer operators. We performed multiple response analysis. We also showed the total percentage comparison of E-government service providers and operators giving E-government services and getting harassed while providing it.

1.4 Thesis Objective

This paper shows which problems are mostly experienced in government-to-business (G2B) and government-to-government (G2G) delivery models of E-government systems. We used statistical analysis such as correlation analysis to identify limitations associated with e-governance in government-to-business (G2B) and government-to- government (G2G) delivery model. We identified the percentage of providing services directly through the use of the Internet, problems faced by the service providers while giving services, we also collecting opinions from them to conquer the disability. This thesis work will appearance the barriers with E-government services and to find the actual reason why service providers are not showing interest in providing E-government services.

1.5 Organization of the Thesis

In this section we discussed about the organization of the thesis.

In chapter one, introduction presents an overview of the background of our work such as related work, motivation, and our objective.

In chapter two, literature review presents an overview of thesis literature, a clear concept for E-government system and its importance.

In chapter three, methodology and data represents available methods to assess the usability of E-government system and data analysis procedure.

In chapter four, results and discussions represented the exact associated factors. Section by section we showed the analysis results.

Firstly frequency of E-government services E-government Service Providers and operators are giving, the harassment they are facing from public, problems they faced while using E-government sites, and their opinion of overcoming these obstacles.

Secondly the ratio of people getting E-government services, and the ratio of E-government Service Providers/operators getting harassed by the citizens.

In chapter five, conclusion represents a clear discussion about all the workflow with results analysis. Then a short description about the future work availability. Finally a short conclusion presented as ending of our work.

1.6 Discussion

This is the introduction chapter and this chapter just introduces our thesis, previous related work done by different authors, and our goals. Also, this is the blueprint of our work.

Chapter 2

Literature Review

In this chapter we introduced our thesis literature and the importance of the E-government system. In section 2.1 we discussed the literature introduction; in section 2.2 we discussed thesis literature; in section 2.3 we should summarize the chapter.

2.1 Introduction

To understand our research work, the literature review is important. Our research work is named “Assessing the usability of E-government websites at Shariatpur region in Bangladesh. Here we discussed the importance of the E-government system. Also, we discussed about statistics and the field of statistics.

2.2 Thesis Literature

Our thesis named “Assessing the usability of E-government websites at Shariatpur region in Bangladesh” is a work of statistical analysis in the field of statistics. In this section, we discussed statistics, the field of statistics, and the importance of the E-government system.

2.2.1 Statistics

Statistics is a branch of mathematics which involved collection,description,analysis and inference of conclusions from quantitative data. Statistics involves following steps: Identifying problems by collecting data. Analyze collecting data. Coming up with a hypothesis. And testing the hypothesis.

2.2.2 Field of Statistics

The field of statistics is the science of learning from data.With the help of statistical knowledge we collected data,employ analysis and effectively presented the results.

Actuarial science is the discipline that applies mathematical and statistical methods to assess risk in the insurance and finance industries.

Astrostatistics is the discipline that applies statistical analysis to the understanding of astronomical data.

Biostatistics is a branch of biology that studies biological phenomena and observations by means of statistical analysis, and includes medical statistics.

Business analytics is a rapidly developing business process that applies statistical methods to data sets (often very large) to develop new insights and understanding of business performance & opportunities.

Chemometrics is the science of relating measurements made on a chemical system or process to the state of the system via application of mathematical or statistical methods.

Demography is the statistical study of all populations. It can be a very general science that can be applied to any kind of dynamic population, that is, one that changes over time or space.

Econometrics is a branch of economics that applies statistical methods to the empirical study of economic theories and relationships.

Environmental statistics is the application of statistical methods to environmental science. Weather, climate, air and water quality are included, as are studies of plant and animal populations.

Epidemiology is the study of factors affecting the health and illness of populations, and serves as the foundation and logic of interventions made in the interest of public health and preventive medicine.

Spatial statistics is a branch of applied statistics that deals with the analysis of spatial data.

Geostatistics is a branch of geography that deals with the analysis of data from disciplines such as petroleum geology, hydrogeology, hydrology, meteorology, oceanography, geochemistry, geography.

Machine learning is the subfield of computer science that formulates algorithms in order to make predictions from data.

Population ecology is a sub-field of ecology that deals with the dynamics of species populations and how these populations interact with the environment.

Social statistics is the use of statistical measurement systems to study human behavior in a social environment.

Statistical physics is one of the fundamental theories of physics, and uses methods of probability theory in solving physical problems.

Statistical thermodynamics is the study of the microscopic behaviors of thermodynamic systems using probability theory and provides a molecular level interpretation of thermodynamic quantities such as work, heat, free energy, and entropy. [8]

2.2.3 Difference Between E-government and E-governance

The difference between government and governance is often raised. Governance is defined as the action or manner of governing. It is the process by which we collectively solve our problems and meet our society's needs. Whereas, Government is the instrument we use. E-Governance is a broader topic that deals with the whole spectrum of the relationship and networks within government regarding the usage and application of ICT's. [9] E-Government is actually a discipline dealing with the development of online services to the citizen, such as e-tax, e-transportation or e-health. On the contrary, E-Governance is a wider concept that defines and assesses the impacts technologies are having on the practice and administration of governments and the relationships between government officials and the wider society.

2.2.4 Importance of E-government System

Generally e-Government is basically the use of Information Communications Technology (ICT) and its application by the relevant government body for the provision of information and public services to the people. In simple terms, E-Government is the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees. It is the use of information technology to support government operations, engage citizens, and provide public services in a more efficient and transparent manner. E-Governance has several benefits, according to the World Bank (2002)[10]

- E-governance greatly simplifies the process of information accumulation for citizens and businesses.
- It empowers people to gather information regarding any department of government and get involved in the process of decision making.
- E-Governance strengthens the very fabric of democracy by ensuring greater citizen participation at all levels of governance.
- E-Governance leads to automation of services, ensuring that information regarding every work of public welfare is easily available to all citizens, eliminating corruption.
- This revolutionizes the way governments function, ensuring much more transparency in the functioning, thereby eliminating corruption.
- Since the information regarding every activity of government is easily available, it would make every government department responsible as they know that every action of theirs is closely monitored.
- Proper implementation of e-Governance practices make it possible for people to get their work done online thereby sparing themselves of unnecessary hassles of traveling to the respective offices.

- Successful implementation of e-Governance practices offer better delivery of services to citizens, improved interactions with business and industry, citizen empowerment through access to information, better management, greater convenience, revenue growth, cost reductions etc.
- Furthermore, introduction of e-Governance brings governments closer to citizens.

2.3 Discussion

E-government system is very important for a country. The less usability of E-government service is very alarming condition for a country. About statistics and the importance of E-government system are the main topics discussed in this chapter.

Chapter 3

Methodology and Data Analysis

In this chapter, we introduced our thesis Methodology and Data Analysis description. In section 3.1 we discussed thesis methodology and Data Analysis introduction; in section 3.2 we discussed the overview of the Analytic approach; in section 3.3 we discussed data analysis details; in section 3.4 we discussed thesis Methodology Details; in section 3.5 we should give a short discussion of this chapter.

3.1 Introduction

We used some methodology on collected datasets to find the most significant circumscriptions associated with the usability of E-government websites. We also calculated the percentage of people taking E-government services directly. We also calculated the percentage of people getting harassed from computer operator or government employee. In this chapter, we have a close look at the Analytical Approach of this thesis and the necessary information. In the methodology section, we have a close look at percentage calculation.

3.2 Data Analysis

To get the frequency of E-government services, the frequency of problems faced while accessing the E-government sites, the frequency of harassment while providing E-government services to people and the frequency of opinion to overcome limitations of E-government sites we used multiple response analysis. To calculate percentage of directly giving E-government services and getting harassed by people while giving it, we used percentage formula. Data used in this study are raw data, taken from people of all stages of education, age, and occupation.

3.3 Methodology

In this section, we discussed percentage calculation. An imperial research approach has been used in this study. We collected three hundred and fifty data from random computer operators and selected govt offices. Random educational qualifications and ages were selected for the research. Qualitative and quantitative data were collected from the participants. In this research, we specified some basic sites to the users and collected their data.

3.3.1 Selected Government Websites

| No | Website Name | URL |
|----|--|---|
| 1 | Surokkha | https://surokkha.gov.bd/ |
| 2 | Web based result publication system for education boards | https://eboardresults.com/v2/home |
| 3 | Birth Certificate | https://everify.bdris.gov.bd/ |
| 4 | NID | http://www.nidw.gov.bd/ |
| 5 | Online Right for Information | https://ictd.gov.bd/ |

Table 3.1: Selected Government Websites

We let the participants to choose their option from the selected sites from table 3.1, and collected their opinions.

3.3.2 Analysis Methods

In this section, we should give an overview of the analysis procedures of multiple response analysis and calculation of percentages.

3.3.3 Multiple Response Analysis

Multiple response analysis is a frequency analysis for data which include more than one response per participant, such as to a multiple response survey question. [11] Multiple response sets occur when you have a set of related choices or characteristics in which a subject or experimental unit can possess one or more of those characteristics. A multiple response question presents a list of possible answer options, and the respondent selects all options that are true for them. There are two basic data structures for this type of analysis. We used data recorded in multiple columns.[12]

In this thesis we used multiple response analysis for the frequency of E-government services, the frequency of problems faced while accessing the E-government sites, the frequency of harassment while giving E-government services to mass people and the frequency of opinion to overcome limitations of E-government sites.

3.3.4 Percentage Calculation

We used percentage calculation to find the ratio of service providers directly providing E-government services and to find the ratio of service providers being harassed by largest community. To find out the percentage, We calculated the percentage by dividing the value by the total value, and then multiplying the results by 100. The formula used to calculate percentage is:

$(\text{Value} / \text{total Value}) * 100\%$.

3.4 Discussion

This chapter showed a clear description about methodology we used for the various analysis of our thesis. Here also showed an overview of Analytical approach, Data information and details. Using datasets and methodology we got results of our thesis. Results and other details will be discussed in next chapter.

Chapter 4

Result and Discussion

The most important chapter, mainly focused on all analysis results and discussion. In section 4.1 we discussed about this chapter introduction; in section 4.2 we discussed about multiple response analysis; in section 4.3 we discussed about percentage analysis; in section 4.4 we gave preventive idea to overcome the limitations of E-government sites; in section 4.5 we gave effective idea to increase the usability of E-government sites for its users. In section 4.6 we gave a short discussion about this chapter.

4.1 Introduction

This chapter showed the result of finding the usability of E-government sites at the Shariatpur region in Bangladesh. We analyzed the raw dataset using multiple response analysis to find out the frequency of E-government services govt employees and computer operators are providing, the harassment they are facing from people, problems they faced while using E-government sites, and both of their opinions of overcoming these limitations. Also, we used percentage calculation to find out the ratio of internet connection-type operators are using and the ratio of operators getting harassed by the people.

4.2 Multiple Response Analysis

Multiple response analysis is a frequency analysis for data which include more than one response per participant, such as to a multiple-response survey question. We discussed multiple response analysis in this section.

4.2.1 E-government Services Provided by Govt Employees

| Service Provided by Govt Employees | Responses | | |
|------------------------------------|-----------|---------|------------------|
| | N | Percent | Percent of Cases |
| Birth Certificate | 46 | 21.8% | 59.7% |
| NID | 39 | 18.5% | 50.6% |
| Death Certificate | 31 | 14.7% | 40.3% |
| Online apply for Ground Service | 54 | 25.6% | 70.1% |
| Online Right of Information | 41 | 19.4% | 53.2% |
| Total | 211 | 100.0% | 274.0% |

Table 4.1: Multiple Response of E-government Service Govt Employees are Providing

From table 4.1 we observe that govt employees have provided services of birth certificate, NID, online apply for ground service, online right of information, death certificate. If we look at the table we can see that the most used service is online ground service which is 70.1%. The second most provided service is birth certificate which is 59.7%. The percentage of online right of information is 53.2%, and NID is 50.6% and the lowest used service is death certificate which is 40.3%. Hence, we can see online ground service is provided mostly to people by govt employees. The rest of the services are given less.

4.2.2 Problems Faced by Govt Employees

Table 4.2: Multiple Response for Problems Govt Employees are Facing

| Govt Employees Faced Problem | Responses | | Percent of Cases |
|---------------------------------------|-----------|---------|------------------|
| | N | Percent | |
| Internet Connectivity Problem | 32 | 18.5% | 41.6% |
| Server problem | 68 | 39.3% | 88.3% |
| Problems in Database | 38 | 22.0% | 49.4% |
| Conscious of having right information | 35 | 20.2% | 45.5% |
| Total | 173 | 100.0% | 224.7% |

In Bangladesh, frequency of lack of server access, poor user-friendliness of the system, and slow internet speeds have created headaches to its users. So far the number of nominally available digitalised government services in Bangladesh is 761. [?] For the lack of proper planning, the previous government could not implement e-Governance properly. Till now users are going through problems in implementing E-government system. From table 4.2 we can see that govt employees are facing internet connectivity problems which is 41.6%. Govt employees mostly got the server problems which is 88.3%. In some cases, there are problems in the database which is 49.4% and a medicore problem with conscious of having right information which is 45.5%. Hence, we can observe the problem with server is the biggest problem faced by maximum govt employees. Nevertheless govt employees experienced minimum internet problems which is undoubtedly a ray of hope for E-government service in countrywide.

4.2.3 Harassment Faced by Govt Employees

Table 4.3: Multiple Response for harassment govt employees are facing

| Harassment Faced by Govt Employees | Responses | | Percent of Cases |
|---|------------------|----------------|-------------------------|
| | N | Percent | |
| Failure to provide accurate information | 46 | 43.4% | 65.7% |
| Lack of awareness | 60 | 56.6% | 85.7% |
| Total | 106 | 100.0% | 151.4% |

Now and then, govt employees are getting harassed by our citizen. From table 4.3 we can observe that Most of the of the time people are failed to provide accurate information. The rate of providing misinformation is 65.7% which cannot be endured. They also faced lack of awareness from people which is 85.7%. In some cases, we have found people misbehaved with them.

4.2.4 Opinions from Govt Employees

Table 4.4: Multiple Response for Problems Govt Employees are Facing

| Opinions of Govt Employees | Responses | | Percent of Cases |
|---------------------------------------|-----------|---------|------------------|
| | N | Percent | |
| Update Database regularly | 42 | 22.5% | 54.5% |
| Conscious of having right information | 39 | 20.9% | 50.6% |
| Increase Server capacity | 68 | 36.4% | 88.3% |
| Increase the quality of internet | 38 | 20.3% | 49.4% |
| Total | 187 | 100.0% | 242.9% |

The ranking of Bangladesh in internet speed is now 103rd among 110 countries. Though on 19 February 2018, [?] Bangladesh started the 4G network service users are having problems with internet connectivity in rural areas. Server capacity should be increased to take the extra load. Databases need to be updated regularly, as often on government websites updated information is not found. Computer operators and government officers who are associated with data storing in databases should be careful of having the right information. And corruption must be removed to establish an effective E-government system.

4.2.5 Self Service Operators are Taking

Table 4.5: Multiple Response for Operators getting Self Service

| Service Use Operators | Responses | | Percent of Cases |
|------------------------------|------------------|----------------|-------------------------|
| | N | Percent | |
| Covid Vaccine Registration | 245 | 56.8% | 96.5% |
| Result of Board Exam | 186 | 43.2% | 73.2% |
| Total | 431 | 100.0% | 169.7% |

Meanwhile, computer operators are taking necessary E-government service. From table 4.5 we can observe that they have been taking Covid vaccine registration which is 96.5% and another is result of board examination which is 73.2% respectively. Computer operators getting service of covid vaccine registration which is numerously considerable.

4.2.6 Services Operators are Providing

Table 4.6: Multiple Response for Operators are Providing E-government Service

| Operators Provided Service | Responses | | Percent of Cases |
|---------------------------------|-----------|---------|------------------|
| | N | Percent | |
| Covid Vaccine Registration | 250 | 22.8% | 94.7% |
| Result of Board Exam | 2442 | 2.3% | 92.4% |
| Birth Certificate | 236 | 21.6% | 89.4% |
| Death Certificate | 108 | 9.9% | 40.9% |
| Online apply for Ground Service | 99 | 9.0% | 37.5% |
| Online Right of Information | 158 | 14.4% | 59.8% |
| Total | 1095 | 100.0% | 414.8% |

Besides govt employees, computer operators also providing E-government services to citizen for ensuring a more reliable E-governance system countrywide. In table 4.6 we can observe several services they are providing. Firstly, covid vaccine registration which is 94.7% in a highest rate; Secondly Board examination result in a rate of 92.4%. Third most provided service is birth certificate which is 89.4%. Then comes rest of the services ,providing death certificate which is 40.9% ; Online application for ground service is 37.5% at a lowest rate; and online right of information is 59.8% which has a medium rate.

4.2.7 Ratio of Operators Using Internet Connection

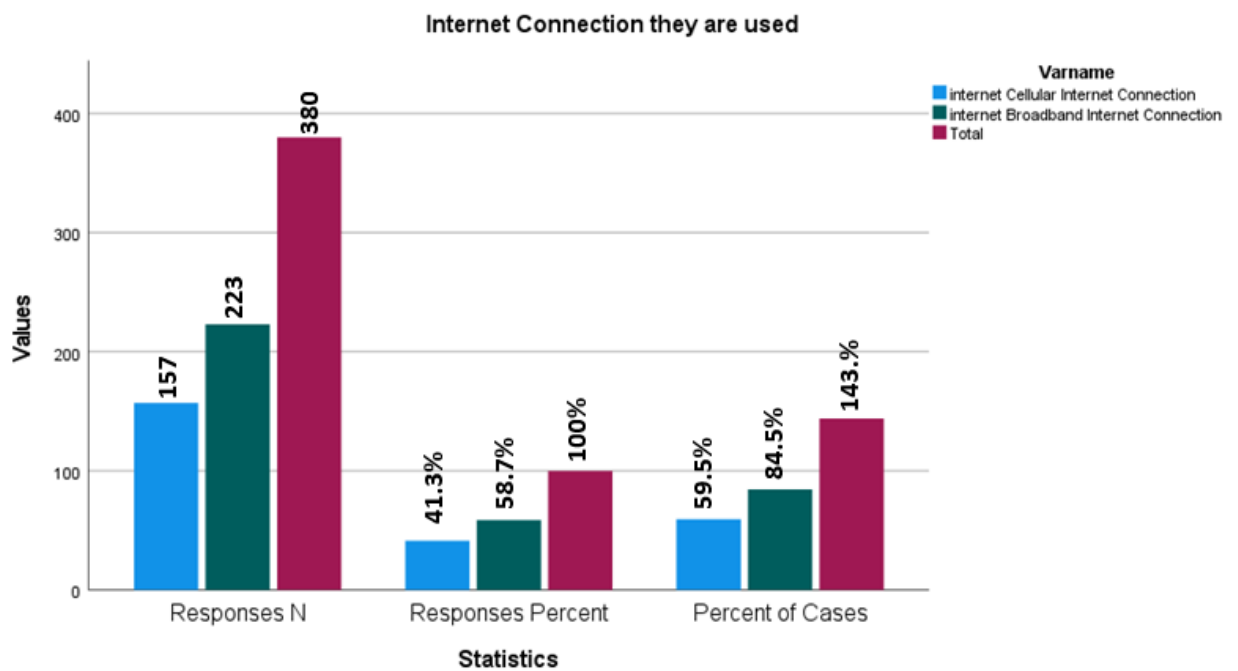


Figure 4.1: Ratio of Internet Connection Operators Used

From figure 4.1 we can observe the ratio of internet connection operators are using to provide E-government service to citizen. We can see that, 59.5% of operators are using cellular internet connection while another percentage of using broadband internet connection is 84.5%, which is highest in number.

4.2.8 Operators Faced Problem

Table 4.7: Multiple Response for Problems Operators are Facing

| Operators Faced Problem | Responses | | Percent of Cases |
|---------------------------------------|------------------|----------------|-------------------------|
| | N | Percent | |
| Internet Connectivity Problem | 212 | 28.3% | 80.3% |
| Server problem | 228 | 30.5% | 86.4% |
| Problems in Database | 148 | 19.8% | 56.1% |
| Conscious of having right information | 160 | 21.4% | 60.6% |
| Total | 748 | 100.0% | 283.3% |

In this age of digital era, there are many advantages of transition to the brave

new world but it also comes with a few thorns. If there is internet problem in a area, or having a poor server connection, the challenges of providing simple service sometimes become a burden for its users. [?]. From table 4.7 we can see that, operators are facing internet connectivity problems which has a percentage of 80.3% and the second most faced problem is nothing but server problem which is 86.4%. In some cases, there are problems with the database this is 56.1% and lastly the problem with conscious of having right information which also has an average percentage of 60.6%.

4.2.9 Ratio of Facing Harrassment by People

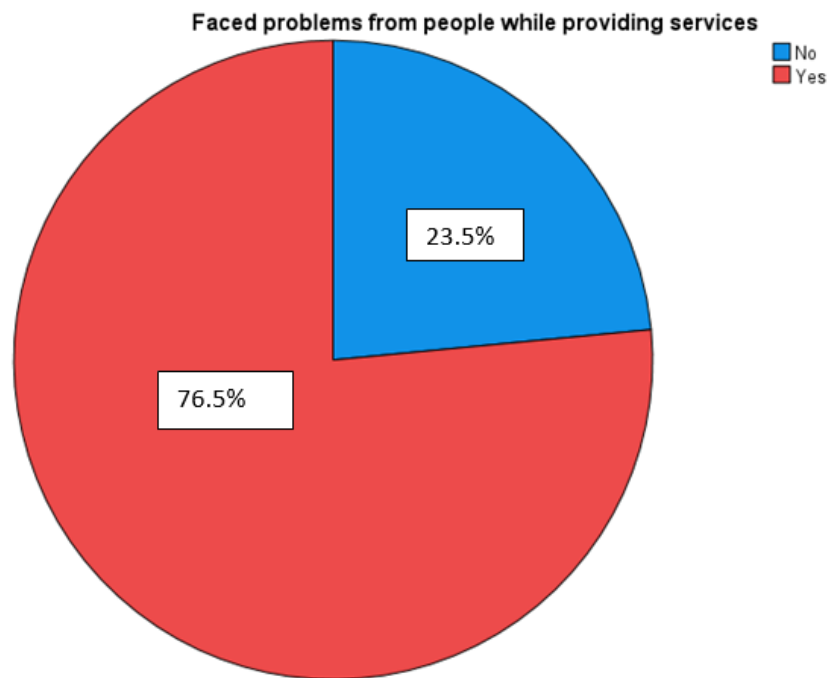


Figure 4.2: Ratio of facing Harassment by People

In figure 4.2 we can observe that 76.5% of computer operators are harassed by people. Previously, we have shown the types of harassment they have been facing. So far 60.00% of people are being harassed by people and rest of the operators (23.5%) confirmed they have not faced any while providing service. And this 76.5%, undoubtedly a huge number of getting harassed. We need to be more alert against this violence and proper steps must be taken.

4.2.10 Opinions from Operators to Overcome Limitations

Table 4.8: Multiple Response for opinions to overcome the limitations

| Opinions from Operators | Responses | | Percent of Cases |
|---------------------------------------|-----------|---------|------------------|
| | N | Percent | |
| Update Database regularly | 194 | 24.2% | 74.9% |
| Conscious of having right information | 173 | 21.6% | 66.8% |
| Increase Server capacity | 227 | 28.3% | 87.6% |
| Increase the quality of internet | 207 | 25.8% | 79.9% |
| Total | 801 | 100.0% | 309.3% |

Internet speed is likely to be slower in Bangladesh while the price of internet is being costlier. This is an ultimate problem of operators and any non-government E-government service provider. Since, they have to buy internet (either mobile internet or broadband) for giving service to people, this is actually a barrier for them. Internet price should be lower. From table 4.8 we can observe, operators are wanting for increase internet quality is 79.9%, 87.6% of operators voted for increasing server capacity which is another major problem for them. However, 74.9% operators want for updating databases regularly, since our govt websites databases are not updated timely. They also want people not to provide misleading information and to be more conscious of having right information which is 66.8%

4.3 Discussion

In this study, we have analyzed raw data, collected from govt officials and computer operators. We analyzed the raw dataset using multiple response analysis to find out the frequency of E-government services they are providing, the harassment they are facing from people, the problems they faced while using E-government sites, and their opinion of overcoming these limitations.

Chapter 5

Conclusion

In section 5.1 we should conclude our whole work in a summary. In section 5.2 we discussed about work limitations. In section 5.3 we discussed about future work opportunities. In section 5.4 we should give a clear discussion of our thesis and results.

5.1 Conclusions

In this study, we have used raw datasets from our computer operators and govt employees respectively. We used multiple response analysis. We found the frequency of E-government services provided by govt employees and computer operators. The primary benefit would be replacing and optimizing the Paper Based System while implementing electronic government. That could save lots of time, money and also environment in return due to reducing paper consumption. More efficiency, enhanced services to better serve citizens, better accessibility of public services, more transparency and accountability of government are the expected advantages of E-government. This study will help to increase the facilities of the E-government system, and improve the usability of the E-government system. With a better E-government system, Bangladesh can serve her citizen in an efficient way and can represent Bangladesh in the developed world.

5.2 Limitations

This study has few limitations. Inhere, we used data sets of 341 is relatively small, which can be considered as a limitation of our work. In spite of that, this is the usual problem of the survey studies when we have focused groups, particularly experts in the area investigated. However, it must be noted that the research can be used as a guide in a certain area which solely is left for the consideration of future study works. But, to the best of our knowledge, this is the first study to conduct this type of study to examine the factors affecting e-governance in Bangladesh.

5.3 Future Work

Our study named “Assessing The Usability of E-Government Websites at Shariatpur Region in Bangladesh” would be useful for increasing the facilities of E-government sites. This kind of approach will help to find the limitations of E-government sites. We showed the usability of E-government services using multiple response analysis. Now, new dataset and new factors can be used to measure steps which ICT division has been taken earlier and how beneficial it

is for people. Also further study can check for services which ICT division must have to provide better E-government services to our citizen. This can be a comparison for further betterment of E-government Services in our country.

5.4 Discussion

We collected data from random computer operators and govt employees respectively. Then we used multiple response analysis. Based on multiple response analyses, we found the frequency of E-government services people are taking, problems people are facing while using E-government sites, the harassment people faced from computer operators and government officers, and the opinion to overcome the limitations of E-government sites. Then we used percentage calculation. Based on percentage calculation, we found the ratio of people getting E-government services, and the ratio of people getting harassed from computer operator or government officer.

Appendix A

Appendix

A Research on Usability of E-Government Services
GOVERNMENT EMPLOYEES

| | |
|---|--|
| Name: | Age: |
| Educational Qualification: | Phone: |
| 1.Which internet connection do you use? | |
| <ul style="list-style-type: none"> • Cellular connection | <ul style="list-style-type: none"> • Broadband connection |
| 2. Which services do you provide? | |
| <ul style="list-style-type: none"> • Birth registration • Death registration • Ground Service • Right to information • Others | |
| 3. Which kind of problem do you face in service providing? | |
| <ul style="list-style-type: none"> • Internet Connection • Server Problem • Data base problem • Lack of Correct Information • Others | |
| 4. Have You ever faced problem from public in service providing? | |
| <ul style="list-style-type: none"> • Failure to provide accurate information • Lack of Awareness | |
| 5. Opinions: Challenges & Solutions | |
| <ul style="list-style-type: none"> • Regular Database Updates • Ensure correct information • Increase server performance • Improving internet speed | |

Appendix B

Appendix

A Research on Usability of E-Government Services
COMPUTER OPERATOR

| | |
|---|--|
| Name: | Age: |
| Educational qualification: | Phone Number: |
| 1. Have you ever taken online services? | |
| <ul style="list-style-type: none"> • Yes | <ul style="list-style-type: none"> • No |
| 1.1 If Not, Why did not accept or why do not want to accept? | |
| <ul style="list-style-type: none"> • Not needed | <ul style="list-style-type: none"> • Problem with government officials services |
| <ul style="list-style-type: none"> • Lack of Skill | <ul style="list-style-type: none"> • Others |
| 2. Which internet connection do you use? | |
| <ul style="list-style-type: none"> • Cellular connection | <ul style="list-style-type: none"> • Broadband connection |
| 3. The device you use: | |
| <ul style="list-style-type: none"> • Mobile | <ul style="list-style-type: none"> • Computer |
| 4. Which Services did you take? | |
| <ul style="list-style-type: none"> • Covid vaccine registration • Board Exam Result | |
| 5. Which services do you provide? | |
| <ul style="list-style-type: none"> • Covid vaccine registration • Board Exam Result • Birth registration • Death registration • Ground Service • Right to information • Others | |

6. Which kind of problem do you face?

- Internet Connection
- Server Problem
- Data base problem
- Lack of Correct Information
- Others

7. Have You ever faced problem from public in E-Government service providing?

- Yes

- No

8. Opinions: Challenges & Solutions

- Regular Database Updates
- Ensure correct information
- Increase server performance
- Improving internet speed

References

- [1] R. Santa, J. B. MacDonald, and M. Ferrer, “The role of trust in e-government effectiveness, operational effectiveness and user satisfaction: Lessons from saudi arabia in e-g2b,” *Government Information Quarterly*, vol. 36, no. 1, pp. 39–50, 2019.
- [2] J. Fan, P. Zhang, and D. C. Yen, “G2g information sharing among government agencies,” *Information & Management*, vol. 51, no. 1, pp. 120–128, 2014.
- [3] V. R. Rao, “Collaborative government to employee (g2e): Issues and challenges to e-government,” *Journal of e-Governance*, vol. 34, no. 4, pp. 214–229, 2011.
- [4] J. Choudrie, J. Wisal, and G. Ghinea, “Evaluating the usability of developing countries’e-government sites: a user perspective,” *Electronic Government, an International Journal*, vol. 6, no. 3, pp. 265–281, 2009.
- [5] M. N. Islam, S. A. Rahman, and M. S. Islam, “Assessing the usability of e-government websites of bangladesh,” in *2017 International Conference on Electrical, Computer and Communication Engineering (ECCE)*, pp. 875–880, IEEE, 2017.
- [6] S. Liton and M. A. Habib, “Analyzing challenges and opportunities of the implementation of e-government in bangladesh,” *Global Journal of Computer Science and Technology*, 2015.
- [7] M. J. Alam, “E-governance in bangladesh: Present problems and possible suggestions for future development,” *International Journal of Applied Information Systems (IJ AIS)*, vol. 4, no. 8, pp. 21–25, 2012.

- [8] Wikipedia contributors, “List of fields of application of statistics — Wikipedia, the free encyclopedia,” 2023. [Online; accessed 30-May-2023].
- [9] F. Bannister and R. Connolly, “Defining e-governance,” *E-Service Journal: A Journal of Electronic Services in the Public and Private Sectors*, vol. 8, no. 2, pp. 3–25, 2012.
- [10] G. Ntulo and J. Otike, “E–government: Its role, importance and challenges,” *School of Information Sciences. MoiUniversity*, pp. 1–16, 2013.
- [11] R. L. Miller, C. Acton, D. A. Fullerton, J. Maltby, R. L. Miller, C. Acton, D. A. Fullerton, J. Maltby, and J. Campling, “Multiple response sets,” *SPSS for Social Scientists*, pp. 217–238, 2002.
- [12] Y. D. Edwards and G. M. Allenby, “Multivariate analysis of multiple response data,” *Journal of Marketing research*, vol. 40, no. 3, pp. 321–334, 2003.