USABILITY TESTING OF E-COMMERCE APP IN BANGLADESH

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I am submitting this thesis report as part of my Bachelor of Science degree in Software Engineering.

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APPROVAL

This thesis titled on **"Usability Testing of E-commerce App in Bangladesh"**, submitted by **Shariful Islam Noor (ID: 191-35-2635)** to the Department of Software Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Software Engineering and approval as to its style and contents.

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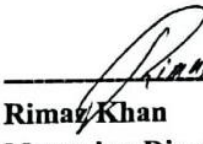

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DECLARATION

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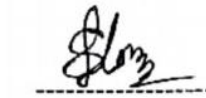

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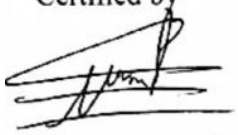

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First, I am thankful to Almighty ALLAH for giving me the strength, ability and opportunity to complete the final year thesis successfully.

I am grateful to **Ms. Nusrat Jahan, Assistant Professor and Head**, Department of Information Technology & Management (ITM). Her endless patience, scholarly guidance, energetic supervision, constructive criticism, and valuable advice have made it possible to complete this work.

Finally, I am deeply grateful to my parents for their support, appreciation and encouragement.

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ABSTRACT

In the era of modern technology, e-commerce is becoming very popular in a developing country like Bangladesh. It has altered the way people shop. As a result, new e-commerce sites are constantly emerging. In order to remain competitive, existing applications focus on improving their user interfaces to better serve their customers. So, I decided to test two popular e-commerce applications in Bangladesh, Daraz and Chaldal, to understand the current state of e-commerce. For this work, I used the System Usability Scale (SUS) and Usability Metric for User Experience (UMUX) survey-based methods. People of different ages and professions have participated in this survey. After analyzing the participants' data, I found that the applications had some usability issues, but the overall results were promising. From my analysis, I have concluded that the coming times of e-commerce will get better.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Usability testing measures the user-friendliness of an application. In this process, a team of testers examines the application before it goes live to find defects. The purpose of a usability test in an application is to ensure that it meets the objectives of ease of use, flexibility, and controllability. According to reports, 50% of the developer's energy goes into fixing usability issues. In order to meet user expectations, usability testing is always recommended in the early stages of development (Jain & Purandare, 2021). The aim is to discover any usability problems, gather qualitative and quantitative information and decide the participant's pride with the product wiki

E-commerce refers to any type of business or commercial transaction that takes place over the internet. Currently, it has become one of the most important aspects of the internet. The e-commerce market has grown rapidly around the world and also in Bangladesh. In 1979 Michael Aldrich invented online purchasing (Jain & Purandare, 2021). In 1999, the first e-commerce platform was launched in Bangladesh. But in 2011, first full-fledged e-commerce platform akhoni.com (now bagdoom.com) was launched (Islam, 2022). Currently B2C, C2C, B2B, B2E are most popular types of e-commerce in Bangladesh. Among these four, B2C is the most common type (International Trade Administration, 2022). But a significant portion of total e-commerce websites are engaged in C2C e-commerce, which is auction-based commerce between consumers. Globalization has led to e-commerce platforms becoming very popular in Bangladesh as well. People have become more reliant on e-commerce platforms as a result of the COVID pandemic. The reason for this is that e-commerce platforms continued to provide their services at that time. In the context of e-commerce, people typically pay attention to the user interface first. And a customer's first impression of an application is based on its user interface. When customers access the application, they notice the flexibility and workflow, so they want to

explore different pages and find out different information. An e-commerce application needs to maintain consistency throughout all pages in order to create a good impression, as

daily needs and promotional offers constantly change (Jain & Purandare, 2021). When using e-commerce applications, users usually experience problems. Problems may arise because of inexperience with the application or poor performance (Lynn et al., 2020).

Previously in this field a lot of work has been done. These studies therefore aim to understand the performance and issues faced by e-commerce application users. This will help to fill the gaps in usability problems dealing with customers by offering designers the preferred data regarding usability challenges from users. It will be done by performing a usability test on an e-commerce application to determine how users use its features and options to access services (Lynn et al., 2020). Code compatibility and portability are two other challenges in the usability testing of e-commerce applications, as they can be accessed on different devices and operating systems. The purchaser again reports trouble in the case of poor render quality and non-practical visualization of the product (Jain & Purandare, 2021).

So, in order to survive the competition in the near future, e-commerce companies will have to pay more attention to their user interface.

1.2 MOTIVATION OF THE RESEARCH

E-commerce platforms have become very popular in our country since last few years. One of the reasons behind this is globalization. E-commerce has added a new dimension to business. According to the latest report of the "Bangladesh Bureau of Statistics," the population of Bangladesh is 165.59 (“Bangladesh,” 2022) million. Among them, 52.58 (DataReportal, 2022) million are internet users. This indicates that e-commerce has significant long-term potential in the coming days. As a result of the pandemic situation caused by COVID, people are now more dependent on e-commerce sites. Because of this, people are getting everything very easily while sitting at home. This saves both time and money. As a result of the popularity of this platform, new e-commerce platforms are constantly arriving on the market. The main objective of these sites is to satisfy their users.

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Due to this, they have to pay close attention to the user interface. Moreover, they have to update their site constantly. Usability testing is very important to ensure user satisfaction. Through this, users can easily give their opinion about the application. As a result, the application can be presented in a more user-friendly

manner. So, the motivation behind the work is to suggest the best method for conducting usability testing and to assess the condition of e-commerce in Bangladesh.

1.3 PROBLEM STATEMENT

We know that worldwide e-commerce is now very popular. They prioritize user satisfaction to stay competition. The most important thing for this is usability testing. Many researchers work with different types of usability testing methods, such as lab tests, remote usability tests, survey questionnaires, and many more. Using each method, raw data is collected from the users about the usability of the application. This is the most important part of usability testing. In the context of Bangladesh, very little research has been done on e-commerce usability testing. So more work is needed in this field. For this research, I am going to use the survey questionnaire method. There are different types of survey questionnaire methods, such as SUS, UMUX, UMUX-LITE SUPR-Q, etc. I use UMUX and SUS for my research. Since e-commerce sites are used more or less by people of all ages, I have tried to collect data from people of all ages. This research will help the designer team to develop more user friendly system.

1.4 RESEARCH QUESTIONS

This study aims to address this research question:

- Does usability testing prove the e-commerce systems' usability in Bangladesh?

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1.5 RESEARCH OBJECTIVE

The main objective of my research is to check the usability of e-commerce applications through the survey questionnaire method. Additionally, this study has other objectives:

- Testing most popular e-commerce sites.
- Using most used survey questionnaire methods.
- Collecting data from all age group.

1.6 RESEARCH SCOPE

The scope of this research is as follows:

- This research is based on the survey-questionnaire method. It will help the designer team take future steps to develop a more efficient and user-friendly system.
- To learn more about the condition of e-commerce in Bangladesh right now and its possibilities for the near future.

1.7 THESIS ORGANIZATION

In the first chapter, usability testing, E-commerce in the context of Bangladesh, the background behind the work, motivation of the research, problem statement, research questions, research objectives, research scope are discussed.

In the next chapter, I will discuss literature review where we can see some previous studies in the field of usability testing of e-commerce applications. In chapter three, the methodology of this research will be covered. In this chapter, I will discuss data collection, data pre-processing, and analysis of methodology. In chapter four, the results of the methodology will be discussed. In chapter five, the last chapter, I will give the conclusion. There will be a total summary of my work. Here I have discussed what work I will do in the future for this work.

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CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

A literature review is an examination of scholarly sources in a particular field. In a literature review, a researcher examines the previous work—research, conference papers, books, articles, etc.—in order to determine what previous research has been done on the subject, provide an overview of it, and identify any gaps in it. After analyzing their results, they can focus on their limitations and find ways to produce better results.

2.2 PREVIOUS LITERATURE

Today, e-commerce plays a significant role in both buying and selling. Now, people are more engaged in it. For this reason, organizations give more priority to their user interfaces to meet the needs of their users. So usability testing is a very important thing. Many researchers in this field have already conducted research and used various usability testing methods. So, for my work, I have been concentrating on survey questionnaire methods of usability testing.

To understand the usability of an e-commerce application, Jain & Purandare (2021) used survey questionnaire method and online tool. They thought that consumers are aware of the upcoming e-commerce site, which can give tough competition to existing companies. Thus, all the existing e-commerce companies need to improve their web and mobile applications to retain their customer base. The only limitation of this research is limited age group participation.

To evaluate the effectiveness, efficiency and satisfaction Hussain et al. (2017) tested a popular e-commerce application. They thought that the main menu and the payment method had some problems that needed to be fixed in order to improve the application's effectiveness, efficiency, and user satisfaction. The limitation of this research is they conducted this test with only twelve participants.

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Santiworarak & Choochaiwattana (2018) thought that for developing a website, designers and developers must have a clear knowledge of navigation because it will help customers find all the information they want. Also, they need to develop a responsive website that supports all kinds of devices. Their limitation is that they only conduct research on B2C websites.

Hussain et al. (2018) used usability testing methodology to measure the effectiveness, efficiency and satisfaction of an e-commerce application. they found that that usability score of the application was below average. They concluded that the application has some usability issues. They had conducted this test with only ten participants.

Swaid et al. (2018) used heuristic evaluation for measuring the usability of hotel booking application. The study identifies usability issues and offers suggestions to make mobile apps for hotel booking more usable.

According to Davidavičienė et al. (2020) their aim was their goal was to assess how certain criteria affected a user's experience when making purchases on e-commerce websites. They found that the nature of the user's experience does have an impact on how the consumer perceives the specific e-commerce platform. They found that a customer's perception of a particular e-commerce platform is influenced by the nature of the user's experience.

To evaluate a mobile shopping app Hussain et al. (2019) was conducted a Heuristic Evaluation. Each excerpter individually evaluated the application. After that all issues founded by experts were combined. Finally, they found some usability issues and they give their recommendation.

Lynn et al. (2020) used Unmoderated remote usability testing for increasing user satisfaction of a mobile commerce application. They found that the application is easy to use, efficient and has good functionality but some issues were mentioned by participants which means users were not fully satisfied with the application. This study has some limitations such as small number of participants, limited sample size, users of different experiences.

Ahmad et al. (2017) had conducted a usability testing based on the WAMMI components. According to the analysis's findings, the website's visitors find its attractiveness to be

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satisfactory. But, visitors are not happy with the controllability, effectiveness, helpfulness, or learnability.

Nathaniel et al. (2019) evaluate five e-commerce application through online questionnaires. After the evaluation they found some usability issues. For this reason, they advised the designers to concentrate more on developing a visually appealing and simple-to-navigate e-commerce platform.

2.3 CONCLUSION

In the above research papers, a variety of methods have been used. Some of these methods are heuristic evaluation, survey questionnaire, lab test and many more. In this research, I also tried to implement some usability testing methods to evaluate the usability of e-commerce application.

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CHAPTER 3

RESEARCH METHODOLOGY

3.1 RESEARCH METHODOLOGY

For this research, I have applied the System Usability Scale (SUS) and Usability Metric for User Experience (UMUX) questionnaire methods. I collect survey data from users using Google Forms.

3.2 DATA COLLECTION

This survey-based study is intended to evaluate the usability of several e-commerce platforms. In this study, I investigated Daraz and Chaldal, the two most widely used e-commerce platforms in Bangladesh. First, I have created a Google Form based on the SUS and UMUX questionnaires. Then I distributed it to the user in order to collect data. A total of 151 people are participating in this survey. After completing the collection, I recorded the data in an Excel sheet (Figure 1).

	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Name	Age	Gender	Profession	Which application do	How much time do yo	1I think that I would lik	2.I found the system u	3.I thought the system	4.I think that I would n	5.I found the various f	6.I thought there was t	7. I would imagine that	8. I found the system u
2	Shariful Islam Noor	20-25	Male	Student	Daraz, Chaldal	Less than 0.5 hours	5	1	5	1	4	2	4	1
3	Ahadul Islam Sagor	20-25	Male	Student	Daraz	Less than 0.5 hours	4	4	5	4	4	4	5	4
4	Ankon Chowdhury	20-25	Male	Student	Daraz	0.5-1 hours	3	3	4	4	4	4	4	4
5	Meem	20-25	Female	Student	Daraz	Less than 0.5 hours	3	3	4	2	4	3	3	3
6	Fahim	20-25	Male	Student	Daraz	Less than 0.5 hours	4	2	4	2	4	2	4	2
7	Sourovi Haidar	20-25	Female	Student	Daraz	Less than 0.5 hours	4	2	5	2	2	2	4	2
8	T.M Moeen Uddin	20-25	Male	Student	Daraz	Less than 0.5 hours	3	4	4	4	5	4	3	4
9	Md. Saif Ali	20-25	Male	Student	Chaldal	Less than 0.5 hours	3	3	4	1	3	3	4	3
10	Hasin Ishrak Khan	20-25	Male	Student	Daraz	Less than 0.5 hours	2	4	4	5	4	4	4	3
11	Sharmin Afroze	More than 25	Female	Student	Chaldal	Less than 0.5 hours	4	2	5	1	4	3	5	1
12	Fayez	20-25	Male	Student	Daraz	Less than 0.5 hours	4	4	4	3	4	3	4	3
13	Yoboraj Ahmed	20-25	Male	Student	Daraz	Less than 0.5 hours	3	3	3	3	3	3	3	3
14	Ishrak	Less than 20	Male	Student	Daraz	Less than 0.5 hours	5	1	5	1	4	1	4	1
15	Jabed	20-25	Male	Self Employed	Chaldal	Less than 0.5 hours	4	2	5	5	4	2	5	5
16	Md. Sakib Ali Mazum	20-25	Male	Student	Chaldal	Less than 0.5 hours	4	1	4	1	4	1	5	1
17	Sara	20-25	Female	Student	Daraz	Less than 0.5 hours	4	2	5	4	4	2	5	1
18	Tamima	20-25	Female	Student	Daraz	Less than 0.5 hours	4	2	5	2	2	2	3	3
19	Taskiya	20-25	Female	Without occupation	Daraz, Chaldal	Less than 0.5 hours	3	3	3	2	3	4	5	5
20	Jabed	Less than 20	Male	Student	Daraz	Less than 0.5 hours	3	4	4	4	4	4	3	4
21	Ahmed	20-25	Male	Self Employed	Chaldal	0.5-1 hours	5	2	5	5	5	2	5	5
22	Rifat	More than 25	Male	Service holder	Daraz	Less than 0.5 hours	5	1	4	3	4	3	4	3
23	Marcus	More than 25	Female	Service holder	Chaldal	Less than 0.5 hours	5	1	4	4	4	4	4	5
24	LEON	More than 25	Female	Without occupation	Chaldal	More than 1 hours	5	1	5	5	5	1	5	4
25	Sakib Bhuiyan Nilloy	20-25	Male	Student	Daraz	Less than 0.5 hours	5	5	5	5	5	5	5	5
26	Md Sharif	More than 25	Male	Service holder	Daraz, Chaldal	Less than 0.5 hours	4	2	5	1	4	2	3	1
27	Adnan	Less than 20	Male	Student	Daraz	0.5-1 hours	4	1	4	1	5	2	4	2
28	tamanna	20-25	Female	Student	Daraz, Chaldal	Less than 0.5 hours	5	2	5	2	5	2	5	2
29	ishrat	More than 25	Female	Without occupation	Daraz	Less than 0.5 hours	5	2	5	2	5	2	5	2
30	Adiba	20-25	Female	Student	Chaldal	Less than 0.5 hours	3	2	4	4	1	4	3	4
31	latif	20-25	Male	Student	Daraz, Chaldal	Less than 0.5 hours	5	2	5	2	5	2	5	2
32	Shahidul Islam	More than 25	Male	Business	Daraz, Chaldal	Less than 0.5 hours	4	2	4	1	5	2	4	2

Figure 1: Raw Survey Data

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3.2.1 PARTICIPANTS AGE

In this research, I have tried to collect data from people of all ages. Out of 151 participants, people aged 20 to 25 are the majority. The number of these people is 75, which is half of the total number of participants. The second place was occupied by people over 25 years of age, who numbered 53, or 35.3%. 22 people under the age of 20 made up the lowest number of participants. In percentage, it is 14.7%. This indicates that people of all ages now use e-commerce applications. A pie diagram is shown for the above data in Figure 2.

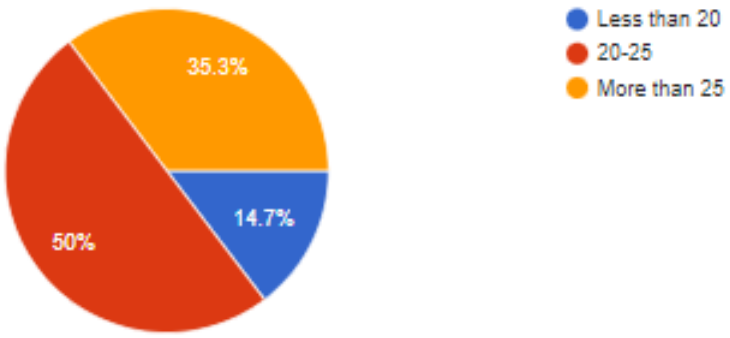

Figure 2: Pie diagram of different age groups of participants

3.2.2 PARTICIPANTS GENDER

In this survey, the majority of the participants are male. 55.3% of participants are male. The rest of them are female, which means 44.7% are female. It shows that women are not far behind men in technology usage today. It is illustrated in Figure 3.

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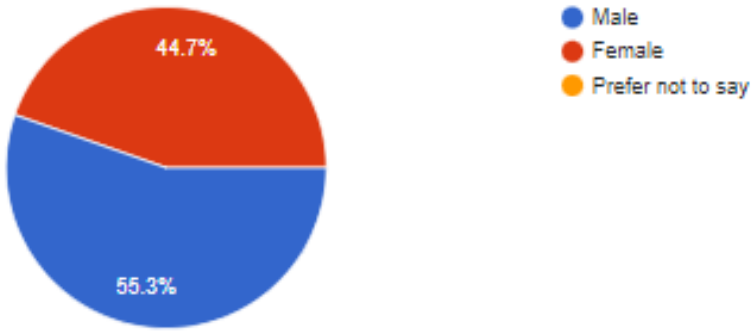

Figure 3: Pie diagram of gender distribution among participants

3.2.3 PROFESSION OF PARTICIPANTS

People from different professions have participated in this research. The majority of participants were students. It is 52% in percentage. Second and third place, respectively, are taken by service holders (16%) and the self-employed (14%).Moreover, teachers, students, businessmen, etc. also participated in this survey. It proves that e-commerce sites are becoming more popular day by day. The above data is shown in Figure 4.

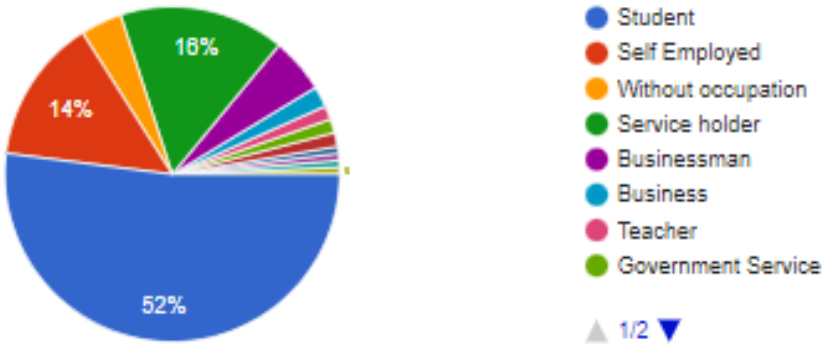

Figure 4: Participants of different professions

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3.2.4 USAGE RATE OF APPLICATION

In this survey, I worked with two popular e-commerce sites, Daraz and Chaldal. According to the collected data, 113 people use Daraz, and 93 people use Chaldal. Those percentages are 75.3% and 62%, respectively. A total of 56 users are using both applications, which is 37.3% of the total number of participants. Based on this data, it is obvious that e-commerce sites are experiencing an increase in users. A bar chart is displayed in figure 5.

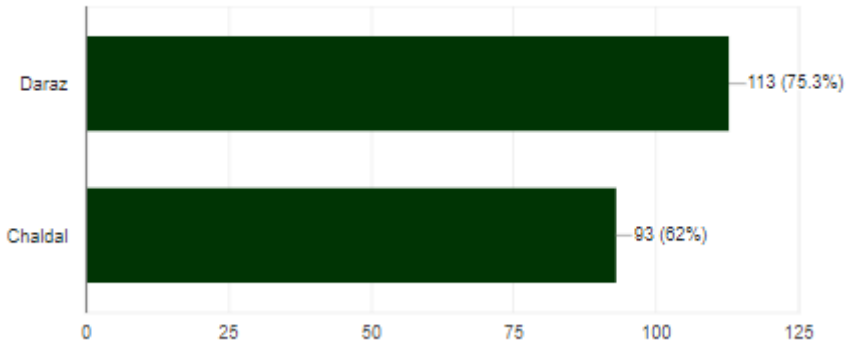

Figure 5: Application usage rate

3.3 DATA PREPROCESSING

After the survey, when data collection was complete, I re-observed the data. A total of 151 people participated in this survey. In this research, I used the SUS and UMUX questionnaire methodologies to evaluate the usability of two well-known e-commerce applications: Daraz and Chaldal. In order to simplify my work, I have created separate Microsoft Excel files for each application. For each application, I had to calculate the method score. And for this, I used statistical software called SPSS.

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3.4 STATISTICAL SOFTWARE

The purpose of statistical analysis software solutions is to identify patterns and trends by collecting and analyzing data. In order to perform data science techniques such as regression and time series analysis, mathematical calculations and statistics theorems are used (Kaur, 2022). Several statistical software programs are currently available. Statistical Package for the Social Sciences (SPSS) is the best among them.

SPSS software is used for quantitative analysis of complex statistical data. SPSS Inc. first launched this software in 1968, and IBM later purchased it in 2009 (“SPSS Inc.,” 2022). For processing and evaluating survey data, a wide range of researchers, including those in the fields of marketing, health, and many others, use SPSS. SPSS has four core components, such as Statistics Program, Modeler Program, Text Analytics for Surveys Program and Visualization Designer (Jordan, 2021). In this software there are two types of SPSS. One of them is data view, and the other is variable view.

SPSS is currently one of the best statistical software programs in existence. Due to its ease of use in handling complex data, SPSS is frequently used in survey-based research. Since my research is survey-based, I used SPSS to analyze the data (William, 2022).

3.5 SYSTEM USABILITY SCALE (SUS)

In order to measure the usability of a product, the System Usability Scale (SUS) is a fairly simple, quick, and reliable tool. It is a simple, ten-item Likert scale with five response options for participants, from "strongly agree" to "strongly disagree," used in systems engineering to assess subjective usability (Usability.gov, 2013). It was developed by John Brooke at Digital Equipment Corporation in 1986. (“System Usability Scale,” 2022). This testing method is based on a survey questionnaire.

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3.5.1 PROCEDURE

At the beginning of the survey, I provided the survey questionnaire for Daraz and Chaldal to the participants to test the usability. For each application, I provided each participant 10 questions. These 10 questions with response options are shown in figure 6.

	The System Usability Scale Standard Version		Strongly Disagree				Strongly Agree
			1	2	3	4	5
1	I think that I would like to use this system frequently.		O	O	O	O	O
2	I found the system unnecessarily complex.		O	O	O	O	O
3	I thought the system was easy to use.		O	O	O	O	O
4	I think that I would need the support of a technical person to be able to use this system.		O	O	O	O	O
5	I found the various functions in this system were well integrated.		O	O	O	O	O
6	I thought there was too much inconsistency in this system.		O	O	O	O	O
7	I would imagine that most people would learn to use this system very quickly.		O	O	O	O	O
8	I found the system very awkward to use.		O	O	O	O	O
9	I felt very confident using the system.		O	O	O	O	O
10	I needed to learn a lot of things before I could get going with this system.		O	O	O	O	O

Figure 6: Standard version of SUS

Participants gave their responses based on their experiences. A total of 151 people took part in this survey. After collecting data from users, I calculated the SUS score. There is a formula to calculate this SUS score. The formula is:

((Q1-1)+(5-Q2)+ (Q3-1)+(5-Q4)+ (Q5-1)+(5-Q6)+ (Q7-1)+(5-Q8)+ (Q9-1)+(5-Q10))*2.5

Here, Q1–Q10 represent the scores given by the participants to these 10 questions.

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Application 1	Application 2
SUS Score = 10672.5/151 =70.68	SUS Score =10470/151 =69.34

Table 1: SUS SCORE FOR ALL APPLICATIONS

Application 1		Application 2	
Mean Value	Standard Deviation	Mean Value	Standard Deviation
3.94	.93	3.93	.92
2.20	.92	2.19	.97
4.06	.90	3.97	.96
2.32	1.09	2.31	1.08
3.89	.98	3.79	1.01
2.30	.96	2.36	.99
3.85	.93	3.85	.99
2.32	1.07	2.38	1.05
4.05	1.05	3.91	.95
2.38	1.07	2.47	1.11

Table 2: SUS SCORE CHART FOR ALL QUESTIONS

3.6 USABILITY METRIC FOR USER EXPERIENCE (UMUX)

UMUX is a quick qualitative test designed to evaluate a system's overall usability. UMUX is a clear and simple four-item survey that asks respondents to assess their agreement with two positive and two negative statements using a seven-point Likert scale. It is developed by Kraig Finstad and his colleagues at Intel in 2010 (Valdespino, 2020). SUS and UMUX are quite similar.

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3.5.1 PROCEDURE

In this method, I first provided four questions with seven response options for both Daraz and Chaldal to the participants. These four questions are shown in Figure 7.

	The Usability Metric for User Experience Standard Version	Strongly Disagree	1	2	3	4	5	6	7 Strongly Agree
1	This system's capabilities meet my requirements.		○	○	○	○	○	○	○
2	Using this system is a frustrating experience.		○	○	○	○	○	○	○
3	This system is easy to use.		○	○	○	○	○	○	○
4	I have to spend too much time correcting things with this system.		○	○	○	○	○	○	○

Figure 7: Standard version of UMUX

Participants gave their responses based on their personal experiences. A total of 151 people responded to this survey. After that, I analyzed the response data and calculated the UMUX score. For calculating this score, a formula is used that is kind of similar to the SUS score. The formula is:

$$\frac{((Q1-1)+(7-Q2)+(Q3-1)+(7-Q4))*100}{24}$$

Here, Q1–Q4 represent the scores given by the participants to these 4 questions.

Application 1	Application 2
UMUX Score = 11083.33/151 =73.40	UMUX Score =10791.67/151 =71.47

Table 3: UMUX SCORE FOR ALL APPLICATIONS

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Application 1		Application 2	
Mean Value	Standard Deviation	Mean Value	Standard Deviation
5.44	1.43	5.44	1.40
2.61	1.51	2.73	1.53
5.64	1.48	5.48	1.43
2.85	1.66	3.04	1.69

Table 4: UMUX SCORE CHART FOR ALL QUESTIONS

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CHAPTER 4

RESULT AND DISCUSSION

4.1 INTRODUCTION

In this chapter, I will describe the current state of e-commerce in Bangladesh. I have previously described in detail the methods I used for my work after data preprocessing. In this section, I will discuss the results of the methods in detail.

4.2 RESULT DISCUSSION

After implementing SUS and UMUX on my dataset, I calculated the score, mean, and standard deviation for both methods. Then I compared these scores with the Sauro/Lewis Curved Grading Scale. And, using the standard deviation, I tried to evaluate the usability of both applications.

4.2.1 SUS RESULT

Each participant was asked to give their opinion on these two applications, Daraz (Application 1) and Chaldal (Application), through a survey questionnaire. In this survey, a total of 151 participants give their opinion based on their experience. I can define the application rating based on the SUS score. From Table 1, the SUS score for application 1 is 70.68 and application 2 is 69.34.

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Score Range	Grade	Percentile
84.1-100	A+	96-100
80.8-84.0	A	90-95
78.9-80.7	A-	85-89
77.2-78.8	B+	80-84
74.1-77.1	B	70-79
72.6-74.0	B-	65-69
71.1-72.5	C+	60-64
65.0-71.0	C	41-59
62.7-64.9	C-	35-40
51.7-62.6	D	15-34
0.0-51.6	F	0-14

Table 5: THE SAURO/LEWIS GRADING SCALE

According to Table 5, both applicants received grades between 65 - 71. Therefore, both applications received a C. In Table 2, for application 1, I found the lowest standard deviation (.90), which is the third SUS question. This indicates that the efficiency of this application is poor. The SUS score of this application is satisfactory, but developers need to pay attention to increase the efficiency. On the other hand, for application 2, I found the lowest standard deviation (.92) in the first SUS question. That shows that there is a problem with the effectiveness of the application. So the developers need to pay attention to this.

4.2.2 UMUX RESULT

Like in SUS, a total of 151 participants took part in the survey here as well. In Table 3, I have calculated the UMUX score using this data. The UMUX score for application 1 is 73.40, and for application 2, it is 71.74. According to Table 5, the Sauro/Lewis grading scale, the grade for application 1 is B-, and the grade for application 2 is C+. Overall, the

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UMUX score for both applications is satisfactory. In Table 4, for application 1, I found the lowest standard deviation (1.43) for the first UMUX question and the highest standard deviation (1.66) for the fourth UMUX question. For application 1, both of these values have a negative sign. Again for application 2, I found that one value is too high and another is too low. First value is for question 4 and other value is for question. This also indicates a negative sign. For both applications, developers need to improve the efficiency of the application to satisfy their users.

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CHAPTER 5

CONCLUSION AND LIMITATION

The e-commerce sector in Bangladesh has been growing rapidly for the past few years. In this era of intense competition, new e-commerce sites are constantly emerging. As a result, people have more options. Therefore, existing applications regularly improve their user interfaces to survive the competition. That is why usability testing is so popular. Developers can get user feedback and make the system more user-friendly by applying this. In my work, I have tried to test two popular e-commerce applications in Bangladesh by using usability testing. I have used the SUS and UMUX methods. My main objective was to test these applications and give an idea of the overall situation of e-commerce in Bangladesh. In my work, I have tried to test two popular e-commerce applications in Bangladesh by using usability testing. I have used the SUS and UMUX methods. My main objective was to test these applications and give an idea of the overall situation of e-commerce in Bangladesh. People of all ages participated in my survey. Besides men, women also participated equally. This indicates that the future of e-commerce is very bright in the context of Bangladesh.

Limitation: In this work, I have worked with only two applications. It would have been possible to get more accurate results if I had worked with more applications. In the future, I would like to work on more applications.

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