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Effect of e-banking practices in the banking sector of Bangladesh-customers' perception

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Abstract

In the present study, the quality of E-Banking is reviewed with short- and long-term effect on the perception of bank consumers. The Opinion of 400 banker and customer was collected by survey questionnaire method in the month of June-July, 2022 on a five-point Likert scale. The response variables are classified as E-Banking quality, E-Banking short term effect, and E-Banking long term effect by factor analysis and reliability test. Based on the above classification structural equation model (SEM) is developed with demographic variables. The findings indicate that as the quality of electronic banking rises, potential short-term effects may also rise noticeably. Also, with the increase of E-Banking quality long term effect may increases significantly. The bankers observed that the quality of E-Banking is good, but the customer identifies the quality of E-Banking is not sufficient. E-banking is still in its infancy and is being expanded in new directions. In order to ensure optimum customer satisfaction, it must be addressed and new options for the consumer must be created, which calls for ongoing research. The banking authority may take the required steps to improve the quality of e-banking, which will have an impact on both the short- and long-term consequences of e-banking and will therefore continue in Bangladesh.

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1. Introduction

E-banking, or electronic banking, is the delivery of financial services using the Internet. In E-banking simple, fast, easily accessible, and reasonably priced monetary services are available at any time, day or night. Consumers may save a lot of money on their banking transactions by switching to e-banking, which is the wave of the future and can be accessed via Internet, phone, or other electronic delivery channels. At the moment, electronic banking is very popular in Bangladesh. Short Message System banking, Tele Banking, Push and Pull services, Automated Teller Machines, Fast Track, and other e-banking options have all been deployed by Bangladesh's commercial banks. E-banking provides a wide range of services, including retail and fiduciary for individual clients and wholesale for business clients. E-banking, or electronic banking, refers to the use of computers and other intelligent devices to facilitate financial transactions and provide access to account information and other banking service. E-commerce and e-business are now becoming more and more essential to companies because of the developing global economy. However, no in-depth study on the impact of e-banking on Bangladesh's banking industry has been conducted. Online banking may be a helpful component of e-business. Recently, the Bangladesh Bank pushed for the implementation of an automated clearing house system. This accelerated the shift to online banking from the manual banking system.

2. Literature Review

E-banking is a technology based online system and it is new and fairly unknown to certain individuals in Bangladesh, owing to the digital divide, as well as the varying levels of Internet experience and settings. Since 2001, customers in Bangladesh have had access to online banking services. Hasan, Baten, Kamil, and Parveen (2010) observed a significant gap in customers' existing knowledge of Internet banking. Shahriar (2014) performed research in 2014 and found that, unlike foreign banks, online banking was only recently made available by a select group of large commercial and national banks, along with a few regional banks. Despite significant investments made by various financial institutions, the adoption of Internet banking has not met the projected expectations. Taking into account the results of Dutch Bangla Bank Ltd. (DBBL) and BRAC Bank Ltd., Huda and Chowdhury (2017) research the potential of e-banking in Bangladesh. In order to measure the effectiveness of these two financial institutions, seven trend equations have been tried out over a range of operations. From 2008 to 2015, the analysis showed that both banks' ATM and customer recovery rates, branch counts, service fees, IT service revenue, card costs, computer equipment and software depreciation, other operating costs, cash carrying fees, net income, and earnings per share were on an upward trend. In addition, this study uncovered the great possibility of E-banking in Bangladesh by highlighting the various types of E-banking instruments in Bangladesh and the E-banking performance of two pioneer banks, namely DBBL and BRAC Bank (Malarvizhi & Geetha, 2008). A survey of customers' attitudes about online banking was conducted in 2013 by Mondal and Saha (2013).

Despite the potential issues of internet and electricity accessibility, the study revealed that customers expressed satisfaction with the bill payment and cash transfer services. Nevertheless, financial institutions may enhance their corporate social responsibility endeavours and persist in advocating for the enactment of legislation that is conducive to online operations (Debnath & Mahmud, 2007). To investigate the current state and future potential of electronic banking in Bangladesh, Biswas, Taleb, and Shinwary (2011) performed a comprehensive field study. Despite widespread poverty and illiteracy, he claims e-banking has a big place in Bangladesh like other nations of the globe (Niranjanamurthy & Chahar, 2013). According to Salehi and Alipour (2010), the introduction of e-banking will have far-reaching, beneficial effects on the Iranian banking industry. They also demonstrated the inefficiency of banking transactions in Iran owing to customers' lack of awareness of available electronic banking services. Bankers and Iranian lawmakers can overcome this problem by establishing widespread e-banking services (Salehi & Alipour, 2010).

Ali (2010) took a look at how things stood with Bangladesh's online banking and e-commerce infrastructure. He emphasised the notion that conducting business activities through online platforms accelerates productivity levels that are already substantial, and ensures a positive trajectory for the growth of Gross Domestic Product (GDP). E-commerce as a whole satisfies the customer's need for immediate service by use of several expedited distribution methods. Nigeria's telebanking and electronic payment systems were evaluated by Agboola (2006).

Lack of sufficient infrastructure, including telecom services, power supply, etc., was highlighted as the key barrier to successful tele-banking operations in the country. In addition, it explained how tele-banking services boost client loyalty and increase the bank's market share.

According to research by Malarvizhi and Geetha (2008), the uptake of e-banking services in India is hindered by customers' worries about security and privacy. The study uses a structured questionnaire to collect data from 200 participants and analyse it with descriptive statistics and regression. The findings indicate that individuals are inclined to this transition of online banking services, contingent upon the banks' ability to furnish adequate security measures and transparent guidelines.

3. Objective of the Study

The 1st objective of the study is to determine the short-term effect of E-Banking practice. Also, the 2nd objective of the study is to determine the long-term effect of E-Banking practice. Finally, the 3rd objective of the study is to determine the demographic effect of E-Banking practice in Bangladesh.

3.1. Varieties of Online Banking

Customers now have a wide variety of options for conducting banking business without physically visiting a branch. These options are variously referred to as "personal computer banking," "online banking," "internet banking," "telephone banking," and "mobile banking." The term "e-banking" may be considered to be an umbrella term for all of these different types of electronic banking.

3.1.1. Tele-Banking

The telephone is used to access the tele-banking service. In order to gain access to an account, it is imperative to establish contact with a designated telephone number. Additionally, there exists a multitude of service options that can be selected from.

3.1.2. PC Banking

The growing recognition of how essential it is to have a working knowledge of computers has contributed to an increase in the number of people using personal computers all around the world. The astonishing decline in the price of microprocessors has also contributed to the quickening of the adoption of computers. The financial transactions that a consumer completes on their personal computer are referred to as "PC banking."

3.1.3. Mobile Banking

In point of fact, mobile banking is nothing more than an expansion of the idea behind internet banking. The boundaries between the many varieties of online banking are gradually blurring, and the emergence of mobile banking is a particularly noteworthy instance of this trend. However, mobile banking is still in its infancy and has a long way to go before it becomes mainstream. There are many drawbacks in the usage of such terminals, including the slower transmission speed of the WAP standard and the limited quantity of information that is delivered. The numerous additional elements should also be considered.

3.2. Hypothesis

Hypothesis (Null) 1: There is no discernible connection between the quality of e-banking and the influence on the short term.

Hypothesis (Alternative) 1: There is a clear relationship between E-Banking quality to short term effect.

Hypothesis (Null) 2: There is no apparent connection between E-Banking quality to long term effect.

Hypothesis (Alternative) 2: A notable correlation exists between the quality of E-Banking and its long-term impact.

Hypothesis (Null) 3: There is no obvious relationship of E-Banking response type (customer and banker) to short term effect and long-term effect.

Hypothesis (Alternative) 3: There is an obvious correlation of E-Banking response type (customer and banker) to short term effect and long-term effect.

Hypothesis (Null) 4: There is no visible correlation of gender to short term effect and long-term effect.

Hypothesis (Alternative) 4: There is a visible link of gender to short term effect and lengthy impact.

Hypothesis (Null) 5: There is no visible association of age group to short term effect and long-term effect.

Hypothesis (Alternative) 5: There is a visible association of age group to short term effect and long-term effect.

Hypothesis (Null) 6: There is no significant effect of education to short term effect and long-term effect.

Hypothesis (Alternative) 6: There is a visible link of education to short term effect and lengthy impact.

4. Material and Method

To study the effect of E-Banking, a survey is conducted within the banker and customer of different bank in Bangladesh. For the survey, seven E-Banking quality questions are selected as independent variable and E-Banking effect is selected as short-term effect with seven questions and long-term effect with seven questions as dependent variables from the literature review and experience of the authors. Then the questionnaire is validated with factor analysis with reliability test. The survey questionnaire is pre-tested with 20 respondents of bankers and customers for the final survey. The ultimate survey instrument is selected subsequent to any necessary modifications and rectifications that are made in light of the feedback provided by the participants. The final version is subsequently validated through factor analysis, utilising the responses obtained from the ultimate cohort of participants. During the period spanning June and July of 2022, a total of 450 individuals were surveyed for their perspectives. The final questionnaire was disseminated through various channels, including electronic mail, WhatsApp, LinkedIn, and in-person discussions. The methodology employed for the sampling process was stratified random sampling utilising a randomly assigned block design.

It is observed that some of the respondents did not react to the questionnaire, answered all of the questions with the same rank, or did not answer many of the questions. So, best 400 of the respondents were ultimately selected from the data for the subsequent analysis. This selected response data is coded in Statistical Package for Social Science (SPSS) computer package using a five-point Likert scale as 1 representing poor quality and 5 representing excellent quality for the E-Banking quality variables. Also, short-term effect and long-term effect variables are coded as 1 strongly disagree with the opinion and 5 strongly agree with the opinion. Among the valid 400 respondents, 146 (36.5%) are bank customer and 254 (63.5%) are banker respondents. Again, 262 (65.5%) male respondents and 138 (34.5%) female respondents are selected. The below 30 years age group of the respondents are 64 (16%) respondents, 30 – 40 years age group of the respondents are 148 (37%) respondents, 40 – 50 years age group of the respondents are 144 (36%) respondents and above 50 years age group of the respondents are 44 (11%) respondents. Among the respondents, it was found that 110 individuals (27.5%) held a graduate level educational qualification, 244 individuals (61%) held a master's level educational qualification, and 46 individuals (11.5%) held a PhD level educational qualification. Now the descriptive analysis values are computed for each answer variable in the survey response data. In this stage, the Kaiser-Meyer-Olkin Measure for Sampling Adequacy test shows the suitability of survey response variables to categorize into three factors as E-Banking quality, short term effect, and long-term. These factors are validated with Cronbach's Alpha values. The present study employs a Structure Equation Model (SEM) to investigate the impact of E-Banking quality and demographic variables on both short-term and long-term effects. The selected model is tested for validity by convergent validity with average variance expected (AVE) and discriminant validity with maximum shared variance (MSV) test. Finally, Spearman rho correlation, Kolmogorov Smirnov Test, ShapioWilk Test, MannWhitney Test and Kruskal-Wallis Test are conducted to determine the significant effect of demographic variables to E-Banking quality.

5. Result and Discussion

Table 1 displays the survey respondents' descriptive statistics (Number, Minimum, Maximum, Total, Mean, and Standard Deviation).

Table 1. Summary data from the questionnaire variables.

Sl. No.	Questionnaire	Variable name	N	Min.	Max.	Sum	Mean	Std. dev.
1.	E-Banking quality	Average E-banking quality	400	2.00	5.00	1333	3.334	0.876
a.	E-Banking service quality	Quality1	400	2	5	1322	3.31	0.997
b.	Security status of banking transaction	Quality2	400	2	5	1376	3.44	0.999
c.	Speed quality of online transaction	Quality3	400	2	5	1302	3.25	0.986
d.	Facility of ticket, shop pay and utility bills	Quality4	400	2	5	1342	3.36	0.933
e.	Personal computer and internet connection	Quality5	400	2	5	1326	3.31	1.024
f.	Response quality of the medium	Quality6	400	1	5	1318	3.29	1.049
g.	Impact on social life	Quality7	400	2	5	1348	3.37	1.008
2.	Short term effect	Average short-term effect	400	2.29	5.00	1575	3.937	0.785
a.	Reduces extra transaction time	Short1	400	2	5	1522	3.80	1.039
b.	E-banking reduces carrying cash	Short2	400	2	5	1554	3.88	1.027
c.	Increases productivity and efficiency of banker	Short3	400	2	5	1586	3.97	0.903
d.	Eliminates duplication and wastage of document	Short4	400	2	5	1592	3.98	1.026
e.	Minimize maintenance cost and shortage cost	Short5	400	2	5	1582	3.95	0.951
f.	E-banking required minimum man power	Short6	400	2	5	1594	3.99	0.810
g.	Curtail security cost	Short7	400	2	5	1592	3.98	0.895
3.	Long term effect	Average long-term effect	400	2.1	4.86	1542	3.856	0.698

Sl. No.	Questionnaire	Variable name	N	Min.	Max.	Sum	Mean	Std. dev.
a.	Create new opportunities of jobs for unemployment people	Long1	400	2	5	1518	3.80	0.880
b.	Participate in the country's economic health	Long2	400	2	5	1508	3.77	0.865
c.	Proper planning and monitoring	Long3	400	2	5	1550	3.87	0.867
d.	Increased comfort and time saving	Long4	400	2	5	1560	3.90	0.813
e.	Quick and continuous access to information	Long5	400	2	5	1568	3.92	0.834
f.	Better cash management and fund management	Long6	400	2	5	1536	3.84	0.864
g.	Reduced costs and convenience	Long7	400	2	5	1556	3.89	0.842

The study reports the mean and standard deviation values for E-Banking quality across different time frames. Specifically, the mean values range from 3.25 to 3.44 with corresponding standard deviation values ranging from 0.933 to 1.049 for the overall E-Banking quality. For short term effects, the mean values range from 3.80 to 3.99 with corresponding standard deviation values ranging from 0.810 to 1.039. Similarly, for long term effects, the mean values range from 3.77 to 3.92 with corresponding standard deviation values ranging from 0.813 to 0.880. The mean with standard deviation of average E-Banking quality, average short-term effect and average long-term effect are 3.334 ± 0.876, 3.937 ± 0.785 and 3.856 ± 0.698 respectively. The Kolmogorov-Smirnov and Shapiro-Wilk test statistics result of average E-Banking quality are 0.137 (0.000) and 0.926 (0.000), for Average short-term effect are 0.179 (0.000) and 0.906 (0.000) and for average long-term effect are 0.108 (0.000) and 0.954 (0.000) respectively. As the p values are less than 0.05, the response values of the E-Banking quality, Average short-term effect and Average long term effect variable are not normally distributed. So, non-parametric test (Spearman rho correlation, Mann-Whitney Test and Kruskal Wallis Test are conducted to determine the correlation and significant difference of short-term effect and long-term effect with demographic variables (respondent type, gender, age group and education)).

In the above result, the mean and standard deviation values overlap each other. So, factor analysis may be conducted to classify the questionnaire into different factor and convergent validity (AVE) and discriminant validity (MSV) test is conducted to validate the selected model., which is shown in Table 2.

Table 2. Factor analysis, Cronbach's Alpha and validity test result values of response variables.

Rotated component matrix[a]					Kolmogorov	Shapiro-Wilk	Convergent	Discriminant
Variable name	Component			Cronbach's alpha	-Smirnov average	Average test (Sig.)	Validity (AVE)	Validity square of
	1	2	3		Test (Sig.)			MSV
Quality1	0.893			0.950	0.137 (0.000)	0.926 (0.000)	0.755	Quality and Short term 0.192
Quality2	0.886							
Quality3	0.879							
Quality7	0.878							
Quality5	0.863							
Quality4	0.846							
Quality6	0.836							
Short2		0.930		0.921	0.179 (0.000)	0.906 (0.000)	0.659	Short term Long term 0.133
Short5		0.836						
Short1		0.823						
Short3		0.801						
Short7		0.801						
Short4		0.754						
Short6		0.721						
Long2			0.913	0.918	0.108 (0.000)	0.954 (0.000)	0.653	Quality and Long term 0.125
Long3			0.874					
Long7			0.814					
Long6			0.789					
Long4			0.785					
Long1			0.766					
Long5			0.698					

Note: Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization.
a. Rotation converged in 4 iterations.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy for factor analysis: 0.873 (level of significance: 0.000). Therefore, factor analysis may be used to apply the splitting of the response variable into many components. Table 2 (factor analysis) shows the findings of the survey broken down into three groups: (1) E-Banking quality (factor loading 0.893 to 0.836), (2) E-Banking short term effect (factor loading 0.930 to 0.721), and (3) E-Banking long term effect (factor loading 0.913 to 0.698). All measurements for each factor have excellent reliability, as shown by the factor loading result, which reveals that all factor loadings are larger than 0.400. E-Banking is now specifically referred to as (i) E-Banking. Service (ii) Banking transaction security (iii) Online transaction speed (iv) Ticketing, retail payment, and utility bill payment (v) Access to a computer and the internet (vii) How it affects one's personal and professional relationships. Short-term effects include (i) less time spent on transactions, (ii) less need to carry cash around, (iii) greater productivity and efficiency on the part of bank employees, (iv) the elimination of duplicate documents, (v) reduced costs associated with maintenance and shortages, (vi) reduced manpower requirements, and (vii) reduced security expenses. The long-term effects are listed as follows: (i) providing unemployed people with new job opportunities; (ii) contributing to the nation's economic health; (iii) careful planning and monitoring; (iv) greater ease of use and less wasted time; (v) instantaneous and uninterrupted access to data; (vi) improved cash and fund management; and (vii) lower costs and greater convenience.

The value of each element as E-Banking quality according to Cronbach's Alpha is 0.950, while the value of the E-Banking short term impact is 0.921 and the value of the E-Banking long term effect is 0.918 accordingly. The fact that each of the Cronbach's Alpha values is more than 0.7 demonstrates that the survey answer questionnaire containing these three elements is highly trustworthy, valid, and consistent. A structural equation model for the short-term effect of e-banking and the long-term effect of e-banking from e-banking quality with demographic factors has been built on the basis of the results of the factor analysis that was presented above Figure 1.

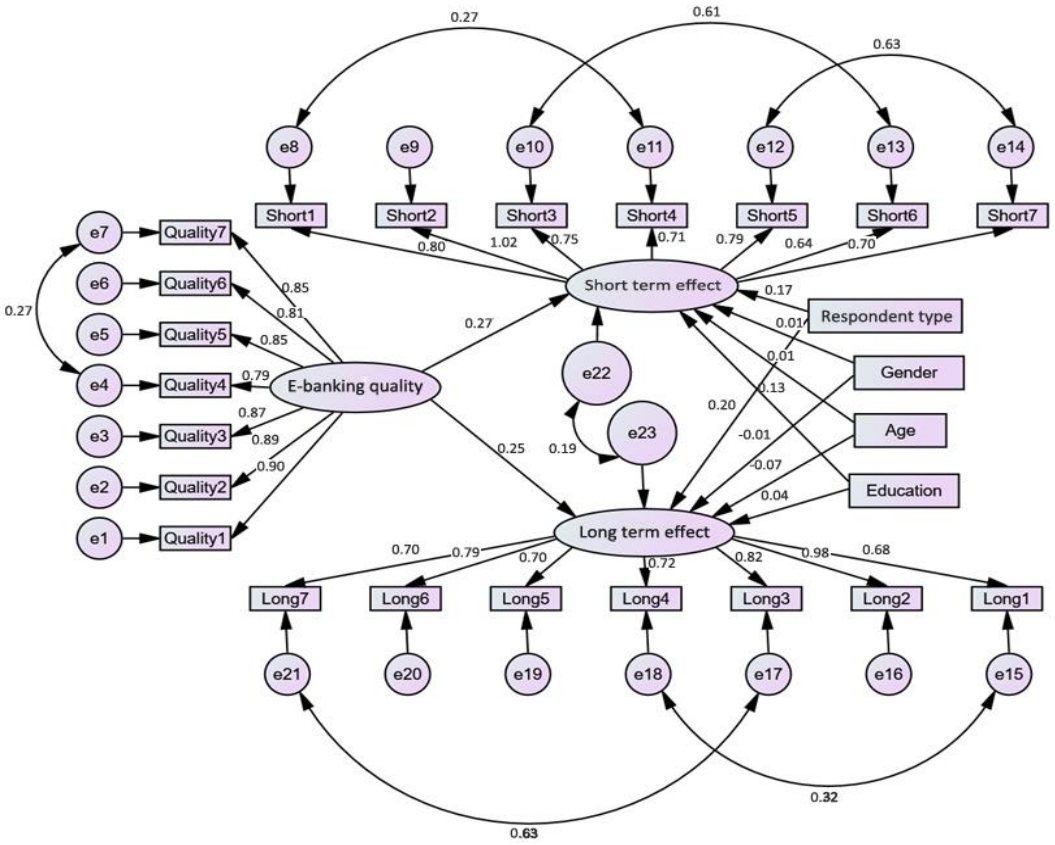

Figure 1. Structure equation model for effect of e-banking.

According to the structural equation model presented earlier, the standarized regression weights for E-Banking quality range from 0.79 to 0.90, while the standarized regression weights for E-Banking short term effect range from 0.64 to 1.02, and the standarized regression weights for E-Banking long term effect range from 0.68 to 0.98. In this case, each of the factor loadings are extremely high and statistically significant (p 0.05). E-Banking quality, E-Banking short term effect, and E-Banking long term effect all have error variances that range from 0.19 to 0.37, – 0.05 to 0.53, and 0.03 to 0.42, respectively. These error variances are all very high and significant (p 0.05), respectively. Both the short-term effect, which has an error variance of 0.60, and the long-term effect, which has an error variance of 0.32, are large and significant (p 0.05). The covariance

values range from 0.08 to 0.24, and they are significant as well (p less than 0.05). The model has the following statistics: 2 /df equals 2.242, which is less than three; the goodness of fit index (GFI) is 0.901, which is greater than 0.9; the comparative fit index (CFI) value is 0.956, which is greater than 0.9; the incremental fit index (IFI) is 0.956, which is greater than 0.9; the Tucker Lewis index (TLI) is 0.950, which is greater than 0.9; the normed fit index (NFI) is 0.924, which is greater than 0.9 and Root Mean Square Error of Approximation is 0.056, which is less than 0.08. Because the model index values in this case fulfil all of the requirements of the survey, we may conclude that the model is well-fitted.

According to Table 2, the expected average variance (AVE) for assessing convergent validity of E-Banking quality is 0.755. Similarly, for E-Banking short term effect and E-Banking long term effect, the AVE values are 0.659 and 0.653, respectively. Here the AVE values are greater than 0.5, which indicates model has achieved convergent validity. To test the discriminant validity, maximum shared variance (MSV) for E-Banking quality and short-term effect is 0.192 (from Table 2), which is less than square root of AVE for E-Banking quality (0.869) and square root of AVE of short-term effect (0.812). The maximum shared variance (MSV) for both short-term and long-term effects is reported as 0.133 in Table 2. This value is lower than the square root of the average variance extracted (AVE) for the short-term effect (0.812) and the square root of the AVE for the long-term effect (0.808). Also, maximum shared variance (MSV) for E-Banking quality and long-term effect is 0.125 (from Table 2), which is less than square root of AVE of E-Banking quality (0.869) and square root of AVE of long-term effect (0.808). So, the selected model has achieved the discriminant validity.

The path coefficient of E-Banking quality to short term effect is 0.25 ($p < 0.000$). As the p-value is less than 0.05, Hypothesis (Null) 1 is rejected. So, E-Banking quality has a significant effect on short term effect. The Spearman rho correlation between average E-Banking quality and average short-term effect is 0.201 ($p < 0.000$). So, E-Banking quality has a strong positive correlation on short term effect. It may be concluded that with the increase of E-Banking quality short term effect may be increases.

The path coefficient of E-Banking quality to long term effect is 0.16 ($p < 0.000$). As the p-value is less than 0.05, Hypothesis (Null) 2 is rejected. So, E-Banking quality has a significant effect on long term effect. The Spearman rho correlation between average E-Banking quality and average long-term effect is 0.198 ($p < 0.000$). So, E-Banking quality has a strong positive correlation on long term effect. It may be concluded that with the increase of E-Banking quality long term effect may be increases.

Table 3. Performance of short-term effect and long-term effect with demographic variables.

Measured variable	Measured value	Number of observations	Mean value	Standard deviation	Test	Test-statistic value	Sig (2-tail)
Short term effect	Customer	146	3.695	0.818	Mann-Whitney test (z)	4.668	0.000
	Banker	254	4.075	0.732			
Long term effect	Customer	146	3.683	0.728	Mann-Whitney test (z)	3.412	0.001
	Banker	254	3.956	0.662			
Short term effect	Male	262	3.934	0.752	Mann-Whitney test (z)	0.921	0.357
	Female	138	3.942	0.847			
Long term effect	Male	262	3.841	0.693	Mann-Whitney test (z)	0.646	0.518
	Female	138	3.885	0.710			
Short term effect	Below 30	64	4.023	0.701	Kruskal Wallis Test (Chi-square)	1.567	0.667
	30 – 40	148	3.946	0.781			
	40 – 50	144	3.874	0.812			
	Above 50	44	3.987	0.832			
Long term effect	Below 30	64	3.978	0.658	Kruskal Wallis Test (Chi-square)	5.812	0.121
	30 – 40	148	3.908	0.707			
	40 – 50	144	3.743	0.711			
	Above 50	44	3.877	0.653			
Short term effect	Graduate	110	3.737	0.837	Kruskal Wallis Test (Chi-square)	9.741	0.008
	Masters	244	4.017	0.763			
	PhD	46	3.988	0.696			
Long term effect	Graduate	110	3.647	0.684	Kruskal Wallis Test (Chi-square)	18.445	0.000
	Masters	244	3.982	0.657			
	PhD	46	3.690	0.799			

Table 3 presents the analysis results of Performance of short-term effect and long-term effect with demographic variables. The average short-term effect for 146 clients has a mean and standard deviation of 3.995, 0.818, whereas for 254 bankers it is 4.075 0.732. Short-term effect is significantly related to the E-Banking response type (client and banker) (path coefficient = 0.29, p 0.0001). The short-term effect of the third null hypothesis is rejected since the p value is less than 0.05. For this reason, the sort of answer made via E-Banking significantly affects the immediate results. The mean short-term impact is 4.668 (p 0.0001) according to the Mann-Whitney Test (z) statistic. The immediate effects of electronic banking are notably dependent on the nature of the reactions exhibited by both the financial institution and the customer. Since bankers have a substantially larger short-term effect (4.075) than clients (3.995). Therefore, the banking authorities may take appropriate steps to improve the quality of E-Banking to boost the short-term impact of E-Banking.

The average long-term effect for 146 clients is 3.6830.728 and for 254 bankers it is 3.9560.662, as measured by mean and standard deviation. E-Banking response type (client and banker) has a 0.25 (p 0.0001) path coefficient to long-term effect. The long-term consequence of rejecting the third null hypothesis (H3) since the p-value is less than 0.05. Therefore, the type of response provided by an E-Banking system is highly consequential for the results obtained over time. The average long-term impact has a Mann-Whitney Test (z) statistic of 3.412 (p 0.0001). Therefore, the type of reaction from both customers and banks to E-Banking matters greatly for its long-term impact. Since bankers have a substantially larger long-term impact (3,956) than clients (3,683). Therefore, the banking authorities may take appropriate measures to improve the quality of E-Banking in order to boost E-Banking's long-term impact.

The average short-term impact for 262 men is 3.934 0.752 and for 138 females it is 3.942 0.845. Short-term impact is related to gender, with a path coefficient of 0.01 (p = 0.886). There is insufficient evidence to reject Hypothesis (Null) 4 for a short-term impact, as the p-value is larger than 0.05. Therefore, gender plays no role in the immediate aftermath. The average short-term impact has a z-score of 0.921 (p = 0.357) according to the Mann-Whitney U test. Therefore, there is no difference in the short-term impact across sexes.

Long-term effects were measured in 262 men and 138 women, with a mean and standard deviation of 3.841 0.693 and 3.885 0.720, respectively. Gender (male and female) has a path coefficient of 0.02 (p = 0.795) to long-term influence. Hypothesis (Null) 4 for long-term effect cannot be rejected since the p-value is larger than 0.05. Therefore, there is no substantial difference in outcome based on gender. The mean long-term impact is 0.646 (p = 0.518) according to the Mann-Whitney Test (z) statistic. Therefore, there is no substantial difference between male and female in the long-term impact.

The study reports the mean and standard deviation values for the average short-term effect across different age groups. Specifically, the mean with standard deviation value for the Below 30 age group (consisting of 64 respondents) is 4.023 ± 0.701, for the 30 – 40 age group (comprising 148 respondents) it is 3.946 ± 0.781, for the 40 – 50 age group (with 144 respondents) it is 3.874 ± 0.812, and for the Above 50 age group (consisting of 44 respondents) it is 3.987 ± 0.832. The study found that the path coefficient between age groups (Below 30, 30 – 40, 40 – 50, and Above 50) and short-term effects was 0.01, with a p-value of 0.900. There is insufficient evidence to reject Hypothesis (Null) 5 for a short-term impact, as the p-value is larger than 0.05. Therefore, differences in age do not significantly alter the immediate consequences. The average short-term impact is 1.567 (p = 0.667) according to the Kruskal-Wallis Test (Chi-Square). Accordingly, there is no discernible difference in short-term impact among age groups (30, 30–40, 40–50, and 50+).

The mean with standard deviation value of average long-term effect of Below 30 age group (64 respondents) it is 3.978 ± 0.658, with 30 – 40 age group (148 respondents) it is 3.908 ± 0.707, with 40 – 50 age group (144 respondents) it is 3.743 ± 0.711 and Above 50age group (44 respondents) it is 3.877 ± 0.653. The path coefficient of age group (Below 30, 30 – 40, 40 – 50 and Above 50) to short term effect is 0.04 (p = 0.170). There is insufficient evidence to reject Hypothesis (Null) 5 for long-term effect because the p-value is larger than 0.05. Therefore, differences in age do not substantially alter the outcome. The average long-term impact is 5.812(p = 0.121) according to the Kruskal-Wallis Test (Chi-Square). Therefore, there is no discernible difference in the effects over time between the younger (30–40) and the older (50+) age groups.

Table 4. Test statistic value of short term and long-term effect of education.

Dependent variable	Education		Mann-whitney test (z) statistic value	Sig (2-tail)
Short term effect	Graduate	Masters	3.053	0.002
		PhD	1.654	0.098
	Masters	PhD	0.786	0.432
Long term effect	Graduate	Masters	4.031	0.000
		PhD	0.173	0.862
	Masters	PhD	2.371	0.018

The mean with standard deviation value of average long-term effect of graduate education (110 respondents) is 3.647 ± 0.684, master's education (244 respondents) is 3.982± 0.657 and PhD education (46 respondents) is 3.690± 0.799 (Table 3). The path coefficient of education (graduate, masters and PhD) to long

term effect is 0.04 (p = 0.418). As the p-value is higher than 0.05, Hypothesis (Null) 6 is not rejected for long term effect. But the Kruskal Wallis Test (Chi-Square) statistic value of average long-term effect is 18.445 (p = 0.000). So, education group (graduate, masters and PhD) has a significant effect on long term effect. From the Table 4, the z-statistics value of graduate and masters is 4.031(p = 0.000) and masters and PhD education is 2.371 (p = 0.018), so there is a significant difference of long-term effect for graduate with master's education and masters with PhD education. But the z-statistics value of graduate and PhD education is 0.173 (p = 0.862), so there is no significant difference of graduate with PhD education. So, the banking authority may take necessary promotion activity for the graduate and PhD customer to improve the E-Banking quality.

6. Conclusion

E-banking practices are moderately practiced in Bangladesh. Masses were not very much aware of the practice. Covid-19 brings new momentum at E-Banking services in Bangladesh. The people of the country received most of the facilities of the bank through E-banking services during the COVID-19 pandemic, when it was a great challenge to think to go outside of the home. Most of the customers became familiar with the e-banking services during this time. So, the banks also tried to bring the services at the door of the customer for their survival. The study shows, E-Banking quality has significant effect and positive correlation with short term and long-term factors. But gender and age group have no significant effect on short term and long-term factors. The attainment of a Master's degree has a substantial impact on one's graduate educational qualifications in the short term. The attainment of a master's degree holds a considerable impact on long-term outcomes in comparison to the attainment of a graduate or PhD degree. o, the banking authority may take necessary promotional activities for the graduate and PhD customers to improve the E-Banking quality in the short term and long-term effect. As a result, the quality of E-Banking will improve and sustain for a long term in Bangladesh.

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