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Editor's Note

Text to be added...

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The Impact of Customs Electronic Payments on Import Facilitation in Bangladesh

Md. Tarek Mahmud

1. Abstract

The rapid increase of international trade evolves the necessities of trade facilitation. In international trade, delay or additional time consumption is often interpreted as the cost of trade which is a hindrance to trade facilitation. To minimise the hindrances of trade facilitation many initiatives have been introduced by different Customs Administrative Authorities across the globe. Customs electronic payment is one of those key initiatives to reduce customs clearance time and facilitate trade. This is also considered as one of the international best practices which can influence trade facilitation from various aspects e.g., reducing time and costs, increasing trade volume, ensuring transaction security, etc. This paper examines the impact of electronic payments on trade facilitation in Bangladesh by using the difference-in-differences estimator to analyse changes in the duration of payment and trade volume both in quantity and value based on the ASYCUDA World data from 2014 to 2020. The results show that there is a significant reduction of payment duration due to the use of customs electronic payments over traditional payments. On the other hand, I found that the trade volume in value for electronic payments user firms appears to increase, whereas the trade volume in quantity decreases. This suggests that the government of Bangladesh can consider initiatives to attract the importer or agents to use the electronic payments for the reduction of clearance time to facilitate trade.

Keywords: Trade facilitation, customs electronic payments, customs clearance time, TFA, cost of doing business.

2. Introduction

The benefits of trade facilitation, as supported by empirical evidence, are quite important. It acts as a catalyst for economic growth by increasing

trade flow across the countries. It can also foster industrialization and employment. Trade facilitation is very vital for those countries which have a soaring dependency on international trade. Trade facilitation is the process of simplifying, modernising, and harmonising the export and import procedures. Any initiatives aimed to facilitate trade should cover at least one of the many areas of trade facilitation like cost reduction, process simplification, time reduction, reduction of physical visits, etc. Customs electronic payments can play a role in most of the areas of trade facilitation. It entails reducing customs clearance time, simplifying the process of payments, reducing the trade costs and visits. Having those benefits, the trade volume can also be affected which can be interpreted as the indication of trade facilitation. To facilitate trade and ensure secure payment transactions, the government of Bangladesh introduced customs electronic payment in 2017. It provides speedy, almost costless, hassle-free, secure transactions beyond the limitation of office hours. Customs electronic payments aim to reduce customs clearance time and simplify the procedures by using electronic mediums to pay customs duties and other payments guaranteeing the minimum duration elapsed for the payment. After the initiation, 4 years have passed, and it is expected to evaluate the efficacy of this reform. This paper intends to estimate —to what extent electronic payments affect the payment duration in Bangladesh. The additional interest of this study is to evaluate— to what extent electronic payments affect the trade volume in import quantity and value, which are the measurements of trade facilitation.

For a country like Bangladesh that highly depends on international trade, the significance of trade facilitation is very high as the volume of international trade has increased very significantly in the last couple of decades. This necessitates seamless trade across the borders by reducing cumbersome bureaucratic processes and eliminates red-tapism. Government revenue and protection of the society from the imports of unwanted goods lay on the other side of the coin of trade facilitation. Bangladesh is still highly dependent on revenue from international trade and the government can neither sacrifice the importance of revenue collection nor can compromise with the safety and security threat of the people from unwanted goods imports. Therefore, the government always seeks to find a balanced way to facilitate trade without sacrificing the legitimate revenue collection along with minimising the threats for people from the imports of unwanted goods. Customs electronic payment is one of those very valuable strategies which can ensure trade facilitation without compromising with the revenue collection and ensure the safety

and security threats of the people. It secures legitimate revenue collection by preventing payment document's forgeries and helps customs to concentrate more on risky consignments that can create threats to society.

Trade facilitation reduces the transaction cost of trade and increases business competitiveness along with greater efficiency and control (Grainger, 2007). Time elapsed in international trade is often interpreted as the transaction cost, and Uzzaman and Yusuf (2011) conferred that the most important objective of trade facilitation is to reduce time in international trade. Trade facilitation is closely entwined with the customs clearance time, and the World Trade Organisation (WTO) incorporated several articles focusing on reducing customs clearance time in the Agreement on Trade Facilitation, widely known as the Trade Facilitation Agreement (TFA) (WTO, 2013). Electronic payments are one the most significant articles of the TFA (article 7.2) which aims to reduce customs clearance time. As a signatory of the TFA, Bangladesh is obligated to adopt and maintain procedures described in the TFA (Hossain, 2018). This includes electronic payments (article 7.2) as each member country has the obligations to implement and uphold the procedures allowing the option of electronic payments as much as possible for duties, taxes, fees, and charges collected by customs incurred upon cross-border trade (WTO, 2013). Therefore, Bangladesh holds the TFA as one of the priority areas and takes initiatives to implement all the articles including customs electronic payments. As the keystone of implementation, Bangladesh ratified the TFA and committed to revamping the country's legal provisions according to the agreement (WTO, 2016). Bangladesh is also a signatory of the Revised Kyoto Convention (RKC)—the blueprint of modern customs. It focuses on using information technology or electronic media as a support instrument for customs and trade to achieve cost-effectiveness and efficiency (WCO, 2008). This section of the RKC has set the cornerstone for many customs administrations including Bangladesh to implement information technology such as electronic payments, single windows, non-intrusive inspection (e.g., scanner), and other technologies in trade facilitation.

The border compliance time for import is very lengthy in Bangladesh–i.e., 216 hours–compared to neighbouring countries like India (65 hours) and Pakistan (120 hours), and it is ranked 176th in the world (World Bank Group, 2019). Border compliance time or customs clearance time connects with the cost of doing business and business supply chain security, and the World Bank described that, a one-day delay in customs clearance means a 1% loss of trade between countries (Popa, Belu, Paraschiv, & Marinoiu, 2015). Under these circumstances, border compliance time and cost

reduction are the major challenges for Bangladesh to facilitate trade. To achieve substantial progress in reducing customs clearance time and costs, Bangladesh adopted electronic payments for collecting customs duties, taxes, and other charges. The National Board of Revenue (NBR) — the apex body for implementing customs electronic payments in Bangladesh — decided to make customs electronic payments mandatory for customs payment (NBR, 2020; Uddin, 2020).

Using panel data on import, the impact of customs electronic payments on payment duration— one of the significant segments of customs clearance time, has been estimated. This study also estimates the impact of customs electronic payments on trade volume— both in import quantity and import value. In this procedure, the difference-in-differences (DID) estimation has been used. This estimation compares the duration of payment, import quantity, and value of imports of the firms that are using the electronic payments (treatment group), and firms that are not using the electronic payments for customs clearance (control group) before and after the implementation of customs electronic payments.

Results showed a statistically significant negative relationship between payment duration and customs electronic payments. A 1% increase in customs electronic payments decreases payment duration by 14.47%. The relationship between trade volume in value and electronic payments is positive and statistically significant, which means the use of customs electronic payments increases the trade volume in value. On the other hand, the relationship between trade volume in quantity and customs electronic payment is negative and statistically significant which indicates that the use of electronic payment reduces the import quantity. As using customs electronic payments is not mandatory, it depends on firms to choose payment methods, and those who are using electronic payments in one customs station, may not use in the other stations, or even it may vary between consignments within a customs station. To address this issue, triple differences estimator has been used to estimate differences between electronically paid consignments and non-electronically paid consignments of the electronic payment user firms, which is interpreted as a robustness check. The result also showed a significant negative relationship between customs electronic payments and payment duration that implies the use of customs electronic payments reduces the payment duration by13.28% with a 1% increase of using customs electronic payments. However, it showed a statistically insignificant relationship between trade volume in import value and customs electronic payments. On the other hand, the trade

volume in quantity is negatively affected by customs electronic payments which indicates that the use of customs electronic payments decreases the volume of trade because of increasing the bulk consignments imports. The result of robustness checks also supports the results of outcome variables.

These findings indicate that the use of electronic payments reduces the payment duration. Delay or consuming time is considered as the cost in international trade. So, reduction of time or cost can facilitate trade. Therefore, the government can take initiatives to attract the importers or their agents to use customs electronic payments to reduce the customs clearance time. Reduction of customs clearance time leads towards reduction of trade cost and gain business competitiveness which are the key areas of trade facilitation, and by enjoying the benefits of trade facilitation, Bangladesh can accelerate economic growth.

Customs electronic payment is one of the best international practices and its impact is visible in many countries. For example, in Rwanda, the electronic payments system under the Rwanda Electronic Single Window (ReSW) umbrella initiative reduced customs clearance time from registration to payment by 27%.

(Nizeyimana & Wulf, 2015). After the introduction of electronic payments-enabled Pakistan Automated Customs Clearance Systems (PaCCS), the customs clearance time has massively reduced as 93% of consignments were released within 24 hours compared to only 4% in the previous year of its implementation in Pakistan (Ahmad, 2010).

There are a limited number of studies that have assessed the impact of electronic payments exclusively. Most relevant examples include the study of Nizeyimana and Wulf (2015), and Ahmad (2010). Both of the studies analysed the impact of the Electronic Single Window (ReSW) in which they showed the impact of electronic payments on the duration as a part of the total customs clearance process. The findings of both studies showed significant positive effects of the Single Window on trade facilitation. However, these studies chose the different areas of concentration— the Single Window and its impact on trade facilitation, and neither of the studies focused on customs electronic payments exclusively, nor used the statistical tools for further analysis. This paper differs from Nizeyimana and Wulf (2015), and Ahmad (2010) by focusing exclusively on customs electronic payments and their impact on trade facilitation. These types of empirical studies concentrating exclusively on customs electronic payments and their impact on trade facilitation are few. Moreover, no study, either empirical or non-empirical has

been conducted in Bangladesh to evaluate the impacts of the customs electronic payments system, although four years have passed after its adoption. Such an evaluation will be beneficial for the National Board of Revenue to understand the impacts of this system, and it may further help to re-evaluate the implementation policies.

The rest of the paper is organised into four sections. Section 2 gives an overview of electronic payments implementation in Bangladesh. In section 3, I provide the data and methodology to address the research problem. Section 4 provides the main results and the interpretation of the results. The final section— section 5 concludes with some recommendations, limitations and provides topics for future research.

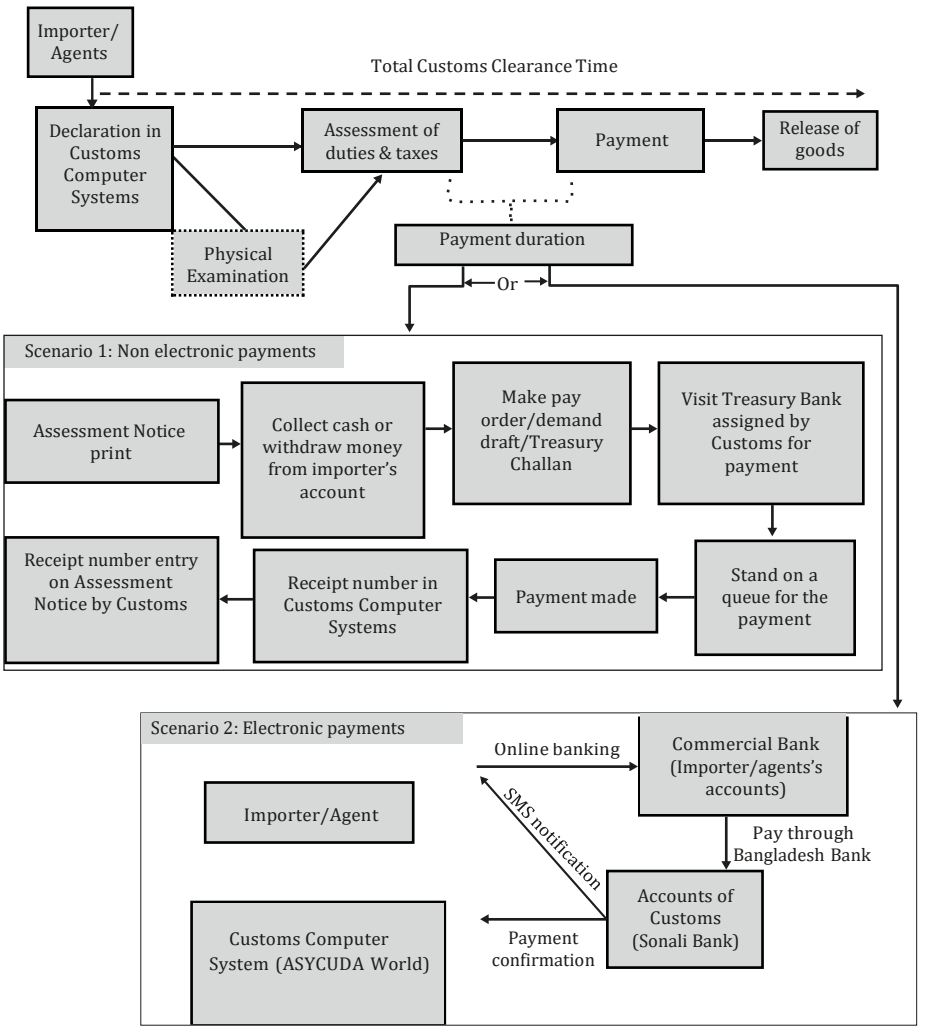
3. Overview of Electronic Payments Implementation in Bangladesh

To ensure safe, secure, and fast procedures that do not rely on human intervention, Bangladesh Customs introduced the customs electronic payments system in 2017 (National Board of Revenue, Bangladesh, 2017). The main objectives of customs electronic payments were to reduce the duration and costs and simplify the procedures which would have governed trade facilitation.

The process flow of Bangladesh Customs and intervention areas of the customs payments are shown in figure 1. The process begins with the importers' or their agent's declaration for clearing a consignment. The consignment can be selected for physical examination of the goods based on the risk factors involved with the consignment. After the physical examination, Customs assesses or determines the amount of duties and taxes. If it is not selected for physical examination of goods by risk management, it directly goes for assessing duties and taxes. When Customs determine the amount of duties and taxes, the importer or agent goes to make the payment to release the goods. In between the two stages—the assessment stage and the payment stage, there are two methods in Bangladesh. The first one is using the traditional method of paying duties and taxes in which importers or agents need to go under eight manual stages starting from assessment notice print to collect receipt number on printed assessment notice from customs officer as mentioned in scenario 1 of figure 1. This non electronic method is very time-consuming, tedious, costly, and less secure which is a hindrance to trade. To mitigate these problems, Bangladesh Customs introduced a time-efficient, simple, secure, and user-friendly method— the second method, electronic payments (National Board of Revenue, Bangladesh, 2017). In this method importer or the agent can transfer the amount of

customs duties and taxes to the customs account as payment through the online banking system.

Figure 1. The stages of customs clearance and workflow of e-payment and non-e-payment



4. Data and Methodology

4.1 Data

The data used in this study are declaration level panel data of import from the Customs Computer System named Automated System for Customs Data (ASYCUDA World) provided by the National Board of Revenue, Bangladesh. This data covers only the imports during the

period of 2014 to 2020 and does not cover the exports. This does not include the temporary importation, imports under bonded warehouse facility, transit consignments, re-imports, and imports through courier and postal services as those are special types of imports that do not require duty payment or have only a small amount of revenue involved.

There is extreme difficulty in acquiring customs clearance data in a user-defined way. Therefore, the data I acquired is recorded based on the day, e.g., assessment date, payment date, bill of entry date, etc., and does not represent the specific time of the day. Hence, the study is limited in assessing payment duration in days.

Table 1 Payment duration Summary Statistics

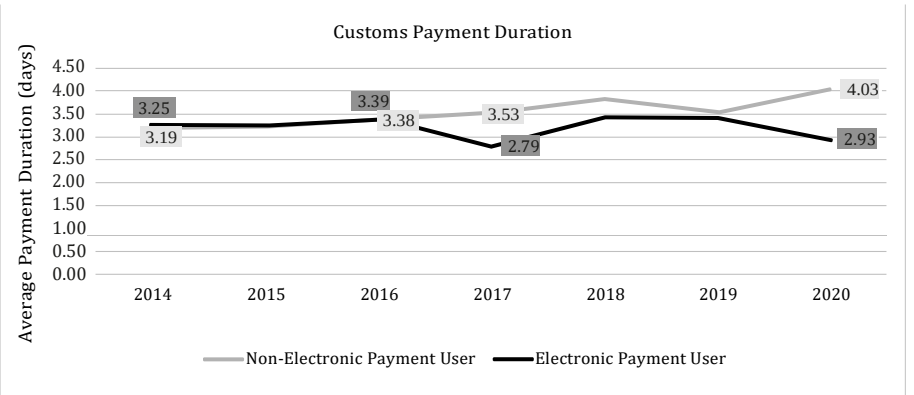
Year	Variable(s)	Mean	Standard Deviation
2014	Non electronic payments user duration (days)	3.185	4.029
	Electronic payments user firms' duration (days)	3.245	3.532
2015	Non electronic payments user duration (days)	3.227	4.184
	Electronic payments user firms' duration (days)	3.255	3.696
2016	Non electronic payments user duration (days)	3.382	4.142
	Electronic payments user firms' duration (days)	3.385	3.777
2017	Non electronic payments duration (days)	3.530	4.183
	Electronic payments duration (days)	2.794	3.386
2018	Non electronic payments duration (days)	3.824	4.525
	Electronic payments duration (days)	3.420	3.890
2019	Non electronic payments duration (days)	3.547	4.382
	Electronic payments duration (days)	3.414	3.236
2020	Non electronic payments duration (days)	4.034	4.795
	Electronic payments duration (days)	2.930	2.788
	Number of observations = 1,463,069		

Summary statistics of the payment duration in days are presented in Table 1 where the mean and standard deviation of the electronic payment's users' and non-users' payments duration is shown. In this table, the mean and standard deviation are shown yearly from the year 2014 to 2020. Data shows the differences between non-electronic payments user firms' duration and electronic payments user firms' duration before 2017 because customs electronic payments were

introduced in that year. From 2017, it shows the differences between electronic payments and non-electronic payments consignments, and not the differences between electronic payments user firms and non-user firms. The summary statistics in Table 1 depicts that in 2020, the duration for electronically paid consignments is reduced by 1.104 days compared to non-electronically paid consignments.

Figure 2 depicts that the payment duration of the electronically paid consignments has been reduced by 1.10 days in 2020 compared to non-users. It also indicates the parallel trend from 2014 to the year 2017 when customs electronic payment was introduced. The payment duration has started to decrease from 2017 after the initiation of electronic payment. In 2018 and 2019, the payment duration has a slight upward trend, but in 2020 it has reduced to 2.93 days in case of using customs electronic payments.

Figure 2. Customs payment duration



The summary statistics in Table 2 represent the trade volume by import value of goods. Table 2 shows the mean and standard deviation of the users of the electronic payment' and non-users, volume of import by value based on payment year. The volume of import for electronic payments user firms in 2017 increased by BDT 1534871 compared to the import value of 2014.

The summary statistics in Table 3 represent the trade volume by import quantity, where the mean and standard deviation of the electronic payments' users' and non-users', volume of imports by value are shown based on payment year. The average volume of imported quantity in 2020 increased by 6930.10 kg compared to import quantity in 2014 and it has also increased by 1924 kg compared to the average imported quantity in the immediate past year of introducing customs electronic payments.

Table 2 Trade Volume —Import Value Summary Statistics

Year	Variable(s)	Mean	Standard Deviation
2014	Non-electronic payer firms' import value (BDT)	7528953	3.15e+07
	Electronic payer firms' import value (BDT)	5257907	1.74e+07
2015	Non electronic payer firms' import value (BDT)	6608321	2.97e+07
	Electronic payer firms' import value (BDT)	5729204	6.25e+07
2016	Non electronic payer firms' import value (BDT)	6001203	2.49e+07
	Electronic payer firms' import value (BDT)	5468847	2.87e+07
2017	Non electronic payer firms' import value (BDT)	6496767	2.93e+07
	Electronic payments import value (BDT)	4686119	1.09e+07
2018	Non electronic payer firms' import value (BDT)	7384612	4.29e+07
	Electronic payments import value (BDT)	4701847	1.30e+07
2019	Non electronic payer firms' import value (BDT)	8662023	8.28e+07
	Electronic payments import value (BDT)	3765839	7289827
2020	Non electronic payer firms' import value (BDT)	8966071	3.82e+07
	Electronic payments import value (BDT)	6891770	2.57e+07
	Number of observations = 1,463,069		

Table 3 Trade Volume—Imported Quantity Summary Statistics

Year	Variable(s)	Mean	Standard Deviation
2014	Non-electronic payer firms' import value (BDT)	7528953	3.15e+07
	Electronic payer firms' import value (BDT)	5257907	1.74e+07
2015	Non electronic payer firms' import value (BDT)	6608321	2.97e+07
	Electronic payer firms' import value (BDT)	5729204	6.25e+07
2016	Non electronic payer firms' import value (BDT)	6001203	2.49e+07
	Electronic payer firms' import value (BDT)	5468847	2.87e+07
2017	Non electronic payer firms' import value (BDT)	6496767	2.93e+07
	Electronic payments import value (BDT)	4686119	1.09e+07
2018	Non electronic payer firms' import value (BDT)	7384612	4.29e+07
	Electronic payments import value (BDT)	4701847	1.30e+07
2019	Non electronic payer firms' import value (BDT)	8662023	8.28e+07
	Electronic payments import value (BDT)	3765839	7289827

Year	Variable(s)	Mean	Standard Deviation
2020	Non electronic payer firms' import value (BDT)	8966071	3.82e+07
	Electronic payments import value (BDT)	6891770	2.57e+07
	Number of observations = 1,463,069		

4.2 Methodology

This study uses the difference-in-differences (DID) method to estimate the effects of electronic payments on the duration of customs duties and tax payments, and trade volume in imported quantity and value; both of which are the measurement of trade facilitation. DID technique is employed to compare the duration of payment and value of trade of the firms that are using the electronic payments (treatment group), and firms that are not using the electronic payments for customs clearance (control group) before and after the implementation of electronic payments. DID is an ideal method to measure the difference in the outcomes between two periods— before and after the policy implementation in comparing between an exposed group and an unexposed group of that policy (Khandker, Koolwal, & Samad, 2009). They also suggest that the use of DID can produce a better result than an ordinary least square because of its capability of absorbing the fixed effects of controlling time-invariant and unobserved characteristics that may affect the dependent variable. As my data and my study purpose possess the necessity of addressing those issues; therefore, I used DID with the following model:

$$Y_{itk} = b_0 + b_1 Epayment_{it} + Year_t + c_{ik} + f_{itk} \quad (1)$$

where, Y_{itk} indicates the outcome variable, which is the natural log value of duration from Customs assessment (informing the payable amount of duties and taxes) to actual payment of duties in days, or the natural log of the trade volume in quantity in kg or value of imported goods in BDT by firm "i" in year "t" in customs station "k". $Epayment_{it}$ a dummy variable indicates that firm "i" is an electronic payment user in the year "t". $b1$ is the coefficient of interest, which is the impact of electronic payment (treatment) on outcome Duration or InValue. Yeart is a dummy variable that indicates 1 if the payment is made after electronic payment introduction and 0 if otherwise. c_{ik} depicts the interaction term between $Firm_i$ and $Station_k$; where Firm i is a dummy variable that indicates 1 if the firm (importers) is a user of electronic payment and 0 if otherwise and $Station_k$ is a dummy variable that indicates 1 for the payment made

after electronic payment introduction in that specific customs station and 0 if otherwise. f_{itk} is the error term representing other factors that are not included in the equation.

The locations of those customs stations are segregated across the country. For example, stations of the capital city may have the scope of less electronic payment use because the station is in the nearest place to deposit and hardly requires transporting or sending money, which can be positively affected to the remote stations due to the distance or security of money transport. Therefore, the station fixed effect has been used with interacting the firm-fixed effect that addresses the firms' patterns and trade participation. For example, giant multinational enterprises (MNE) may likely use e-payment, but small and medium enterprises (SMEs) can be lagging. Yearfixed effects are also used because of changing trade both in pattern and volume over the years. For example, the volume of trade in 2017 or 2018 may be affected by the US-China trade war, and the volume of trade or probability of electronic payments can be affected due to the covid-19 in 2019 and 2020. Moreover, A robust standard error has been used in clustering at the firms' level to avoid correlation across or within the clusters. I later conducted robustness checks to support my analysis.

As using electronic payments is not mandatory for the firms, they are using electronic payments in one station, but may not use electronic payments in another station. It is not mandatory to use electronic payments for all its consignments for an electronic payments' user firm in a single station. So, firms may use electronic payments for one consignment and may not use them for the other consignments. To address these issues, the triple differences estimation is used with the following model:

$$Y_{itk} = b_0 + b_1 (epayment)_{it} + d_{it} + c_{ik} + n_{tk} + f_{itk} \quad (2)$$

where d_{it} denotes the interaction between $Year_t$ and firmi and c_{ik} depicts the interaction term between $Firm_i$ and $Station_k$, and finally, n_{tk} denotes the interaction term between $Year_i$ and $Station_k$. Other variables take the same definition as in equation (1).

5. Results

Table 4 provides estimated results of the impact of customs electronic payments on payment duration and volume of trade. The estimated results are based on equation 1. The results for column (1) show the estimation of the coefficient of customs electronic payments on payment duration (natural log value) and for column (2) shows the coefficient of customs electronic payments on the volume of trade-in value (natural log value),

and for column (3) shows the volume of trade in quantity (natural log value), respectively. All the results' coefficients of impact are statistically significant at a 1% level.

Table 4 Regression Results

Variables	(1) InPayment duration (days)	(2) InImport Value (BDT)	(3) InImport Quantity (kg)
Electronic payments	-1.447*** (0.0276)	0.0597*** (0.0131)	-0.164*** (0.0166)
Constant	0.354*** (0.00169)	13.96*** (0.00150)	8.281*** (0.00166)
R-squared	0.110	0.333	0.589
Observations	1,463,069		

*Note. ***Significant at 1% level, **Significant at 5% level, *Significant at 10% level. All columns include the station and firm fixed effects, the time (year) fixed effects, and control variables. Robust standard errors have been used. Standard errors in parenthesis are robust to heteroskedasticity and serial correlation. Table 4 shows the result of the regression where Column (1) is used for the natural log of payment duration as the dependent variable, and column (2) is used for the natural log of import value (CIF), and column (3) is used for the natural log of import quantity.*

The coefficient of payment duration is (-)1.447 days which indicates that there is a reduction in the payment duration for firms that are using customs electronic payments compared to non-users. The coefficients of trade volume in value and quantity are 0. 0597 and (-) 0.164 respectively. These indicate that import in value increases and import in quantity decreases significantly for the electronic payments' user firms compared to non-user firms after the initiation of customs electronic payments. The R-squared values are low as 0.110, 0.333, and 0.589 for the duration, trade volume in value, and trade volume in quantity respectively. In dealing with trade data Fishman and Wei (2004) also observed very low R-squared values. They described it as the cause of differencing out much of the information in the data. In this study, the data is from various trading firms, years, and different customs offices with a high level of noise, hence there is the possibility of low R-squared values for the similar reasons described by Fishman and Wei (2004). Standard errors of the estimated coefficients are 0.0276, 0.0131, 0.0166 respectively for the payment duration, import value, and import quantity which are relatively smaller, meaning that the coefficients are precise.

5.1 Impact on Payment Duration

The regression result of Column (1) of Table 4 shows that the use of customs electronic payments has a negative impact on payment duration at a 1% significant level which signifies that the customs electronic payments significantly reduce the payment duration or customs clearance time. The coefficient (-)1.447 indicates that a 1% increase in customs electronic payments reduced the payment duration by 14.47% for electronic payments user firms compared to the non-users after the initiation of customs electronic payments in 2017. It also shows that the initiation of customs electronic payments reduces more than one-fourth of the payment duration (26.40 %) for electronic payments user firms compared to non-electronic payments users. The result of the estimation of 26.25% reduction of payment duration is likely to be affirmed by the existing literature of (Nizeyimana & Wulf, 2015) which also found that the customs clearance time from registration to payment was reduced by 27 percent (%).

The result estimation can be interpreted to suggest that the use of customs electronic payments reduces the delays in payment of customs duties and taxes. Hence, it saves the trade cost e.g., port charges, container fare, and other charges of electronic payments user firms at the entry ports. It also reduces the risk of supply chain security and enhances the predictability of getting import goods in due time which ensures the security in the value chain of the firms. Supply chain security is very vital for export-oriented industries like ready-made garments— the lion's share of Bangladesh's export basket to whom the challenges for meeting the lead time is the key. A study by the Organisation for Economic Co-operation and Development (OECD) indicated that only automation and simplification of procedures can reduce 5.5% of trade costs in Asia (OECD, 2013). The reduction of duration by using customs electronic payments can prevent more than 1% trade loss between the countries as described by Popa, Belu, Paraschiv, and Marinoiu, (2015). The customs electronic payments create a remedy for minimising this trade loss and reduces the cost of doing trade. With savings from the costs of the potential delay in the clearing process, firms can reinvest that money on industrialisation or on more importation which can enhance the growth of the firms and encourage more trade.

5.2 Impact on Trade Volume

The regression result of column (2) of Table 4 shows that the use of customs electronic payments has a positive impact on trade volume in value which portrays that the imports in value of the firms that are using electronic

payments have increased significantly at 1% level compared to non-user firms after the implementation of customs electronic payments in 2017. The coefficients of trade volume in value (0.0597) indicate that a 1% increase in using customs electronic payments increase import in value by 0.59% for the electronic payments' user firms compared to non electronic payments user firms after the initiation of customs electronic payments. On the other hand, the regression result of column (3) of Table 4 shows that the use of customs electronic payments has a negative impact on trade volume and quantity. The coefficient (-) 0.164 shows that a 1% increase in customs electronic payment reduces the import quantity by 1.64 percent (%).

The results can be interpreted to suggest that the initiation of electronic payments increases the trade volume in value of the firms that are using electronic payments. This increase in trade volume can also be interpreted as the increase of trade— which is one of the most visible indicators of trade facilitation. This increase in trade volume also aligns with the argument that the reduction of clearance time saves the costs of trade and that savings can be invested in the trade which can further accelerate the trade.

The result of trade volume in quantity indicates that customs electronic payment reduces the import quantity. One of the main reasons behind that can be the import of bulk consignments.

5.3 Robustness Checks

Table 5 presents the robustness checks. By interacting with the firms and years, firms and stations, and years and stations, I show the impact of customs electronic payments on payment duration, and trade volume in value and quantity. Table 5 shows estimated results of the impacts of customs electronic payments on payment duration and volume of trade by addressing the impact of electronic payments user firms' non-electronic payments during the treatment period— after June 2017. The estimated results are based on equation 2. The result for column (1) shows the estimation of the coefficient of customs electronic payments on payment duration and for column (2) shows the coefficient of customs electronic payments on the volume of trade-in value, and column (3) shows the coefficient of customs electronic payments on the volume of trade in quantity, respectively.

The results' coefficient of the impact on electronic payments on payment duration and import quantity is statistically significant at the 1% level. The coefficient of column (1) of Table 5 is (-)1.328 which indicates that a 1% increase in customs electronic payments decreases the payment

duration by 13.28%. The impact of customs electronic payments on trade volume in value shows no significant effects over non-electronic payments of the electronic payments' user firms.

Table 5 Regression Results from Differences in Differences in Differences (DDD) (Equation 2)

Variables	(1) InPayment duration (days)	(2) InImport Value (BDT)	(3) InImport Quantity (kg)
Electronic payments	-1.328*** (0.0260)	0.0105 (0.0138)	-0.174*** (0.0172)
Constant	0.353*** (0.00169)	13.96*** (0.00150)	8.281*** (0.00166)
R-squared	0.116	0.335	0.590
Observations	1,463,069		

*Note. ***Significant at 1% level, **Significant at 5% level, *Significant at 10% level. All columns include the station fixed effects, the firm fixed effects, and the time (year) fixed effects, and control variables. Robust standard errors have been used. Standard errors in parenthesis are robust to heteroskedasticity and serial correlation. Table 4 shows the result of the regression where Column (1) is used for the natural log of payment duration as the dependent variable, and column (2) is used for the natural log of import value (CIF), and column (3) is used for the natural log of import quantity.*

The regression result of column (3) of Table 5 shows that a 1% increase in the use of customs electronic payments reduces the trade volume in quantity by 1.74%. The use of customs electronic payments is not mandatory, and the firms can pay both electronically and non-electronically within a Customs station. The probable cause can be the bulk or non-containerised cargoes. The bulk, or non-containerised cargoes (e.g., salt, sugar, fertiliser) are not usually stored at the ports and released from the outer anchorage of the sea from where goods are transferred from the mother vessel (large ship) to lighterage ships directly. As those bulk cargoes are not staying at the port, the port charges and demurrages are quite invariant to those consignments. The quantity of those consignments is large and in one consignment it can carry more than 1000 times or equivalent to other non-bulk consignments. The customs electronic payments do not have a significant impact on those bulk consignments and firms are less likely to use the electronic payments to clear those consignments. Therefore, it might be one of the significant causes of not increasing the import quantity or value in the case of electronically paid consignments compared to non-electronically paid consignments.

5.4 Potential alternative explanation of results

An alternative explanation of the results obtained could be the decrease in the number of consignments that can provide the opportunity to make payments quickly. If the number of consignments is high, it usually takes more time to make the payment for the workload, whereas it takes less time if the number of consignments is low. The data shows that there is an increase of 44% in electronic payments consignments from 2017 to 2020 for the electronic payments' user firms, which nullifies that potential alternative explanation.

6. Conclusion

Trade facilitation is one of the most priority areas for Bangladesh and reducing time, cost, and simplifying procedures are the core areas of concern. Customs electronic payments are associated with all three core areas of concern for trade facilitation. This paper assessed the impact of customs electronic payments on trade facilitation in Bangladesh by using the difference in differences method where I applied the station fixed effects, the firm's fixed effects, the time (year) fixed effects, and the robust standard errors at firms' level to control unobserved characteristics that may affect the results. The results obtained, showed that payment duration reduces by 14.47% with a 1% increase of using customs electronic payments for electronic payments user firms compared to the non-users after the initiation of customs electronic payments in 2017. Trade volume in value also increases by 0.59% with a 1% increase in using electronic payments. Trade volume in quantity reduced by 1.64 with a 1% increase in using electronic payments. One of the main causes of decreasing import quantity may be the increase of importation in bulk cargos that are released from the vessel to vessel in the sea and not stored in the ports for clearance. Moreover, in one bulk consignment, thousands of tons of goods are imported and cleared directly.

The use of electronic payments reduces the payment duration. Time is considered to cost in international trade, and reduction of time or cost can facilitate trade. The government may consider initiatives to attract the importer or agents to use the electronic payments for the reduction of clearance time and by this way, trade can be facilitated. There is also evidence of an increase in the trade volume in value for customs electronic payments user firms. Lack of awareness may be a deterrence for further ameliorating the customs electronic payments. The government can consider more awareness programs and initiatives to reduce the

bottlenecks to the use of customs electronic payments.

Although this study has estimated the impact of customs electronic payments on the duration of payment, it does not estimate the impact on the whole customs clearance time. The duration of payment is calculated on the day basis, not exactly at an accurate time of the day. Therefore, these limitations can pave the way to conduct further research in this area by covering the accurate time of the day and whole customs clearance time.

The reduction in customs clearance time is one of the major challenges of Bangladesh Customs to facilitate trade. Customs electronic payments can contribute in this area to meet the challenge of reducing clearance time. Reduction of customs clearance time leads towards reduction of trade cost and gain business competitiveness which are the key areas of trade facilitation and by enjoying the benefits of trade facilitation, Bangladesh can accelerate more economic growth.

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Relative Impact of Fiscal and Monetary Policies On Bangladesh Economy: A Comprehensive Approach

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Abstract

For developing countries like Bangladesh, understanding the relative impact of monetary and fiscal policies on GDP growth is crucial to formulate growth-enhancing policy decisions. This paper inspects the relative effectiveness of these two policies on the real GDP growth of Bangladesh using ARDL, VECM and VAR estimation techniques to ensure comprehensiveness. From the results of all the three estimation techniques, it is seen that in the long run only fiscal policy has positive influence on growth while monetary policy stays either statistically insignificant or negative. In the short run, however, the results from the different estimation techniques are not very consistent. Here, ARDL technique shows that both money supply and government expenditure has statistically significant and positive effects on GDP while VAR-based Variance decomposition (VDC) and Impulse Response Functions (IRFs) state that only government expenditure has a positive impact in the short run. In contrast, VECM technique reveals that neither money supply nor government expenditure has a statistically significant impact in the short run. As from the results, it is apparent that government expenditure helps generate growth in the long run, it should be raised which may necessitate raising more government revenue. And, the main goal of monetary policy should be ensuring stability of the economy.

Keywords: Fiscal Policy, Monetary policy, GDP growth, ARDL, VECM, VAR

JEL Classification:C22, E61, E63, O23

Introduction

It is recognised in the economic theory that in spurring economic growth in any economy both fiscal policy and monetary policy have a role to play. A good number of research works underscored the necessity of macroeconomic policies in helping maintain price stability, employment opportunity and a healthy financial sector together with ensuring stability in balance of payment which ultimately result in a GDP growth boost when these two policies are used properly.

In the field of economic theory, there are two different schools of thoughts that have distinct opinions concerning the relative effect of fiscal and monetary policies on GDP growth. Keynesians (1965) opine that government interventions (in terms of fiscal policy variables like government expenditures and taxes) have a decisive role in fuelling economic output through affecting aggregate demand whilst the monetarists state that monetary policy exerts more influence in this respect. From Poddar and Hunking (1971) to Nursini (2017) in more recent times, a number of researchers have found the superiority of fiscal policy over monetary policy. On the other hand, after Friedman and Schwartz (1963), not a few researchers have acknowledged greater effectiveness of monetary policy. Although this thought-centric rivalry between these two opinions has faded out lately, from the macroeconomic point of view, it is imperative to evaluate the relative impact in terms of a developing country like Bangladesh specifically during its period of extensive economic growth, 1980-2016.

Bangladesh is one of the South-Asian countries that has just achieved its status from low to lower-middle income country by going through a 'development paradox' as stated by scholars. It is conceived because the country keeps moving ahead despite several setbacks in its way. With this process of forward-looking approach, the country has laid down its agenda of uplifting the economy to become a developed one by 2041. To achieve the goals, the fiscal policy of the country has come into the scene taking several mega projects to help enhance the economy along with keeping the per capita growth in the aspired route. In this situation, the government expenditure reveals a steady enhancement in the current years with the policy initiative of the government. In terms of monetary policy, Bangladesh Bank, the central bank of the country, is authorised to formulate half-yearly monetary policies to keep money supply in optimal amounts to tackle inflation by keeping it within the threshold level (Bangladesh Bank Order, 1972). Notably, the years 2016 and 2017

witnessed the astonishing growth rate at above 7 per annum, indicating that both the fiscal and monetary policies are functioning well along with the positive influence of many supportive factors such as the population dividend. Since Bangladesh is moving forward at a steady rate towards a set goal to be achieved by 2041, it is desirable to understand the relative effectiveness of monetary and fiscal policies on its economy.

Respecting Bangladesh economy, to test the relative effectiveness of monetary and fiscal policies, a number of methodological approaches have been made. Back in 1998, using a modified St. Louis Equation, Latif and Chowdhury found fiscal variables to be more effective in spurring economic growth. Likewise, the VECM model is used by Mohammed and Mahfuzul (2017) to find the strong impact of fiscal deficit, a fiscal policy variable, on economic growth. In contrast, using Unrestricted Vector Autoregressions (VAR) based on Variance Decompositions (VDCs) and Impulse Response Functions (IRFs), Rahman (2005) found greater impact of monetary policy on economic growth compared to insignificant effect of fiscal policy on the same. Later, Johansen Cointegration Technique with Vector Error Correction Model (VECM) is used by Hasan et al. (2016) to find similar results. Here, apart from difference in variables and time period, the cause of disparity among studies may merely be methodological. To mitigate the research gap, this study aims at estimating the relative effectiveness of monetary and fiscal policies on the real GDP growth of Bangladesh; yet, the distinction lies in the fact that it employs multiple regression techniques i.e. ARDL, VECM and VAR to ensure comprehensiveness of the results, which is an exclusive addition in this genre of studies. The study's uniqueness has been deepened in the way that all the regression results found using above mentioned techniques resemble each other in terms of the long run dynamics. Besides, dependent variables' lagged values are considered to resolve the problems coupled with the original St. Louis equation, i.e. reduced form, omitted variables bias, Almon lag procedure, etc., as shown by Stein (1980) and Ahmed et al. (1984). In the study, time series data are taken from 1980 to 2016, the period which demonstrates comparatively a balanced economic situation and more degree of freedom in policy domain. Very few preceding studies covered this period particularly to inquire into the relative impact of fiscal and monetary policies on GDP growth in Bangladesh.

The study is of 6 sections. Section 1 provides an introduction to the study. Section 2 discusses the theoretical backdrop and practical scenario pertinent to this study. Relevant literature is reviewed in Section 3. Section

4 outlines the model, methodology and data specification of the study. Next section (Section 5) narrates the study results obtained and lastly, Section 6 summarises the study findings, conclusion and policy recommendations as the final section.

Monetary and Fiscal policy: Theory and Practice Theoretical Underpinnings

Among all the policies that a government makes, monetary and fiscal policies are the most important ones. These two broad macroeconomic policies dictate how the economy should act both in the short and the long run. According to economists including Levy et al. (2010), Jahan and Sarwat (2014), etc., monetary policy, set by the central bank of a given country, is a macroeconomic policy affecting the growth of money supply[1] in order to achieve objectives like ensuring economic growth along with maintaining optimum employment and threshold level of inflation. In contrast, originally proposed by John Maynard Keynes (1965), fiscal policy is loyal to the philosophy that government can influence an economy by introducing changes in its revenue-expenditure mix which means either expanding or contracting the tax base along with changing the volume and patterns of public expenditures. While monetary policy is quick to implement, fiscal policy requires some time to figure out the scope of government expenditures (Pettinger and Tejvan, 2019). Likewise, fiscal policy measures' impact on the economy can be felt in the long run whereas that of monetary policy often has a short run nature (Schmidt and Michael., 2019). Subject to different phases of development and unique demand of an economy, these two policies are used in specific combinations to achieve predetermined goals of a country.

Monetary and Fiscal Policy Standpoint: The Context of Bangladesh[2]

From Table 1below, it is seen that total government expenditure rose by 4.84% from 7.12% in 1980 to 12.56% in 2016. For government revenue, the increment was 3.94% in the same period.

1 Several developed countries, for example, the U.S. and the like, choose to influence the policy interest rates instead of monetary aggregates aka money supply as monetary policy variable. However, since policy interest rates in Bangladesh areyet to be targeted frequently, money supply (broad money or M2) is used as the monetary policy variable.

2 In this section, data of government expenditure and government revenue are sourced from World Development Indicators (WDI) and Bangladesh Bank. Budget deficit figures are calculated by the authors deducting total expenditures from total revenue of respective years. All the data (except the percentages) are in nominal forms.

Table 1 Total Government Expenditure, Revenue and Fiscal Deficit in Bangladesh (As % of GDP)

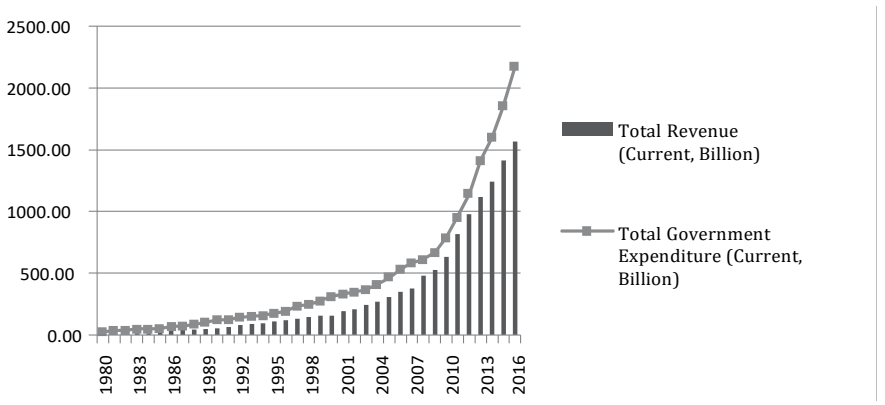
Year	Total Expenditure	Total Revenue	Total Deficit
1980	7.72	5.09	2.63
1985	8.42	4.97	3.45
1990	11.04	5.21	5.83
1995	11.37	7.20	4.17
2000	11.53	5.79	5.74
2005	10.69	7.18	3.50
2010	9.75	7.87	1.88
2015	12.22	9.31	2.91
2016	12.56	9.02	3.53

Source: World Development Indicators (WDI), Bangladesh Bank (BB)

Once Fig. 1 showing the government expenditure and revenue (in absolute amount) is looked at, it becomes clear that both government expenditure and revenue experienced a gradual increase over the years.

From these tables and figures, it is apparent that government revenue has always remained below 10% of the GDP, which is the lowest in the South Asian countries. The Tax to GDP ratio in India and Nepal is 19.7% and 19.6% respectively and is close to 36% in developed countries (Dhaka Tribune, 2018). It is also clear that the rate of growth in government revenue is getting very slow as the years pass.

Figure 1. Total Government Expenditure and Revenue of Bangladesh (In BDT Billion)

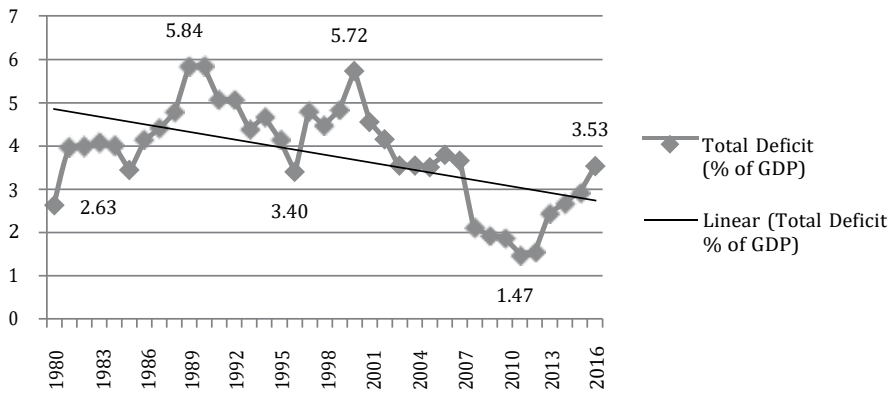


Source: WDI and BB

The compound growth, as calculated, was 13% for government expenditure whereas 14% for revenue as initially the revenue was very low. If the figures of government expenditure and revenue are analysed, it is clear that government expenditure has always been higher than government revenue implying that there is always some deficit in the budget of Bangladesh.

The total deficit figure shows a somewhat different picture. In 1980, the deficit was 2.63% which climbed to 3.53% in 2016. However, there have been a lot of fluctuations as Fig. 2 depicts.

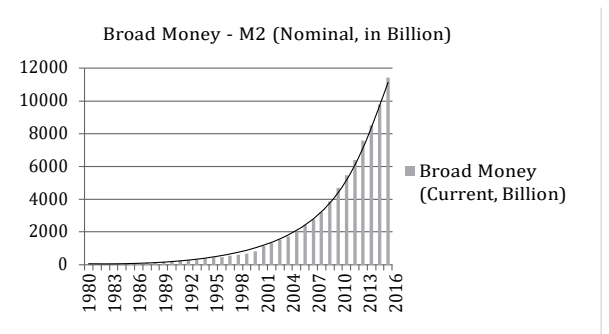
Figure 2. Total Budget Deficit of Bangladesh Government (As % of GDP)



Source: WDI and BB

Figure 3. Growth in Broad Money (M2) in Bangladesh

Year	Broad Money (M2)	
	(% of GDP)	(Nominal, in Billion)
1980	14.20	39.86
1985	19.59	113.49
1990	22.45	233.35
1995	28.83	439.68
2000	30.55	820.39
2005	47.42	2025.23
2010	58.75	4685.21
2015	64.51	9778.29
2016	65.87	11415.24



Source: WDI and BB

In 1989, the budget deficit was at its peak, which was 5.84% of the GDP. After a continued decline, it reached 3.4% in 1996. However, then it again increased up to 5.74% in 2001. In 2011, it hit the bottom of only 1.41% after which it again started moving up and returned to the point of 3.53%

in 2016. Its trendline, nonetheless, shows a negative slope indicating that the budget deficit has an overall decreasing trend. It is also to be noted that the budget deficit has been maintained much below 5% since 2001.

FromFig.3, it is seen that broad money (M2) as a percentage of GDP was 14.2% in 1980. It moved upward as much as 65.87% in 2016. For money supply, the compound growth rate is around 17% in the 37-year period. The absolute amounts (in billion) are also given in the table while the accompanying graph depicts the growth in money supply in visual form.

Literature Review

The Keynesian school of thought (1965) in favour of fiscal policy stated that changes in tax rates and government expenditures have a sizable impact on economic output and any change in aggregate demand has short-run effects on real output and employment rather than on prices, leaving monetary policy decisions largely ineffective. On the other hand, monetarists put their opposite statement to nullify the claim of Keynesian view, such as that of Friedman et al. (1963). This group tends to assert that money supply has a short-run impact on aggregate demand as indicated by the quantity theory of money.

Many years ago, this debate emerged as a heated issue among economists. Although this controversy has died down lately, nevertheless, the comparative potency of these two policies need to be understood in terms of a developing country like Bangladesh to practise appropriate policy interventions in order to stimulate growth.

From earlier to present, a few researchers identified a great influence of fiscal policy on GDP growth (Poddar and Hunking, 1971; Artis and Nobay, 1972; Devarajan et al., 1996; Jiranyakul and Brahmasrene, 2007; Mansouri, 2008; Appah, 2010; Sikiru and Umaru, 2010; Ali and Ahmed, 2010; Medee and Nenbee, 2011, Igwe et al., 2015; Rosoiu, 2015; Najaf, 2016;Simon, 2012; Hussain, 1982; Chowdhury, 1986; Darrat, 1984; Yasin ,2000; Chatziantoniou et al., 2013; Attari and Javed (2013); Alshahrani and Alsadiq (2014); Mutuku and Koech, 2014; Ćorić et al., 2015;and Nursini, 2017 in particular found positive effect of government expenditure in developing countries.

In contrast, another group of scholars found monetary policy that has significant effect on economic output (Friedman and Schwartz, 1963; Andersen and Jordan, 1968; Keran, 1970; Elliot, 1975; Carlson, 1978; Batten and Rafer, 1983; Ali et al., 2008; Senbet, 2011).Ahmad et al., 2016; Gul et al., 2012; Hansen and Seshadri, 2013; Vinayagathasan,

2013; Ajisaje and Folorunso, 2002; Ezigbo, 2012; Anna, 2012; and Shahid et al., 2008 found monetary policy to be much effective in spurring growth in developing countries in their research works. A number of studies have proved that expansionary monetary policy is important for economic growth.

A number of researchers, however, found both of the policies to be effective (Simorangkir and Adamanti, 2010; Jawaid et al., 2011; Mahmood and Sial, 2011; Arif and Ali, 2012; Enahoro et al., 2013; Falade and Folorunso, 2015; Sen and Kaya, 2015).

In the context of Bangladesh, Latif and Chowdhury (1998) employing a modified version of St. Louis Equation studied both of these policies and they summarise that the effect of fiscal policy is more than the monetary policy. This study used the Ordinary Least Square (OLS) method to arrive at the results applying nominal variables over the years 1974-1993.Applying nominal variables, Hasan (2001) discovered that both the fiscal and monetary policies are significant in the case of Bangladesh. Employing Variance Decompositions (VDCs) and Impulse Response Functions (IRFs) based on unrestricted Vector Autoregressions (VAR), Rahman (2005) argues that only monetary policy has a significant positive effect on GDP growth whereas fiscal policy has no such effect. Using Johansen cointegration technique and Vector Error Correction Model (VECM), Hasan et al. (2016) stated that monetary policy has a larger effect on GDP growth in comparison to fiscal policy. Using data from 1980 to 2014, Navaratnam and Mayandy (2016) found a negative impact of fiscal deficit on Bangladesh, India, Pakistan and Sri-Lanka and positive relationship for Nepal. Granger causality indicated that fiscal deficit triggers economic growth in Bangladesh, Pakistan and Nepal whereas for India and Sri-Lanka, growth was not caused by fiscal deficit. Utilising VECM model, Mohammed and Mahfuzul, 2017 found a positive and significant impact of fiscal deficit on GDP growth rate in Bangladesh between 2000 and 2016.

The effect of fiscal and monetary policies on GDP growth is shown differently in the studies of different researchers because of using different methods, variables and time frames. But the existing study has uniquely used three methods i.e. ARDL, VECM and VAR to reach the result validated by all these techniques. These three techniques have produced the same result in the long run dynamics that might make the existing study a rigorous academic piece in its kind.

Methodology

Variable Specification

Following table shows the variables used in the study together with their details.

Table 2 Variable Specification[3]

Serial No.	Variables	Sign	Type	Source
1	Log of Real GDP	Y (LY)	Dependent	WDI
2	Log of Real Government Expenditure [4]	G (LG)	Independent	WDI
3	Log of Real Money Supply (M2)	M2 (LM2)	Independent	WDI
4	Log of Nominal Interest Rate	NR (LNR)	Control	WDI
5	Log of Final Household Consumption	C (LC)	Control	WDI
6	Log of GDP Deflator (2010)	GDPD (LGDPD)	Control	WDI

In this paper, real government expenditure and money supply (M2) are taken as the fiscal policy and monetary policy variables respectively. Only government expenditure is taken to represent fiscal policy as it comprises government revenue as well. On the other hand, money supply (M2) represents the monetary policy stance of Bangladesh since unlike many of the developed countries like the U.S., Bangladesh Bank, the central bank of the country, does not intervene in the policy interest rates[5] frequently. Instead, Bangladesh Bank, through monetary policy, exerts influence on the money supply (M2) growth to achieve the macroeconomic targets.

Model Specification

Auto Regressive Distributed Lag (ARDL) technique has been used to resolve the Almon Lag problem of the original St. Louis Equation through taking the optimal lag for all the variables including both the exogenous and endogenous ones. Issues relating to endogeneity and omitted variables

3 Time Series data on different variables are collected from the World Bank Development Indicators (WDI). And, EViews 10 econometric package is used for estimations in this study.

4 Here, as revenue comprises a big part of government expenditure, only government expenditure is taken as the fiscal policy variable because taking government revenue at the same time may result into serial correlation.

5 Introduced only some 2 decades ago, policy interest rates, e.g., repo and reverse repo, are yet to be frequently used in formulating monetary policy in Bangladesh.

have been taken care of by introducing three new variables, namely, nominal lending interest rate, final household consumption expenditure and GDP deflator (2010) to the equation. The function form of the model is-

$$Y = f(G, M2, NR, C, GDPD)$$

The general equation of the model is-

$$LY_t = b_0 + b_1 LG_t + b_2 LM2_t + b_3 LNR_t + b_4 LC_t + b_5 LGDPD_t + f_t \quad (1)$$

Where,
$b0$ = Y- intercept term[6]
$b1$, $b2$, $b3$, $b4$ and $b5$ = Regression coefficients of the respective regressors.
T = Trend
f = the stochastic term[7]
t = time period.
In this context, according to the a priori expectation, the expected signs of the regression coefficients are $\beta_1>0$, $\beta_2 \gtrless 0$, $\beta_3<0$, $\beta_4>0$ and $\beta_5 \gtrless 0$.
Next, Vector Error Correction Model (VECM) and Vector Autoregressive (VAR) Model have also been used to estimate the same equation to check the consistency of the results found in the ARDL estimate.

Regression Techniques and the Other Tests

A. It is imperative that all the variables become integrated at their first difference form for this study. To check this property, Augmented Dickey Fuller (ADF) and Phillips Perron (PP) unit root tests have been used.[8] The ADF test uses the following equation.

$$\Delta Y_t = n + b_t + d_{t-1} + \sum_{j=1}^{k} a_j \Delta Y_{t-j} + f_t \quad (2)$$

Here, Δ is the difference operator; t indicates time trend; f is the error term; Y_t is the series and k represents the lag. PP test shares the same null hypothesis and asymptotic distribution with ADF test.

B. Three estimation techniques, ARDL, VECM and VAR have been used for regression in this study. In the beginning, using Akaike info criteria (AIC), Autoregressive Distributed Lag (ARDL Bound Testing)

6 It is the average value of real GDP keeping the values of all the explanatory variables at zero.
7 It indicates the unexplained variation in the dependent variable, GDP growth.
8 The null hypotheses of both of the tests are the same which states that the concerned time series has a unit root or possesses stochastic trend.

technique based on Ordinary Least Squares (OLS) is used to check the presence of long run cointegration among the variables. The basic ARDL regression model is given below.

$$Y_t = n + a0\,X_t + a1\,X_{t-1} + \ldots + a_p\,X_{t-q} + b1\,Y_{t-1} + \ldots + b_k\,Y_{t-k} + \varepsilon t \quad (3)$$

Here, μ indicates the intercept term, Y stands for the dependent variable and X represents the dynamic regressors. α shows the short-run coefficients whereasβ is used to show the long-run coefficients. ε is the error-term of the equation.

Then, to check the robustness of the model, the model is estimated using the Vector Error Correction Model (VECM) after checking the existence of long run cointegration using Johansen Cointegration Test. Once the existence of cointegration is confirmed, VECM estimate is conducted using the optimal lag as indicated by VAR Lag Order Selection Criteria. Conventional VECM for co-integrated series is given below:

$$\Delta Y = b + \sum_{i=1}^{n} \delta bi\,\Delta Y_{t-1} + \sum_{i=1}^{n} \delta d\,\Delta X_{t-1} + \{Z_{t-1} + nt \quad (4)$$

For simple bi-variate models, the following equation is used.

$$y_t = bx_t \quad (5)$$

In case of normalisation process in VECM, the equations used are as follows-

$$\Delta x_t = a_1(y_{t-1} - bx_{t-1}) + \varepsilon_t \quad (6)$$

$$\Delta y_t = a_2(y_{t-1} - bx_{t-1}) + n_t \quad (7)$$

Finally, a Vector Autoregressive (VAR) model is used to show the Variance Decompositions (VDCs) and Impulse Response Functions (IRFs) of the variables of interest. The VAR estimate is employed using the lags suggested by VAR Lag Order Selection Criteria. The VAR model uses the basic equation as follows-

$$y_t = v + A_1 y_{t-1} + \ldots + A_p y_{t-p} + B_0 x_t + B_1 B_{t-1} + ,,, + B_s x_{t-s} + u_t \quad (8)$$

Here, yt is a vector of K variables, each having p lags including some optional exogenous variables as xt.

C. Serial Correlation LM Test, Heteroskedasticity Test (Breusch-Pagan-Godfrey) and Normality Test are conducted to ensure that the residuals are free from any error. Also, to ensure model stability, Recursive Estimations (CUSUM and CUSUM of Squares Tests) are used.

Results and Interpretations

Unit Root Tests

Table 3 Unit Root Test Results*

Variables	ADF				PP				Order of Integration
	Level		1st Difference		Level		1st Difference		
	Constant	Constant & Trend	Constant	Constant & Trend	Constant	Constant & Trend	Constant	Constant & Trend	
LY	5.11	0.53	-1.80	-8.26	5.11	0.53	-4.05	-9.92	I (I)
	(1.00)	(1.00)	(0.37)	(0.00)	(1.00)	(1.00)	(0.00)	(0.00)	
LG	-0.07	-2.34	-7.50	-7.63	-0.04	-2.62	-7.41	-7.63	I (I)
	(0.95)	(0.40)	(0.00)	(0.00)	(0.95)	(0.27)	(0.00)	(0.00)	
LM2	-0.17	-2.47	-4.31	-4.24	0.07	-1.77	-4.24	-4.16	I (I)
	(0.93)	(0.34)	(0.00)	(0.01)	(0.96)	(0.70)	(0.00)	(0.01)	
LNR	-2.39	-2.55	-3.89	-4.05	-2.33	-3.06	-4.20	-4.17	I (I)
	(0.15)	(0.30)	(0.01)	(0.02)	(0.17)	(0.13)	(0.00)	(0.01)	
LC	-0.56	-2.44	-9.15	-9.23	-0.56	-2.89	-9.18	-9.86	I (I)
	(0.87)	(0.36)	(0.00)	(0.00)	(0.87)	(0.18)	(0.00)	(0.00)	
LGDPD	-1.86	-2.84	-4.17	-2.94	-1.59	-2.69	-4.13	-4.22	I (I)
	(0.35)	(0.20)	(0.00)	(0.16)	(0.48)	(0.25)	(0.00)	(0.01)	

**Results show adjusted t-stats with associated probabilities in parentheses. From the results of both ADF and PP test, it is evident that the variables in the study become integrated at their first difference form which is necessary for the estimation techniques used.*

Long-run results from ARDL and VECM Estimates

Table 4 ARDL and VECM Long Run Results

ARDL[9]			VECM[10] [11]		
Variables	**Coefficient**	**t-statistic**	**Variables**	**Coefficient**	**t-statistic**
LG	0.43	2.42	LY (-1)	1.00	-
LM2	0.03	0.38	LG (-1)	-0.72	-9.88
LNR	-0.23	-2.43	LM2 (-1)	-0.09	-1.50
LC	0.19	0.62	LNR (-1)	0.30	4.61
LGDPD	0.25	2.30	LGDPD (-1)	0.13	2.07
C	9.07	2.83	-	-	-

9 The F-Stat value of the ARDL estimate is 4.76, which is above the upper bound value of 1% significance level at 4.15. This indicates cointegration of the variables in the long run.

10 As the Trace and Maximum Eigenvalue of Johansen Cointegration Test indicate the presence of at least 2 cointegrating equations among the variables at the 0.05 level, VECM estimate is performed to see their respective coefficients.

11 LC is not considered in the long run estimate of VECM, as it is taken as an exogenous variable.

Here, in the long run, ARDL estimate shows that government expenditure has statistically significant (t-statistic value equal to or above |1.96|) and positive impact on GDP growth. After the normalisation process, the same result has also been produced by the VECM[12] estimate. However, in the case of money supply, both of the estimation techniques reveal that it does not have a statistically significant influence on GDP growth in the long run.[13]

ARDL and VECM Regression Outputs for the Short Run with CointEq(-1)

Table 5 ARDL and VECM Short-run Outputs

ARDL			VECM		
Variables	**Coefficient**	**t-statistic**	**Variables**	**Coefficient**	**t-statistic**
D(LY(-1))	0.83	9.11	CointEq1	-0.17	-2.86
D(LG)	0.21	8.77	D(LY(-1))	-0.01	-0.02
D(LG(-1))	-0.04	-2.21	D(LY(-2))	0.11	0.57
D(LG(-2))	-0.14	-6.52	D(LY(-3))	-0.07	-0.31
D(LM2)	0.06	2.22	D(LG(-1))	0.01	0.33
D(LM2(-1))	0.08	3.75	D(LG(-2))	-0.11	-2.54
D(LM2(-2))	0.07	2.85	D(LG(-3))	-0.01	-0.20
D(LM2(-3))	0.10	3.82	D(LM2(-1))	0.02	0.63
D(LNR)	0.01	0.39	D(LM2(-2))	-0.03	-0.83
D(LNR(-1))	0.08	3.97	D(LM2(-3))	0.09	2.20
D(LNR(-2))	0.05	3.14	D(LNR(-1))	0.08	1.89
D(LNR(-3))	0.08	4.55	D(LNR(-2))	-0.00	-0.23
D(LC)	0.24	6.00	D(LNR(-3))	0.02	0.62
D(LC(-1))	-0.01	-0.30	D(LGDPD(-1))	0.07	0.90
D(LC(-2))	0.17	5.22	D(LGDPD(-2))	-0.09	-1.19
D(LGDPD)	0.40	6.65	D(LGDPD(-3))	0.19	2.31
D(LGDPD(-1))	-0.01	-0.36	LC	0.05	2.87
D(LGDPD(-2))	0.08	1.68	-	-	-
D(LGDPD(-3))	0.22	4.90	-	-	-
CointEq(-1)*	-0.49	-7.87	-	-	-

12 In their study, Osuji and Chigbu (2013) found Government Expenditure to be positively related to growth. Government capital expenditures/ investments have a long trail of positive results to engender growth. Therefore, it is generally found to impact the economy positively in the long run.

13 Classical Economic theories believe that money does not have any impact in the long run as it does not affect the real economy. Whatever effect money has in the short run becomes nullified in the long run (Friedman, 1968). Therefore, money is said to be 'growth neutral in the long run.' Tawodros (2007), Wallace and Cabrera (2006) apart from many other researchers in this area found evidence of money neutrality in their respective studies.Osuji and Chigbu (2013), especially, found that money supply has an inverse relationship with growth in the long run.

From 'ARDL Error Correction (ECM) Regression', it is seen that government expenditure has a little (0.04)[14] but statistically significant impact on growth whereas money supply has some (0.31)[15] positive and significant effect. This indicates that money supply has more influence on growth in the short run. This result is aligned to the idea that fluctuations in money supply have short run effects until the economy adjusts towards equilibrium (Mankiw, 2015). The CointEq-1 value in this model is -0.49 with 1% level of significance. Hence, it is clear that in the model cointegration between the dependent variable and the regressors exists. From the value, it can also be said that around 50% disequilibrium is corrected in the current period. So, it takes the economy about two years to reach equilibrium after any shock.

However, from the VECM output, it is seen that government expenditure has statistically significant short run effects only in the 2nd lag while money supply has significant impact in its 3rd lag. The CointEq1 value is negative and statistically significant, as desirable in the short run dynamics of VECM.

Variance Decomposition (VDC) and Impulse Response Function (IRF) from Vector Autoregressive (VAR) Model

Table6 Variance Decomposition of GDP (LY)

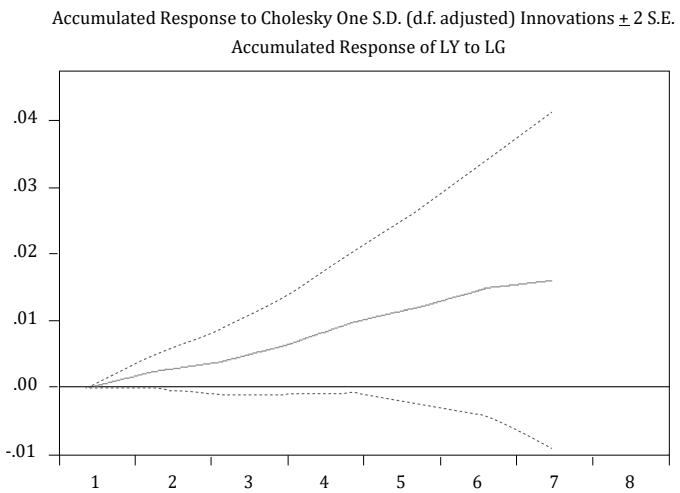
Period	S.E.	LY	LG	LM2	LNR	LGDPD
1	0.005154	100.0000	0.000000	0.000000	0.000000	0.000000
		(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)
2	0.006255	77.26966	20.91218	0.807769	0.024757	0.985626
		(13.8134)	(12.9956)	(4.24720)	(5.46269)	(3.04933)
3	0.007474	54.92854	19.47744	2.296391	20.32798	2.969653
		(14.4616)	(11.9590)	(5.94912)	(11.7450)	(4.39811)
4	0.008838	40.07241	24.72867	1.672873	31.40076	2.125282
		(13.1670)	(12.6535)	(6.07859)	(12.4357)	(3.66965)
5	0.010333	30.11485	32.43789	1.544707	33.88773	2.014832
		(12.3283)	(13.9380)	(7.10508)	(12.2734)	(3.44284)
6	0.010972	27.83234	34.98426	4.100222	30.16651	2.916672
		(12.0085)	(14.4768)	(9.24050)	(11.1848)	(3.91165)
7	0.011701	26.15114	38.17493	6.405802	26.62981	2.638327
		(11.9981)	(14.7338)	(11.3763)	(10.2513)	(4.01745)
8	0.012260	24.46486	35.97923	12.78189	24.37010	2.403914
		(12.0107)	(14.8624)	(13.3974)	(9.88211)	(4.20657)

14 Adding the coefficients of government expenditure (0.21-0.04-0.13= 0.04)

15 Adding the coefficients of money supply (0.06+0.08+0.07+0.1= 0.31)

In order to examine whether government expenditure or money supply has greater impact on growth, using VAR estimate from the orthogonalised residuals[16], Variance Decomposition (VDC) and Impulse Response Functions (IRFs) are generated[17]. From Table 6, it is evident that government expenditure explains the variance of forecast error of real GDP growth more than money supply from year 02 to year 08. From the 2nd year onward, government expenditure explains at least 19.5% of the forecast error variances in any given year whereas money supply explains at most 12.8% during the whole time span.

Figure 4. Impulse Response of GDP Growth to Government Expenditure



Here, the IRF graph (Fig. 4) illustrates how real GDP growth responds to any shock in the government expenditure. Apparently, growth responds positively with any such shock in the beginning and it keeps on growing with passage of time, indicating that government expenditure shock has effects both in the long and short run.

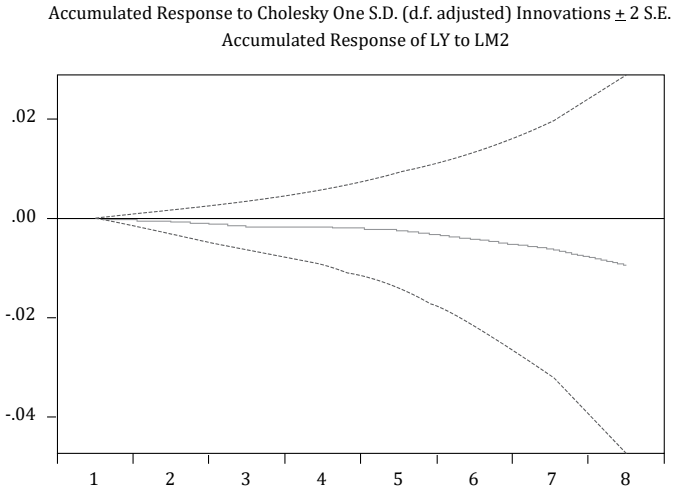
On the contrary, response of growth in terms of any shock in the money supply is negative as shown in the fig.5.From the initial period up to year 08, it is seen to be negative.

From these two figures, it is apparent that government expenditure has more impact on real GDP growth compared to that of money supply both in the long and short run.

16 For the orthogonalisation of the residuals, Cholesky decomposition has been used.

17 Through 1000 Monte Carlo simulations from the orthogonalised residuals, the standard errors of VDC and the confidence bands of IRFs have been generated.

Figure 5. Impulse Response of GDP Growth to Money Supply



Residual Diagnostics Results

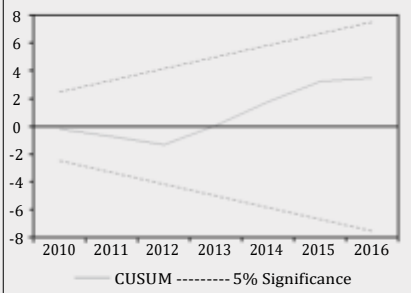
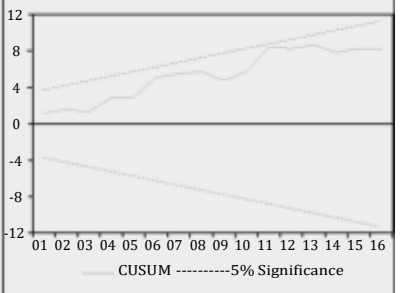
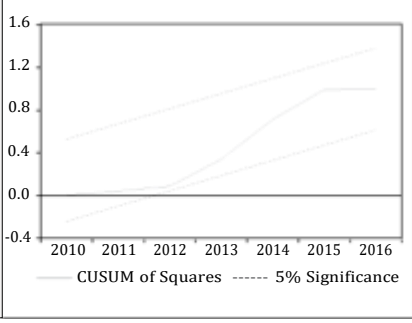
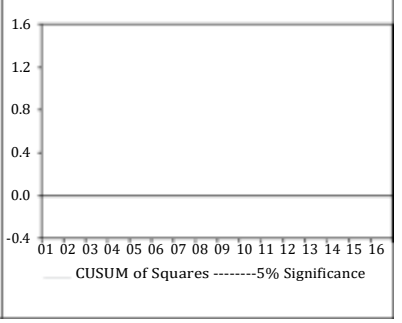
Table 7 Summary of the Results of Residual Diagnostics Tests of ARDL and VECM

Breusch-Godfrey Serial Correlation LM Test			
ARDL		**VECM**	
Prob. F(1,6)	0.6676	Prob. F(1,15)	0.9151
Prob. Chi-Square(1)	0.2980	Prob. Chi-Square(1)	0.8723
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
ARDL		**VECM**	
Prob. F(25,7)	0.5464	Prob. F(21,11)	0.4616
Prob. Chi-Square(25)	0.4197	Prob. Chi-Square(21)	0.3849
Prob. Chi-Square(25)	1.0000	Prob. Chi-Square(21)	0.9949
Normality Test			
ARDL		VECM	
Jarque-Bera	0.278303	Jarque-Bera	1.810393
Prob.	0.870096	Prob.	0.404462

From the results of these tests, it is evident that the modelsare free from serial correlation and heteroskedasticity. And the residuals of these models are also normally distributed.

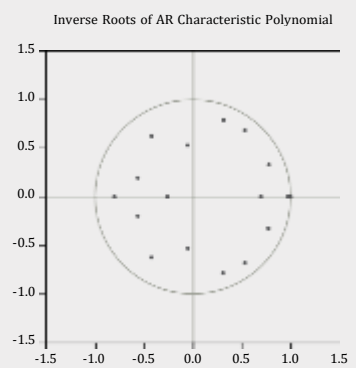
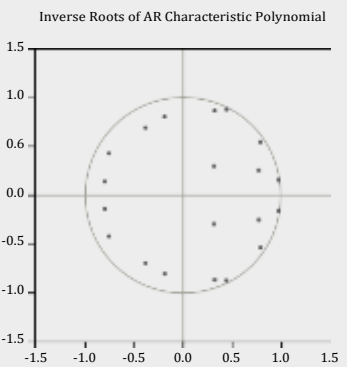
Stability Diagnostics Results

Table 8 Summary of the Results of Stability Diagnostics Tests

Recursive Estimations		
	ARDL	**VECM**
CUSUM		
CUSUM Square		

In these graphs, it is visible that the drawn lines are within the 5% critical line, assuring the stability of the ARDL and VECM models.

Table 9 AR Roots Graph

VECM	VAR
	

The AR Roots Graphs.provides information on the stability of the VECM and VAR models. The estimates, particularly, IRFs become inaccurate unless the AR Roots results indicate favourably to the stability of the models. Here, both of the graphs show that the inverse roots of the models are within the circles, indicating the stability of the VECM and VAR models.

Combined Results of the Models

Table 10 Comparative Results of ARDL and VECM

	ARDL		VECM		
	Variables	**Coefficient**	**Variables**	**Coefficient**	**t-statistic**
Long Run	LG	0.43	0.0462	-0.72	-9.87
	LM2	0.03	0.7143	-0.09	-1.50
Short Run	LG	0.04	Around 5%*	-0.10	Almost insignificant**
	LM2	0.31	Around 5%*	0.08	Almost insignificant**

** Probabilities of most of the lagged variables are below 5% significance level.*

***t-stats values of most of the lagged variables are below the significance level of 1.96*

From table 10, it is seen that both ARDL and VECM indicate that government expenditure has more impact on real GDP growth compared to money supply in the long run. However, in the short run, ARDL suggests money supply to be more influential. VECM, nonetheless, shows that neither government expenditure nor money supply has any significant impact in the short run. From the VAR estimates (Table: 5.4, Fig: 5.4.1 & 5.4.2), it is also shown that government expenditure has more influence on growth both in the long and short run.

To recapitulate, it becomes validated from all the estimation techniques that government expenditure has more impact on GDP growth compared to money supply in the long run.

Findings, Conclusion and Policy Recommendations

Findings

The study started with the objectives to unravel the tangle as to the relative effectiveness of monetary and fiscal policies on GDP growth using ARDL, VECM and VAR estimation Techniques. From the results of the estimations,

it is evident; although the short run dynamics are not uniform, it is clear enough from the three long run techniques that the fiscal policy has more impact on GDP growth compared to the monetary policy.

Conclusion

The results from all the three estimation techniques reveal that in the long run, fiscal policy has a more significant role to play on GDP growth in comparison to monetary policy. This result is distinguished from the results found by Rahman (2005) and Hasan et al. (2016) but resembles the study conducted by Latif and Chowdhury (1998). The theory of Friedman (1968) that monetary policy cannot have much impact on the long run is also reflected by this result.

Quarterly data of GDP, government expenditure or money supply are not available. A quarterly time series regression could have provided somewhat different results. And, although the short-run dynamics do not coincide in different estimation techniques, the short-run results from the ARDL technique are more consistent with economic theories.

Policy Recommendations

On the basis of the results obtained, the policy recommendations may closely be associated with the promotion of fiscal policy, which includes:

- Fiscal policy, especially, the government expenditure has a very significant association with GDP growth. In this regard, it requires enhancing government expenditure in stimulating GDP growth. Notable increase of government expenditure results from raising more government revenues.

- The main target of monetary policy should make stable the macroeconomic situation by keeping the lending interest rate and exchange rate low.

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Nepotism and Job Search: An Investigation on Bangladeshi Graduates

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Abstract

The youth unemployment rate in Bangladesh is 10.6 % which is more than twice the overall national unemployment rate standing at 4.2 %. And this group of young people are at risk of having their labour-market prospects deteriorating in the long term according to a report by the International Labor Organization (Ilo, 2022). To correctly identify all the plausible aspects leading to massive unemployment among the youth, nepotism marks an important area of study and investigation in order to figure out particularly in which areas the university students fail or are able to secure their desired job opportunities after their graduation. However, this issue rarely receives the necessary attention and focus, and scholarly discussions on this topic are sparse. To shed light on this, a survey questionnaire was designed for university graduates with different backgrounds and expectations which led us to gather interesting insights into how nepotism plays a role in shaping their interest into areas of job search and also in helping them to get their desired jobs. We were able to confirm that graduates who rely on family and friends for job leads are more likely to get hired shortly after graduation. They require fewer job applications, and are less likely to broaden their horizons in their search for employment. It was also noted that the dynamics of the job search vary significantly between majors, particularly in the fields of Business Administration, STEM (Science, Technology, Engineering and Mathematics) and the Social Sciences, in terms of both the demands of the applicants and the extent to which they rely on external assistance in order to secure employment. These findings provide a glimpse into the decision-making process behind

the nepotistic job choices made by graduates and also helped in shedding light on the consequences of those who were engaged in the job seeking process without the same advantages or backings.

Introduction

Institutional nepotism refers to the situation when there is favouritism or preferential treatment to select people in an institutional space especially when most candidates are kept under the pretence that jobs would be offered to the most suited among them. In other words, it refers to the practice of favouring one's friends, relatives, or other acquaintances over other applicants for a position due to sentimental ties rather than professional merit (Kwon, 2006). It is somewhat of a major concern that this phenomenon is hardly discussed and researched in the academic environment. Every year, roughly a million more recent graduates enter the ranks of the unemployed, according to the Bangladesh Bureau of Statistics (2020), further exacerbating an already challenging situation. Bangladesh has a 4.37 percent unemployment rate, and 46% of young unemployed persons under the age of 25 have college degrees. Therefore, it is important to thoroughly research the conjectures that govern new graduates' entry into the job market in accordance with their field of study. Due to market dynamics, the nepotism phenomenon is explicitly examined in the context of emerging countries (Popczyk, W. 2017). This article will not delve into the societal perspective towards nepotism, instead focus on the actuality of nepotism among graduates. A reason for this is to exclude the subjective view towards nepotism among the wider populace and follow a more evidence-based approach. However, this paper will attempt to provide a picture of how nepotism plays a role in the job choices of graduates from their lenses, as well as how their decisions to pursue nepotistic career choices or not have connections with the types of jobs they apply for, the majors they pursue, the quantity and quality of jobs they apply for, as well as their industry-relevant skills. These observations were further used in the research to pinpoint specific trends and patterns of graduate hiring in Bangladesh's competitive but constrained labour market.

Research Objective:

The primary objective of this research is to explore different factors relating to job search of graduates and its connection with nepotism. For the achievement of this objective, this research further investigated the number of jobs one has applied to, the waiting period to seek their first job, job exploration time to choose a specific career path and the generality

of nepotism among different majors. A further examination was done into their relations to figure out whether or not they sought to pursue nepotistic means in their job search in order to get an important insight and find a pattern among these factors. The significance of these factors gives a crucial insight into the job seeking attitude of graduates as well as opens up a new dimension to an area of research in which existing literature is sporadic. This research will broaden our understanding of the intricate labour market dynamics, the process of job search and the varied instances of the connection of nepotism that is faced by the graduates of all domains.

Literature Review:

Choice of career has always been a concern for graduates in the market and the highly contested labour market in Bangladesh often presents challenges with not only matching skills but also other external factors that play a crucial role in it. There are multiple phases to choosing a career, and several models that determine the stages of exploration, search, stages of evaluation and decision (Mihal, Sorce, & Comte, 1984). Among them, People's social context has been demonstrated to have an impact on their job search ferocity, decision-making during the pursuit process, and job accomplishment (Jaidi, Van Hooft, & Arends, 2011). Using social networks is referred to as a key strategy for learning about job prospects in the job search literature (Wanberg, Kanfer, & Banas, 2000). Due to higher competition and organisational practices of the labour market, nepotism and cronyism always seemed to be prevalent in job placements (Van Hoye, 2009). However, the traditional methods of research regarding nepotism has always been from the hiring methods of the organisation as opposed to the applicant's viewpoint. Bellow (2003) adds to this conventional viewpoint by proposing a contemporary interpretation of nepotism that emphasises the viewpoint of the job applicant. Bellow (2003) introduces the term "new nepotism" to describe the phenomenon of people following their family members and friends by making identical choices regarding their workplace or taking advantage of possibilities made available by those in their inner circle. This is more likely due to having an existing opportunity ready which leads the job aspirants to search for jobs demonstrating a lack of self-efficacy and trying to make use of their existing networks to avoid competition on the competency paradigm. Students' expectations about their own abilities in a certain field are a powerful predictor of their enthusiasm enhancing their self-efficacy during job search for that field, as Hackett (1981) showed. But due to graduates already having an opportunity to evade the process of job selection, they often don't engage

in the self-efficacy method of job selection. One of the most important factors that might convert students to choose a certain career path is the situation wherein their parents have already influenced them heavily to join a particular type of industry. As a result, the graduate is very much reluctant to think on their own or put a rigorous thought before joining. Kniveton (2004) states that the family can help a young person choose a career by giving them information and advice, either directly or indirectly. Within this perspective, there are several factors that one must consider. If a self-fit perspective is brought into context, it might be the case that the graduates feel more inclined to their parent's profession because they see a larger conjugation between their personality and their parent's occupation. According to Van Hooft and Tracy Stout (2013) in 'Nepotism in organisations', this perspective is aided by the fact that chances and favouritism may play a role in why some people choose to advance their family members' or friends' careers. For example, parents can leverage their influence within a company to open doors for their children (Corporate favouritism). In 'Nepotism in organisations' edited by Jones, R. G.(2013), states that a nepotistic job search could be described as making less extensive use of the resources available to get employment. Therefore, these choices that graduates make can be because they feel more in line with their parents occupations or they could be pressured/coerced to join or maybe there was an opportunity that was already present for them to tap into, which would ideally be termed as a nepotistic way of choosing a career. This finding lends credence to the idea that highly self-determined people are less likely to be swayed into a career path they aren't interested in by pressure from family members, while nepotistic environments are more likely to lead people to make decisions based on what's best for them professionally rather than what's best for them personally. Subsequently, when people are less inclined to actively seek out new employment prospects, it is likely because they were pressured into making a decision or given a chance to settle into a particular path.

According to Werbel (2000), in order to develop accurate judgments of an ideal profession choice, both self-research and environmental inquiry are required. Job search typically refers to both the number of places people check for work-related information (job search sources) and the amount of time and energy people devote to finding and applying for jobs (Barber et al., 1994; Kanfer et al., 2001). On the basis of this theory, Crossley and Highhouse (2005) conceptually and empirically differentiated between three job search strategies: (1) a focused strategy, in which one focuses their

search efforts on a small number of carefully screened potential employers; (2) an exploratory strategy, in which one examines several employment options and actively gathers information; and (3) a haphazard strategy, in which one passively gathers information both inside and outside of one's area of expertise. A job search involving nepotism is unlikely to use any of these strategies because it is limited to obtaining a job through one's network of relatives and friends rather than casting a wider net to include acquaintances and professional contacts or making use of a larger array of more formal job search sources. Thus, exploration and waiting time for securing a job becomes an important factor for the job search process

Moreover, the type of nepotism that is employed to gain employment differs from one situation to the next. Here, close friends and relatives are examples of strong links, while casual acquaintances and former co-workers are examples of weak ties. As Granovetter (1973) argues in his strengths and weaknesses theory, those with whom we have tenuous ties tend to associate with people from different social groups and obtain information from a variety of sources. If the quality of your network is good, networking might boost your chances of landing a job. Therefore, the people one knows, the strength of my relationships with them, and the influence they have in decision-making all play a role in the likelihood of finding a new employment. Since nepotistic employment could lead to members of the same family being given preferential treatment in the recruiting process, this would presumably stand antithetical to the idea of consistency. In some cases, such as in the recruiting process, family members may be given preferential treatment or held to higher standards than the wider populace (Dickson, Nieminen, & Biermeier-Hanson, 2012). An additional violation of the freedom from bias principle occurs when a job candidate is related to the management making the hiring choice (or to someone higher up in the organisation). Some fields of study are more likely to attract favouritism than others, depending on the student's chosen major. In the Gulf Cooperation Council (GCC) region, factors other than education, such as family influence and nepotism, can play a key role in gaining a job. For example, in GCC nations, nepotism is prevalent in many spheres, such as finding or keeping a job, gaining access to public facilities, and setting up a marriage (Kropf & Newbury-Smith, 2016).

Since nepotism is a salient problem all around the world and it is difficult to identify the metrics to presume perceived nepotistic attitudes, it becomes important to have a quantitative approach to seeing beyond what is obvious. And it becomes more important in a country like Bangladesh

where resources and research on this topic is dubiously scarce. Although there has been some research focusing on the effects of nepotism in industries, there is hardly any source from a job seekers perspective which makes it harder to find any previous literature surrounding this concept.

Methodology:

A survey questionnaire was designed for 210 participants from different backgrounds and was spread through online mediums. According to the graded scale of sample sizes proposed by Comrey and Lee (2013) the number of respondents in the sample is considered to be fair as it includes more than 200 respondents. The questionnaire was designed in google forms to bring information related to nepotism in a subtle way so as to not invite biassed responses from its respondents. The target respondents of the survey were graduates in the market who had an experience of applying to jobs and having gone through the process of selection. The questions were asked in a way that didn't specifically mention the word "Nepotism" or anything along the lines but they were asked to detail their application process. The questions ranged from asking about their industry relevant skills as well as relevant information regarding how they carried out the process of job search. It included questions as to who had the most involvement during their process of searching for a job and also took information regarding what sort of help these stakeholders (Parents, Relatives, Friends, Instructors, Existing Employees within that organisation etc.) were providing. From that information, it was possible to track whether they received any special assistance from the involved stakeholders immediately following that question. This helps in bringing out a disinterested approach of the respondent wherein they will unknowingly admit to the extent of help they took. For example, if the applicant responded that their CV's were forwarded with an active recommendation or the person involved was already part of the organisation, it was taken as a sign of direct involvement and thus a nepotistic way of searching for a job. On the other hand, if the assistance was merely suggestions, the individual was working in that field they applied to or helping in the application process, it was deemed to be not having enough information to call it nepotism yet. In this way, it was possible to figure out which of the graduates took external assistance to land a job and which ones followed the usual procedure of recruitment. The questionnaire didn't give explicit hints that they were collecting data for possible interference and thus was able to avoid the biased responses that would have been presumably larger if they were directly about their

experience. Later on, the data was segmented into two parts, one of which included the respondents who have taken heavy assistance from external sources for the purpose of this study and the respondents who didn't receive heavy external help. For the ease of estimation, these two groups were compared to other factors in the survey.

The data were stored, processed and analysed using Pandas from Python and Microsoft Excel software. Initially the data was stored in python based on responses. After that the Gaussian normal distribution test was performed to see if the data was normally distributed. Necessary data cleaning was also done through pandas. The study attempted to find out the relationship between nepotism and other factors such as their entry salary, the number of jobs they applied to, industry relevant skills and their exploration during job search as they reported. For this purpose, it focused on whether any difference existed between (Nepotism = 1) and (Nepotism = 0) using statistical tests. Statistical tests could not be performed on the majority of the outputs due to data being heavily categorical. The data was collected this way because respondents are often very uncomfortable giving out their personal information like rejections, number of jobs they applied to, salaries of those jobs, CGPA etc. which leads to a skewed dataset. That's why an attempt was made to collect data within a certain range so that they don't feel like they are giving away too much information. Later on, Pandas was also used to generate graphs and charts based on specific Tables prepared in that segment of study that were derived from multiple responses.

Data:

In this cross-sectional dataset, we have 210 participants among which 69 (32.86%) participants had been involved with nepotism while applying while 141 (67.14%) participants had no major involvement with it. Among these graduates, our data was segmented in 3 categories according to their subject major, since job opportunities and dynamics pertaining to skills are vastly different in each of these spheres. So, the first of these 3 categories was the STEM group (science, technology, engineering and mathematics) where the highest number of respondents was gathered (51.4%) including engineering along with life and natural science graduates, second was the Business Administration group (29.1%) and finally the Social Sciences group (19.5%) which included Economics, Humanities and other peripheral subjects relating to it. Another important categorization was whether they studied in a Public, Private or National University.

We found that Public University had 30.48% of the respondents and private universities had 66.19% along with a minutiae 3.33% responses from national universities as well. Due to sample size differences among these 3 categories especially with national universities only holding 3 percent responses, the consideration to analyse the implications of type of university was not made. From this dataset, the segmentation was done on the basis of the entry salary of the jobs they applied to and from that perspective, the prevalence of nepotism was observed.

Results and Findings:

The approach for finding out the effects of nepotism would be viewed from different metrics in which the aim is to understand how its presence affects the job search. This research can be used to better our understanding about the labour market dynamics wherein we consider nepotism as a factor in the job search process, to be cognisant of how nepotism affects youth in terms of their waiting period and their own exploration in regards to job seeking and how it varies for different subjects and field of employments. Using descriptive statistics, the following factors will be investigated among the respondents of the survey.

1. Number of jobs they applied to before landing their first job: Essentially people who use external assistance do not need to apply to many jobs because they have predetermined choices that already exist.

2. Their waiting period for a job and its connection to Nepotism: The wait for a job can often be heavily correlated with their choice or privilege of using external links to land jobs.

3. Exploration of job search before applying to different places: Exploration of jobs can be connected as such that people who extensively search for jobs have less connections as they don't have the opportunity that is tailored to their needs. Highly motivated people and people with options to be really exploratory with their career choices as per the job search strategy theory by Crossley and Highhouse (2005).

4. Based on certain salary ranges and their majors, an estimation of nepotistic practices carried out by graduates and its correlation with their CGPA range: This estimation is going to be insightful as the determination of which field and among which salary range are the dominant practitioners of nepotism and its eventual connection with their CGPA will be tracked. Often, people with high industry or academic skills don't need to pursue external assistance and that hypothesis will be put to test

1. Number of Jobs they Applied to Before Landing their First Job:

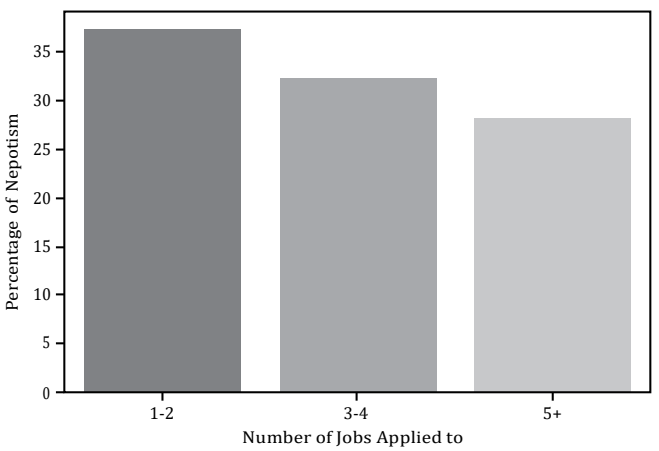
Among 210 participants, 3 segments were created according to the quantity of the jobs they applied to before finally getting acceptance. Here, the 3 segments were primarily people who applied to 1-2 jobs, 3-4 jobs and 5+ jobs before finally getting accepted to their desired positions. From this study, it is evident that people who applied to 1-2 jobs only had a higher likelihood of carrying out nepotistic ways of applying (36.3%) than graduates who applied to 3-4 jobs (32.4%) and consequently that was outnumbered eventually to graduates who applied to 5 or more jobs (28.3%).

Table 1 Variable Specification

Number of Jobs Applied to	No. of responses	Frequency of Nepotism	Percentage of Nepotism
1-2	99	36	37.3%
3-4	37	12	32.4%
5 and above	74	21	28.3%
Grand Total	210	69	

** Total sample size: 210 (141 from experimental group, 69 from control group)*

Figure 1.2: Bar Plot of Nepotism Against Number of Jobs Applied to



2. How Long did they Have to Wait to Secure their First Job and its Connection to Nepotism

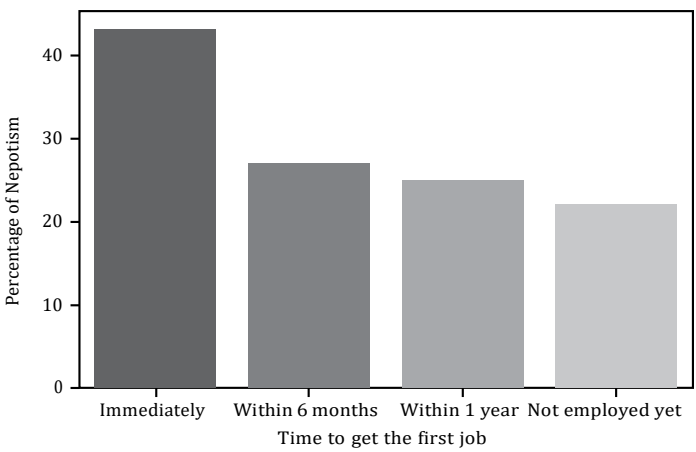
The groups were divided into 5 clusters wherein their duration to secure their desired job was observed. Here the groupings were whether they immediately received the job they applied to, within 6 months duration,

within 1 year duration, more than a year duration or their current status still remains as unemployed. Here it can be observed that graduates who immediately received the jobs have a higher percentage of using external assistance (43.1%) as their path was assisted with less hurdles along the way. It can also be seen that these graduates had a very less amount of career exploration (28.81% of them had only explored 1 or 2 on a Likert scale of 5) as they immediately entered the job market. Secondly, it is seen that graduates who secured their job within 6 months had a tendency to use nepotism at a level of 27% and within 1 year it goes down to 25%. It should also be noted that graduates who are not employed yet tended to have the lowest percentage of exercising nepotism with only 22% trying to seek out external sources of job search. However, we can see that graduates who have waited out more than a year have the highest tendency to exercise external links to carry out their job search (58%). It should be noted however that they cover only 8.09% of the total respondents and the entry salary of the jobs they apply to are essentially low paying jobs where 29.41% are 10-15k jobs and 47.05% are ranging from 15-25k salary.

Table 2 Distribution of Time Required to Seek a Job and Percentage of Nepotism

Job securing Duration	Frequency	Nepotism frequency	Nepotism percentage
Immediately	58	25	43.1%
Within 6 months	69	19	27%
Within 1 year	12	3	25%
Not employed yet	50	11	22%

Figure 2.2: Bar Plot of Time to Get First Job vs Nepotism Percentage



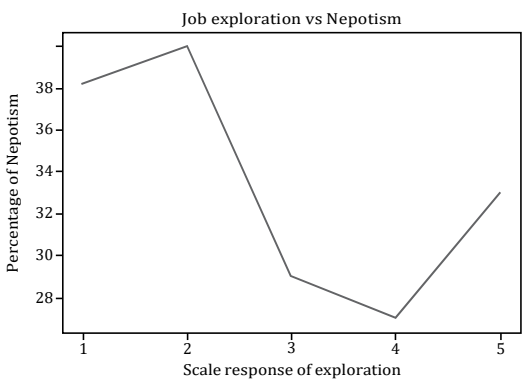
3. Exploration of Job Search Before Applying to Different Places

As mentioned in the literature review, organisation psychologists often correlate people's exploration of job search with their tendency for nepotistic practices. In this question, it was asking the respondents to rate their exploration of different options in the job market of their field out of a scale of 5 before applying to jobs. Graduates who rated themselves low on the exploration scale tended to have the highest percent of nepotistic means of accessing a job wherein respondents with scale response '1' had a 38.2% and scale response '2' had nepotism percentage of 40%. But as the scale has moved up, it can be seen that nepotism has been decreasing as '3' got 29% and '4' got 27% of respondents pursuing alternate ways of career search. However, it is striking to note that scale response '5' got a higher percentage of 34 % which is greater than its previous 2 counterparts. The reason could be that this particular group was already applying to high paying jobs as they had 56 percent of respondents applying to an entry level salary of more than 35 thousand and 50 thousand combined. They also have 40 percent graduates who only applied to 1-2 jobs which means other factors like job seeking duration and entry salary affected their exploration tendencies.

Table 3 Statistical Summary of Job Exploration and Percentage of Nepotism

Exploration Scale Response	Frequency	Nepotism frequency	Percentage
1	34	13	38.2%
2	25	10	40%
3	55	16	29%
4	47	13	27%
5	49	17	33%

Figure 3.2: Summary of Job Exploration Before Application vs Nepotism



4. Entry Salary Grouping of Graduates of Different Majors

Graduates in Business Administration have been segmented in 3 clusters on the basis of their entry salary offered for recruitment. The first is for low paying jobs which range below 15k while mid paying jobs range above 15k to 35k. The highest paying jobs for fresh graduates are 35k and above. It is interesting to note that whichever Business Administration graduates are getting low paying jobs have a higher percentage of nepotism (28.57%) where they make up to 14.29% of the total low paying jobs. But as we move on to high paying jobs, we can see a lesser percentage of nepotism for 15-35k entry salary (21.62%) and for 35k+ range (23.52%) as well. They respectively make up for 32.17% and 30.3% of the population size among those salary ranges.

Table 4 Distribution of Nepotism Among Business Administration Graduates for Different Entry Salary

Entry Salary	Range	Frequency	Nepotism Frequency	Nepotism Percentage
Low paying Jobs	10,000-15,000	7	2	28.57%
Mid paying jobs	15,001-34,999	37,	8	21.62%
High paying Jobs	35,000 and above	17	4	23.52%

Now let's look at the picture for Graduates in STEM. As usual they have been segmented in 3 clusters on the basis of their entry salary offered for recruitment. It is interesting to note that the situation gets reversed from Business Administration graduates as the percentage of nepotism tends to increase as we go from low to high paying jobs. For low paying jobs, a 26.92% nepotism is observed among 53.06 percent of the respondents in that salary category. But as we move on to high paying jobs, we can see higher levels of nepotism for 15-35k entry salary (41.37%) and for 35k+ range (37.5%). They make up for 50.44% and 37.5% of the population size among those salary ranges respectively.

Table 5 Distribution of Nepotism Among STEM Graduates for Different Entry Salary

Entry Salary	Range	Frequency	Nepotism Frequency	Nepotism Percentage
Low paying Jobs	10,000-15,000	26	7	26.92%
Mid paying jobs	15,001-34,999	58	24	41.37%
High paying Jobs	35,000 and above	21	8	38.09%

Finally, observing the situations in Social Science subjects, we have the least amount of nepotism in low paying jobs (18.75%) and as the entry salary goes up, it becomes tougher to land a job without external links

making mid paying jobs have a nepotism percentage of 50% and 37.5 % among high paying jobs. This can be explained by the availability of social science jobs and the intense competition graduates end up facing for that reason.

Table 6 Distribution of Nepotism Among Social Science Graduates for Different Entry Salary

Entry Salary	Range	Frequency	Nepotism Frequency	Nepotism Percentage
Low paying Jobs	10,000-15,000	3	16	18.75%
Mid paying jobs	15,001-34,999	8	16	50%
High paying Jobs	35,000 and above	3	8	37.5%

Conclusion:

Nepotism is becoming more of a perturbing issue among graduates especially when there is an unemployment problem and researchesindicate that when it comes to employment and promotion in the public sector, personal ties and favouritism have surpassed individual merit and success around the world, as reported by the Gatti, R., (2013). The university graduates that add to the general unemployment population in Bangladesh is certainly a concern. In a country where scope of various jobs are not abundant, it is definitely a struggle to make a smooth transition to one's career. In such a situation, the sociocultural context places a crucial role in job placement through nepotistic means. Therefore, research needs to be done to accommodate the modal and procedural aspects of job recruitment. This sort of research is scarce in nature because recruiters often are not comfortable providing the data for the prevalence of nepotism in their workplace and it is often the case that they don't even keep the data of the procedures. Then again, finding networks of relatives is an arduous task since it calls for access to private data that is sometimes hidden from the public. Even when information is available, detecting nepotism is very laborious and time-consuming. Prior attempts to implement such matching algorithms lacked robustness in regards to the methodology used which forced the researchers to adopt a varied range of techniques to detect nepotism (Ferlazzo, 2012). That's why in this paper, the focus was on the graduates who were giving data points to identify the general trends and patterns of the factors that are associated with job seeking. The patterns help identify what factors contributed most and the exact nature of the effect of nepotism in the process of their job search.

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Appendix: Survey Questionnaire

Graduates Making Career Choices: Factors and Influences

* Required

1. Gender *

Mark only one checkbox.

☐ Male ☐ Female

2. Age *

☐

3. What did you major in? *

Mark only one checkbox.

☐ Engineering ☐ Business Administration ☐ Law

☐ Social science ☐ Medical Science ☐ Natural Science

☐ Humanities ☐ Economics

4. What is your current education level? *

Mark only one oval.

☐ Undergraduate (Ongoing) ☐ Undergraduation (Completed)

☐ Masters (ongoing) ☐ Diploma

☐ Masters(completed)

5. What is the status of your educational institution? *

Mark only one oval.

☐ Public University ☐ National university

☐ Private University ☐ Technical education

6. How much do you think your university is reputed in the job market? *

Mark only one oval.

- [ ] Not reputed
- [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
- [ ] Very demanding

7. What is your CGPA range ? *

Mark only one oval.

- [ ] 3.85-4.00 [ ] 3.5-3.85 [ ] 3.00-3.5
- [ ] 2.5-3.00 [ ] Below 2.5

8. Do you think you were competent and skilled enough according to your academic field while you applied for those jobs? *

Mark only one oval.

- [ ] Not really
- [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
- [ ] Very skilled

9. How good is your communication skill? *

Mark only one oval.

- [ ] Not that good
- [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
- [ ] Very good

10. How good is your CV compared to your peers? *

Mark only one oval.

- ☐ Not good
- ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
- ☐ Very Competent

11. How many jobs did you apply to before landing your first job? *

Mark only one oval.

- ☐ 1-2 ☐ 3-4 ☐ 4-5 ☐ 6+

12. What's the entry salary for the job you applied for on average? *

Mark only one oval.

- ☐ 10-15K ☐ 15-25K ☐ 25-35K
- ☐ 35-50K ☐ 50k+

13. How did you get to know about the company ? *

Mark only one oval.

- ☐ Social media ☐ Internet Websites
- ☐ Through a relative or a friend ☐ Through an employer

14. Have you been advised by someone to look out for internal links to secure a good place in the job market? *

Mark only one oval.

- ☐ Yes ☐ No

15. How important do you think it is to have some link for managing a job in BD? *

Mark only one oval.

- [ ] Competence is key
- [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
- [ ] Link is very important

16. How long did it take to secure your first job after graduation? *

Mark only one oval.

- [ ] Immediately Within
- [ ] 2 months
- [ ] Within 6 months
- [ ] Within 1 year More
- [ ] than a year Not
- [ ] employed yet

17. How passionate were you about your job selection?

**Mark only one oval.*

- [ ] I gave it due to external pressure
- [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
- [ ] I thought I was a perfect fit

18. Who had the most involvement in your search for a job? *

Mark only one oval.

- [ ] Parents Relatives
- [ ] Friends and seniors
- [ ] Instructors and mentors
- [ ] Existing employees within that organisation you applied

19. How much involvement did they have through the process of job selection? *

Mark only one oval.

- [ ] They suggested me to join companies
- [ ] They were placed well in that sector
- [ ] They helped me in the application process
- [ ] They forwarded my CV and had a word of mouth
- [ ] They were part of the existing company/industry I applied for
- [ ] N/A

20. What was your motivation for choosing the career track? *

Mark only one oval.

- [ ] Parents expectation Peer and Social Pressure
- [ ] Reputed company Financial constraints
- [ ] There was simply an opportunity
- [ ] Passion

21. Did you think you explored enough before applying ? *

Mark only one oval.

- [ ] Not really
- [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
- [ ] I researched about every options

22. How much would you say the job opportunities in your field are? *

Mark only one oval.

- [ ] Pretty non existent
- [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
- [ ] Lot of opportunities

23. How important is having a good CGPA to secure a job in your field? *

Mark only one oval.

- [ ] Only Skills matter
- [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
- [ ] CGPA is the determinant

24. Do you intend to help other people to apply to that workplace by providing information/guidance or direct assistance? *

Mark only one oval.

- [ ] Yes [ ] No

25. Have you applied despite them mentioning in the circular that ' Candidates with higher degrees will be preferred'? *

Mark only one oval.

- [ ] Yes [ ] No

26. What is your current status of work? *

Mark only one oval.

- [ ] Working for a company
- [ ] Got rejected due to nepotism but found another suitabale job
- [ ] Planning for higher studies
- [ ] Enrolled in higher studies
- [ ] Shifted from my study line
- [ ] Still looking for jobs

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Impacts of E-mutation: A Study on Service Recipients' Perception

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Abstract

Land management has gained the utmost importance in the development arena worldwide in recent years. Land-related targets and indicators were incorporated in 5 goals, 8 targets, and 12 indicators of SDG. Different studies have identified the conventional land management system as a reason for inefficient land management in Bangladesh. The government of Bangladesh has taken some initiatives to digitise the land management system. Since 2018, the Land Administration has launched an E-mutation system to update land records. The objective of this research is to investigate the impacts of E-mutation on the service recipients and their perception about it. The research covers 03 circles in Savar Upazila, Union Land Offices, and their service recipients. The target respondents of the study are mutation applicants, Assistant Commissioner (Land), and Union Land Assistant Officers. Both quantitative and qualitative data are used to validate the results of this research.

The study reveals that the impact of E-mutation on the service recipients is positive, being pleased with the E-mutation system; as it reduces time, cost, and visit (TCV). In addition, it reduces the nuisance by brokers and ensures better service quality. However, nearly four- fifths of the service recipients are dependent to apply for E-mutation due to a lack of knowledge of land-related documents and poor ICT skills. This paper would aid the policymakers to devise further strategies for efficient land management in Bangladesh.

Key Words: E-mutation, Land Management, Digitisation, SDG, TCV, ICT Skill

Introduction

1.1 Background

Land management has gained the utmost importance in the development arena worldwide in recent years. It can be noticed by observing the differences between Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs). While no

target and indicator in MDGs were related to land, Land related targets and indicators were incorporated in 5 goals, 8 targets and 12 indicators of SDG.

Land is the most important source of livelihood security and means of production in Bangladesh (Arens, 2011). Due to the high demand of land, its frequency of transfer is very high (Nahrin and Rahman, 2009). However, it takes around 245 days to complete all 8 procedures of land transfer and updating the record of rights (USAID, 2010). Different studies have identified the conventional land management system as a reason for inefficient land management in this land hungry country (Brooks and Alam, 2015; Hossain, 2015; Talukder et al., 2014).

The Ministry of Land is responsible for land administration and management in Bangladesh. The operations conducted under this ministry include land survey, preparing and updating record of rights, khas land management, vested and abandoned property management, collection of land development tax (LDT), land acquisition, international and inter-district land boundary demarcation etc. Surprisingly, the transfer of land ownership is not operated under this ministry. Instead, the registration of land transfer is operated under the Ministry of Law, Justice and Parliamentary Affairs. Due to lack of coordination between the registration and the updating RoR[1](Herrera, 2016), problems like fake deeds, fake ownership of documents, illegal occupancy, legal disputes, social conflicts etc. arise frequently (Asad, 2013).

To overcome the crises that arises from conventional land management system in Bangladesh, digitisation of land management system was recommended in a wide range of researches (Asad, 2013; Barkat et al., 2000a; Herrera, 2016; Islam et al., 2015; Naeem, 2019; Nahrin and Rahman, 2009; Rabbani and Hossain, 2019; Talukder et al., 2014). The government of Bangladesh has taken some initiatives to digitise the land management system. Since 2018, the Land Administration has launched an E-mutation system to update land records, though the previous land record database has not been completed yet (The Financial Express, 2020).

1 Record of Rights

1.2 Problem Statement

What are the impacts of E-mutation on Service Recipients?

1.3 Rationale of the Research

As E-mutation is quite recent in Bangladesh, its impacts on the service recipients have not still been studied to a great extent. There is need for conducting research on how DLMS[2] would affect service recipients. Besides, due to legal and technical complexities of the issue, a poor number of researchers pave their way into this area. Hence this study pursues identifying the impacts of E-mutation on the service recipients and their perception about it.

1.4 Research Objectives

Broad Objective

To find out the impacts of E-mutation on the service recipients and their perception about it

Specific Objectives

- To identify the perceived benefits enjoyed by E-mutation applicants from the digital land management system and recommend ways to maximise those.
- To identify the perceived challenges of E-mutation applicants to use digital land management systems and recommend ways to minimise those.

1.5 Scope of the Research

This research investigated the impacts of DLMS on the E-mutation applicants only. The level of land related literacy, ICT literacy and the perception of land administration were investigated. Impacts on other stakeholders of digital land management were out of scope of this study.

2. Research Methodology

2.1 Study Areas and Population

The research covered 03 circles in Savar Upazila which include 3 Upazila Land Offices, Union Land Offices, and their service recipients. The population of the study were:

2 Digital Land Management System

- Mutation Applicants of the study area
- AC (Land)s[3] of all the circles in Savar Upazila
- ULAOs[4] of all the Union Land Offices in Savar Upazila

2.2 Sources of Data

A combination of data sources was used for the research. Therefore, to conduct this particular research, data sources would be:

- Primary data from the target population using both Quantitative and Qualitative techniques.
- Secondary data from relevant literature

To collect the required data/information following techniques were adopted with specific target respondents for each of the target groups:

- Quantitative data – Quantitative data was collected by face to face interview using structured- questionnaire.
- Qualitative data – Key Informant Interviews (KIIs) and In-depth Interviews (IDIs)were conducted to collect qualitative data using semi structured interviews.

2.3 Quantitative Method

For quantitative sampling related methods, face to face interviews were conducted using structured questionnaires.

Quantitative Sample Distribution

Following are the target population-wise sample distribution:

Respondents	Total
Mutation Applicants in Savar Circle	45
Mutation Applicants in Ashulia Circle	30
Mutation Applicants in Amin Bazar Circle	25
Total	100

2.4 Qualitative Method

Both quantitative and qualitative data are important to triangulate the findings derived from the study. Qualitative data could provide such insights which may help further program design. Therefore, different

3 Assistant Commissioner (Land)

4 Union Land Assistant Officer

qualitative techniques were utilised to collect data from different kinds of stakeholders and target groups. For qualitative data the following tools were used:

- Key Informants Interview (KII)
- In-depth Interview (IDI)

KII

KIIs are also expected to provide important information that is not easily captured in statistics or documents. Another important reason for selecting KIIs as one of the measures to collect qualitative data is that they help to be familiar quickly with the study area and to obtain in-depth information within a short time. Avoiding employment of long time in data collection, especially while conducting unstructured interviews and to encourage respondents to provide concrete information for the sake of the research was also possible through the KIIs. Key Informant Interviews (KIIs) were conducted with the following stakeholders:

- AC(Land)
- ULAO

IDI

The IDIs were conducted using semi-structured guidelines prepared for mutation applicants.

Qualitative Sample Distribution

For the qualitative part, respondents were selected following purposive sampling technique. The sample distribution for the qualitative approaches was as following:

Techniques	Respondents/Areas	Total
KII	AC (Land)	2
	ULAO	2
Total KII		4
IDI	Mutation applicants	2
Total IDI		2

Qualitative Respondent selection

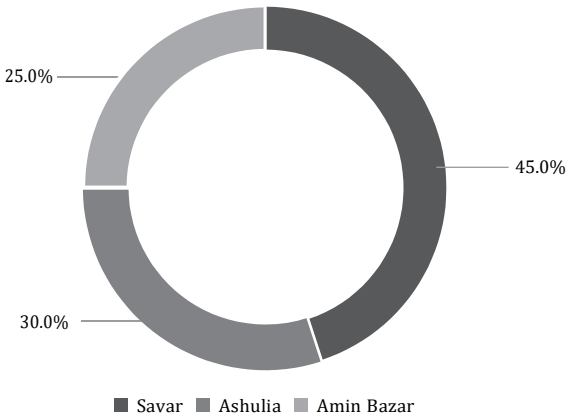
Respondents/participants of IDIs and KIIs were selected based on their willingness to participate in this research and availability. Purposive method was utilised in this study.

3. Analysis and Findings

3.1 Socio Demographic Profile of the Respondents

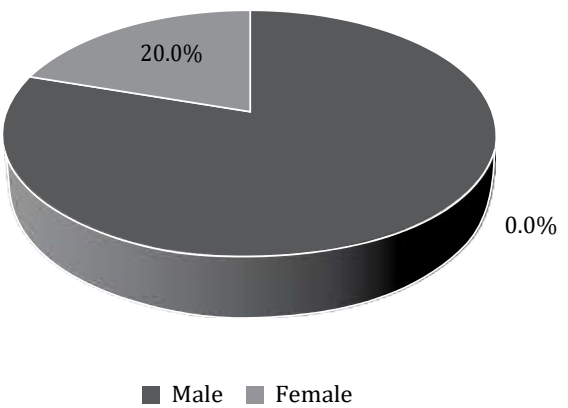
3.1.1 Area

Majority of the respondents (45%) were from Savar Revenue Circle, while 30% of them were from Ashulia and remaining 25% represented the Aminbazar Circle. It was found that respondents from Savar Circle were more spontaneous than the other two Revenue Circles.



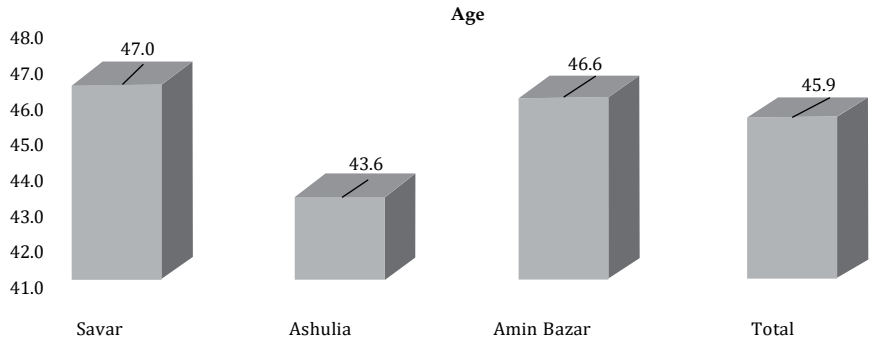
3.1.2 Sex

Most of the respondents (80%) were male while female respondents were very poor in number. It was observed that knowledge of the land management system and E-mutation process was very nominal among the females compared to the male respondents.



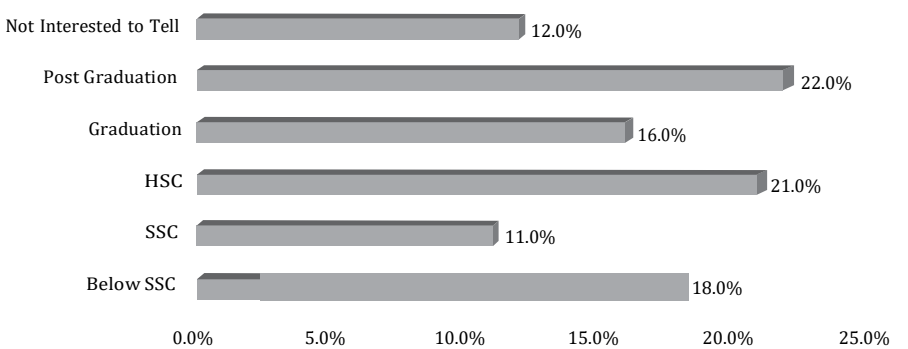
3.1.3 Age

The study shows that most of the respondents are of matured age groups while the old aged and the young people are highly less prone to moving for land management functionaries, especially e- mutation.



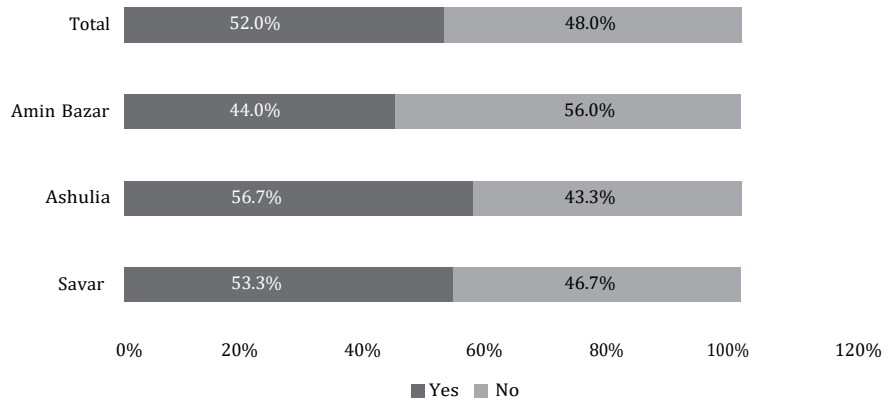
3.1.4Educational Qualification

Among the participants in the study area, in spite of being an area closer to urban conglomerates, the percentage of higher educated people with graduation (16%) and post- graduation (22%) jointly did not cross the percentage of less educated people with HSC or less. Further a significant number of respondents (12%) were not interested to talk about their educational qualification. They are supposed to have less than HSC level educational background because it is generally found, especially in Bangladesh, that people with lower educational qualifications are prone to say nothing about their educational background. So, there is ample scope to assume that this portion of the respondents had poor educational qualification.



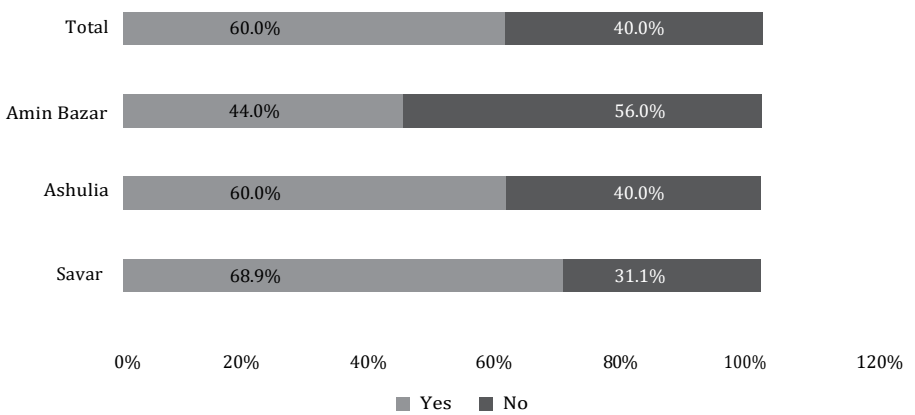
3.1.5 Computer Literacy

It was found that most of the respondents (52%) have literacy, while a significant number of people (48%) are not computer literate. Here in Ashulia Circle has the highest percentage (56.7%) of computer literacy while Amin Bazar, the lowest (44%). Savar (53.3%) and Ashulia are closer to each other in terms of computer literacy among the respondents.



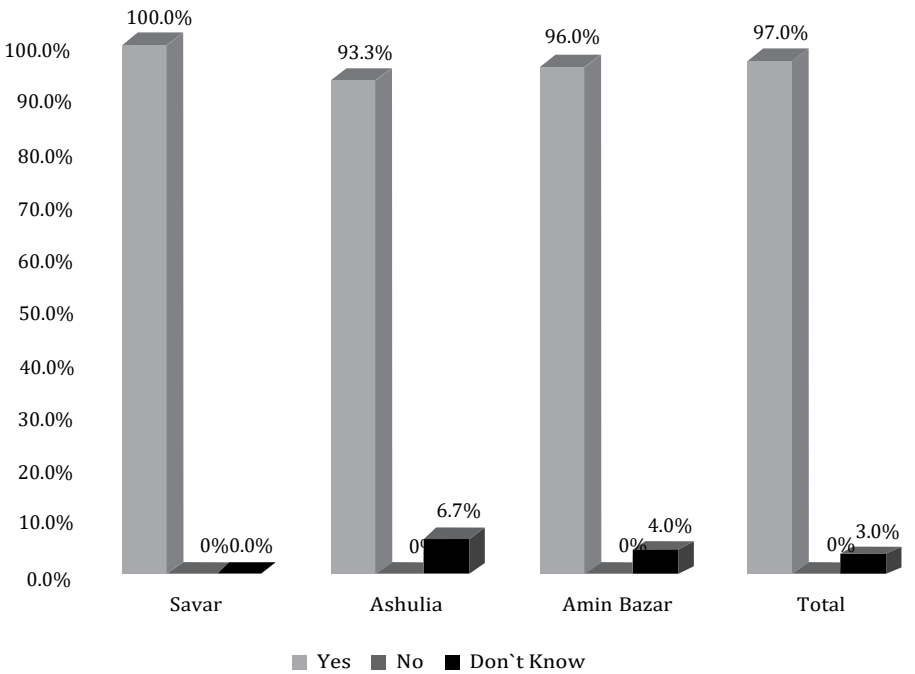
3.1.6 Internet Users

It is identified that most of the respondents (60%) can use internet though a significant number of participants do not have internet access. Here Savar Revenue circle holds the highest number of users (68.9%) while Amin Bazar has the lowest (44%). It is also identified that higher internet users live in areas that are closer to Savar Urban area.



3.2 Notion about Service Simplification after Launching E-mutation System

Being asked about service simplification after the E-mutation process, nearly all the respondents (97%) answered affirmatively. However, an insignificant portion (3%) of them thought it was difficult. It can be assumed that these 3 persons had no idea or pre-experience about the previous mutation process or current E-mutation system. There might have been a possibility that they had been dependent on mediocre middle-men or brokers to get the service.



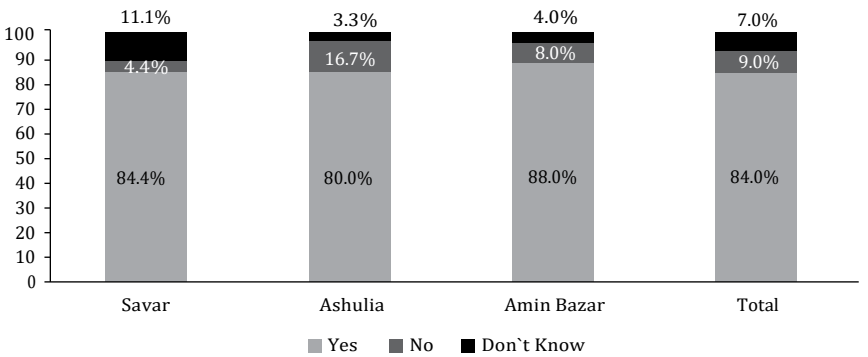
The respondents of KII also think that the application process has become much easier after introducing E-mutation. Service recipients had to collect the application form from Upazila/Circle Land Office. Now, they have a web application system. However, the respondents of KII still think that the level of knowledge on land related documents required for the application has not changed in the new E-mutation system.

3.3 Views about Time Reduction after Initiation of E- Mutation

When asked about whether time was reduced or not after starting e-mutation, a substantial number of participants (84%) opined that time was

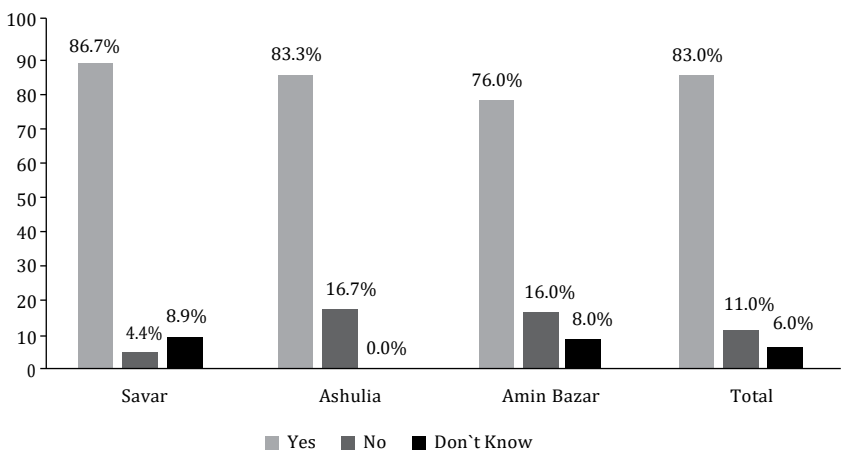
reduced significantly after the E-mutation process. All the three circles under study expressed nearly the same views regarding this point.

An insignificant number of respondents answered negatively (9%) and a poor number of them (7%) do not know.



3.4 Reducing Number of Visit after E-mutation System

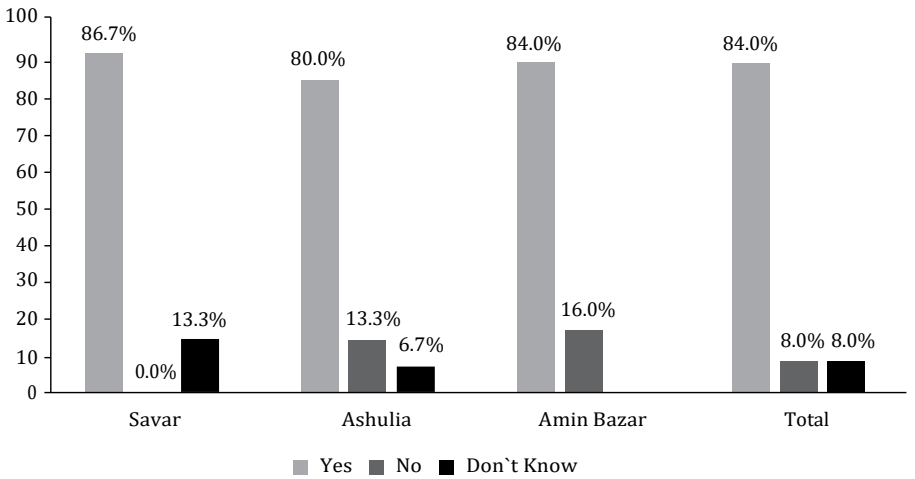
When asked about reduction of visits to get service after launching E–mutation most of respondents (83%) expressed that there has been a substantial reduction in the number of visits. Savar Revenue Circle is with higher performance (86.7%) in reducing the number of visits, while Ashulia Circle showed a lower (76%) than two other similar circles.



3.5 Reduction of Cost after E- Mutation

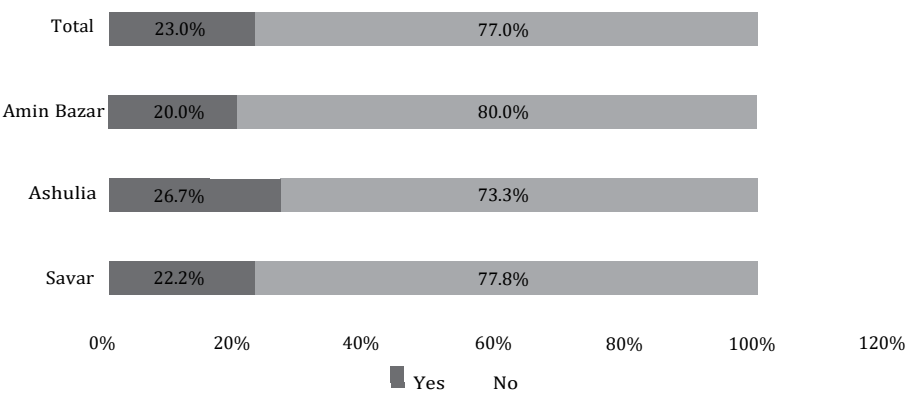
Majority of the respondents answered positively regarding cost reduction after the E-mutation process in Savar Upazila. All the Revenue Circles

showed that more than 80% service recipients could save money compared to the hidden and unhidden cost incurred by them during the previous manual system of mutation. However, the remaining people (16%) still either do not know about it or incur cost as if it were the previous system.



3.6 Self-application or dependence on submitting application for E- Mutation

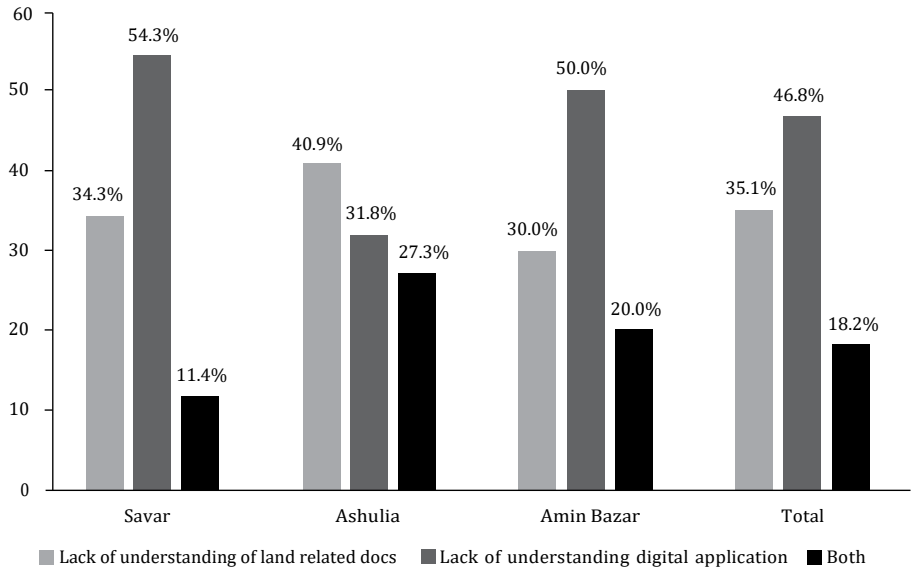
Among the respondents, only (23%) claimed to have applied for E-mutation themselves but most of them (77%) applied with the help of others.



According to the respondents of KII, the number of self-applications is even lower. One of the respondents told that it could be below one out of ten applicants.

3.7 Reasons behind dependence for submitting application for E- Mutation

Respondents who could not apply for E-mutation were ignorant either of land documents (35.1%), or of digital management systems (46.8%), or of both (18.2%). This feature pervades in all the three Revenue Circles with nearly similar characteristics, with a significant difference between Ashulia and other two circles in case of understanding regarding land related documents.

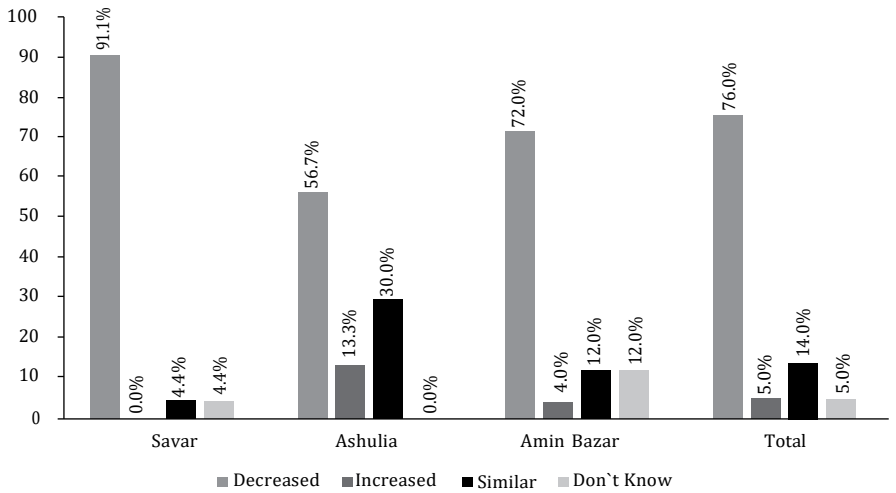


According to the KII respondents, lack of understanding of land related documents is very common with the respondents. This lack of understanding creates further problems. The applicants often attach unnecessary documents with their applications, and often do not attach the required ones. In addition, the KII respondent sometimes found applications with errors that the applicants did not intend to. In many cases, on the day of the hearing, the applicants admit that they do not have knowledge or understanding of land related documents.

3.8 Decreasing Nuisance by Brokers and Touts

It is important to know whether unnecessary harassment and nuisance created to service recipients by brokers and touts have decreased or not after starting the E-mutation system. In response to this question, (76%) of the total respondents answered positively while the remaining (24%)

thought otherwise. However, Ahulia circle was found to be lagging behind in case of decreasing brokers' intervention (56.7%). Here Savar Revenue Circle performed far better (91.1%) than two others in terms of decreasing middlemen's intervention or deception.

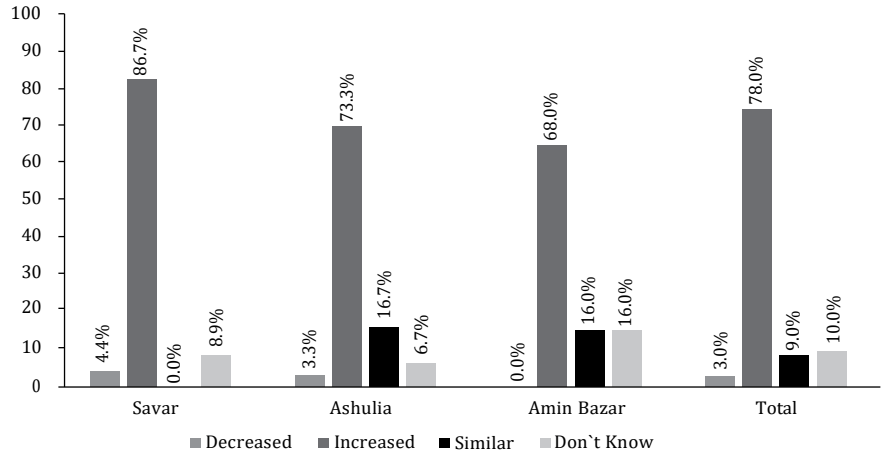


The responses of the key informants' match with the findings. According to them, the nuisance by brokers or touts increases with the number of visits. Before introducing the E- Mutation system, often the applicants would visit land offices to be informed of the update of their application. That increased their vulnerability. As the number visits decreased after introducing E-mutation, the nuisance of brokers or touts also decreased.

> ***"Touts prey on the knowledge gap. Only applicants' knowledge on land related documents can eliminate the touts."***
>
> *-KII Respondent*

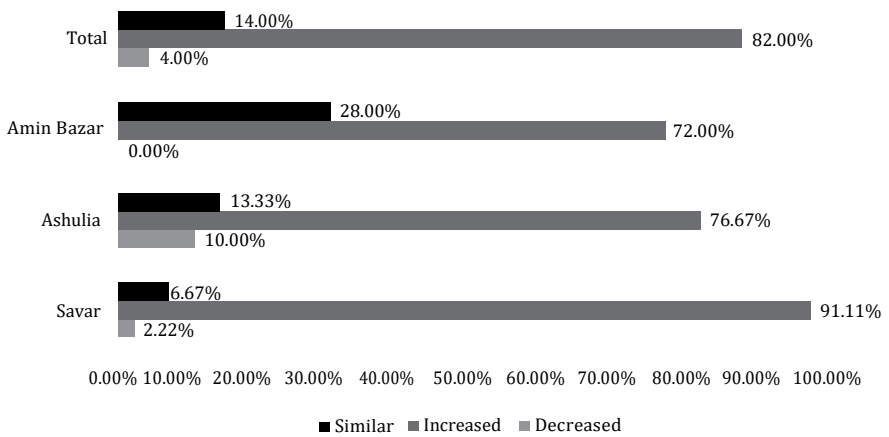
3.9 Transparency in Investigation Process by Union Land Assistant Officers

It was identified that the investigation process done by ULAO has become more transparent than the investigation done during the pre E-mutation procedure. Of the respondents most of them (78%) thought it to be transparent while the remaining (22%) thought otherwise. Here Amin Bazar Revenue Circle was seen to be lagging behind (68%) in terms of transparent investigation done by the ULAOs, while Savar Circle was found with higher transparency (86.7%) on the same issue.



3.10 Cooperative Attitude of Union Land Assistant Officers for Service Recipients

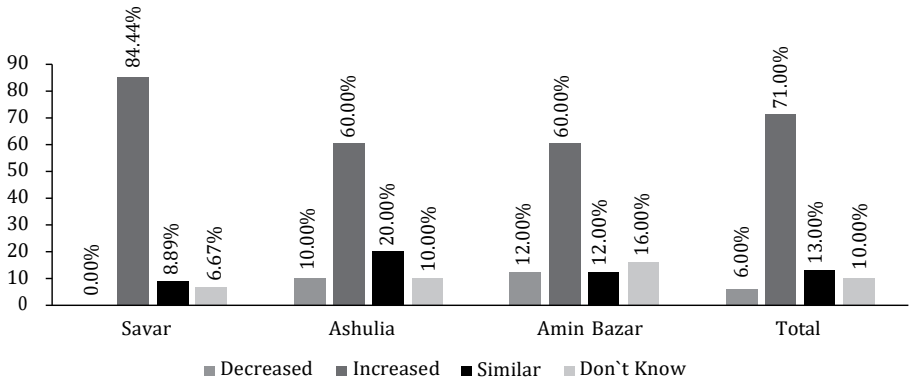
When asked about the attitude to service recipients by ULAOs, most of the respondents (82%) answered affirmatively. While Savar Circle leads in this abstract issue of cooperation to people by service providers, Amin bazaar Circle trails back with 72% positive answers. From the qualitative data it was found that cooperation from the ULAOs are increasing over the years in all the union land offices.



3.11 Cooperative Attitude of the Staffs Upazila/ Circle Land Office

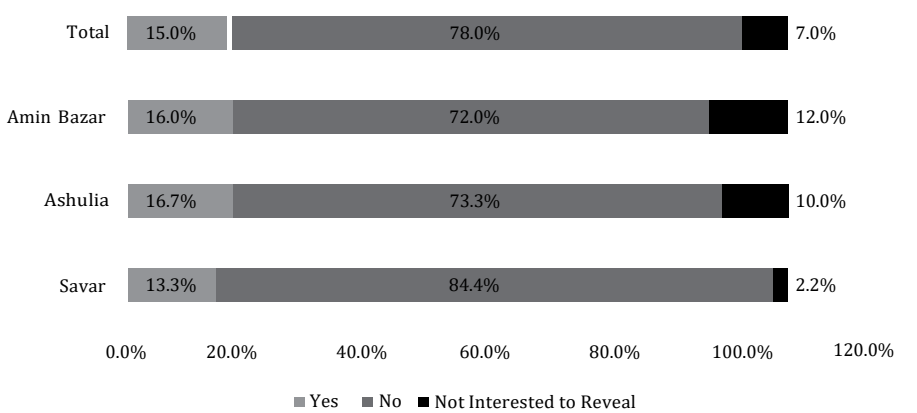
It was found that the cooperative attitude of the staff employed at Upazila Land Office increased substantially. Most of the respondents (71%) opined

that staff working at Upazila Land Office are more cooperative than before. It was also evident that in the case of Savar Upazila Land Office this tendency is higher than the two other circles under study. So, it was assumed that the closer the Upazila Land Office was to the urban area the better and more positive attitude was shown by the employees working at the Upazila Land office.



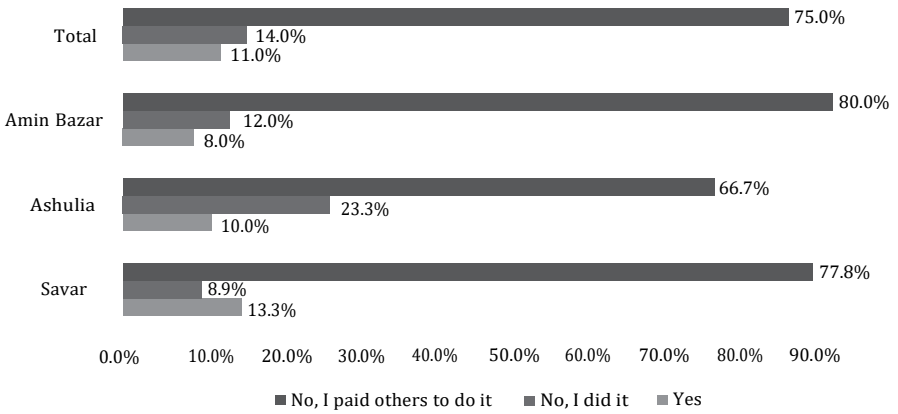
3.12 Service Recipients' dependence on brokers/touts

When asked about whether respondents took help of middlemen for E-mutation, most of them (78%) answered negatively. It became evident that after initiating the E-mutation system, people with computer literacy and internet access either at home or Union Digital Centre, dependency on so called touts or brokers decreased tremendously. However, a good number of them (15%) still needed brokers' intervention to get mutation service.



3.13 Application for E –mutation through UDCs

It was identified that only (11%) of the applicants went to UDCs to complete the E-mutation process, while most of them (75%) paid other private internet service providers to submit the application. The remaining respondents (14%) could apply themselves without any help from others.



3.14 E Mutation Application Cost

When asked about the cost incurred by them for applying through UDCs, only three respondents revealed the cost. These three persons paid 300BDT, 6000BDT and 200BDT respectively. It proved that some service recipients still were not aware of the real cost of service provided by the entrepreneurs of UDCs.

Among the respondents, (75%) paid other persons/ organisations to apply for E-mutation. Of them 11 persons refused to reveal the cost of application; whereas, for the rest of applicants, the average expense was 220 BDT. From the data above it was assumed that the cost of application at UDCs was higher than the cost needed at other private organisations.

4. Recommendations and Conclusion

4.1 Recommendations

It is urgent to digitise the land mutation procedure in order to ensure pester free services to the recipients and it is, further, crucial to make citizens conscious regarding land E-mutation system to trim

down the admittance of middlemen and brokers. Computerisation in the land mutation system saves time manifold both of the service provider as well as the service seekers. Therefore, to optimise the system, selected citizens, UDC entrepreneurs, private internet service providers at local level, and para-legal professionals, especially with at least secondary level of education, should be provided computer literacy and land literacy training throughout the country undertaking a project on ICT and Land Literacy.

If training on ICT and Land Literacy is provided, people will be aware of land related documents and internet-based application systems through campaigning and lab–based training at Computer Labs in different educational institutes. Land Administration Training Centre or BCS Administration Academy can be assigned to implement projects on skill development integrating Officials of Field Administration.

Though being digital, a grey area still remains in the investigation process done by Union Land Assistant Officers. There still remains the possibility of charlatans deceiving the innocent during the investigation process in spite of digitising the application process and messaging system. People have to communicate with ULAOs bringing land documents when they remain either silent or compromise with the demand of officials working at Union Land Offices. There is room for policy intervention in this step of E-mutation to find a citizen-friendly way to increase the transparency in investigation done by the ULAOs.

There is a group of para-legal professionals with no formal degree in law who are commonly known as brokers or touts. Like the deed writers and the stamp vendors, who are also like para-legal professionals, a group of paralegals with knowledge of ICT and Land Documents can be developed through training under the supervision of The Collector/ District Magistrate and license can be issued to them to practice fixing fees for providing land related services. It will create a revenue base for the government and help formalise the service given informally to citizens with poor knowledge of ICT and land documentation.

Advanced training on land management can also be provided to the entrepreneurs UDCs and licences can be issued to them by the Collector. In case of any kind of moral degradation while providing service, his/ her license can be cancelled, and penal measures can be taken. It will also formalise their services and will be brought under control rules and regulations.

It was found that in many cases the number of visits were still higher than expected. A new study needs to be designed to investigate cases where the number of visits are high and then ways and methods need to be identified to decrease that number.

Officials working at the Union/Upazila Land Offices who provide services at the doorsteps can be trained to improve their manners and etiquette to the service recipients. The front desk officials need to make eye-contact and smile towards the service recipients. These front officials can also be assigned to guide people how to lodge an application for E-mutation and process of receiving/providing services related to land mutation.

There is lack of coordination between the office land registrations (Sub –registry Office) and the office of E-mutation (Upazila Land Office), being under two different ministries- Ministry of Law Justice and Parliamentary Affairs and the Ministry of land respectively. Since land registration and land mutation are intrinsic part of one another and one impacts the other, it is an urgent policy decision that needs to be addressed for the sake of providing citizen centric, speedy and easy service delivery. So, it is imperative to bring these two offices under one roof - bringing the Department of Registration under the Ministry of Land - for ease of operation regarding issues related to land mutation and registry.

4.2 Conclusion

As E-mutation is relatively new in Bangladesh, its impact on the service recipients has been found to be positive to a great level. Respondents are pleased with their experience of the new E-mutation system and think that introduction of E-mutation has reduced the application process time, the number of visits and the perceived cost of mutation. However, it was found that four fifth of the respondents took help to apply. It means though there are several perceived benefits of E-mutation, the application process is not yet user friendly enough.

Again, even though more than four fifth of the respondents are educated (SSC and above), more than half of the total respondents lack computer and internet literacy. That means the education system could be redesigned to incorporate more computer related lessons. In addition, around four fifth of the respondents took help from others to apply for E-mutation, signifying that despite being educated, they lack the knowledge on the land related documents. Among the respondents who

took help from others to apply for E-mutation, two-thirds said that they do not have knowledge on land related documents. It is evident that there is a clear gap between the required land related knowledge for application and actual land related knowledge of the applicants.

Further, lack of internet usage knowledge exceeds the lack of knowledge on land related documents. It may lead to less transparency in investigation process by Union Land Assistant

Officers because of poor land literacy of service recipients and real attitude of the staff will not be understood by the service recipients. Again, the study found that the nuisance from brokers has reduced significantly and most of the respondents mentioned that they did not take help from any broker. However, they took help from others to apply, which signifies that a stakeholder group exists in the middle of the procedure (informal) who are not perceived as brokers. The role of Union Digital Centers in mutation application is not significant enough as it was expected to break syndicate around land litigations and mutation system, as more than half of the respondents are not ready for digital land management system yet .It was also seen that land title possession is still male dominated. There is room for study to find out the ownership ratio based on sex.

Finally, there is room for conducting research on how digital land management systems would affect service recipients. Despite legal and technical complexities of the issue, this study would pave the way for identifying the impacts of E-mutation on the service recipients and their perception and would remain as an eye-opening instance to the policy makers and as a source of study for the researchers in this arena.

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Teacher`s ICT training and impact of Teaching-Learning in Primary Education

Mohammad Ashraful Alam Khan

Abstract

There is an increasing concern among national as well as international development regarding the implementation Situation of ICT in Primary Education. There is a need to move beyond the accumulated facts and figures generated by using both quantitative and qualitative mixed approach research through semi structured interviews as well as classroom observation tools. To achieve this, the present research focuses on the availability of equipment, using digital content in classrooms and teachers' skill and their training. This study investigated primary school teachers' perceptions of the barriers and challenges preventing them from integrating ICTs in primary school and how it impacts on the learning process. The participants of this study were head teachers, ICT trained teachers and all the students of the observing classroom from the 5 schools at Brahmanbaria Sadar Upazila. The objective of this study is: 1. To explore the teacher's self-assessment of their ICT training skills. 2. To determine the impact of the learning on the teaching and learning activities. 3. To identify the challenges in providing ICT teaching for learners. According to the findings of the study primary school teachers are not yet ready to integrate ICTs into their classrooms due to a number of obstacles that include unavailability of ICT friendly classrooms, equipment and web-based resources in the school. The lack of competence of the teachers in understanding the existing ICT training along with the shortage of technical support and proper technological knowledge on how to integrate ICT into their teaching and learning process altogether have also contributed to the inability to integrate ICT properly into the primary school classrooms. It is therefore needed to extend the duration of the existing ICT training programmes and also introduce refresher training courses for those who

have received it earlier. Most importantly, all primary school teachers who have not yet received the training should be given ICT training immediately. The study recommends that partnership with public and private sectors is necessary to enable effective training of teachers, ensure ICT friendly classrooms, equipment, web-based resources, connectivity and overall coverage for quality education.

Key Words: Primary School, Learning Process, ICT Trained Teacher, ICT Training, ICT Equipment, Quality Education

Introduction

Education is a complicated endeavour with numerous factors influencing the "system of education", "management", "curriculum development" and "the teaching process" (Nathani,2022). Current process of global debate is focusing fully on the prospects of computer regarding the society uses and opportunities respectively (Prasanna,2022). In this digital age, "information and communication technology (ICT)" has become an inevitable reality in human life. Apart from the necessity of primary education; however, "ICT education" is still not recognized as a significant part of the basic education. The major purpose of "digital Bangladesh" is to ensure education for all by "Vision 2021" to achieve the "Sustainable Development Goals (SDG)" (Islam, 2010, p.5). In order to meet all sustainable educational goals a main approach has been to introduce and impose the necessity of basic education within Bangladesh. When "Information and Communication Technology (ICT)" is used in institutions, it has an impact on children's life by influencing their perceptions and ethics, values and morality as well as guiding them in becoming a global citizen. The techniques and process of efficient teaching is also covering various aspects of the lifestyle practices of the educational process of Bangladesh, or as a whole education itself as a discipline evolved significantly at the close of the twentieth century because of the "widespread use of ICT". ICT techniques have significantly more profound approaches.

However, like many developing nations Traditional "teaching-learning" and "ICT based activities" are insufficient to support the knowledge building in Bangladesh. More than a decade ago, it was emphasised that the "ICT revolution" poses special challenges to Bangladesh's education system. Despite all the challenges it is very reassuring that selected primary schools in each Upazilla have received laptops, multimedia devices, and other accessories as a part of an innovation action plan. At the same time, teachers at these schools have

been trained in the use of ICT as part of their professional development.

The "United Nations (UN)" and its different departments, such as the "International Labour Organization (ILO)", "UNESCO", and "UNICEF", have taken attempts to integrate local education systems within the greater context of globalization. As a result, the majority of the provider countries are committed to building a global perspective of education systems in collaboration with developing countries to develop global perspective education policies. Shown (Williams, 2015). However, in developing countries, this cooperation is likely to occur within the officials appointed by the government and also introduced to those people who have limited understanding regarding their educational necessity (Williams, 2015). The aim of this research is to identify ways to efficiently implement ICT in primary education.

1.1 Study objectives

- To explore the teacher's self-assessment of their ICT training skills;
- To determine the impact of the learning on the teaching and learning activities and
- To identify the challenges in providing ICT teaching for learners

1.2 Rationale of the Study

Bangladesh's system of education has received very little focus in terms of doing research into various sectors in order to develop educational policy guidelines. Instead, a survey of the available literature reveals that just a few agencies and donors accepted it and promoted it as a mode of study material and learning materials. At the field level, a number of obstacles have already emerged. These difficulties can be alleviated by performing fresh research studies and exploring ideas in various broad domains. Bangladesh, being a developing country with a high population density, seeks to develop by utilizing human resources. In order to develop quality human resources, it is essential to have a quality education system in place. This study is an attempt to emphasise the need to allow all children, regardless of socioeconomic status, to use current technologies. The purpose of this study is to understand the basic educational needs with "ICT study procedures" within different institutions. Exploratory as well as evaluative study practices are important in understanding the quality needs and aspects of basic education. It is also important to propose policies that can influence the understanding of the scope of implementing

"primary ICT learning procedures" within the basic educational structure.

1.3 Limitations of the study

This study is focused mainly on ICT training in primary education in Bangladesh. And through this research also identify the main barriers when considering primary education in a developing country like Bangladesh with its societal and economic implications. It was not possible to compare the larger sociocultural background that impacts on the future approaches of their citizens and their families because the study was limited to only a few select schools. It is also tough to acquire essential data with all types of target groups due to the limited research timeframe. As a result, the scope of this research is limited to only ICT training in primary schools.

2. Review of Literature

Reviewing current literature on ICT adoption in primary schools is critical for improving knowledge and understanding of practices, as well as comparing and contrasting local and worldwide methods. This portion of the literature review research has also enabled us to grasp diverse methods to ICT deployment in fundamental education, with a particular focus on teacher training and skill when compared to the global context. Many background difficulties exist at this moment in the system however it is very common to encounter such issues in technical areas like ICT (Obaydullah & Rahim2019). Short (2022) described ICT resources not only give students the tools they need to promote and develop these skills, but they also inspire them to participate boldly in imaginative learning, improving both the effectiveness and the enjoyment of teaching and learning for all parties. Syahid et al. (2019) mentioned that the development of the ICT training curriculum considered the needs of the teachers who would be implementing ICT in elementary schools, thus it is anticipated that it will result in successful training. Teachers should replace the traditional teaching approach with an attractive learning style by involving ICT in their lessons (Ziden et al.2011). ICT has lately been demonstrated to be a proper tool of education that promotes some huge alterations in teaching and learning methods. According to Khan, Hasan, and Clement (2012). Students can now work more efficiently than in the past by the efficiency of technology (Keengwe, Onechwari et al. 2008). Before World War II (WWII), education was only available to the upper crust of Asian Society (Anuar & Krzys, 1987, p25). However, after world war two, the process of decolonization has succeeded to achieve the quality aspects at the cost of numerous colonial countries around the

world. This bit of history is extremely important for global educational development all over the world (Anuar & Krzys, 1987, p25). According to UNESCO, technology is a significant "education multiplier" (Nielsen 2015). It is also important to consider how well technology is integrated into teaching and learning methods. Many educationalists have conceived of ICT's usage in education in different ways (Kumar and Pasricha 2014). It has been observed that students with learning impairment can benefit greatly with the introduction of this process of education in order to help maintain their overall wellbeing. The use of "ICT in classrooms" allows the students to enjoy movies, audios, graphics, texts, and photos; this is one of the key reasons why efficient educational technology has become necessary for giving instruction. (Kumar and Pasricha 2014). Now the "4th Primary Education Development Program (PEDP IV)" has been in operation since 2018 and targets to continue its operations until 2023. Several development partners and the Bangladesh government primarily fund the "PEDPs". The government is considered as the most efficient contributor in changing the entire perceptions of the modern educational structure (Directorate of Primary Education, 2011b.) Yelland (2005, p.233) has stated that the impact on "ICT based teaching methods" are crucial in managing the basic approach of fundamental education about content and it also works as a vehicle for effectively transmitting ideas. According to research carried out in England, "ICT is becoming increasingly valuable in aiding learning across the curriculum and in particular for developing Spoken language" (Broker and Siraj-Blatchford, 2002, cited in Riley, J.2007). The vision and aims are to implement ICT into mainstream education as a tool for eradicating poverty, establishing good governance, and ensuring social equality for all citizens through "quality education", "health care", and "law enforcement". Preparing the country for climate change (PMO, 2010). Becta (2005) found that the process of ICT integration is hampered by the issue of adequate internet connectivity and the absence of readily available connectivity. The key to the successful integration of ICTs into teaching and learning is further training and professional development (Yildirm, 2007). Digital learning plays an important role regarding this aspect, it can also improve the quality of learning practices in different modes and aspects of education and learning with the help of audio as well as video process is highly efficient in providing the structural configuration of this aspect (Nie and Liu 2011). Despite the fact that many scholars have made significant progress in establishing digital learning and its principles for increasing learning quality, there is still much work to be done at the primary school level in a developing country like India

(Mohapatra 2009; Mohapatra 2014). Therefore, a study of how the basics in Sophisticated technological artefacts effect the way individuals learn should be undertaken in order to achieve scientific progress in the field of multimedia learning in e-content (Van Merrienboer and Kester 2005) Bangladesh made a strong commitment at the start of the decade to construct established ICT- driven governance in all sectors (Hasan 2014). One of the most crucial sectors where ICT implementation is required is in education. As Wang mentioned (2008) Effective integration of "ICT" into learning and learning methods is becoming a crucial ability for teachers. ICT has the potential to strengthen educational systems, but developing nations are still a long way from achieving these benefits due to a number of obstacles (Hasan, and Clement 2012). Teachers use pedagogy to describe the teaching strategies, techniques, and approaches to offer instruction and facilitate learning. (Wang 2008). Hasan (2014) proposes that the ICT endeavours require effective supervision and coordination across the authorities to build a full-fledged Bangladesh's Governance based on information and communication technologies (ICT).

3. Methodology

This research work is pursued by using both quantitative as well as qualitative mode of research. Different types of data orientation and data acquisition tools are used in the study. As a tool of data collection, an open survey method is used. A range of techniques, observations of non-participants, semi-structure interviews and document collections were used here.

3.1 Selection of Schools and Research Participants

Students, trained class teachers, and head teachers were participants in this study. The schools for the study were selected with the help of the relevant UEO from selected upazilas. The criteria for selection of schools was based on which schools had the ICT equipment and also had ICT trained teachers. A list of schools was made where ICT equipment were available with the help of an AUEO. Through simple random sampling principle, five schools were selected from the list of schools from Brahmanbaria Sadar Upazila. During non-participants classroom observation no specific selection procedure was used for selecting the students in the classroom. All students in those classrooms and their ICT trained class teachers, head teacher of the school and Upazila Education Officer (UEO) as target participants for this research project. Later in the lesson, six students (three male and three female) from each school from the observing classrooms were selected according to sampling convenience, whose consent had already been secured.

3.2 Participants in this Study

For the purpose of the study, the following five primary schools were selected. The information is given in the following Table-1. It contains the number of students, teachers and trained teachers.

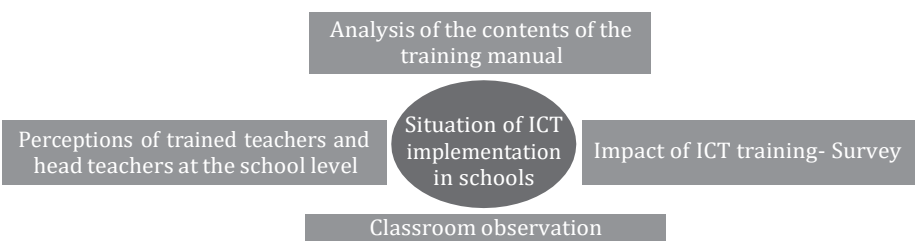
Table 1 Respondent Information

Name of school	Total students	Total teacher	Participants		
			Head teacher	Trained teacher	Selected students
Brizeshor Gov. Primary School	357	9	1	5	6
Ulchapara Gov. Primary School	670	14	1	3	6
VadugharDhakin Gov. Primary School	323	10	1	2	6
Mirhati Gov. Primary School	710	10	1	5	6
Kazipara Dargah Govt. Primary School	317	6	1	2	6

3.3 Analytical Framework for the Study

Study practitioners used a framework drawing by following the complex pattern that is generated with the help of different perspectives, working by following different methods of "ITC learning procedures." Knowledge is constructed in this study through observing and discussing different approaches, interactions and attitudes of different schools.

Figure: Analytical Framework for the study



4. Contents of the Training Manual:

SN	skill areas
1.	Skill of connection of multimedia projector
2.	Skill of computer operating
3.	Skill of operating power point windows
4.	Skill of general problem solving of computer
5.	Skill of typing Bangla font using Unicode keyboard
6.	Skill of English font typing
7.	Skill of downloading and installation required software for digital contents
8.	Skill of power point use
9.	Skill of attachment ability between audio-file and movie clip through internet
10.	Skill of power point slide preparation using u-tube
11.	Skill of video cut and attachment through using a -tube catcher
12.	Skill of downloading of video and document using u -tube
13.	Skill of file converting using u -tube
14.	Skill of opening an e-mail
15.	Skill of an opening account in at Shikkok Batayon
16.	Skill of image transfer from mobile to computer or laptop
17.	Skill of easy problem solving of MS Word version

5. Data Analysis, Results, Findings and Discussion

5.1 ICT Equipment

There is 1 laptop, 1 multimedia, 1 display screen in each of the selected research schools. But all research schools did not have desktop and internet connection. Sometimes they use hotspots for internet connectivity. Besides the above equipment there are some other equipment like sound system, pen drive, CD, hand mike etc.

5.2 Ratio of Supplied ICT Equipment

In response to the question whether the supplied ICT equipment was sufficient enough to fulfil the needs. 88 percent head teachers and 95 percent trained teachers informed that it is not enough to fulfil their needs.

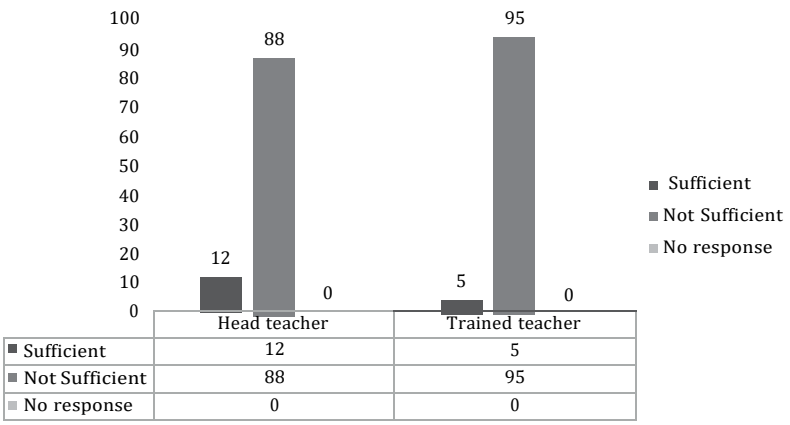
Table 2 ICT Equipment in Research Schools

SN	The name of ICT materials	Quantality
1	Laptop	1
2	Desktop	-
3	Multimedia Projector	1
4	Display Screen	1
5	Modem	1
6	Internet Connection	-

Table 3 The Ratio of Supplied ICT Equipment to Fulfil the Needs

Type of respondents		Response rate %		
		Sufficient	Not Sufficient	No response
1	Head teacher	12	88	-
2	Trained teacher	5	95	-

Figure 1: The Ratio of Supplied ICT Equipment to Fulfil the Needs



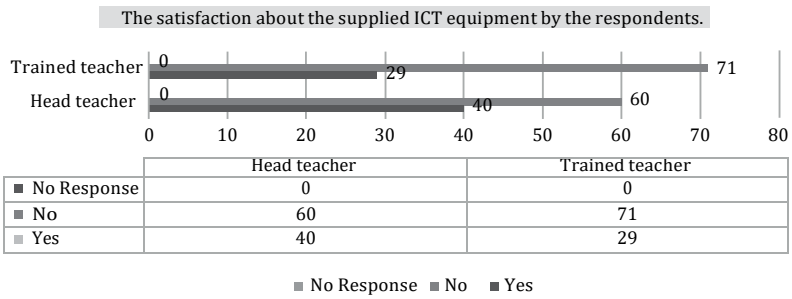
5.3 Satisfaction About ICT Equipment

Table 3 displays the level of satisfaction about the supplied ICT materials according to their school's need. Only 40 percent head teachers, 29 percent trained teachers are satisfied with the supplied materials as their requirement. On the other hand, 60 percent head teachers and 71 percent trained teachers are not satisfied with that.

Table 4 The Satisfaction about the Supplied ICT Equipment by the Respondents.

Type of respondents	Response rate %		
	Yes	No	No Response
Head teacher	12	88	-
Trained teacher	5	95	-

Figure 2: The Satisfaction about the Supplied ICT Equipment by the Respondents.



5.4 Self-Assessment of Teacher

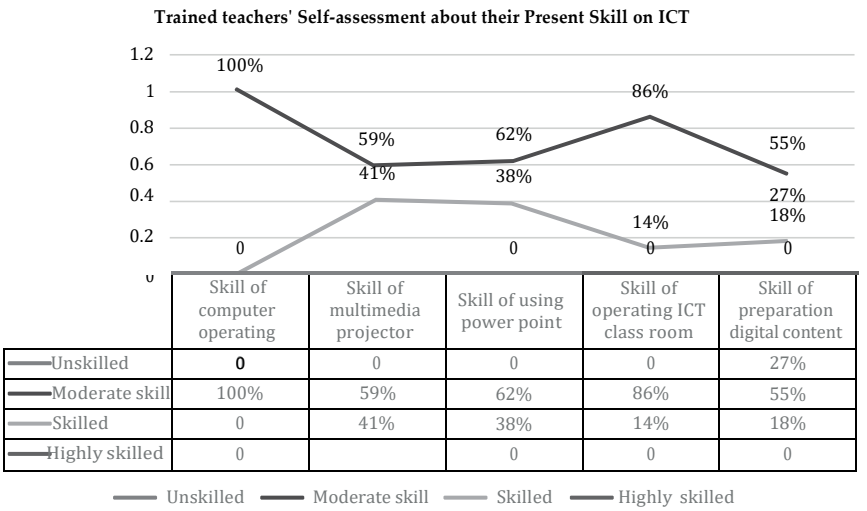
The information from one's self-assessment is very important to get a real idea about present level of expertise on the training they received. Among the respondent teachers a high percentage thinks that they are moderately skilled in computer operating. About 59 percent of teachers think that they are moderately skilled in multimedia projector settings and at the same time no respondents think that they are unskilled. In response to the question of skill of using power point of trained teachers about 62 percent respondent teachers opined that they are moderately skilled. 86 percent of respondent teachers informed that they are moderately skilled in operating ICT classrooms. On the other hand, among the respondents only 18 percent were skilled enough to prepare digital content.

Table 5 Trained Teachers' Self-assessment about Their Present Skill on ICT

Sl. No	Area	Unskilled	Moderate skill	Skilled	Highly skilled
1	Skill of computer operating of trained teachers	-	100%	-	-
2	Skill of multimedia projector setting by trained teacher	-	59%	41%	-

Sl. No	Area	Unskilled	Moderate skill	Skilled	Highly skilled
3	Skill of using power point of trained teacher	-	62%	38%	-
4	Skill of operating ICT classroom	-	86%	14%	-
5	Skill of preparation digital content	27%	55%	18%	-

Figure 3: Trained teachers' Self-Assessment about their Present Skill on ICT



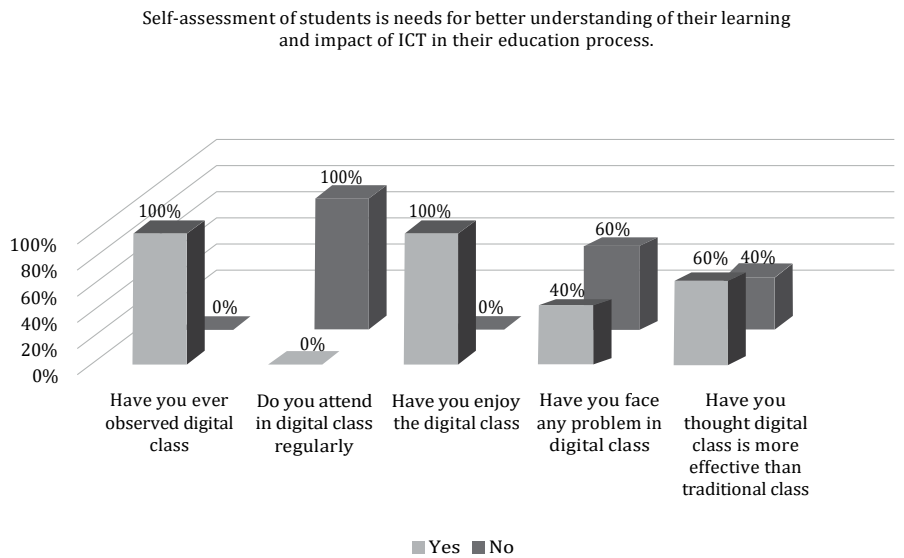
5.5 Self-Assessment of Student

Self-assessment of students is needed for better understanding of their learning and impact of ICT in their overall education process. Among the respondent student's a high percentage answered that earlier they all observed digital classrooms but they did not get a chance to attend digital classrooms on a regular basis. In response to the question of enjoying digital classes they all opined that they very much enjoyed the classes. Only 40 percent of respondent students, informed that they face problems in digital classes. According to the respondent student's 60 percent of students think that digital classes are more effective than traditional classes.

Table 6 Self-Assessment of Selected Students

SN	Area	Yes	No
1	Have you ever observed digital class	100%	-
2	Do you attend in digital class regularly	-	100%
3	Have you enjoyed the digital class	100%	-
4	Have you faced any problems in digital class	40%	60%
5	Do you think digital class is more effective than traditional class	60%	40%

Figure 3: Trained teachers' Self-Assessment about their Present Skill on ICT



5.6 Observation Method & Findings

Non-Participant Observation of ICT Classroom

It has been found that there was no specific digital classroom in selected schools. The digital class was made in their regular classroom where there was not enough space for running digital classes. Moreover, the teachers who were responsible for operating digital classes, were not skilled enough to operate it technically or practically. So the teacher needed the help of others to conduct the digital classes properly as well as setting up

the classes. They were not comfortable operating digital or multimedia classes. Participation of students in multimedia classes was notable and satisfactory. Though teachers were not habituated to set lesson plans fruitfully and effectively. The content of digital class was relevant with the text-books; which the students enjoyed the most. The teacher also managed to complete the class within the time frame.

5.7 Key Informant Interview

Upazila Education Officer (UEO) is the administrative head of primary education for this level. It is very important to know about the overall condition of the impact of ICT training on primary teachers and moreover, this training is satisfactory enough to fulfil the purposes determined by the policy makers. According to the UEO, the duration of the training is only one week which is not enough to provide them with all the necessary aspects about ICT within such a short span of time. She mentioned that the classrooms are not ICT-friendly and only one laptop is not sufficient to maintain ICT classes in all sections. She opined that most of the rural schools have no broadband internet connectivity. And that more advanced contents should be enclosed with the existing training syllabus. Therefore, she makes a suggestion that a high speed internet connectivity be installed and the training for the teachers of all schools on ICT be made mandatory for a period of minimum one month.

6. Discussion

The effectiveness of any training depends on its use. The goal of training will be valueless if teachers are not able to materialize or utilize their training in the classrooms. It is of utmost importance that the teachers are able to implement the learnings from their training practically in their classrooms. In the research schools all the teachers were not given training on ICT, so they think that all ICT trained teachers are responsible for conducting the ICT classes. For conducting an ICT class, a teacher is trained only for two weeks which is not sufficient enough to learn all the necessary things properly. If a teacher is trained once, he/she might forget some of the things taught. So, refresher training courses should be provided to them at regular intervals. Moreover, it is needed to monitor these schools regularly and proper cooperation needs to be extended from concerned authorities consistently.

Availability of ICT equipment is very crucial for conducting ICT classes, but very few schools possess sufficient equipment which is a great

obstacle for conducting classes fruitfully and effectively. Enough funding has not been given to school authorities to buy or repair the broken or unusable equipment. There are no designated digital classrooms for conducting ICT classes and the existing classrooms are not suitable enough for it. All selected schools use modem or hotspot for internet connectivity, on top of that interrupted electricity supply and low speed internet facilities hampers the continuity of the digital classes.

ICT class has a positive impact on the learning process. The learner gets pleasure and becomes more attentive in the class. Attendance of students has improved and increased notably more than before after the introduction of ICT classes; which was very poor in the beginning. Through the ICT classes teachers teaching time is judiciously distributed among children, as a result children's participation in every step is ensured in the process of learning. No child can move to the next higher step of learning unless everyone moves at the same pace. It creates an opportunity for a child's development, creativity and overall communication skills.

7. Policy Recommendation

Teachers need specific professional development opportunities in order to increase their ability to use ICT for formative learning assessments, individualised instruction, accessing online resources and for fostering student interaction and collaboration. For this reason, it is needed to extend the duration of existing ICT training and refreshers training is needed for all teachers who received training earlier. Besides this, all teachers of primary school should be given ICT training as soon as possible. Curriculum should be more advanced and contemporary. It should provide schools with the minimum acceptable infrastructure for ICT, equipment and affordable internet connectivity. On the other hand, it is necessary to establish ICT labs in all schools with full equipment where teachers can get the opportunity to practise ICT regularly so that they are equipped enough to create a positive environment in solving any problems. It is needed to recruit ICT skilled manpower in the upazila education office, so that they can provide assistance if it is needed to repair any ICT materials or provide any other logistical or other support. Digital content needs to be developed in the local language to reflect local culture so that it can be more relatable and understandable for the students.

8. Conclusion

ICT training is important for teaching and learning activities, but first it is crucial to identify areas where the primary teachers face challenges and

also identify how ICT impacts the overall teaching learning system. In this research, semi-structured interviews and non-participant observation of ICT classrooms was used as survey tools. This research found that ICT classes are more effective for happy and fulfilling learning. After introducing the ICT, the attendance of students in schools has increased notably. Though the schools do not have ICT friendly classrooms and available equipment yet, the teachers are trying to continue ICT classes with whatever limited resources are available to them. But the ICT training of teachers is not sufficient enough for them to confidently conduct ICT classes effectively. ICT is not only useful for the teachers' professional development, but it can also be used as a tool for accelerating the educational growth of the students. It equips teachers to handle the demands of the teaching-learning process in the modern world. With the use of ICT, both teachers and students are able to study in a more participatory and interesting setting. So quality ICT training, sufficient ICT equipment for schools and its proper implementation can enhance the learning system effectively. We can expect that ICT will bring changes in forms of teacher training throughout the world. No doubt, in recent years ICT application appears in pedagogy with such an influential means that it can most definitely progress the quality of primary education in Bangladesh in more ways than one.

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Financial Inclusion as the Driver of Poverty Alleviation in Developing Economies: Evidence from Bangladesh

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Abstract

This study aims to investigate the role of inclusive financing practices on poverty eradication in the developing countries context like Bangladesh by utilising annual time series data over the period from 1995 to 2020. The empirical evidence from the study indicates that the macroeconomic influences of inclusive financing on reduction of poverty is not statistically well justified, meaning that no significant statistical relationship has been found between inclusive financing and poverty alleviation in Bangladesh over the study period. But the expected sign of the variables that possess in the specified model gives the remarkable indication regarding the presence of true economic relationship. However, the right direction of the variables related to financial inclusion show that to some extent there have been economic implications from which we could remark that poverty alleviation is positively associated with financial inclusion in Bangladesh similar to many other developing countries across the world.

Key Words: Financial Inclusion, Poverty Alleviation, and Bangladesh.

JEL Classification: C20 and O20.

Introduction

Financial inclusion facilitates access to the financial systems for every citizen of a country and it is important for poverty reduction and minimising the income gap by providing financial services across lower-income and underprivileged segments of the population. In particular, innovative inclusion reflects the individual's ability to access suitable

financial products and services. Bangladesh has an underdeveloped financial system, so it is an essential or time required demand to offer suitable financial services for the excluded group of people from the formal or semi-formal financial system, as the portion of these excluded people are nearly half in comparison with the total population of the country. The proper development of the economy cannot be achieved if almost half of the total population is kept out of the financial services. In fact, economic growth shows a positive relationship with financial services development in every economy across the world.

An inclusive financial sector ensures the proper resource mobilisation that helps to optimise the cost of capital. A well-structured financial system creates a fence that can reduce the growth of informal sources of credit. Now many developing countries have often been prioritising the strategies of financial inclusion among the major policy discussions. Over the past decade, Bangladesh has taken a number of initiatives to expand the coverage of the inclusive financial sector. Currently, the country has achieved remarkable improvement in the area of financial inclusion. Despite these achievements, the economy is still facing a number of challenges that create a substantial barrier in the path of establishing even greater improvement to the suitable inclusive financial system.

1.1. Background Information:

In facilitating financial inclusion among each and every segment of the population, the central bank of Bangladesh (Bangladesh Bank) has taken various innovative initiatives in line with the government's aggregative efforts. Providing easy and rapid financial services through mobile phones, namely, mobile financial services (MFS) have been playing a surprising role in financial inclusion strategies. The innovation of agent banking has also promoted the limited or small-scale banking and daily financial transactions to the unbanked population. In Bangladesh, most of the newly banked persons have come from the segment that primarily consists of women, low-income groups including rural and marginalised people. Bangladesh has entered into financial inclusion successively by its regulatory moves, especially from the central bank through innovating inclusive financial products in banking operations. Among these inclusive financial products, the ten-taka (BDT 10) accounts in the banking system for farmers and social safety net beneficiaries, banking sector oriented mobile banking, agent banking practices, school banking, SME loans for women entrepreneurs, and credit guarantee scheme are a few of the remarkable initiatives.

Bangladesh Bank's policy initiatives are now focusing on providing rural agriculture credit for food security and stable food price in the domestic market, SME financing to potential entrepreneurs for employment creation and income generation, and green financing for climate friendly industrial projects for enhancing environmental sustainability. To facilitate sufficient finance in the agriculture sector, Bangladesh Bank has introduced bank accounts for farmers at nominal deposits, i.e., BDT 10, and as a result 10 million accounts have already been opened so far. BB's regulatory frameworks have facilitated the SMEs; this sector contributes 22.5 percent of GDP and 40 percent of employment. BB has disbursed BDT 3.45 billion from the refinancing scheme to SME financing. For promoting women entrepreneurs, 21.9 percent of the SME credit has been disbursed to women entrepreneurs. Considering inclusive financing as an important strategy for growth driver and poverty reduction tool in developing economies, it has been highly essential to explore the impact of financial inclusion on inclusive growth and poverty alleviation in the context of Bangladesh economy.

1.2. Objective of the Study:

Bangladesh has taken a number of comprehensive initiatives to include the financially excluded people in financial activities, but unfortunately around half of the total population of the economy still has no access to formal financial services. In light of the comprehensive objective of enhancing inclusive economic growth and rapid socio-economic development through nationwide participation of all economic segments of society in the financial system, this study is a modest attempt to investigate the linkage between financial inclusion and overall output growth as well as poverty reduction in Bangladesh. No prior study can be found in the literature for developing economies like Bangladesh to identify comprehensively the macro level impact of inclusive financing on reduction of poverty as a whole. Hence, the empirical research of this study has been carried out considering the following research question:

Does financial inclusion have any significant impact on inclusive growth and poverty reduction in Bangladesh?

The organisation of this paper is arranged in the following structure. Section 2 focuses on literature review, section 3 presents methodology, including data and variables, section 4 discusses the empirical findings, and finally, section 5 incorporates the conclusion and policy implications.

2. Literature Review:

We reviewed a number of literature from the previous studies that have been conducted in the context of developing economies in order to understand the nexus between financial inclusion and poverty reduction across the world.

Khalily and Khaleque (2013) tried to establish the relationship between access to finance and the productivity of the enterprises utilising the surveyed data on households conducted in 2010 by institute of microfinance in Bangladesh. The findings of the study reveal that credit accessibility has higher association with an average productivity of labour and it has a positive influence on total factor productivity as well. Finally, this study concludes that there exists a positive association between access to finance and productivity of enterprises.

Babajide et al. (2015) investigated the determinants of financial inclusion and its impact on economic growth in Nigeria and the evidence shows that financial inclusion is considered as the significant determinant of output in the economy.

Bhatia and Singh (2015) postulated that inclusive growth is considered as the long-term phenomenon that can help to promote the living standard of the deprived sections of the society in the perspective of India.

Onaolapo (2015) examined the relationship between financial inclusion and economic growth in Nigeria using the data from 1982 to 2012. The overall results suggest that the bank based inclusive financing modes have greater influence on poverty reduction.

Islam (2016) studied the recent trends and features of financial inclusion in the Asia-Pacific region. This study indicates that customer protection, financial literacy and governance frameworks are important factors in promoting financial inclusion in this region.

Khalily (2016) assessed the regulatory policies and the effect of financial literacy on inclusion. The empirical evidence shows that financial literacy has a positive influence on inclusive financing modes.

Khayum and Tasneem (2016) evaluated the status, problems and main points of financial system inclusion in Bangladesh and they suggested the policy for the modification of the unit banking system in promoting inclusion.

Maisnam (2017) focused that the financial exclusion is the major obstacle in social development in India and concluded that financial inclusion is essential for an inclusive growth.

Mugo and Kilonzo (2017) explored the community level effects of financial inclusion in Kenya. This study found that the innovative inclusions are supportive for growth and poverty eradication.

Okoye et al. (2017) analysed the influence of financial inclusion on overall economic development in Nigeria for the period of 1986 to 2015. The evidence from the study reveals that financial inclusion in Nigeria has supported poverty alleviation through rural credit channels.

Nizam et al. (2020) examined the impact of financial inclusion on economic growth for the 63 countries consisting of developed and developing nations during the period of 2014 and 2017. This study indicates a threshold effect of the financial inclusion and growth nexus while financial inclusion has a positive association with growth.

Chaid et al. (2021) conducted research to identify the relationship between financial inclusion and GDP growth, including other variables using time series data from 1980 to 2018 in Algeria. This study finds the positive relationship between financial inclusion and GDP growth in the long run as well as in the short run.

Cicchiello et al. (2021) performed analysis to investigate the linkage between financial inclusion and other development variables of the 42 least developed countries in Asia and Africa using panel data for the period of 2000 to 2019. The findings of the empirical study reveal that economic growth is significantly associated with financial inclusion.

Emara and Said (2021) carried out an empirical study to find out the relationship between financial inclusion, governance and growth using annual data of the 44 countries that included emerging markets and MENA countries for the period of 1990 to 2018. The empirical evidence from the study implies that financial inclusion has a positive impact on per capita GDP growth.

After carefully reviewing the different studies that analysed the inclusive financing-economic growth as well as poverty eradication relationship around the world, it is required to comprehensively investigate the issue of financial inclusion and economic development relationships in Bangladesh using macro level recent data.

3. Data, Variables and Methodology:

This study utilised the historical time series data over the period from 1995 to 2020. The macro level secondary data of different indicators used in empirical analysis have been collected from various national and

international organisations like Bangladesh Bank (BB), Bangladesh Bureau of Statistics (BBS) including the World Bank. The annual data relating to the financial inclusion indicators have been collected from the Bangladesh Bank. The yearly information on gross domestic product (GDP) has been collected from the Bangladesh Bureau of Statistics and the historical data on per capita income has been collected from the World Bank.

Financial institutions introduce diversified services by which they can enhance technological progress with suitable product and affordable process innovation and resulting economic as well as financial development. Moreover, the performance regarding these activities by the financial intermediaries is dependent on the levels of aggregative or comprehensive intermediation that measures the depth of the financial system. However, the overall efficiency of the financial system is measured mostly by the financial deepening impact or multiplier effect of the banking system as the banking system holds a large part of any country's financial sector. Furthermore, the skeleton or structural composition of the financial system is widely measured in the context of the quantity and variety of financial auxiliaries operating in the financial system of an economy.

The study has been conducted by employing financial inclusion as an exogenous variable; on the other hand, economic growth including poverty reduction has been utilised as endogenous variables. In the model, financial depth, advance to deposit ratio, liquidity ratio, agricultural and rural credit disbursement growth, SME credit disbursement growth, and bank branch information have been set up as proxies for financial inclusion indicators. While capturing the objective of the study, per capita income has been used as the proxy for output growth along with poverty alleviation. In light of economic thought, per capita income growth can be used to explain the overall poverty reduction measure. If the economic growth is not inclusive, i.e., all segments of the society are not benefited with this economic growth and furthermore, the distribution of income is not equitable where there is a higher income gap. In that case, the per capita income growth would not usually be the correct way of interpreting the measure of poverty alleviation. However, it has been recognised and accepted worldwide that, per capita income growth is a suitable indicator that can be used as a rough or primary measure of poverty reduction for most cases in the developing country perspective. The financial inclusion indicator, namely financial depth has been included in this analysis in order to focus on how financial assets are revolved in the economy by the proper financial intermediation with solid savings-investments mechanism.

Agricultural credit disbursement and SME credit disbursement have also been included as the measure of financial inclusion because the credit facility to these sectors could increase productivity to some extent and increase the household's income as well, finally it could also be useful to foster growth and contribute to poverty reduction. The bank branches information is mainly considered to reflect the availability of credit sources and also the accessibility to the credit sources. As the banking activities have been expanded to the remote or rural area, which has been contributed in boosting up the financial integration along with increasing behaviour of savings-investments practices among the household level. This study has specified the following econometric model in order to explore the proper relationship between the variables under consideration.

$$LPCI = \beta 0 + \beta 1FDM + \beta 2LDR + \beta 3LR + \beta 4LACD + \beta 5LSMECD + \beta 6BBI + TT + \varepsilon t \quad (1)$$

Where,

LPCI = Natural log of Per Capita Income

FDM = Financial Depth Measure by Ratio of Broad Money (M2) to GDP

LDR = Loan to Deposit Ratio in Banking Sector

LR = Liquidity Ratio of Banks

LACD = Natural log of Agriculture Credit Disbursement

LSMECD = Natural log of SME Credit Disbursement

BBI = Number of Bank Branches Information

TT = Time Trend

Explaining macroeconomic relationships using time series data may often give misleading results due to the non-stationary problem. While in the presence of hidden time trends, the specified relationship cannot produce the true picture of the study variables. To optimise this problem, a deterministic time trend variable, namely TT has been included in the empirical relationship as an explanatory variable. Such time trend variable has been considered exclusively to measure any drift that may not be explained by the said macroeconomic relationship. The specified model of this study will be estimated using the Ordinary Least Squares (OLS) method. After estimating the model, some diagnostic tests regarding OLS assumptions, including model specification test will also be performed. Standard tests for stationary are mostly applicable in case of large samples.

In this study, a stationary test has not been conducted as the sample size is quite small. In this regard, as the time trend variable has been added to the model, it might be useful enough to resolve the non-stationary problem. In practice, the inclusion of time trend is often the most reliable one to explain the approximate relationship of the study variables by omitting any kinds of hidden drift (if any) around the measure.

4. Findings of Empirical Analysis and Discussions:

The following section of this paper includes the descriptive statistical features, multiple regression estimation, outcomes of different diagnostic tests and then adds on the discussions based on empirical findings.

Table 1 Statistical Features (Descriptive)

	LPCI	FDM	LDR	LR	LACD	LSMECD	BBI
Mean	6.55	42.19	100.15	24.67	8.85	10.81	7426
Median	6.39	45.17	101.13	25.05	8.86	10.84	6672
Maximum	7.59	52.88	106.57	32.70	10.11	12.89	10588
Minimum	5.79	27.47	93.93	18.20	7.38	8.49	5813
Std. Dev.	0.56	9.17	3.08	3.42	0.92	1.43	1608.98
Skewness	0.49	-0.49	-0.18	0.44	-0.17	-0.07	0.74
Kurtosis	1.86	1.71	2.46	3.44	1.69	1.74	2.05
Jarque-Bera	2.48	2.81	0.45	1.04	1.96	1.74	3.35
Probability	0.2888	0.2453	0.7966	0.5935	0.3754	0.4191	0.1872
No. of Obs.	26						

Source: Calculated by Author using EViews Software.

Table 1 shows the descriptive statistical features of the study and it depicts that all the study variables follow the normal distribution as the probability value of the Jarque-Bera Test accepts the hypothesis that the observations come from the normal distribution.

Table 2 presents estimation of the regression coefficients of the model using the OLS method. The explanatory variables except for liquidity ratio of banks and bank branches information haven't shown any significant statistical relationship with per capita income growth. As the estimated probability rejected the hypothesis of the presence of any kinds of association with endogenous variables, hence the said relationship has been depicted by an inconsistent statistical relationship. In analytical principle, it could be interpreted that a 1% increase in liquidity ratio of

banks is associated with a 0.79% decrease in per capita income at 5% level of significance. On the other hand, one unit (one branch) increase in bank branch information is associated with a 0.02% increase in per capita income at a higher statistically significant level. In light of the directions of economic relationships, all the coefficients of the explanatory factors have taken the expected signs. Furthermore, the adjusted R-square indicates that around 99% of total variation in the dependent variable can be explained by the included explanatory variables of the model.

Table 2 Results of the OLS Regression Model Estimation

Dependent Variable: LPCI				
Explanatory Factor	Co-efficient	Std. Error	t-statistic	P-value
FDM	0.009855	0.006220	1.584368	0.1305
LDR	0.009126	0.004518	2.020037	0.0585
LR	-0.007915	0.003704	-2.136920	0.0466
LACD	0.090668	0.081832	1.107976	0.2825
LSMECD	0.030757	0.135645	0.226746	0.8232
BBI	0.000269	0.000033	8.022547	0.0000
TT	-0.011759	0.025221	-0.466237	0.6466
β0	2.444198	1.280971	1.908082	0.0725
Adjusted R-square	0.9922	Durbin-Watson Value		1.3743
F-statistic	458.9487			
P-value (F-statistic)	0.0000			

Source: Calculated by Author using EViews Software.

Table 3 Residual Diagnostics and Specification Test

Diagnostic Tests	Test Statistic (Estimated Value)	P-value
Diagnostic Tests	Test Statistic (Estimated Value)	P-value
Serial Correlation	F-statistic = 1.9762	0.1778
Normality test	Jarque-Bera = 4.6019	0.1002
Heteroscedasticity	F-statistic = 1.4053	0.2630
Ramsey Reset	F-statistic = 0.0604	0.8087

Source: Calculated by Author using EViews Software.

After estimating the coefficients of the model, the different diagnostic tests have been performed in order to justify the OLS assumptions of the residual like autocorrelation, normality and heteroscedasticity, and model

specification test has also been applied. Table 3 shows the results of the diagnostic tests including model specification test. The results indicate that the estimated errors follow the normality assumption as well as that the estimated residuals are free from heteroscedasticity problem and autocorrelation test also suggests that no serial correlation has been found among the estimated disturbance terms. The Ramsey Reset test reflects that the model specification is suitable enough in order to interpret the stated relationship among the different indicators.

Even though the estimated model doesn't reveal any significant statistical relationship between inclusion measure and poverty alleviation indicator, the only exception is that the liquidity ratio of banks and bank branches information has indicated that there exists a highly significant but weak statistical relationship with poverty alleviation. However, in terms of economic insight, all the exogenous variables under study show the right economic direction by displaying the expected signs of the estimated coefficients which indicates that to some extent financial inclusion has positive association with economic growth including poverty reduction in Bangladesh.

5. Conclusion:

Inclusive growth indicates all segments of the population can benefit from economic growth; generally, it focuses on productive employment rather than on income redistribution. Hence, inclusive growth is considered a long-run phenomenon for improving the deprived parts of society in terms of their living standard. In fact, financial inclusion plays an important role in the inclusive growth process by delivering financial services at an affordable cost to the underprivileged groups of the society. Financial exclusion is unacceptable in any circumstances because it leads to social degradation. Keeping large sections of society un-served from financial services, there is no way to promote inclusive development.

This study tries to find out the macro level linkage between inclusive financing and poverty reduction in Bangladesh. Employing the yearly time series data over the period from 1995 to 2020, the outcomes of this study do not support the significant statistical relationship between the mentioned variables, although some insightful relationships in terms of economic direction have been found. Sometimes the macroeconomic relationship of important indicators such as that have been studied in this paper might not be identified in a proper statistical phenomenon, but the relationship that developed in the stated model could be interpreted in terms of the direction of variables movement with the facts of economic

theory. Since financial inclusion has significant merit in terms of poverty reduction strategies across the world, proper research work should be conducted on this issue. Therefore, this study might be helpful to focus on some useful implications for the policy making process in the socio-economic development goals of Bangladesh that could relate the factors like inclusive financing, equitable growth and poverty alleviation. In fact, Bangladesh has recently graduated from the status of least developed economy and entered into the process of becoming a developing country, hence the innovative steps to inclusive financing could be essential for ensuring sustainable economic development.

5.1. Policy Implications:

The important challenges for enhancing inclusive financing are:

1. The higher percentage of rural population and almost entire portions of the population living in remote areas do not have sufficient access to banking services due to inadequate banking infrastructure.

2. Poor technological infrastructure with competitive and cost-minimising behaviour often discourages the banks to provide small loans in the agriculture or SME sector.

3. The country has no national financial inclusion strategy to pursue the nationwide development of inclusive financial sectors.

Some policy measures could be proposed to overcome the obstacles in the development process of inclusive financial systems.

1. Integrated national financial inclusion strategy should be formulated in ensuring universal financial access through introducing suitable financial products.

2. Financial services to the unprivileged group including women should be provided by enhancing the proper development of banking infrastructure in the rural and remote areas. In addition, target-based financing could be introduced to cover the un-served people and to enhance woman empowerment as well.

3. Financing facility to agriculture and MSME should be expanded for promoting the inclusive financial sector because a large number of marginal populations including farmers and small enterprises remain out of banking services.

5.2. Limitation and Further Scope:

In fact, the analytical part of this research has been performed with employing time series data of annual frequency. In reality utilising yearly data in empirical analysis could be the cause of misleading results which might be considered as the major limitation of this study. However, it would be highly appreciated if further investigations are carried out by incorporating higher-frequency data along with the inclusion of more influencing factors and adopting different econometric approaches which might be useful in order to mitigate the research gap in this area.

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