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Financial Inclusions : A study on Agent Banking

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Abstract: *The main purpose of this research is to reflect the attainment of financial involvement through agent banking. Trend analysis of number of accounts, amount of deposits, loans and amount of remittances flow have illustrated the positive growth of agent banking both in countryside and urban areas during 2015 to 20120.Both the Pooled OLS and random effect model demonstrate the significant impact of amount of deposits and remittances flow in agent banking of Bangladesh. Hausman test supports random effect model over fixed effect at showing the effect on deposit to number accounts but opposite results have been observed to show the effect on remittances to number of accounts. Breusch and pagan lagrangian multiplier test elucidated that OLS is better than random effect model. The data set is free from multicollinearity but variances are not constant which means heteroscedasticity problem exists. Ramsey RESET test proves the model has omitted variable bias due to insufficiency of relevant variables' data over the consecutive years.*

JEL classification numbers: *G00, G20 and R1*

Keywords: *Agent Banking, Financial Inclusion, Urban and Rural area*

1. Introduction

Over the time, banking activities have been made easier, faster, and wider throughout the world and many new services are introduced for accelerating the process. Agent banking is simply the outcome of this process where the main purpose is to blowout banking services to the unbanked and rural people of a country that they can enjoy basic banking services. Agent banking also makes it possible to spread banking services outside the physical banking structure which helps a large portion of the population to fulfill their financial needs in the disbursed area.

Besides the traditional structure of the banking system, this new invention is rapidly introduced in many developing countries. In Bangladesh, the government took the initiative of opening agent banking activities in 2013 and to implement that Bangladesh Bank (BB) introduced necessary guidelines to regulate and instruct the banks about the details of agent banking.

As agent banking is a unique banking system, many banks are interested to offer it to both in rural and urban areas distressed and unprivileged people in Bangladesh. Services include deposit collection, loan disbursement, collecting inward remittance, utility bill payments, and all these services are offered by an authorized agent. This agent is a third party owner who is responsible for doing the banking transactions on behalf of the respective bank. Agent banking always focuses on providing regular banking services with the help of agents to help the rural

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people to transact their necessary transactions through a formal structure and help the economy to use the scatter money for a greater purpose.

In Bangladesh, about 38.3% (Bangladesh Bank, 2020) of workforces are involved in the agricultural sector (Statista, 2019) and the bulk of them live in a rural area where a formal banking structure is impossible to establish. Agent banking is helping in this situation by fulfilling basic banking needs and leading to financial inclusion. As most of the rural people are uneducated, providing banking services through agents is the easiest way to achieve the goal of financial inclusion.

2.0 Objectives of the Study

The broad objective of this study is to see how agent banking is opening a new scope of achieving financial inclusion in Bangladesh.

To achieve the broad objective of this report, the following specific objectives are focused on the report-

i. To know the trend and growth of agent banking by emphasizing on the numbers of banks and their agent banking facilities dividing into male, female, urban and rural segments for promoting financial inclusion.

ii. To assess the amount of deposit collection, inward remittances, number of agents and loan disbursement through agent banking for the customers outside the bank premises.

3.0 Literature Review

In developing countries about 28 percent of adult people are under banking channel and an estimated account rate per adult is 0.9.Financial services can bring a positive result in people's lives on the way to financial inclusion (Kendall, 2010). Furthermore poor people's lives are changing as they are getting basic financial services like savings, making payments, credit which is making a positive difference in the way of financial inclusion (Dupas and Robinson, 2009). Financial inclusion is a blessing to small and medium firms as they face fewer obstacles to flourishing the business. Besides, there have been many arguments regarding the conviction of financial exclusion as an obstacle to the development of the economy and promoting financial inclusion in the system (Schiffer and Weder, 2001).

In 2013, Bangladesh Bank introduced agent banking defining banking services out of traditional banking structure through a branchless process and engaging agents under a rational agency agreement where the central bank has the target to serve the underserved and impoverished segments of the population focusing to reach geographically dispersed places (Bangladesh Bank, 2018).

In Colombia there had been seen relationship between financial inclusion and branchless banking which significantly reduce delivery and set up cost, operating cost, cash in and out the

cost and wider range of service cost. Both rural and urban people feel more ease in banking transaction rather than in bank premises because of agent banking (Ivatury and Pickens, 2006). It was also shown that a broader range of social and economic inclusion was possible if the bank continued to offer fundamental services through agents.

In 2009, the World Bank found that the meaning of financial inclusion is different in developed countries as they included advanced tax savings accounts, basic accounts, government payments (World Bank, 2008). A study made by Financial Sector Development (FSD) in 2000 showed that the United Kingdom (UK) had boosted towards financial inclusion due to change in regulations in financial markets, and development in information technology (Leyshon and Thirft, 1995).

Many studies have been conducted to show the relationship between financial inclusion and agent banking and degree of effectiveness in developing countries. Cost structure and high cost per branch are the key barriers in financial inclusion which could only be solved by agent banking. If there is no concept of agent banking then the bank has to establish different branches with full empowerment in different remote places which is costlier process (Gardeva and Rhynea, 2011).

Generally banks need to bear high initial cost while opening branches in several areas which lengthen the breakeven tenure. As such, the introduction of banking services through agents is a better way to do business across the country where potentially less number of people live and less volume of the transaction will occur. If agents will be available for a longer period, local people will be at ease to do the transactions and it will increase the bank's profit and indirectly improve productivity by increasing customer base and decreasing branch costing (Morgan P. 2014). Agent banking solves the liquidity crisis in the countryside where lack of liquidity is not a widespread problem among the low-income people becoming less sensitive to these occasional shortfalls as they are getting continuous service without waiting in a queue (Musau, 2013). Regulatory amendments are placed in one institution and the regulations are in favorable conditions of the banks which drives the financial inclusion (Sarker, Ghosh and Palit, 2015). Besides banks can reach potential customers like low-income people, rural people through this fixed cost system and simply transferring some operating power to the agents without the high cost of branch management (Camara, Tuesta and Urbiola, 2015).

Day to day banks are becoming interested in agent banking because of some motivating factors like desiring to connect remote areas by exploring new market segments and wide-spreading geographical customers through digitalized services as banks don't need to expand an entire branch with a heavy investment in infrastructure (Santu, 2017). Moreover, agent banking produces less cost for the banks than branch banking (Hass, 2015). This study also found that branch banking is 58% (Bangladesh Bank, 2020) costlier than agent banking (Afzal, 2016)

as agents of several banks do not need huge human resources as well as infrastructures which lower the overall operating and maintenance costs also banks have to pay fewer commissions to the agents compared to salaries offering to regular employees.

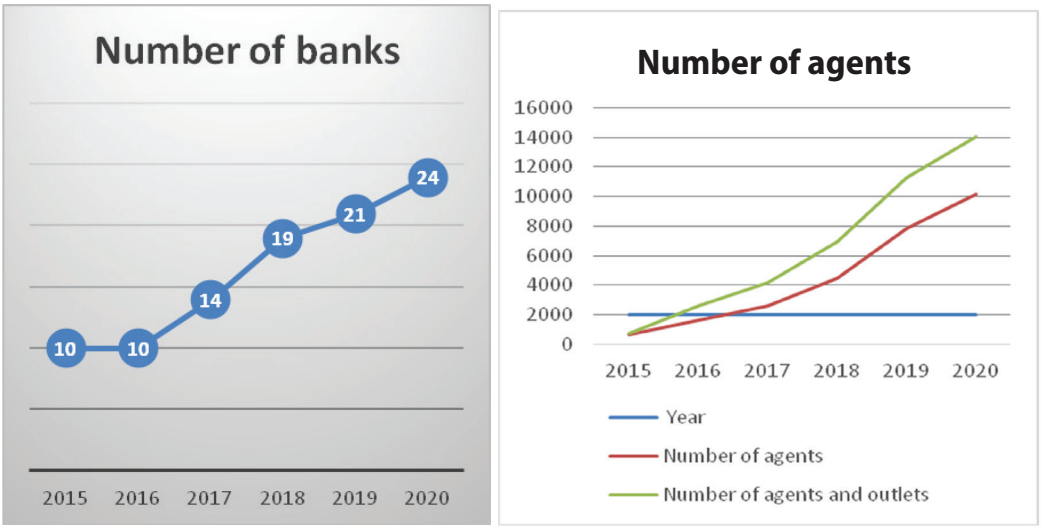
Agent banking can help low-income and disadvantaged people leading them towards taking credits and deposits on an easy process and this helps on the way to financial inclusion. Agent banking services help the banks to uphold the financial and economic process even in macroeconomic crises which surrounds continuous financial system around unprivileged people (Hannig & Jansen, 2010). It also expands employment opportunities as local people get loan easily, flourishing their SME businesses avoiding less unfavorable conditions than before (Bede Uzoma et al., 2016).

In most cases, customers are not aware about facilities of the formal financial system, also they cannot afford them for high costs in transactions involving the cost of information, transportation, and opportunity. Sometimes offered services and products do not match with their needs and wants and make them abstain from this formal system as they are less creditworthy according to established characteristics of being a bank customer (Singh, 2014). As agent banking is less time consuming, more efficient, and less expensive than formal banking services, potential of flourishing agent banking in different countries is very high (Ahmed JU and Ahmed A, 2018). Through innovation of agent banking process for connecting unbanked people can be a great initiative for financial inclusion. Agrani Bank Limited in Bangladesh, tried to connect poor people, including in financial services by using Ansoff's Growth Matrix (Ahmed and Ahmed, 2018) also known as product market matrix which focus on evaluating chances for corporations to upsurge their sales through displaying alternate amalgamations for new markets by market penetration strategy, market development strategy, product development strategy and diversification strategy (Abdin. J, 2016). Another study shows, there is a possibility of interaction between financial inclusion and agent banking through some external influences like political, economic, and government policies (Afande, 2015). Some success factors towards a succession of agent banking in Bangladesh like innovations, new technologies, and banking structure (Mujeri, MK, 2018).

4.0 Agent Banking in Bangladesh

Any contract entered into between a bank and an agent or juristic person shall comply with these guidelines and any other relevant laws in force. Furthermore an agent can operate more than an outlet to provide a framework for offering branchless banking services and promote financial inclusion within a safe and sound financial system environment (Guidelines for agent banking by Bangladesh Bank, 2017). Besides these, from the inception of agent banking in the formal banking sector to till 2020, agent banking grows day by day to bring the unbanked and underprivileged people within the banking system and this growth can be seen through analyzing some of the variables of agent banking in Bangladesh through trend analysis.

Figure 1: Number of banks and agents and outlets



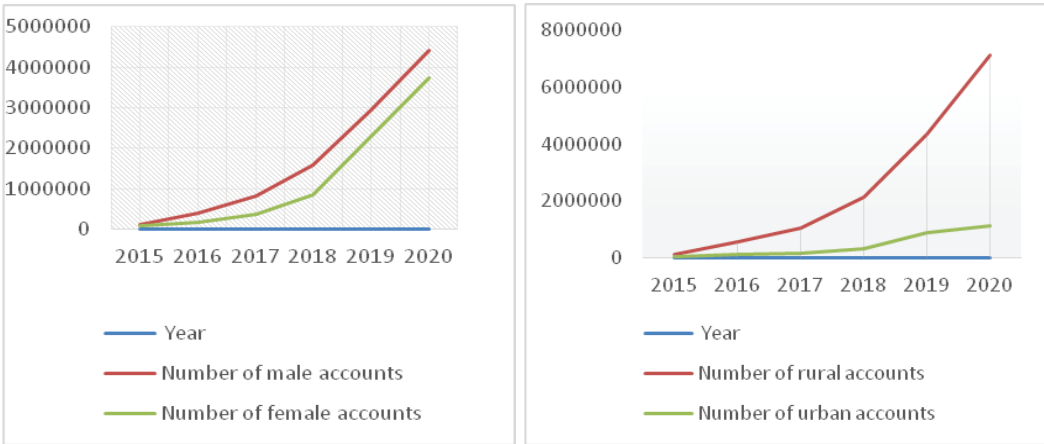
Source: *Bangladesh Bank*

Above graph shows in 2015, there are only 10 banks in this field but now in 2020, the number turns to increase at 24 and outlets reached at 14016, indicates more banks are engaging in this potential sector. Initially, both the number of agents and outlets were growing at a slow pace but from 2018 the number has begun to grow compared to consecutive previous years.

Male and female accounts

Agent banking service has a specific goal when started its journey in Bangladesh only purpose to connect more underprivileged male and female people both in urban and rural areas in the form of formal banking channels. Below charts clearly displays that male and female both are alike concern on agent banking but people in rural area are getting more facilities than urban areas over the period.

Figure 2: Male-female and rural-urban accounts of agent banking

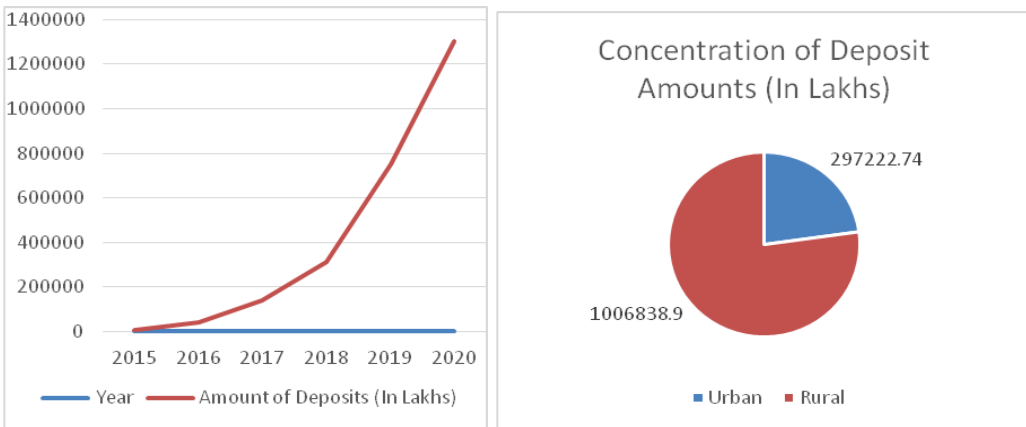


Source: Bangladesh Bank

Deposits Overview

The following graphs show amount of deposit collection is increasing enormously in 2017 which was far better than 2015 and 2016. The amount reached from 5851.82 to 1304061.72 lakh in 2020 and hope to increasing further. Additionally 77% of rural people are now depositing their money through agent banking which is higher than urban people.

Figure 3: Amount of deposits and Concentration of deposit amounts (in Lakhs)



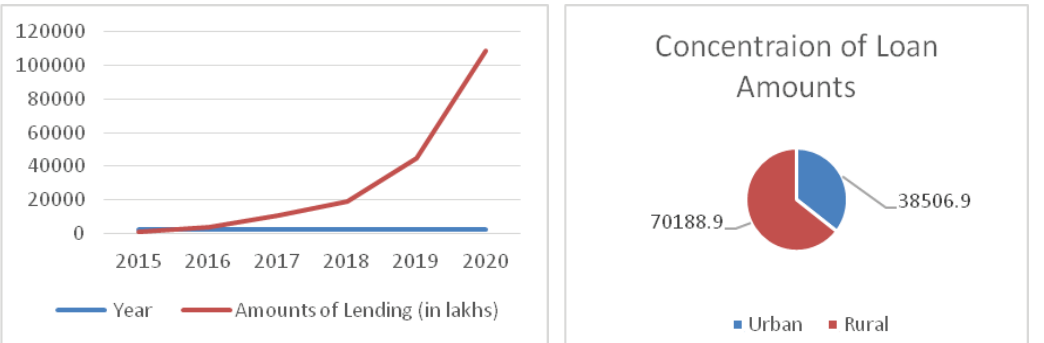
Source: *Bangladesh Bank*

Loan Overview

Though all 24 banks are offering loan services through agent banking to the people who are very few compared to all banks in banking industry of Bangladesh. Very few are offering

lending services to the customers through agent banking. The Following graph shows that lending is very significant in 2019 and 2020 which are doubled than 2015. Besides people who are taking loans are mostly from the rural area. On the other hand in the urban area, 35% of people are enjoying loan facilities of agent banking.

Figure 4: Amounts of lending and concentration of loan amounts through agent banking (in Lakhs)

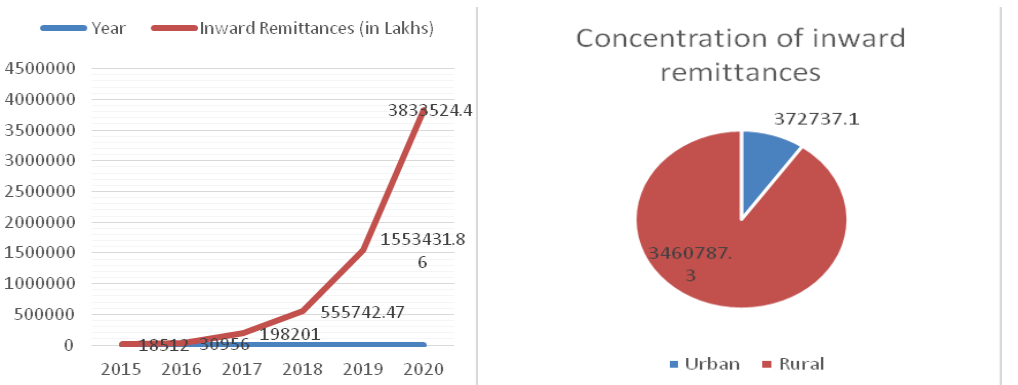


Source: *Bangladesh Bank*

Remittances Overview

Observing the following graphs, significant change has been seen in earning remittance through agent banking from 2015 to 2020. Due to the inception of agent banking, remittance is easily reached to unbanked people through a proper banking channel. According to agent banking report of Bangladesh Bank, around 90% rural and 10% urban people are getting remittance facilities that are out of main stream banking channel. The facility of getting remittance through banking channel is enjoyed mostly by the rural person which is 90% of total remittance and only 10% people from the urban area are taking this facility.

Figure 5: Inward remittance and concentration of inward remittances



Source: *Bangladesh Bank*

5.0 Research Methodology

For conducting the study secondary data has been used which is collected from annual reports of the banks Bangladesh bank's report, website, several publications, books, magazines, journals and websites of the respective banks. According to Bangladesh Bank's report (2020) twenty four (24) commercial banks are operating agent banking services in Bangladesh out of 61 banks. So, 24 commercial banks have been considered from the population of 61 banks. The research study has used data from 2016 to 2020. Observing literature reviews and type of data set, an empirical model is developed to show the link between the role of agent banking and financial inclusion. To estimate the model specification for the panel data, couple of linear regression has been developed to clarify the appropriateness of model. Here amount of deposits and amount of remittances have been chosen as dependent variables and number of accounts has been chosen as independent variables.

Variables	Name
Dependent variables	• Amount of deposits • Amount of remittances
Independent variables	Number of accounts

Pooled OLS test, R squared test, F-test, Hausman test, Fixed effect model test, random effect model test, Breusch and pagan lagrangian multiplier test, heteroscedasticity test, multicollinearity test, Ramsey RESET test have done to articulate the impact of number of accounts on amount of deposits and amount of remittances separately. Regression analysis is done with the collected panel data set by using StATA (Version 12) software to show the relation between financial inclusion and agent banking in Bangladesh. The regression equations are as follows:

$$\mathbf{Y_1 = \alpha_0 + \alpha_1 X + \varepsilon} \quad \textbf{(1)}$$

$$\mathbf{Y_2 = \alpha_0 + \alpha_2 X + \varepsilon} \quad \textbf{(2)}$$

Where,

$\mathbf{Y_1}$ **and** $\mathbf{Y_2}$ = Indicates amount of deposits and remittances respectively.

$\boldsymbol{\alpha_0}$ = Constant variable

$\boldsymbol{\alpha_1}$, $\boldsymbol{\alpha_2}$, = Regression coefficients for the number of accounts in two different linear regression models regressed with deposits, and amount of remittances respectively.

6.0 Data Analysis and Findings

The statistics showed in the following table represent the numerical summary of all types of variables used in this research study.

Pooled OLS Model

Estimation Model: Deposit to Number of Accounts

Dependent variable: Deposits	Coefficient	Std. Err.
Explanatory Variable: Number of accounts	0.4362865***	0.1745398
Constant	37516.87	95060.48
F(1, 88) = 6.25***		
Prob> F = 0.0143		
R Squared = 0.0663		

At 5% level of significance number of accounts has significant positive impact on deposit amount as the p value is 1.4% and the co-efficient is 0.4362865. The coefficient of determination is 6.63% that means variation in number of accounts is explained 6.63% by amount of deposits.

Estimation Model: Remittance to Number of Accounts

Dependent variable: Remittances	Coefficient	Std. Err.
Explanatory Variable: Number of accounts	0.3040633***	0.359668
Constant	11632.93	19588.76
F(1, 88) = 71.47***		
Prob> F = 0.000		
R Squared = 0.4482		

At 5% level of significance number of accounts has significant positive impact on the remittance amount as the p value is 0.00% and the co-efficient is 0.3040633. The coefficient of determination is that means 1 unit variation in number of accounts is explained 6.63% by amount of remittances.

Fixed Effect Model

Estimation Model: Deposit to Number of Accounts

Dependent variable: Deposits	Coefficient	Std. Err.
Explanatory Variable: Number of accounts	-0.0407704	0.2817826
Constant	126913	105603.5
F(1, 71) = 0.02		
Prob> F = 0.8854		

At 5% level of significance, number of accounts has not significant impact on the deposit amount as the p value is 88.50% and the co-efficient is -0.0407704.

Estimation Model: Remittance to Number of Accounts

Dependent variable: Remittances	Coefficient	Std. Err.
Explanatory Variable: Number of accounts	0.3700092***	0.0543865
Constant	-724.7383	20382.4
F(1, 71) = 46.29***		
Prob> F = 0.0000		

At 5% level of significance, number of accounts has significant positive impact on the remittances amount as the p value is 0.00% and the co-efficient is 0.3700092

Random Effect Model

Estimation Model: Deposit to Number of Accounts

Dependent variable: Deposit	Coefficient	Std. Err.
Explanatory Variable: Number of accounts	0.4362865***	0.1745398
Constant	37516.87	95060.48
Wald Chi2(1) = 6.25***		
Prob> chi2 = 0.0124		

At 5% level of significance, number of accounts has significant positive impact on the deposit amount as the p value is 1.2% and the co-efficient is 0.4362865

Estimation Model: Remittance to Number of Accounts

Dependent Variable: Remittances	Coefficient	Std. Err.
Explanatory Variable: Number of accounts	0.3128229***	0.0380062
Constant	9991.447	22052.48
Wald Chi2(1) = 67.25***		
Prob> chi2 = 0.0000		

At 5% level of significance, number of accounts has significant positive impact on the remittances amount as the p value is 0.00% and the co-efficient is 0.3128229

Hausman Test-1: Deposit to Number of Accounts

H_0: fixed effect model is preferred than random effect model.

H_1: fixed effect model is not preferred than random effect model.

Chi2 (1) = 4.65**

Prob> Chi2 = 0.0310

Here the p value is 3.10% and the value of chi2(1) is 4.65 determines null hypothesis is rejected

and alternate hypothesis is accepted that means random effect model is more preferable than fixed effect model

Hausman test-2: Remittance to Number of Accounts

H_0: fixed effect model is preferred than random effect model.

H_1: fixed effect model is not preferred than random effect model.

Chi2 (1) = 2.16

Prob> Chi2 = 0.1416

At 5% significance level the p value is 14.16%, and is greater than 5% clearly indicates the null hypothesis is accepted and alternate hypothesis is rejected that means fixed effect model is appropriate rather random effect model

Breusch and pagan lagrangian multiplier test for random effects-1: Deposit to Number of accounts

Breusch and pagan lagrangian multiplier test **(**BPLM) test is for checking whether random effect is better than OLS or not. To conduct this test null and alternate hypothesis have been developed as follows

H_0: OLS is better than random effect.

H_1: OLS is not better than random effect.

At 5% significance level the Chi2(1) value is 1.86 and the P value is 17.31% respectively. Here the probability value exceeds the P= 5% value determines the null hypothesis is accepted. That means OLS is better than Random effect

Breusch and pagan lagrangian multiplier test for random effects -2: Remittance to number of effects

H_0: OLS is better than random effect.

H_1: OLS is not better than random effect.

At 5% significance level the Chi2(1) value is 0.48 and the P value is 48.63% respectively. Here the probability value exceeds the P= 5% value determines the null hypothesis is accepted. That means random effect is not better than OLS when remittance has chosen as independent variable and number of accounts as dependent variable.

Variance inflation factor (VIF) Test

The variance inflation factor (VIF) is 1.00 which exists in between reference value 1 to 5 that means the data set is free from multicollinearity problem.

Ramsey RESET Test

Ramsey RESET test is used for notifying powers of the fitted values of remittance.

H_0: Model has no omitted variables.

H_1: Model has omitted variable bias.

F(3,85) = 4.09

Prob> F = 0.0091

At 5% significance level, null hypothesis is rejected and alternate hypothesis is accepted that means model has omitted variable bias. The study has chance to add more relevant variables but in practical agent banking is a new idea in the banking system of Bangladesh. So, data is not available for different relevant variables

Heteroscedasticity Test

Chi2(1) = 101.95

Prob> Chi2 = 0.0000

Here the Chi2 (1) is 101.95 and the probability value is 0.000 so the null hypothesis is rejected and alternate hypothesis is accepted that heteroscedasticity problem exists in data set and the variances are not constant.

7.0 Conclusion

Accumulating savings, providing loans, providing inward remittances, enhancing number of agents and augmentation of economic transaction conveniently both in rural and urban zone has been seen through agent banking activities are regular phenomenon in Bangladesh. As a result, the promotion of financial inclusion is greatly accelerated in Bangladesh by offering expedient banking services to unbanked people. The empirical model of this report shows that deposit amounts, inward remittance, and the number of agents are positively influencing the number of accounts being opened where (Ahmed JU and Ahmed A, 2018) showed the evolvement of agent banking services as a first state owned bank in Bangladesh into their banking strategies to achieve their desired goals. As more accounts are opening, the more unbanked people are coming under the umbrella of the banking system and contributing to the economy and fulfilling the objectives of financial inclusion. This study also reveals impact of number of bank accounts on both amount of deposits and amount of remittances. Gradually enormous areas of services like different bill payments facilities, various loans for rural people can be added under existing agent banking activities which could be added in data analysis but lack of data consistency over the years of those variables forced to deselect them. Agent banking already signs a significant impact in Nigeria, Kenya, and Malaysia (Bede Uzoma et al., 2016). Likewise this paper also suggests, Bangladesh is on the right track to becoming an emerging country, has huge scope to

explore agent banking for the unprivileged and unbanked people. Since the inception of agent banking in 2013 to till now, only 24 conventional banks comes into this prospective sector which is very low number comparing with totals 61 banks. Furthermore, this paper tries to show the importance and impact of agent banking in our financial system and how financial inclusion like agent banking can expedite deposit balance, number of transactions, volume of transactions and inward foreign remittances etc. which may attract other banking institutions to expand their business in this area and help the government to flourish the economy.

This research paper also has certain limitations. Firstly, due to a scarcity of time, reliable and relevant data collection is quite difficult. Secondly there are sixty-one conventional banks in the banking industry but only 24 banks are offering agent banking which is very few in sample size. Thirdly, only three (one independent and two dependent) variables have been used because data of other variables (amount of landings and number of outlets) are not consistently archived and available during 2015 to 2020. This research paper shows the involvement of unbanked people both rural and urban areas to get the financial services by agent banking. However, all the listed banks have not agent banking services. But according to this research paper the growth is to upward trend. So, if people are more aware about their savings and financial institutions can cover more unbanked people by providing new and innovative agent banking activities. Moreover, this way of banking system will create a milestone for the upcoming future. Further research can be done on how agent banking helps in the profitability of a bank as well as how it is gaining customers' confidence as an alternative delivery channel of the traditional branch banking system. To continue this journey, more banks are encouraged to engage in agent banking.

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Appendix

Breusch and pagan lagrangian multiplier test for random effects-1

Estimation Model		
	Var	Sd=Sqrt (Var)
Deposits	7.59e+11	871370.7
e	7.53e+11	867611.9
u	0	0
Test: Var (u) = 0 Chi2(1) = 1.86 Prob> chi2 = 0.173		

Breusch and pagan lagrangian multiplier test for random effects-2: Remittance to number of effects.

Estimation Model		
	Var	Sd=Sqrt (Var)
Remittance	5.46e+10	871370.7
e	2.80e+10	867611.9
u	2.13e+09	46181.79
Test: Var (u) = 0 Chi2(1) = 0.48 Prob> chi2 = 0.4863		