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Relationship between Cashless Banking and Bank's Profitability of Bangladesh

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Abstract:
Cashless banking is one of the most progressive banking policies nowadays especially in this modern era of digitalization. The quest of this study is to explore the relationship of the profitability of the bank's industry with the cashless banking of Bangladesh. Return on Equity (ROE) and Return on Asset (ROA) have been taken as the proxy of profitability whereas transactions volume of Mobile Financial Services (MFS), Automated Teller Machine (ATM), Debit Card and Internet Banking Fund Transfer (IBFT) have been used as the proxy of cashless banking industry in Bangladesh. By collecting secondary data of seven years period from the annual report of the Central Bank of Bangladesh, this study applies a multiple regression technique to explain the relationship between bank's profitability and cashless banking. The result shows that IBFT has a significant positive impact and ATM & Debit card has a significant negative impact on the ROE whereas MFS and IBFT has positive and Debit Card has a negative impact on the ROA of banking industry of Bangladesh. It is revealed from the findings that almost all the factors have positive/negative impact either on ROA or ROE but only IBFT have a positive and significant impact on both ROA and ROE. The findings of this study are somewhat significant for the regularity authorities and stakeholders of bank and non-bank financial institutions as well as for the academicians and government as a whole.

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1. Introduction

Information technology has changed the Banking business behavior and redefined Banking operations in the new era of the banking industry. As such Banks cannot avoid information technology due to its vital role in maintaining both locally and globally competitive edge. The cash flows of most of the Banks are intricately connected to the adoption of information technology (Laudon and Laudon, 2001). Now a day's strategy, policies, and implementation regarding information technology have become the foremost concern to all banks since it has a direct impact on the management decisions, plans, and products and services to be offered by Banks (Adewuyi, 2011). At present Banks all over the world are concentrating more on their e-banking activities, and are expanding their electronic banking activities through the use of wireless networks and venturing into some new areas of electronic commerce globally. Banks offer e-banking services to lessen paperwork and personnel as a cost-saving strategy as well as to protect or expand market share. The banks are also extending their customer base as a sustainable opportunity through the internet and in this way they are exceeding their traditional as well as existing boundaries.

Bangladesh is predominantly a cash-based society, an overwhelming majority of the total retail payments are done in hard cash. In order to achieve the vision of Digital Bangladesh, Government is working relentlessly to digitize different services including banking and payments services. Almost every type of digital payment has acquired popularity and is increasing in Bangladesh but particularly the mobile financial services industry is remarkable for its speedy expansion. Moreover, digital payments for Government-to-Person (G2P) platform have expanded significantly and full digitization of G2P payments is in progress. Currently, about 69% of the value of the payments made by governments are digital. Different government ministries and offices including Banking Sector have undertaken a number of projects involving digital technologies, among which, new digital payments initiatives are on the top priorities. As implemented these systems will further broaden the depth and breadth of digital payments in Bangladesh and contribute towards establishing a less-cash society. Major infrastructure established in this period includes an Automated Cheque Clearing system, Electronic Funds Transfer Network, Card Payment Switch, and Real-Time Gross Settlement System. Side-by-side to achieve financial inclusion, the bank-led Mobile Financial Services (MFS) was introduced. MFS alone has been able to attract more than 72 million populations under the formal financial services network while most of these people were outside the formal financial services earlier.

However, the worldwide acceptance of the internet as a delivery channel for banking products and services has increased; it provides new business openings for banks as well as for customers. These new opportunities carry risks and benefits at the same time. E-banking is different from traditional payment in many ways such as inquiry and information processing systems as well as it operate through a different delivery channel. Various factors affect the decision to adopt E-banking such as customer service enhancement and competitive costs, which stimulate banks to assess and formulate their electronic commerce strategies (Kondabagil, 2007). Banks are focusing increasingly on their cashless banking activities, and offer e-banking services to defend or expand market share or as a cost-saving strategy to reduce paperwork and personnel. Thus, cashless payment systems and instruments have a significant contribution to a greater extent for the effectiveness and stability of the financial system.

Bank customers in Bangladesh are subjected to spend several hours doing simple transactions as compare to cashless banking. According to Ashike (2011), cashless banking can shrink

transactions and processing time, offers multiple payment options, and gives instant notification on all transactions of customers account. Spending long hours in banks and using burdensome documentation reduces customer satisfaction as well as escalates transactions cost and other overhead costs of bank (Ogu, 2011). It is obvious that the increased operating cost of banks may reduce the operating profits for banks. So, there is a direct relation between banks profitability with the implementations of cashless banking. Since in Bangladesh cashless policy is now adopting by all the banks as per directions of the Central Bank then it is also necessary to assess the impact of this policy. Based on the circumstances, the objective of this current study is to examine the relationship between cashless banking and bank's profitability of the banking industry of Bangladesh. To guide the present study, the following research questions are formulated:

i. Does the adoption of a cashless banking policy in Bangladesh affect the profitability of the banking industry?
ii. Does the use of Mobile Financial Services (MFS), ATMs, Debit Card and Internet Banking Fund Transfer (IBFT) transactions as the proxy of cashless banking affect the Return on Equity (ROE) and Return on Asset (ROA) as the proxy of the profitability of banking industry in Bangladesh?
iii. To what extent do the cashless transactions affect the profitability of the banking industry in Bangladesh?

2. Literature Review:

A considerably large number of literatures of different scholars have been studied to observe the connection between cashless banking and bank profitability. Cashless transactions can be defined as those transactions that happened by using ATM, Debit card, Credit card, and others that do not need any hard cash. This can also use for the payment of buying goods and services (Matthew and Mike, 2016). At present almost entire world has been suffering from Covid-19 pandemic and economic activities remain stuck with in a sudden. The pandemic has already damaged the real economic activity, and the limit is yet to know. People are about to prisoned at their home and they are not performing their normal lives. During this hard period most of the individuals are depending on the digital tools mostly on mobile phone and trying to do all types of financial transactions such as paying bills for necessary consumer goods and utility bills, transfer money, mobile recharge, donations, withdraw money, loan installment, insurance premium etc. through mobile banking technologies. COVID-19 causes unprecedented damages to the economy of a country than other natural and human-made crises like climate change, nuclear wars, natural disasters, and local tragedies. Moreover, COVID- 19 has relatively wide range of impacts on financial sectors, namely banking and insurance, stock market, and leasing (Goodell, 2020). Again, the virus may spread through monetary transactions with paper currencies such as, banknotes and coins (Gardner, 2020). Addressing this issue, many central banks from different countries such as China, South Korea, Kuwait, Kenya and others have been stressed on issuing bank notes to the public is free from the viruses (France-Presse, 2020).

Cashless payment might reduce financial risk such as default risk, liquidity risk as well as systematic risk by enhancing the efficiency of the payment system (Akara and Asekome, 2018). Also, Cashless and E-banking can reduce cost, saves time and resources by providing 24/7 services to all interested parties for a basic reason (Kamboh and Leghari, 2016). Cashless policy can promote economic growth and boosted the capacity of banks for lending the unprivileged sector by maintaining more liquidity. It can also contribute to reducing financial corruption by ensuring proper infrastructure and trust (Odior and Banuso, 2012). The E-payment system has a positive influence on the economic development in terms of the GDP of Nigeria and using ATMs for financial transactions has a direct effect on economic growth while other forms of e-

payment methods have a negative effect on economic growth (Oginni et al., 2013). Again cashless policy can help to attract more inward foreign direct investment, create employment and even help to reduce robbery incidences (Muyiwa et al., 2013).

Le and Ngo (2020) conducted a study on the determinants of bank profitability in 23 countries using Generalized Method of Moments (GMM) and found that number of ATMs and POS terminal can accelerate the bank profitability. The adoption of a mobile payment system by merchants increases sales and reduces payment processing costs as well as shows a positive influence on sales growth of the business (Mallat and Tuunainen, 2008). Again in Malaysia, e-payment systems have a negative effect on sales growth and a positive impact on consumers purchase intentions when considering the risk perception of an E-payment system conducted on adult consumers (Cheng et al., 2011). The cashless banking system has been recognized as the most reliable and successful banking system all over the world. It has a more positive impact on banking organizations than the manufacturing sector (Vijayalakshmi et al., 2019). An empirical study conducted on the Nigerian Commercial Banks showed that banking efficiency in rendering services to customers' has been improved due to initiate the e-banking services. The study also found that mobile banking improves the service delivery of banks in terms of transactional convenience, savings of time, and quick transaction alert that has to mend the customer's satisfaction and relationship (Adewoye, 2013). Again in another study in Nigeria using cluster sample technique found that most banks in Nigeria have improved customer relationship and satisfaction with effective electronic banking systems (Olorunsegum, 2010). Gakii (2012) observed the factors determining the use of three types of mobile financial services such as mobile payments, mobile money transfers, and mobile banking in Kenya by applying a multinomial logit model considering age, gender, and education level, tariff of service, and volume of transactions as explanatory factors. The study revealed that the use of mobile payments and mobile banking depends on gender, education, and wealth of individuals as well as the tariffs of service and volume of transactions. Andrianaivo and Kpodar (2011) conducted a study on information and communication technology (ICT), financial inclusion, and growth with evidence from African countries. They used a sample of African countries from the year 1988 to 2007 and shown the mobile phone rollout as an impact of information and communication technologies (ICT) on economic growth. Kaur and Kaur (2013), in a study on bank-wise comparison among customers to evaluate the customer satisfaction by the service quality of internet banking facilities, found no significant difference among the Public-sector, Private-sector and Foreign Banks regarding the facilities of the customers' usage of internet banking services in India. In Malaysia Mohan (2013), conducted a study and used Technology Acceptance Model (TAM) and considered factors were performance expectancy, effort expectancy, social influence, facilitating condition, trust, behavioral intentions. The study found that perceived ease of use positively while self-efficiency and trust are negatively related to the intention towards online banking. Malady (2016) argued that consumers from many developing markets are not active users of the digital channels due to a lack of trust and confidence of consumers in the new channels although they may have the credentials of digital banking to access the digital financial system. The deficiency of trust in digital finance channels by customers has a negative effect on a digital-finance-led financial inclusion program in emerging and developing countries, and due to the lack of strong consumer protection institutions and frameworks, this problem has emerged as a greater problem in those countries. The consequence is that having greater financial data inclusion (or having digital banking credentials) does not necessarily improve access to finance for poor individuals if individuals do not trust digital channels.

A substantial number of researches have been performed in Nigeria and Bangladesh regarding the relationship between cashless policy and bank profitability. Osazevbaru et al. (2014)

conducted a research on Nigerian banks to show the comparison of profits of banks under cash-based policy with a cashless regime and revealed that cashless economic policy has a positive effect on banks' profit as well as reduce cost of operations and increase the inclusion of unbanked population. Itah and Ene (2014) used ATM, POS, and web-based transaction (WBT) to observe the effect of cashless banking on the aggregate return on equity (ROE) of deposited money Banks in Nigeria and results showed that ATM and POS has positive and WBT has a negative relation to ROE. Akara and Asekome (2018) conducted a research by taking ATM and POS as proxy for cashless policy and ROA and ROE as proxy for profitability to examine the impact of cashless policy adoption on the profitability performance of commercial banks in Nigeria. The study revealed that ATM and POS increase the ROA and ROE. In Bangladesh, some researches are available on e-banking and mobile banking. Islam et.al (2019) showed that the convenient and responsive system, transaction security in ATM booth, and technical difficulty are significant factors that affect the customer's experience in mobile banking of Bangladesh. This study recommends that the policymakers and regulators should emphasize the security and technological difficulty factors in ATM booth as well as convenient and responsive system of mobile banking transaction. Because these factors hindered the enhancement of the mobile banking services in Bangladesh and in this way customers experience may be bad in doing mobile banking transactions. Kabir (2013) observed that the users are confused regarding their security in using mobile banking by the perceived risk factors such as performance risk, security/privacy risk, time risk, social risk, and financial risk that are negatively related to the usages of mobile banking. While the other factors are positively connected with the intention to use mobile banking services such as integrity, ability, perceived usefulness, benevolence, perceived ease of use, relative cost, and time advantages. It is also observed that the most dominant factors are security and trust whereas ineffective advertisement negatively influenced the customer satisfaction of mobile banking. Although in Bangladesh, various researches have been done on E-commerce, E-banking, digital finance, financial inclusion, and mobile banking but pieces of literature on the relationship between banks' profitability and cashless banking policy are rare or very limited. Very recently Huq and Hossain (2020) has conducted a study to show the relationship between e-banking and commercial bank performance in Bangladesh and found that only Internet banking is statistically significant and has an impact on ROA and ROE. From the reviews of above mentioned previous works of literature, it is mentionable that no outright research has been initiated based on the impact of cashless banking on the bank's profitability in Bangladesh except the study of Huq and Hossain (2020). But their study took only State-owned and private commercial banks of Bangladesh as a sample and excluded the foreign commercial banks and other specialized banks. Their study also uses only 5 years of data and didn't reflect the whole banking industry. So to bridge these gaps, the current study has taken 7 years of data from the entire banking industry of Bangladesh to examine the relationship of cashless banking with the profitability of the banking industry of Bangladesh.

3. Research Methodology

3.1 Population and Data Collection

To conduct the present study, only secondary data have been used. Since the study is based on the overall banking industry of Bangladesh, the sample includes all the scheduled commercial banks operating in Bangladesh. The evaluation period is from the fiscal year 2012-2013 to 2018-2019 because this is the period that witnessed the major growth of cashless banking services in Bangladesh. Those data are collected mainly from the annual report of Bangladesh Bank (the central bank of Bangladesh) as well as monthly reports of Bangladesh bank, financial statements of commercial banks, write-ups, and various publications.

3.2 Data Description

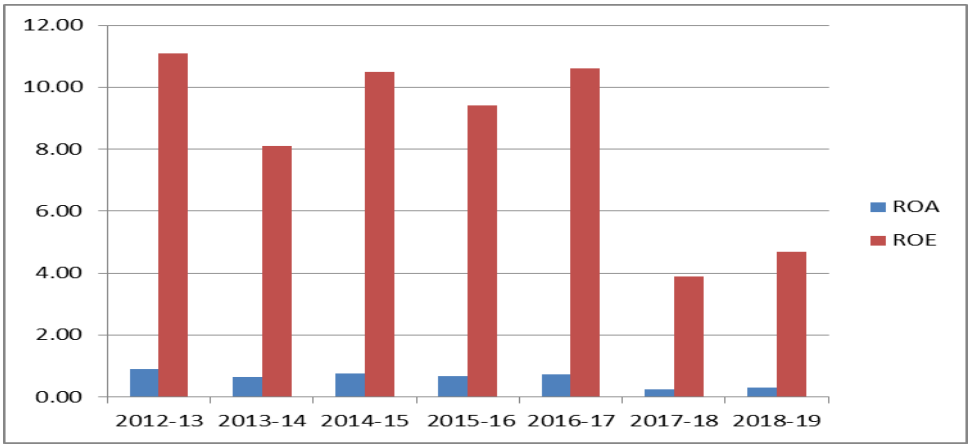

Figure 1. ROA and ROE of Banking Industry of Bangladesh

Figure 1 shows the Return on Equity (ROE) and Return on Assets (ROA) of all scheduled banks operating in Bangladesh from the fiscal year 2012-13 to 2018-19. It is reported that ROA and ROE have the maximum value in the year 2012-13. From the year 2013-14 to 2016-17, it shows a stable trend. But both ROA and ROE has decreased in the year 2017-18 and 2018-19.

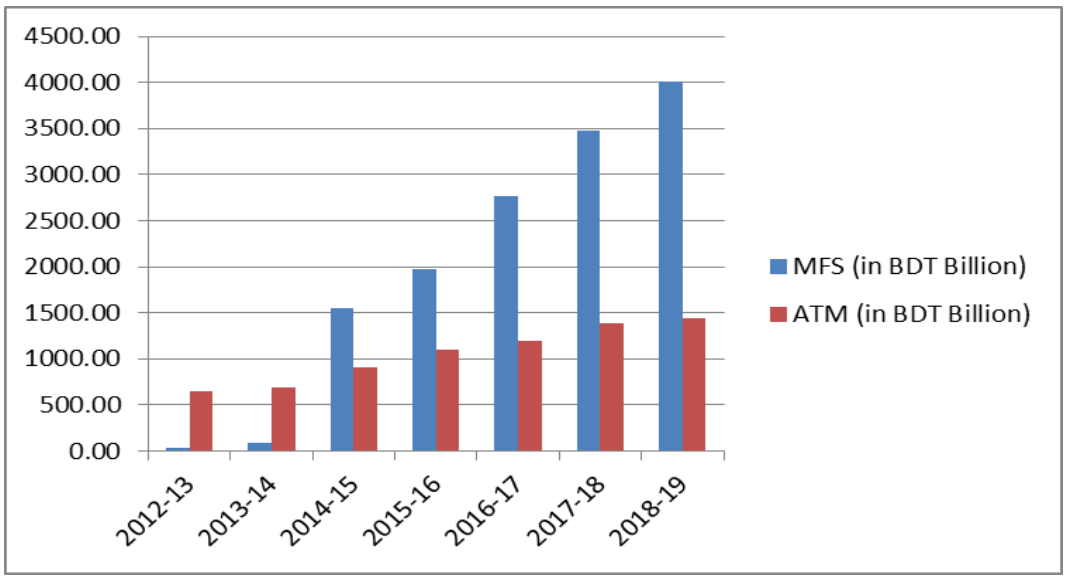

Figure 2. MFS and ATM transactions volume of Banking Industry of Bangladesh

Figure 2 shows the transaction volume of Mobile Financial Services (MFS) and ATMs for the 7 years of the Bangladeshi banking industry. Both the MFS and ATMs display an increasing trend.

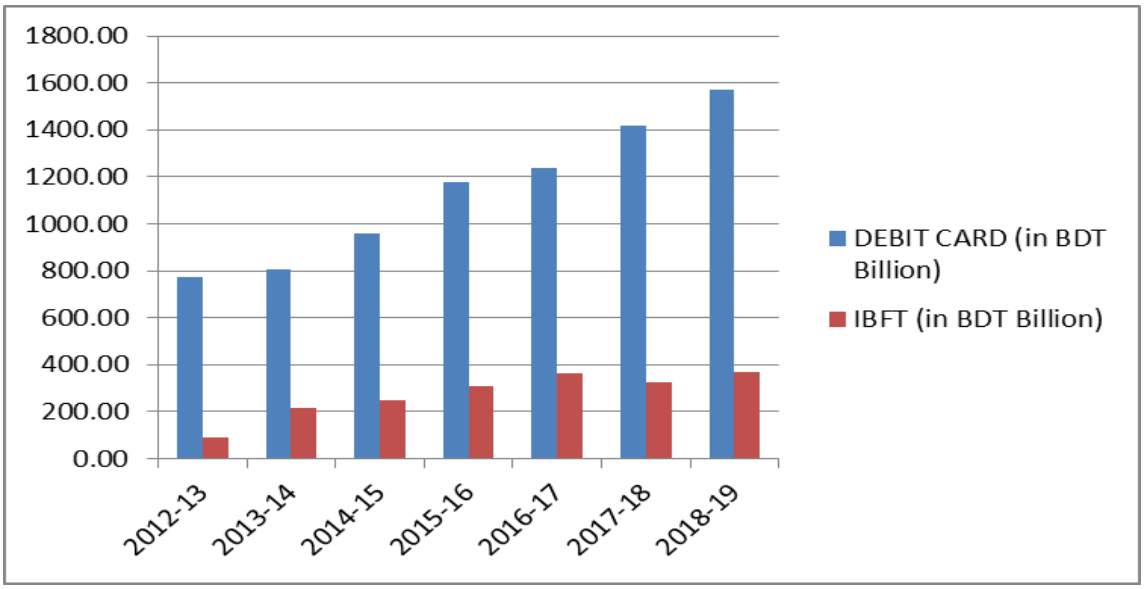

Figure 3. DEBIT Card and IBFT transactions volume of Banking Industry of Bangladesh

Figure 3 shows the Debit Card and Internet Banking Fund Transfer (IBFT) transactions volume of all types of commercial banks that conducted their banking business in Bangladesh. Both Debit Card and IBFT transactions show an upward trend with an exception in the year 2017-18 for IBFT transactions that shows a reduced volume than the previous fiscal year.

3.3 Research Design

As the objective of the study is to evaluate the effects of cashless banking on the banks' profitability, the Return on Equity (ROE) and Return on Asset (ROA) of the banking industry in Bangladesh has been taken as the proxy of profitability. On the other hand amount of Mobile Financial Services (MFS) transactions, the amount of Automated Teller Machine (ATM) transactions, amount of Debit Card transactions and amount of Internet Banking Fund Transfer (IBFT) transactions have been used as the proxy of cashless banking. The research employs the Ordinary Least Square (OLS) method of multiple regression analysis to examine the effectiveness of cashless banking policies on Return on Equity (ROE) and Return on Asset (ROA) of the banking industry of Bangladesh. The analysis has been conducted by two phases; one is taking ROE as the dependent variable with the above-mentioned four independent variables. Another is taking ROA as the dependent variable with those four independent variables. The estimation is concluded using the software "IBM SPSS Statistics 25.0.0.0".

3.4 Model Specification

The econometric model to consider in this study takes MFS, ATM, Debit Card and IBFT as the independent variable and ROE & ROA as the dependent variable respectively. This is used to obtain a reliable parameter estimate in the multiple regression model. The following econometric models have been used for quantitative analysis:

ROE = f (MFS, ATM, Debit card, IBFT) ---------- (i)
ROA = f (MFS, ATM, Debit card, IBFT) ---------- (ii)

The above equations are the functional form of the model. To normalize the data to get reliable and better estimates, logarithmic transformation is performed in comparison with the ratio values of ROA and ROE (Kamboh and Leghari, 2016). So, the following transformed regression equations are used to estimate the coefficients to explore the relationship between dependent and independent variables:

$ROE = \log \beta_0 + \beta_1 \log MFS + \beta_2 \log ATM + \beta_3 \log Debit\ Card + \beta_4 \log IBFT + \varepsilon$ ---------- *(iii)*
$ROA = \log \beta_0 + \beta_1 \log MFS + \beta_2 \log ATM + \beta_3 \log Debit\ Card + \beta_4 \log IBFT + \varepsilon$ ---------- *(iv)*

Where β_0 represents the intercept; β_1, β_2, β_3 & β_4 represents the estimated coefficients for each of the predictors; and ε is the stochastic disturbance term.

The following hypothesis has been formulated based on the objective of the study:
H_0 = There is no statistically significant impact of cashless banking on the profitability of the banking industry of Bangladesh.
H_1 = There is a statistically significant impact of cashless banking on the profitability of the banking industry of Bangladesh.

4. Results and Discussion:

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	7	.25	.90	.611	.244
ROE	7	3.90	11.10	8.328	2.930
MFS	7	42.06	4012.11	1988.435	1556.568
ATM	7	654.30	1447.60	1055.614	316.781
DEBIT_CARD	7	775.70	1573.20	1136.428	303.934
IBFT	7	90.50	371.00	274.914	99.184

(All values are in billion (BDT) except ROA and ROE)
Source: SPSS Output

Table 1 shows MFS has a mean value of 1988.435 BDT billion and the lowest transaction volume in the fiscal year 2012-13 as well as the highest transaction value in the fiscal year 2018-19. The average ATM transaction volume is 1055.614 with maximum transaction value in the year 2018-2019 and minimum at the year 2012-13. Again Debit Card and IBFT have the mean value of transaction value is 1136.42 and 274.91 respectively with maximum and minimum transaction value in the fiscal year 2018-19 and 2012-13 respectively.

Table 2. Model-1 Summary (Dependent Variable, ROE)

R	R Square	Adjusted R Square	F	Sig.	Durbin-Watson
.800	0.719	0.836	.887	.049	2.245

a. Predictors: (Constant), IBFT, DEBIT_CARD, MFS, ATM
b. Dependent Variable: ROE
Source: SPSS Output

Table 3. Model-2 Summary (Dependent Variable, ROA)

R	R Square	Adjusted R Square	F	Sig.	Durbin-Watson
.847	0.717	0.852	1.268	.048	2.244

a. Predictors: (Constant), IBFT, DEBIT_CARD, MFS, ATM
b. Dependent Variable: ROA
Source: SPSS Output

Table 2 and Table 3 represent the model summary and show the values of R^2 are 0.719 and 0.717 respectively which indicate a higher correlation between dependent and independent variables. Values of R^2 are 71.9% and 71.7% means that almost 72% of changes in profitability (both dependent variables) of the banking sector are explained by the proxies of cashless

banking factors (independent variables). 28% is explained by other factors that are not incorporated in this model. The F statistic value of the model-1(table 2) is .049 which is slightly lower than .05 and considered as in the edge of significance at 5% level. Again the value of F statistic of model-2(table 3) is .048 which is also slightly less than .05 indicating that both the regression model is statistically significant and considered as a fit model. As a rule of thumb, the value of the Durbin–Watson test of less than one or greater than three is a sign of autocorrelation problem and is not acceptable. The both model shows the Durbin–Watson statistic value is 2.245 and 2.244 respectively that indicates that the both model is free from autocorrelation problem.

Table 4. Regression Coefficients (Model-1)

Variables	Unstandardized Coefficients B	Standardized Coefficients Beta	t	Sig.	H_0 Rejected/ Accepted
(Constant)	28.192		1.223	.046	
MFS	.003	1.713	.452	.056	Accepted
ATM	-.005	-.589	-.106	.025	Rejected
DEBIT_CARD	-.021	-2.139	-.603	.048	Rejected
IBFT	.011	.359	.377	.042	Rejected

a.Dependent Variable: ROE
Source: SPSS Output

Table 5. Regression Coefficients (Model-2)

Variables	Unstandardized Coefficients B	Standardized Coefficients Beta	t	Sig.	H_0 Rejected/ Accepted
(Constant)	2.114		1.242	.040	
MFS	.000	1.351	.403	.026	Rejected
ATM	-.001	-.651	-.132	.053	Accepted
DEBIT_CARD	-.001	-1.669	-.531	.048	Rejected
IBFT	.000	.192	.228	.041	Rejected

a. Dependent Variable: ROA
Source: SPSS Output

Table 4 and Table 5 show the results of regression coefficients for both the models.
From Table 4 it is seen that the studied variables of ATM, Debit Card, and IBFT are statistically significant at 5% level of significance as the p-value of all the variables is less than .05. But the variable MFS is not statistically significant as the p-value slightly exceeds from .05 and thus the null hypothesis is accepted. Variable MFS and IBFT both have a positive coefficient but MFS is statistically insignificant. Again variable ATM and Debit Card both have a negative coefficient and statistically significant. So, IBFT has a significant positive impact and ATM & Debit card has a significant negative impact on the profitability (ROE) of the banking industry of Bangladesh. From Table 5 it is seen that the variable MFS, Debit Card, and IBFT are statistically significant at 5% level of significance but the variable ATM is statistically insignificant and the null hypothesis is accepted as its p-value slightly exceeds from .05. Variable MFS and IBFT have positive coefficients with statistically significant relation to dependent variable and Debit Card has a significant negative coefficient as well as ATM has a negative coefficient but insignificant relationship with the dependent variable. Therefore, MFS and IBFT have positive and Debit Card has a negative impact on the ROA (proxy of profitability) of the banking industry of Bangladesh. The findings regarding ATM is contrary to the study of Le and Ngo (2020) where they found that ATM has a statistical positive impact on the bank's profitability based on cross country analysis. The findings of this study are consistent with the study of Kamboh and Leghari (2016) & Huq and Hossain (2020).

5. Conclusion

Now a days it is hard enough to find a bank without any of its' electronic banking services in the world. In this regard, developed countries in the world are motivated from paper to electronic payment systems, to a large extent. The cashless policy introduced by the Bangladesh Bank is aimed at achieving a cashless economy and was conceptualized to increase the proficiency of Bangladesh's payment systems which will in turn improves the quality of service being offered by the banking industry. From the various studies, it is considered as one of the prerequisites for the development of the national economy is to encourage a payment system that is secure, convenient, and affordable. Since the cashless policy has been adopted by almost all the banks in Bangladesh, it is also necessary to consider the impact of this policy. Considering this important issue, the aim of this current study is to evaluate whether the cashless policy is affecting the profitability of the Bangladeshi Banks' positively, negatively or only increasing the operating expenses of the banks.

This paper specifically investigate about what impact cashless banking has on ROA and ROE of the Bangladeshi banking industry through ATM, MFS, Debit Card, and IBFT during the period 2012-2019. The result shows that IBFT has a significant positive impact and ATM & Debit card has a significant negative impact on the ROE (proxy of profitability) whereas MFS and IBFT have a positive and Debit Card has a negative impact on the ROA (proxy of profitability) of banking industry of Bangladesh. It is revealed from the findings of the study that almost all the factors have an impact on the profitability but only IBFT have a positive and significant impact on both ROA and ROE, which indicates that increase investment in these services leads to an increase in profitability of banks. Products such as ATM, Smartcard, MFS, internet banking, etc. can, no doubt, reduce or totally eliminate the cost of cash management. Bangladesh has a greater opportunity in accepting the cashless banking payment system that would improve the financial and economic life as well as boost the image of the country by leading a booming economy.

This study is conducted absolutely on the basis of secondary data. So by using primary data may represent different output. Again, only four independent variables have been used as the proxies of cashless banking service but it may appear different output while using other variables along with these variables. The analysis is conducted only for 7 years period. Further research may take on a longer period. This research is conducted on the overall banking industry of Bangladesh. As a result, this output may not be compatible with any specific bank. So, future research can be done on a specific cluster of banks and compare the results with the result of the entire banking industry in Bangladesh and other countries in the world. This study used multiple regression statistical techniques for data analysis; therefore, further study can be initiated by applying popular time-series techniques based on the time-series data of the banking industry of Bangladesh.

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