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E-Banking Service Quality in Bangladesh: A Survey Based Customer Perception Analysis

Abstract

This study aims to investigate customer perceptions of e-banking services based on a comprehensive analysis of survey data collected from a diverse sample of respondents. The survey data encompassed various dimensions, including demographic information, usage patterns, perceptions of specific e-banking aspects, and suggestions for improvement. Out of all the surveys collected, 471 were usable and were compiled with SPSS 25.0. The findings revealed several key insights into customer perceptions of e-banking services. Analyzing the specific dimensions of e-banking perception, customer service and security measures emerged as crucial factors influencing overall perceptions. The respondents expressed positive perceptions regarding e-banking services, with higher agreement or neutrality compared to disagreement. The findings emphasize the need for banks and financial institutions to continuously invest in robust security protocols, communicate them effectively to customers, and build trust in the safety of e-banking services. These recommendations focused on enhancing accessibility, responsiveness, reliability, and assurance. By incorporating these insights into their operations, organizations can stay ahead in the rapidly evolving landscape of digital banking and meet the evolving expectations of their customers.

Cite as:

1. Introduction

The banking sector of Bangladesh has undergone a significant transformation in recent years, especially in the digital domain. The emergence of electronic banking or e-banking has revolutionized the banking industry in Bangladesh. With the increasing number of internet users and smartphone penetration in the country, e-banking has become a popular alternative to traditional banking. However, the success of e-banking services depends on customers' perception of the quality of service provided. Bangladesh has witnessed tremendous growth in the adoption of e-banking services in recent years. Therefore, it is crucial to evaluate the quality of e-banking services provided by banks in Bangladesh from the customers' perspective. This study aims to evaluate the quality of e-banking services in Bangladesh from the perspective of customers.

In recent years, the global banking industry has been substantially transformed by the rapid development of technology. The emergence of electronic banking, also known as e-banking, which has revolutionized the delivery of financial services, is a noteworthy development.

E-banking enables consumers to conduct a variety of banking transactions and gain access to financial services via digital platforms. Bangladesh has witnessed a significant increase in e-banking services, with banks progressively adopting digital channels to meet customers' changing needs and preferences. Understanding how customers perceive the excellence of e-banking services is crucial for Bangladeshi banks. Customers' satisfaction, loyalty, and propensity to implement and utilize e-banking services are heavily influenced by their perception of service quality. It is important to emphasize that the focus of this study will be on customers' perceptions of the quality of e-banking services in Bangladesh. Due to differences in socio-cultural and economic factors, the findings and recommendations may not be explicitly applicable to other nations or regions. This research seeks to provide a comprehensive understanding of the unique challenges and opportunities associated with the quality of e-banking services in Bangladesh. This study is anticipated to cast light on the factors that influence customers' perceptions of the quality of e-banking services in Bangladesh, including dependability, security, responsiveness, convenience, and user-friendliness. The purpose of this study is to investigate and analyze consumers' perceptions of the quality of e-banking services in Bangladesh. By analyzing the factors that influence customers' perceptions and overall satisfaction, this study aims to provide banks with valuable insights and suggestions for enhancing their e-banking services.

2.0 Literature Review

E-banking has become an essential part of modern banking services. With the increasing demand for digital banking services, banks provide high-quality e-banking services to their customers. E-banking service quality has been recognized as one of the key factors that determine customers' behavior towards digital banking. Therefore, it is important to understand customers' behavior towards e-banking service quality.

Several studies have been conducted on the evaluation of e-banking service quality from the customers' perspective.

Sergey Yablonsky, (2016) defined E-banking as a system that enables customers, individuals, financial institutions and businesses to access their accounts, obtain information, and transact business transactions via public or private networks including the internet.

Lilesh, Gautam. in their research (2014) stated Internet Banking where they said, a service that permits access to customer bank accounts and can perform business transactions with the help of an internet network connected through a PC/ Computer anytime from the website of the Specific Bank.

Kassean (2012) surveyed 240 participants in Mauritius. At the end of the study, he revealed that convenience, security, confidentiality, ease of usage, accessibility and speed of connection, cost of connections and computer equipment, willingness to accept change and innovation, ease of navigation on the bank's website and time savings are the main factors being the adoption of internet banking services.

Sanchez and Gallie (2010) investigated the factors determining the usage of online banking in France. The authors compared the internet banking users of Mexican and French banks. They used the data from

available Mexican studies and survey analysis from 398 French bank users. The results of the survey revealed that there are six common factors affecting the usage of internet banking that are difficulty, compatibility, trust, third-party concerns and group influence.

Ying Wu et al. (2010) made a survey on 194 online banking customers in Taiwan and they concluded that consumers use internet banking rather than other banking channels for the benefits it has been providing. In contrast, Octovian and Daniela (2006) mentioned that Romanian customers do not adopt internet banking services because they lack information about internet banking. Ongkasuwan and Tantichattanon, (2002) explained that internet banking service is one kind of banking service in which customers can access their bank accounts and perform financial transactions from their bank accounts on their computers having an Internet connection.

Robinson, (2000) demonstrated that both the provider and customers get several benefits and this is why there is a rise in E-banking. From the perspective of banks, cost reduction is mainly related to E-banking. E-service quality can be explained as an overall customer evaluation of e-service delivery in the marketplace which is virtual.

Malik et al. (2013) in their research tried to inspect the relationship between service quality and customer satisfaction of two private sector banks. They explained that there may be different choices for different customers. But customers always are satisfied when providers can fulfill their needs and want from their perspective.

Berrocal (2009) narrated that where E-Banking has earned the status of essential services in achieving customer faith & confidentiality (loyalty) by making sure of customer satisfaction with proper health conditions.

Al-Amin and Rahman (2010) stated that better IT infrastructure, internal network and country domain are the major issues for the promotion of online banking in Bangladesh. Nupur (2010) stated that E-Banking can offer more reliable, accelerated & rapid services to customers than manual banking services compared with customer satisfaction.

Sadekin and Shaikh (2016) studied the effect of e-banking on the banking sector of Bangladesh and observed that e-banking requires fewer human resources, reduces carrying cash, provides shopping and other facilities by using cards, and demands fewer documents in banking operations.

Parasuraman et al. (1988) stated the SERVQUAL method originated from comprehensive quantitative research which is the study that identifies the service quality & enlightens the dimension. Liao and Cheung (2002) revealed that customers' expectations regarding accuracy, security, quick transaction, flexibility, user-friendliness, and convenience were the most important quality attributes that perceived the usefulness of internet-based e-retail banking.

Baten and Kamil (2010) argued that Bangladeshi customers do not have enough knowledge of e-banking which restrict the extension of e-banking in Bangladesh. Sadekin and Shaikh (2016) observed that customers feel insecurity from hijackers withdrawing and depositing money from ATM booths and its risks; market risks; and liquidity risks.

Rahman (2008) observed that online banking in Bangladesh faces several constraints like lack of safe telecommunication infrastructure, poor network facilities, lack of skilled human resource and training facilities, absence of supportive policies, guidelines, rules and regulations relating to e-transactions and the like.

Alam et al. (2007) assessed the development and prospects of internet banking in Bangladesh and observed that the lack of necessary infrastructure is the key challenge for adopting an Internet-based banking system in the country. They also found that nationalized commercial banks still failed to implement modern internet banking systems due to a lack of proper initiative from Bangladesh Bank.

Overall, the literature suggests that e-banking service quality significantly influences customers' behavior toward digital banking. Banks need to focus on providing high-quality e-banking services to improve customers' satisfaction, loyalty, adoption, and trust.

While the literature acknowledges the importance of e-banking service quality, there is a need for a more in-depth analysis of the specific dimensions that contribute to service quality. The existing studies have primarily explored the relationship between service quality and customer satisfaction. However, there is a research gap in understanding customer preferences and behavior toward e-banking beyond satisfaction. The reviewed literature provides insights into the evaluation of e-banking service quality, but there is a gap in conducting comparative analyses between different banks or regions. While some studies touch upon challenges related to IT infrastructure and security concerns, there is a need for more comprehensive research on the barriers that hinder e-banking adoption. Factors such as technological literacy, perceived risks, accessibility issues, and regulatory constraints could be investigated to better understand the obstacles customers face in embracing e-banking.

3.0 Research Methodology

3.1 Research Type

To achieve the objectives of this study, a qualitative and survey-based research approach has been adopted. The data has been collected through a survey questionnaire distributed among e-banking customers in Bangladesh. As the main objective of this study is to observe the customer's perceptions of Internet banking, thus, data for the paper survey is collected from individual bank customers in the city of Dhaka in Bangladesh. A sample of 470 clients of banks completed questionnaires concerning the customer's perception of Internet banking services.

The questionnaire consists of four parts. First Part is related to the customer's demographic characteristics such as gender, age, marital status, occupation, income, and educational level. The second part is related to customers' thoughts and habits about Internet banking. The third part is concerned with the main effective factors of internet banking such as ease of use, cost, awareness, accessibility, safety and privacy. The fourth part is focused on the improvement of the reliability, accessibility, assurance and responsiveness of e-banking services

In addition, the third part has been prepared according to a five-point Likert scale model from strongly disagree to strongly agree. Twenty-Seven questions

are asked in the survey to collect data about the bank customers. When preparing the questionnaire in this study, attention has been to understanding the questions and not be greater than the number of questions for survey respondents not tightened and to give reliable answers. The sample size is determined by the formula of the normal distribution technique for an unknown population size using a 90% confidence interval. By applying Likert scales, a standard structured questionnaire will be developed. The ranking will range from strongly agree to strongly disagree (ranging numerically from 1 = strongly agree, 2 = agree, 3 =neutral, 4 = disagree, and 5 = strongly disagree). SPSS 25 has been used for the evaluation.

3.2 Descriptive Statistics

Firstly, a conceptual model was created. Then, reliability analysis, regression analysis, frequency, and descriptive analysis were conducted in SPSS 25 computer software. According to the obtained results, the questionnaire has been evaluated. Finally, these evaluations are discussed in terms of customer perceptions towards Internet banking and interaction with bank managers in Bangladesh. Also chi-square test and test of normality are designed. For conducting various types of analyses IBM SPSS 25 has been utilized.

3.3 Regression Analysis

Regression analysis is used to explain the relationship between the dependent variable and one or more independent variables. In this paper, the regression model has developed in studying the relationship between customer perception and customer service satisfaction factor, security factor, cost factor, accuracy factor, availability factor, easy-to-use factor, responsiveness factor and assurance factor

$$Y_{CP} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + e_i$$

Here,

Y_{cp}	=	dependent variable which is represented by Customer's overall perception
β_0	=	Intercept coefficient for each dependent variable
β	=	Slope coefficients for each explanatory variable
X_1	=	explanatory variables which are determined by customer's service satisfaction factor
X_2	=	explanatory variables which are determined by the security factor
X_3	=	explanatory variables which are determined by the cost-effectiveness factor
X_4	=	explanatory variables which are determined by the accuracy factor
X_5	=	explanatory variables which are determined by the availability factor
X_6	=	explanatory variables which are determined by the easy-to-use factor
X_7	=	explanatory variables which are determined by the responsiveness factor
X_8	=	explanatory variables which are determined by the assurance factor
e_i	=	Standard error

3.4 Hypothesis Testing

The purpose of this study is to examine the perception of respondents towards e-banking services and to determine the exact or significant relationship between customer perceptions and those factors that affect e-banking services. The alternative hypotheses are stated below-

H_1: There is a positive relationship between educational level and types of

E-Banking services

H_2: Customer service satisfaction factor significantly increases the customer's overall perceptions

H_3: Security factor positively influences the customer's overall perceptions

H_4: Cost factor positively influences the customer's overall perceptions

H_5: Accuracy factor positively influences the customer's overall perceptions

H_6: Availability factor positively influences the customer's overall perceptions

H_7: Ease of use factor positively influences the customer's overall perceptions

H_8: Responsiveness factor positively influences the customer's overall perceptions

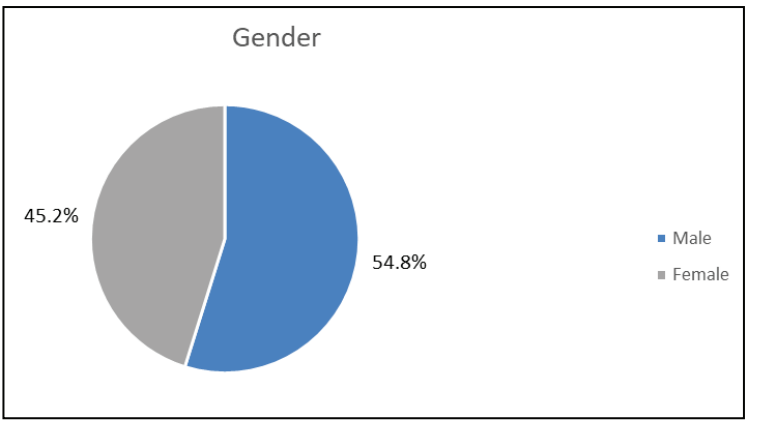
H_9: The assurance factor positively influences the customer's overall perceptions

4. Analysis and Findings

4.1 Survey Analysis

The survey is conducted on 471 respondents who are currently using E-Banking services in the different banks listed in Bangladesh. Through the structured questionnaire, two types of data are collected. Through the first five questions, demographic information about the respondents is gathered. Twenty-two questions are asked to collect information about the usage and perception of e-banking in Bangladesh.

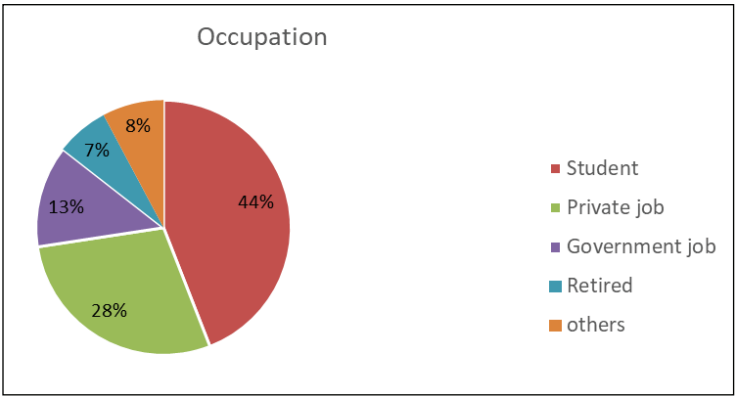
Figure 1: Percentage of Gender



Source: Primary Data

The figure provided represents the gender distribution among respondents in a survey on customer perception of e-banking. In this particular survey, out of a total of 470 respondents, 258 (54.8%) identified as male, while 212 (45.2%) identified as female. The number of female respondents is lower than male respondents in terms of customer perception of e-banking. Several factors could contribute to this imbalance such as sampling bias, social or cultural factors, methodology and personal preferences.

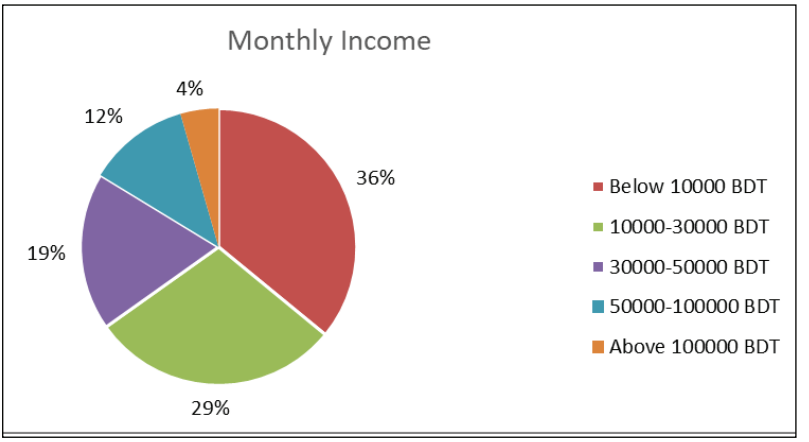
Figure 2: Percentage of occupation of the respondents



Source: Primary Data

The highest frequency and percentage are among students (44.1%). Students, especially in the younger age groups, are more likely to be comfortable with technology and have a higher need for e-banking services for managing finances. Private jobholders have the second-highest frequency and percentage (28.5%). Private jobholders often have busy schedules and may find e-banking convenient for managing their financial transactions. Government job occupations have a relatively lower frequency and percentage (13%). This could be due to the perception that government jobs provide stable salaries and benefits, reducing the need for frequent e-banking transactions. Retired individuals have the lowest frequency and percentage (6.7%). Retirees might prefer traditional banking methods or have less exposure to technology, resulting in a lower preference for e-banking.

Figure 3: Percentage of Monthly Income Level

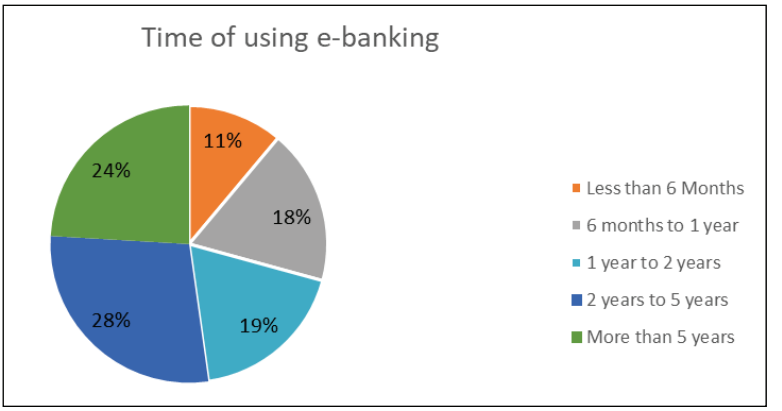


Source: Primary Data

Respondents with a monthly income below 10,000 BDT have the highest frequency and percentage (35.9%). This group might perceive e-banking as a

cost-effective and convenient option for managing their finances, given their limited income. As the income brackets increase, the frequency and percentage decrease. Individuals in higher income brackets might have access to other financial services or prefer traditional banking methods due to perceived security and personal interaction.

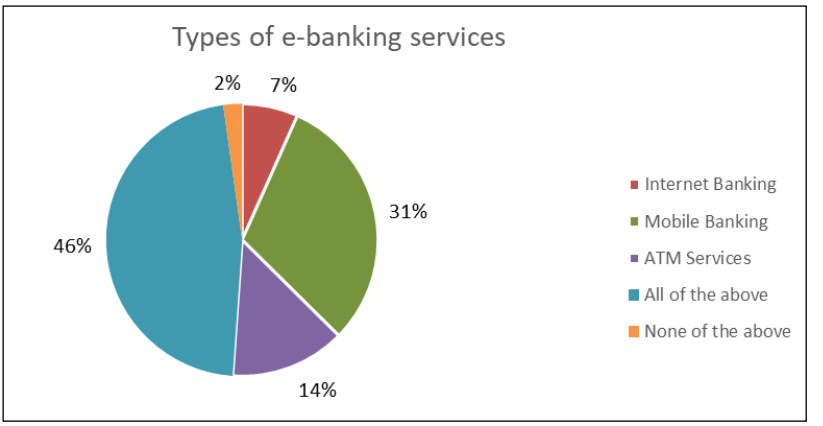
Figure 4: Time of Using E-Banking Services



Source: Primary Data

More than 5 years have the highest frequency and percentage (24.1%). Customers who have been using e-banking for an extended period are likely to have a positive perception based on their long-term experience, familiarity, and trust in the technology. Less than 6 months have the lowest frequency and percentage (11.1%). These customers might be relatively new to e-banking and could still be exploring the services or adjusting to the digital platform, leading to a slightly lower percentage.

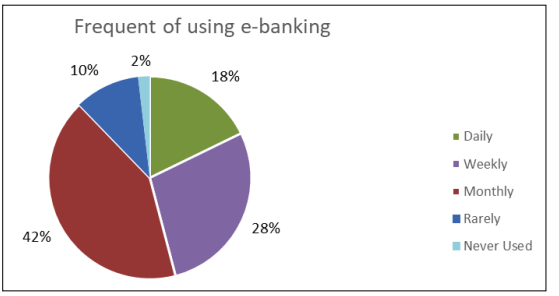
Figure 5: Percentage of Using Different Types of Services



Source: Primary Data

"All of the above" has the highest frequency and percentage (46.7%). This indicates that a significant portion of customers prefers to utilize multiple e-banking services, to meet their banking needs efficiently. Mobile banking has the second-highest frequency and percentage (30.7%). The popularity of mobile banking can be attributed to the increasing availability of smartphones and the convenience of performing banking transactions on mobile devices. Internet banking has the lowest frequency and percentage (6.7%). This could be influenced by factors such as limited internet access, security concerns, a preference for other e-banking channels or participants having limited knowledge about internet banking.

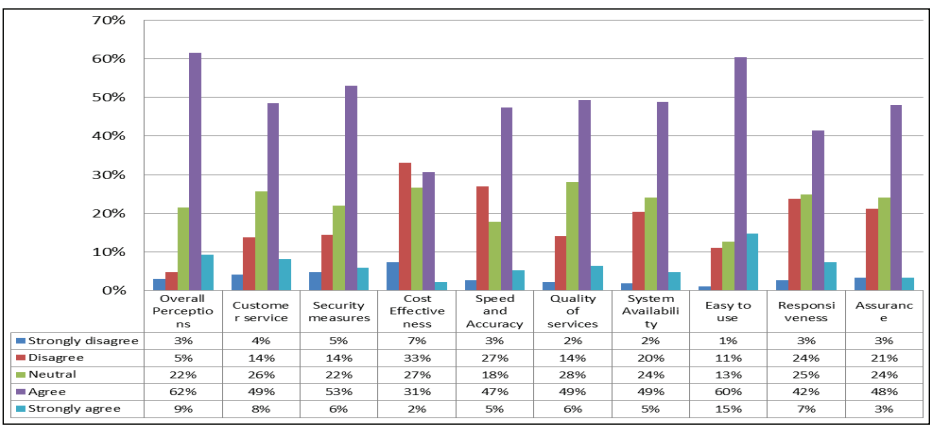
Figure 6: E-Banking Services Frequency of Uses



Source: Primary Data

Monthly has the highest frequency and percentage (41.9%). This suggests that a significant portion of customers prefers to use e-banking services monthly, likely for tasks such as bill payments, fund transfers, and balance inquiries. Daily and rarely have moderate frequencies and percentages. Rarely users might be more comfortable with traditional banking methods. Never Used has the lowest frequency and percentage (1.9%). These customers have not yet embraced e-banking or may have specific concerns or preferences that prevent them from using digital banking services.

Figure 7: Distributions of Customer Responses by E-Banking Perceptions



	Overall Perceptions	Customer service	Security measures	Cost Effectiveness	Speed and Accuracy	Quality of services	System Availability	Easy to use	Responsiveness	Assurance
Strongly disagree	3%	4%	5%	7%	3%	2%	2%	1%	3%	3%
Disagree	5%	14%	14%	33%	27%	14%	20%	11%	24%	21%
Neutral	22%	26%	22%	27%	18%	28%	24%	13%	25%	24%
Agree	62%	49%	53%	31%	47%	49%	49%	60%	42%	48%
Strongly agree	9%	8%	6%	2%	5%	6%	5%	15%	7%	3%

Source: Primary Data

The presented graph data shows comments from participants expressing their satisfaction/dissatisfaction with numerous topics related to E-Banking service features. Those questions are developed by using the five-point Likert Scale method. The topics are listed in the first column, and the frequencies and percentages of responses in different categories (Strongly disagree, Disagree, Neutral, Agree, Strongly Agree) are given. Here's a summary of the responses for each topic:

Overall Perceptions: 61.5% of respondents agreed that overall perceptions of e-banking services were good. This high percentage could be due to the increasing convenience and accessibility provided by e-banking services, leading to improved customer experiences. 9.30% of participants strongly agreed with statement about the perception. Total of 8 people strongly disagreed and 13 people disagreed with the statement.

Customer Service: Similar to overall perceptions, 48.5% agreed that customer service provided by e-banking service providers was good, with 8.1% strongly agreeing. Also, 13.7% and 4.1% of respondents disagreed and strongly disagreed respectively indicating that they might have faced challenges or had negative experiences with customer service related to e-banking.

Security Measures: 53% of the respondents agreed with the efficacy of security measures, with 5.9% strongly agreeing. This high percentage suggests that customers perceive e-banking to be secure and trustworthy. Around 21.9% strongly disapproved.

Fees Charged for e-banking: 48.5% of the respondents agreed and 2% strongly agreed with the fairness of fees charged for e-banking. This suggests that customers perceive the cost of using e-banking services to be fair and justifiable. However, 7.4% strongly disagreed and 33% disagreed.

Speed of Transactions: 47.4% of the respondents agreed and 5% strongly agreed with the e-banking transaction's pace. However, 27% disagreed and 3% strongly disagreed, indicating that they perceive e-banking transactions to be slow or have encountered delays in their experiences.

Quality of Services: 49.3% of the respondents agreed and 6% strongly agreed with the quality of e-banking services. Around 14.1% disagreed and 2% strongly disagreed, indicating that they might have had negative experiences or encountered issues with the quality of e-banking services.

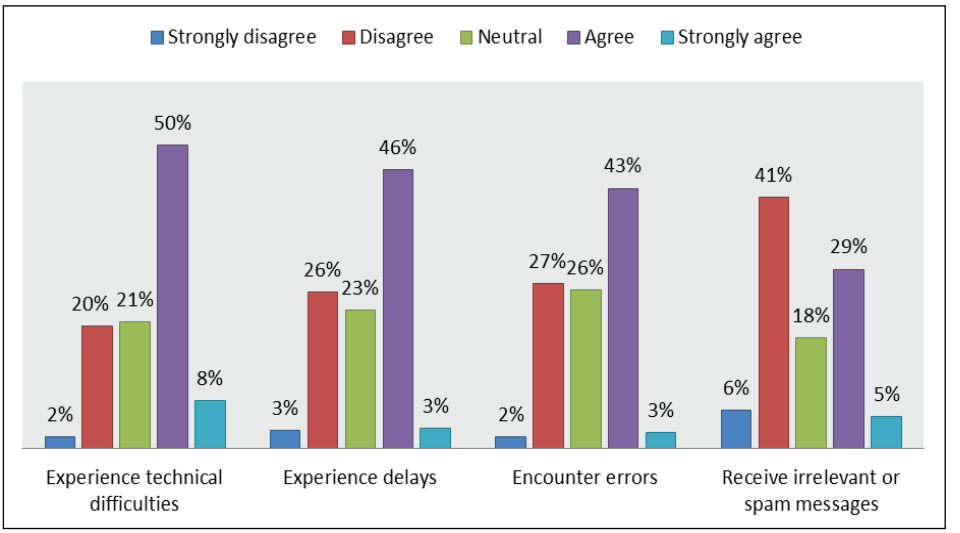
Availability of Services: 48.9% of the respondents agreed and 5% strongly agreed on the accessibility. This suggests that customers find e-banking accessible and convenient, allowing them to carry out transactions whenever needed. But, 20.4% disagreed and 2% strongly disagreed.

Easy to Use: 60.4% of the respondents considered e-banking simple to use, with 14.8% strongly agreeing. But, 11.1% disagreed 1% strongly disagreed.

Ready to Respond Enquiry: 42.5% of the respondents agreed and 7% strongly agreed that e-banking services were responsive to inquiries. This suggests that customers perceive e-banking providers as being responsive and proactive in addressing their queries and concerns. While 23.7% disagreed and 3% strongly disagreed.

Assurance: 48.1% of the respondents felt comfortable and secure when employing e-banking services. But, 21.1% objected, suggesting that they have concerns or doubts about the security of e-banking services.

Figure 8: Customer Perception of the Problems of E-Banking Service



Source: Primary Data

Customers face some problems while using e-banking services and based on those problems four questions were also added in five point Likert Scale analysis.

Experience Technical problems: 49.6% of the respondents approved and 8% strongly agreed with experiencing technical problems. However, 20.7% disagreed and 2% strongly disagreed.

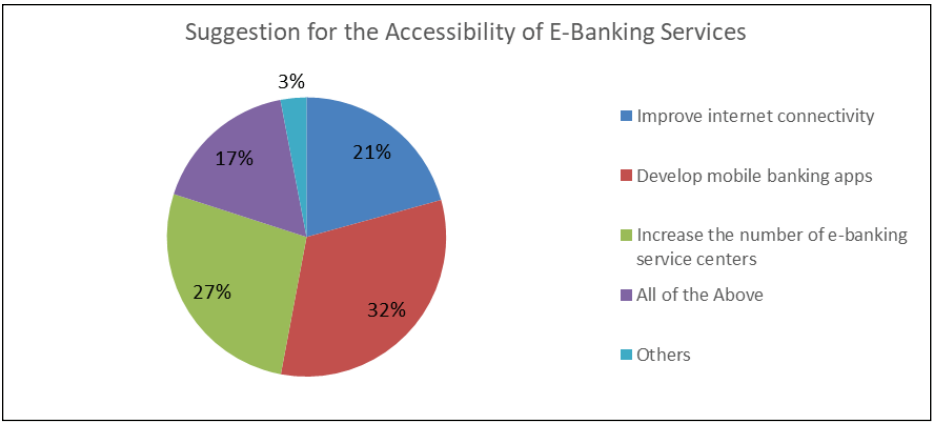
Experience Delays: 45.6% of the respondents agreed and 3% strongly disagreed with experiencing delays in e-banking. However, 25.6% disagreed and 3% strongly disagreed.

Encounter mistakes: 42.6% of the respondents agreed and 3% strongly agreed with experiencing mistakes in e-banking. However, 25.9% opposed and 2% strongly disagreed.

Receive Irrelevant or Spam Messages: 41.1% of the respondents agreed and 5% strongly disagreed with getting irrelevant or spam communications, while 18.1% disagreed and 6% strongly disagreed.

The data gives an overview of the respondents' opinions and perceptions about many aspects of e-banking services. The agreement or disagreement levels could identify areas that may need improvement from the standpoint of the respondents. The data also consists of suggestions for improvements in four different categories related to banking services: accessibility, responsiveness, reliability, and assurance.

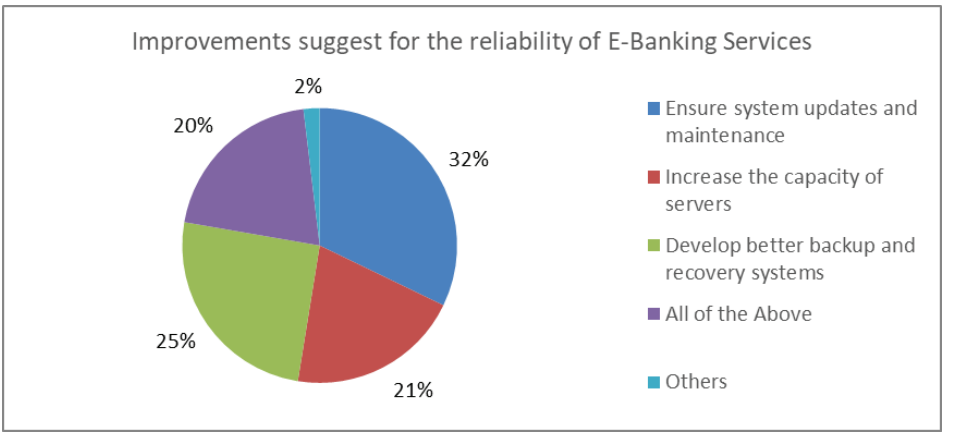
Figure 9: Improvement Suggest for the Accessibility of E-Banking Services



Source: Primary Data

For accessibility of the services 32.2% suggested banking mobile apps so clients could access their accounts and make transactions. Also 27% thought increasing electronic banking service locations can solve the problem of accessibility and 17% preferred all accessibility improvements. Only 3% made unspecified suggestions.

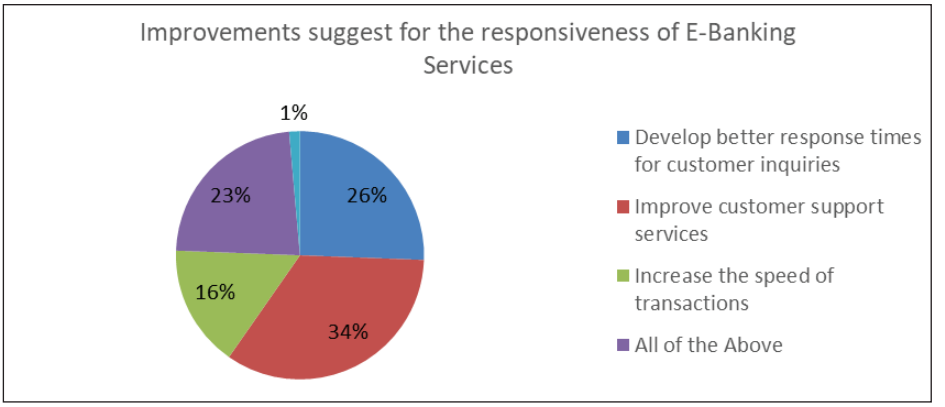
Figure 10: Improvement Suggest for the Reliability of E-Banking Services



Source: Primary Data

To ensure reliability, 32.2% respondents highlighted the importance of regular updates and maintenance to ensure the banking system's dependability and stability. 20.4% suggested increasing server capacity to manage higher demand and avoid service disruptions. 25.2% suggested improving data backup and recovery in case of system failure and 20.4% liked all dependability improvements. But 1.9% made non-data related suggestions.

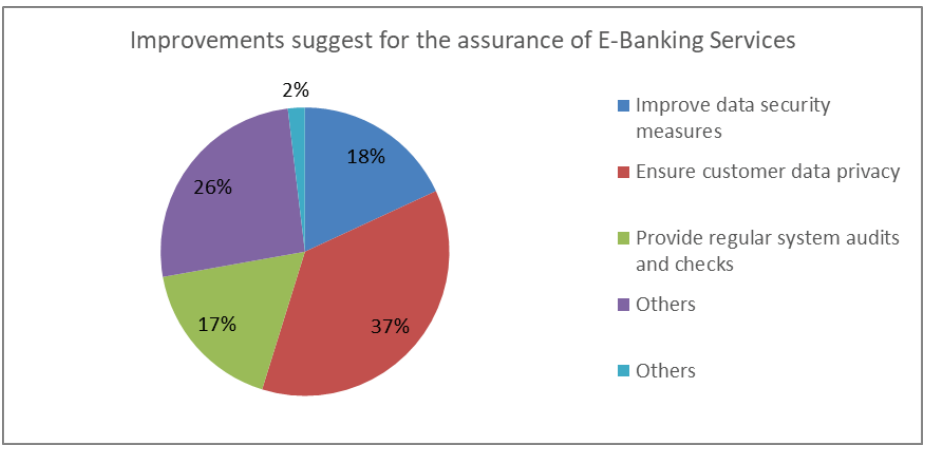
Figure 11: Improvement Suggest for the Responsiveness of E-Banking Services



Source: Primary Data

Total of 25.6% respondents advised speeding up client inquiries for better service to increase the responsiveness of the services, 34.1% suggested making customer support more accessible, helpful, and responsive and 15.9% said faster transaction processing improves customer experience. Out of 470 participants, 94 respondents (20%) favored all responsiveness improvements and 4.4% offered other options.

Figure 12: Improvement Suggest for the Assurance of E-Banking Services



Source: Primary Data

To improve the assurance of the services, 36.7% respondents emphasized the significance of safeguarding customer data and ensuring their privacy, 18.1% highlighted the importance of enhancing data security to protect customers' personal and financial information and 17.4% recommended conducting periodic audits and checks to ensure the integrity and security of banking systems. But 25.9% provided additional suggestions not specified in the data.

The given data presents a summary of

respondents' suggestions for improving different aspects of banking services. These suggestions were gathered through surveys or feedback processes and reflect the opinions and priorities of the respondents. The percentages indicate the relative importance or popularity of each improvement suggestion within its respective category.

4.2 Cronbach's Alpha Analysis

Cronbach's Alpha Analysis is used to test reliability for multiple Likert scale survey questions and measure internal consistency. The result of the analysis can be measured through the following table

Table 1: Internal Consistency of Cronbach's Alpha Analysis

Cronbach's Alpha	Internal Consistency
$\alpha < 0.5$	Unacceptable
$0.5 \leq \alpha < 0.6$	Bad
$0.6 \leq \alpha < 0.7$	Acceptable
$0.7 \leq \alpha < 0.9$	Good (Reliable)
$\alpha \geq 0.9$	Excellent (More Reliable)

Source: George, D., & Mallery, P. (2003). SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.). Boston: Allyn & Bacon

In this survey, 14 questions are developed through five point Likert Scale analysis. The reliability statistics offered include Cronbach's Alpha coefficients for analyzing the internal consistency or reliability of a measurement scale. By applying Croanbach's Alpha analysis the reliability test of individual questions is studied completely. The value of Croanbach's Alpha analysis was found to be 0.796 which examines the consistency of answers across the items in the scale, revealing how closely the items in the scale are associated with each other. The number of .796 shows a relatively excellent level of internal consistency and it is good or reliable for this survey.

4.3 Descriptive Analysis

Table 2 Skewness and Kurtosis

Descriptives	Mean	Median	Mode	Skewness	Z Score	Kurtosis	Z Score
Overall E-Banking services	3.69	4	4.62	-1.20	-8.12	2.10	7.13
Customer service	3.53	4	4.94	-1.02	-6.86	0.65	2.19
Security measures	3.43	4	5.14	-0.68	-4.57	-0.01	-0.03
Fees charged for E-Banking	2.87	3	3.26	-0.06	-0.37	-0.97	-3.28
Speed of transactions	3.26	4	5.48	-0.37	-2.51	-0.99	-3.35
Quality of E-Banking Services	3.43	4	5.14	-0.61	-4.15	-0.05	-0.16
Availability of E-Banking Services	3.34	4	5.32	-0.51	-3.41	-0.61	-2.07
Easy to use	3.77	4	4.46	-0.93	-6.30	0.67	2.26
Ready to Respond Enquiry	3.27	3	2.46	-0.27	-1.84	-0.80	-2.71
Feel secure	3.27	4	5.46	-0.56	-3.81	-0.61	-2.05
Experience Technical Difficulties	3.41	4	5.18	-0.50	-3.39	-0.59	-1.99
Experience delays	3.21	3	2.58	-0.40	-2.71	-0.90	-3.06
Encounter errors	3.17	3	2.66	-0.29	-1.94	-1.02	-3.46
Receive irrelevant or spam messages	2.86	3	3.28	0.23	1.55	-1.04	-3.52

Source: Authors survey

For the normal data mean is equal to the median and the median is equal to the mode, if all three value is equal that means the value is normally distributed. Based on the results of mean, median, and mode maximum questions are normally distributed although this method could not give exact results. So, Z-score is also utilized to identify if the questions are regularly distributed or not. If the result of the Z-score falls within the -1.96 to +1.96 significance threshold of a 5% confidence interval, data is normally distributed. Only four topics were normally distributed based on the skewness of the available data and two topics were normally distributed based on kurtosis. But the outcome of skewness was different from kurtosis, to avoid this difficulty Shapiro-Wilk tests were created further.

The non-normality of the data could be attributed to various factors, such as individual preferences, subjective opinions, biases, or specific experiences of customers related to e-banking. Customers may have diverse perceptions and varied experiences with e-banking services, leading to non-normal distributions in their responses.

Table 3: Normality Test

Tests of Normality	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Overall E-Banking services	0.35	470	0	0.78	470	0
Customer service	0.34	470	0	0.81	470	0
Security measures	0.29	470	0	0.86	470	0
Fees charged for E-Banking	0.21	470	0	0.88	470	0
Speed of transactions	0.30	470	0	0.84	470	0
Quality of E-Banking Services	0.26	470	0	0.85	470	0
Availability of E-Banking Services	0.30	470	0	0.84	470	0
Easy to use	0.36	470	0	0.80	470	0
Ready to Respond Enquiry	0.26	470	0	0.88	470	0
Feel secure	0.30	470	0	0.84	470	0
Experience Technical Difficulties	0.30	470	0	0.85	470	0
Experience delays	0.28	470	0	0.84	470	0
Encounter errors	0.27	470	0	0.84	470	0
Receive irrelevant or spam messages	0.26	470	0	0.87	470	0

Source: Authors' Survey

The table presents the results of tests of normality, specifically the Kolmogorov-Smirnov and Shapiro-Wilk tests, conducted on various aspects of e-banking perception. These tests are used to assess whether the data follows a normal distribution. The table includes different aspects of e-banking perception, such as overall e-banking services, customer service, security measures, fees charged for e-banking, speed of transactions, quality of e-banking services, availability of e-banking services, ease of use, readiness to respond to inquiries, feeling

secure, experience of technical difficulties, experience of delays, encountering errors, and receiving irrelevant or spam messages.

In this table, the significant values for all aspects of e-banking perception are reported as 0.00, indicating that the data significantly deviate from a normal distribution. This suggests that the distributions of perceptions related to e-banking aspects are not normal. In Shapiro test all values are less than 0.05 which indicates that the null hypothesis will be rejected. The null hypothesis is rejected means data is not normally distributed. The results suggest that the assumption of normality is violated. So, both the Kolmogorov-Smirnov and Shapiro-Wilk tests imply that the variables tested do not follow a normal distribution. It means that the data for these variables may exhibit skewness, kurtosis, or departures from a symmetric bell-shaped distribution.

The test results imply that the perceptions of e-banking aspects are likely skewed or exhibit non-normal patterns. It is important to note that this does not necessarily invalidate the data or the analysis but highlights that non-normality should be considered when interpreting the results. It may be necessary to use alternative statistical tests or techniques that are robust to non-normal data when analyzing the perceptions of e-banking.

Table 4: Chi-Square Tests for Educational level and types of E-Banking services usage

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	41.790a	16	0
Likelihood Ratio	40.386	16	0.001
Linear-by-Linear Association	9.811	1	0.002
N of Valid Cases	470		

a. 14 cells (56.0%) have expected count less than 5. The minimum expected count is .02.

Source: Author's Survey

Chi-Square test was introduced to identify the relationship between educational level and usage of online banking services types. The relationship is statistically significant as all the value is lower than the significance level of 0.05, indicating that there is a significant relationship between those two variables being tested. That means when the educational level increases, the use of e-banking service channels also increases. Thus, the null hypothesis will be rejected and an alternative hypothesis is accepted for this research.

The table provides the results of different Chi-Square tests, including the Pearson Chi-Square, Likelihood Ratio, and Linear-by-Linear Association tests. The associated p-value of the Pearson Chi-Square value is reported as 0, indicating a significant relationship between educational level and the usage of online banking service types. This means that the two variables are not independent. The p-value of the Likelihood Ratio is reported as 0.001, indicating a significant relationship based on this test as well. The Likelihood Ratio test is an alternative to the Pearson Chi-Square test and provides additional information about the goodness of fit of the observed frequencies to the expected frequencies. The Linear-by-

Linear Association test assesses the trend or pattern in the relationship between the variables.

The table also highlights an important note: 14 cells (56.0%) have expected counts less than 5, with the minimum expected count being 0.02. This indicates that some cell values have low expected frequencies, which can impact the reliability of the Chi-Square test results. When expected counts are below 5, the Chi-Square test may become less accurate and the significance of the results should be interpreted with caution.

To address the issue of low expected counts, the researcher can combine the cells with low expected counts to increase the expected counts and improve the reliability of the Chi-Square test. Also, increasing the sample size can help to achieve higher expected counts and improve the accuracy of the Chi-Square test. By implementing these strategies, you can increase the expected counts and ensure that the cell values have a larger proportion than 20%, which is recommended for more reliable statistical analysis.

4.3 Regression Analysis

Table 5: Results of Regression Analysis

Model	Unstandardized Beta Coefficient	Standard Error	Standardized Beta Coefficient	Standard Error	Sig.
Intercept	0.7700	0.1720	0.8100	0.1810	0.0000
Customer Service	0.4310	0.0470	0.5080	0.5400	0.0000
Security measures	0.1500	0.0440	0.1760	0.2100	0.0010
Cost Effectiveness	0.0180	0.0370	0.0220	0.0191	0.6240
Speed and Accuracy	-0.0730	0.0390	-0.0080	-0.0823	0.0600
System Availability	0.0860	0.0480	0.0180	0.0540	0.0740
Easy to Use	0.1930	0.0490	0.2060	0.0570	0.0000
Responsiveness	0.1030	0.0390	0.0330	0.0423	0.0050
Assurance	0.0410	0.0480	0.0470	0.0540	0.4000
R Square	0.6140	-	-	-	-
Adjusted R Square	0.6010	-	-	-	-
Std. Error of the Estimate	0.5190	-	-	-	-
Sig. F Change	0.0000	-	-	-	-
ANOVA					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	111.1781	8	13.8973	51.5906	0.0000
Residual	70.3071	461	0.2694		
Total	181.4852	469			

Source: Author's Survey

Multiple regression models were used to analyze the significance of those perceptions about seven components of online banking. To develop the model properly customer service satisfaction factor, security factor, cost factor,

accuracy factor availability factor, easy-to-use factor, responsiveness factor, and assurance factor was used.

Regression Equation

$Y= 0.770 + 0.431X_1 + 0.150X_2 + 0.018X_3 – 0.073 X_4 + 0.086X_5 + 0.193X_6 + 0.103X_7 + 0.041X_8 + e_i$

The intercept of 0.770 indicates that assuming all other parameters remain constant, customer overall perceptions will be 0.0059. This has no practical meaning.

Customer Service: The coefficient of the variable customer service satisfaction level is 0.431 means that if all other factors are held constant then a 1 percentage increase in customer service satisfaction level will decrease customer perception level by 43.10%. *Security Measures:* For every 1% rise in security measures, the dependent variable is expected to increase by 43.10%; assuming all other parameters remain constant. The p-value (0.001) suggests that this relationship is statistically significant. *Speed and Accuracy:* This predictor variable has a coefficient of -0.073, indicating a negative relationship with the dependent variable. However, the p-value (0.060) suggests that this relationship is not statistically significant. *System Availability:* A 1% increase in system availability is associated with an 8.6% increase in the dependent variable. The p-value (0.074) suggests that this relationship is statistically significant. *Easy to Use:* For every one percent increase in ease of use, the dependent variable is expected to increase by 19.3 percent. The relationship between dependent and independent variables is statistically significant *Responsiveness:* A one percent increase in responsiveness is associated with a 10.3% increase in the dependent variable. The p value is less than the significance level of 0.05 so the relationship is statistically significant. The p value of the cost-effectiveness and assurance factor is higher than the significance level of 0.05 and those values are not statistically significant for this model. So, there is no relationship between customer perception level and cost factor. Also there is no relationship between customer perception and assurance factor. Therefore, fees charged by the bank and assurance about e-banking services do not affect customer perception of e-banking services.

F test and R-square

The significance value of the F test is 0.00, which is less than a 5% significance level, indicating that the variables in this study are significant when considered together. The R-square value represents the proportion of variance in the dependent variable that can be explained by the independent variables included in the regression model. In this case, the R-square value is 0.614, indicating that approximately 61.4% of the variance in the dependent variable is accounted for by the independent variables in the model.

5. Conclusion

The findings of this study shed light on various aspects of customer perceptions and preferences regarding e-banking services. The survey data revealed a higher participation rate among male respondents and a dominance of younger individuals, particularly students, in the sample. Mobile banking emerged as the most popular e-banking service, emphasizing the importance of convenience and accessibility in banking

services. Respondents generally expressed positive perceptions about e-banking, with customer service and security measures standing out as significant factors influencing overall perceptions. The study highlights the need for continuous improvement in e-banking services. It recommends developing user-friendly mobile banking apps, enhancing customer support services, and strengthening data security measures. Moreover, addressing issues related to accessibility and ease of use can help make e-banking services more inclusive and appealing to a wider range of customers. Education and awareness initiatives are also recommended to bridge the gap between different educational backgrounds and increase adoption rates. Overall, the study contributes to the understanding of customer perceptions about e-banking and provides valuable insights for banks and financial institutions to refine their strategies and improve customer satisfaction. By considering the suggestions and recommendations outlined in this study, banks can enhance their e-banking services, deliver superior customer experiences, and foster stronger relationships with their customers in the digital banking era.

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