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Challenges in Financial Inclusion of Ethnic Minority Women: Evidence from an Emerging Economy

Abstract

To find out the obstacles preventing ethnic minority women's participation in financial inclusion, four hill areas of Bangladesh have been selected to study where convenient sampling has been applied to collect data. Face-to-face survey interview technique was followed to a sample size of 100 women. Data were analyzed using frequncy analysis, descriptive statistics, pearson correlation analysis and ordinary logistic regression. It has been found that awareness of bank benefits, distance, financial literacy, popularity of other services, and income level are significant obstacles either preventing or discouraging ethnic community women's financial inclusion. Based on the result, it is recommended that banks should increase financial literacy programs to make women financially literate and aware of bank services. As internet connection is low in hilly areas, banks may establish more physical branches to serve them so that they can come under the umbrella of financial inclusion and banks may increase their product lines for serving women of ethnic minority from these hill areas. This study is beneficial for the banks, regulatory bodies and policy makers in Bangadesh and other emerging economies as the findings reveal the fact that banks and concerned parties should encourage ethnic minority women to open bank account to enhance financial inclusion, economic growth and women empowerment.

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1. Introduction

Obstacles preventing women from having banking services has been a subject of interest to researchers, policymakers and bankers since having access to bank services and use of them indicates the financial inclusion of women. The purpose of this study is to find out the obstacles preventing ethnic minority women [1]from financial inclusion. Financial inclusion indicates the accessibility and use of formal financial services like banking loans, savings, insurance, and different kinds of investment opportunities especially for underserved people (Demirguc-Kunt et. al., 2008). The objective of financial inclusion is to bring all under financial services and make these services affordable. The World

[1] For convenience of discussion, we will use the term "women", "ethnic monority women", "ethnic cummunity women"and women of ethnic minority group interchangeably.

Bank (2018) defines financial inclusion as "Individuals and businesses have access to useful and affordable financial products and services that meet their needs like transactions, payments, savings, credit, insurance which are delivered responsibly and sustainably." Ethnic minorities can be defined as social groups with a cultural and social identity different from traditional dominant society that may place them at a disadvantaged and vulnerable position during the development process. Merriam-Webster Dictionary (n.d.) defines ethnic minorities as people belonging to an ethnic community which is a relatively small portion of a population. Ethnic minorities are known as adivasis in Bangladesh and the cultural and socio-political background of these minorities are deeply rooted in the hill districts (Barua, 2010). The Population Census 2022 of Bangladesh estimated 16,50,159 ethnic community people among which 825,408 are ethnic community females (Roy and Deshwara, 2022)

When the word 'gender' is added to financial inclusion, it represents a crucial role in financial inclusion because many disparities are seen between men and women while accessing and using financial services. According to Demirguc-Kunt and Klapper (2013), more than 1.3 billion women worldwide remain largely outside the formal financial system. When there is a gender-based barrier, then women's participation in financial inclusion is limited (Ghosh and Vinod, 2017). According to the World Bank 2018 report on financial inclusion, it was found that about 1.7 billion adults worldwide (31% of adults) do not have a basic transaction account and surprisingly almost half of these unbanked people are women from poor households in rural areas. It was cliamed by many women claim that they don't require an bank account in their name as they use the formal account of someone else in family. (Saluja et. al., 2023). In many cases, husbands own the authority and have access to the ATM card of their wives, indicating the family structures that deprive women and making them dependent on other family members regarding financial matters. (Schaner, 2017; Demirguc-Kunt et. al., 2022).

There is a link between social justice, disadvantages and financial exclusion of ethnic minorities. Khan (2008) found that disadvantages among ethnic minorities present a bigger risk of financial exclusion which affect their access to banking services or credit, economic well-being, autonomy and involvement in democratic society. Generally, women from our traditional society are vulnerable; however, ethnic minority women face a more vulnerable situation since they have little access to local governmental bodies to file a complaint (The Daily Star, 2022). Women of ethnic group (adivasi) in Bangladesh are paid at a lower rate and as a result, households run by women are vulnerable to the impact of fluctuations in labor demand (Perry, 2010), leading to the exclusion from the formal financial system.

Women are victim of biased treatment in family which adversely affects her social interactions and deprives her in access to resources and opportunities (Manta, 2019; Günther and Ghosh, 2018) and financial independence (Schaner, 2017). Financial inclusion is not possible if women are not brought under these services. When women open a bank account, it positively affects families, communities, and economic development. Furthermore, it empowers them economically and helps manage

funds securely. Women entrepreneurs can use their bank accounts to access credit facilities, manage transactions, and get record-keeping services. If women get engaged in banking services, it will have a ripple effect on the economy.

It is visible that women play a role in increasing financial inclusion. Thus, the legal and regulatory framework must be established to ensure equal access to banking services for all groups of women. It can be done to address the specific obstacles that women, especially women of ethnic minority in Bangladesh are facing to have access to the bank's financial services. This study will help generate several contributions in the literature of obstacles restricting ethnic minority women's participation in financial inclusion. Though the recognition of women's contribution in financial inclusion is increasing, but there is a gap of understanding what are the specific barriers faced by ethnic minority women in Bangladesh. There is existing research highlighting gender based financial inclusion but addressing the ethnic minority women's barriers in financial inclusion is limited. Therefore this study will contribute to fill that literature gap focusing on the financial inclusion barriers faced by the ethnic minority women in Bangladesh.

First, till now, only a few studies have focused on the obstacles faced by women in having access to financial services by banks. Moreover, to our knowledge, this might be the first study to identify the obstacles preventing ethnic minority women's participation in financial inclusion in the context of emerging economy countries, even for countries in Asia.

Second, financial inclusion is one of the major challenges for the emerging economies where regulatory bodies and banks are trying hard to bring women of all classes under the formal banking channel. Opening a bank account will help women find a pathway to financial inclusion, enable them to get financial independence, motivate them to save money in a formal mechanism, help them get loans for businesses as many ethnic minority women engage in entrepreneurial activities (World Bank, 2018). Moreover, women are half of the people of a country, and ethnic minority women are mostly underserved. So, it is a must to ensure their participation in bank services that will further increase financial inclusion and this study would be helpful in achieving the stated purpose.

Third, increasing ways to and use of quality financial services and products is important for inclusive economic growth (Holloway et. al., 2017). In emerging economies, women's financial inclusion in terms of having bank accounts is highly important for achieving economic growth as women with bank accounts invested more in their business as well as spent more on education which led to increase in economic growth (Čihák and Sahay, 2018). Therefore, the findings of the research are particularly supportive for emerging economy nations in formulating banking services for all groups of women.

Fourth, the study is specifically important in promoting financial independence and economic empowerment of ethnic community women where banks can play a dominant role. Banks can provide special schemes such as loan and other facilities like bank assurance for domestic upliftment of women (Khurana et. al., 2017). So, the findings of this

research are helpful in upholding women empowerment by banks.

Fifth, this research paper is particularly imperative for banks to bring women, especially women of ethnic minority groups under the formal banking system. Banks can arrange financial literacy and other awareness campaigns to make women understand about the importance of banking services. Besides, this study suggests that banks should introduce new product lines for women to compete with other financial institutions and stay in the market.

Sixth, this study is helpful for regulatory bodies and policy makers in formulating future policies to bring women under banking channel to achieve the purpose of financial inclusion. The regulators can introduce strict policy for banks to bring women under banking financial services by arranging various seminars for women, introducing new product schemes, easy loan financing etc.

The rest of the sections are designed as follows: chapter 2 deals with the extensive previous relevant studies, chapter 3 presents the comprehensive research materials and methods of the study, in chapter 4, details of the discussion derived from the results is presented and finally, chapter 5 deals with the conclusion of the study.

2. Literature Review and Hypotheses Development

Women's participation is less in financial inclusion in the world. Access to formal bank accounts can indeed empower women because a formal account can ensure a safe place to save, borrow, and pay. Almost 1.3 billion women are not under the formal financial system (World Bank Group, 2018). So, efforts are made to increase their participation in having formal accounts (Demirguc-Kunt and Klapper, 2013).

2.1 Women and Financial Inclusion

The gender gap is less observed in financial inclusion, also the obstacles that limit access to finance for women are not focused. Equal access to finance will bring overall development (Cheston and Kuhn, 2002). Different complex laws and customs also discourage women from having a bank account under their name (IFC, 2011). Women demand lower financial services than men because more gender norms influence intra-household dynamics (Johnson, 2004).

Research shows that women are more knowledgeable about loan requirements when they are not opposed by their husbands in the case of taking loans (Fletschner and Mesbah, 2011). Many women entrepreneurs depend on personal credit to finance their new firms. Many research papers have shown that formal institutions like banks are less interested in financing female entrepreneurs and charge higher interest rates than male entrepreneurs (Muravyev et. al., 2009; Demirguc-Kunt et. al., 2008). However, some studies also have shown that there is no evidence that women are not charged higher interest rates than men in developing countries. So, it may differ based on different demands for external financing (Carter and Shaw, 2006).

Women entrepreneurs report greater systematic barriers but there is no discrimination against female borrowers in the lending practices. Some banks want men as guarantors to lend to women. Even in group lending, the bank ensures

permission from the husband before lending. Sometimes unmarried women are generally not considered credit-worthy (Safavian, 2012).

Women might face more challenges in formal Finance because they enter less capital industries. Some women think getting a loan is difficult by their perceptions (Coleman, 2000). They also have lower financial literacy, and this rate is affecting their participation in financial inclusion. Women applying for loans are found to be less experienced in getting loans, they are found to be less educated in relevant fields, and lack of experience is also another factor (Lusardi and Tufano, 2015). Barriers such as low income, low or no financial literacy, and low or no accessibility to finance make women less accessible to have a bank account (IFC, 2011).

Women find challenges in giving collaterals and personal guarantees. Because of low credit scores, they can't have special loan services like men (Narain, 2009). Also, women are called less creditworthy customers as they don't hold the title of their land or house. There are some laws where a husband's signature is required in this case, adverse credit histories of the husband may also affect the woman's credit line. Overall, there are some restrictions outside the home and gender discrimination limits women's access to finance (Chamlou et. al., 2008; Safavian, 2012).

2.2 Obstacles Preventing Financial Inclusion

There is a clear picture that several obstacles are preventing women's participation in financial inclusion in terms of opening bank accounts (Beck et. al., 2008). In this research, ownership of bank account is considered as a proxy for financial inclusion, and how these obstacles are working as barriers to having no bank account (Allen et. al., 2016). World-wide 55% male have a formal account in financial institutions, whereas 47% of women own or co-own such an account with a frowzy picture in emerging economy countries where women are 28% less likely to open an account at a formal financial institution (Demirguc-Kunt et. al., 2022). Opening of bank accounts in the names of women will not ensure their financial inclusion because many claim that their husbands hold the access to their account (Schaner, 2017). Some studies show that women are not financially aware and skilled to manage finances (Kumari and Azam, 2019). Financial literacy has been considered as critical and important factors to bring women under financial inclusion (Gonzales et. al., 2015). Complex documentation also creates problems for those who have less financial literacy (Ghosh and Vinod, 2017). Women can't access financial services, so their earning is also low (Manta, 2019). High level gender discrimination and employment gap are still not decreased (Klassen and Lamanna, 2009). High financial accessibility leads to better control of their earnings (Bernasek, 2003). Lack of access to finance and charges discouraging women to have loans (Manta, 2019). Ethnicity has emerged as a critical factor while promoting financial inclusion in women (Gonzales Martínez et. al., 2020). According to Manta, (2019), Women who lives in underdeveloped areas where infrastructures are poor find it diificult to go to banks in other areas on a regular basis, as a result they avoid banking altogether. This report aims to better understand how the obstacles are keeping women of ethnic minorities away from financial inclusion.

2.3 Hypotheses Development

Awareness of bank benefit

Awareness of bank benefits means understanding the features and advantages of using the bank's benefits (Ghosh and Vinod, 2017). One can use these services in business or personal financing decisions. Some benefits are interest earnings, convenient transactions, access to credit, investment opportunities, etc. Each must be aware of banks' benefits so that they can fulfill their financial needs (Saluja et. al., 2023). With a lack of financial knowledge and skills, women cannot access financial services and the benefits of the formal financial system, making them economically dependent on men and confined to the vicious circle of low investments, low income, and low profits (Manta, 2019). Staying informed about the bank's new features may help people get more advantages offered by banks. Based on the above discussion, the following hypothesis is generated:

H_1: ***Awareness of bank benefits increases the probability of opening bank accounts by ethnic minority women.***

Trust in Bank

Trust is the most needed thing in the banking sector. Banks are sensitive by nature and deal with public money. Banks will work for the best interest of the customer and will manage their funds ethically and maintain regulatory standards as a fiduciary relationship exists between banks and customers. Also, customers trust their bank to keep their information safe and won't share it with third parties (Peterson, 2001). A lack of confidence in trust may lead to a bank run. Trust is called the cornerstone of the banking sector, and it is needed for the Bank's success in attracting customers (Fungáčová et. al., 2019). Women trust the bank service and they are willing to receive the services from the bank (Fungáčová et. al., 2019). Considering the trust issue, following hypothesis is developed:

H_2: ***Trust in bank increases the probability of opening bank accounts by ethnic minority women.***

Financial literacy

Financial literacy is another cornerstone for banks as it lets people know the rationality of financial decisions (Gonzales et. al., 2015). Financial literacy refers to understanding, full knowledge and skill related to financial principles and concepts (The Business Standard, 2023). Financial literacy has been repeatedly considered as critical factor in bringing about financial inclusion and has significant importance in increasing economic empowerment of women, especially the poor women in rural areas(Montanari and Bergh, 2019; Kumari and Azam, 2019; Kaur and Kapuria, 2020). It helps know all terms related to banks and other financial institutions so people understand what they should do before getting engaged in banks. It enhances awareness of different fraudulent activities. Besides, financially literate people understand services easily which contributes to economic growth (Bernasek, 2003). Based on the above information, the following hypothesis is generated:

H_3: ***Financial literacy increases the probability of opening bank accounts by ethnic minority women.***

Complex documentation

According to Beck et. al., (2008), complex

documentation can make customers confused. A customer can easily get confused when the customer doesn't understand complex terms and financial jargon (Dyche, 2002). As a result, it may take more time for that customer to choose a service. This complex documentation also creates problems for those who have less financial literacy. All countries are not fully developed, so many people are not still in the education program (Ghosh and Vinod, 2017). Hence, it will be hard for them to know the details of all documents made by banks for receiving financial services. Based on the discussion, below hypothesis is created:

H_4: ***Complex documentation decreases the probability of opening bank accounts by ethnic minority women.***

Expensive services

According to Djankov (2008), expensive services can make customers demotivated to receive financial services. It has disadvantages both for banks and customers. High service charges can cause customers to be dissatisfied. Moreover, customers may feel they are not getting proper services for the fees they pay to banks (Stevenson and St-Onge, 2005). Customers may move to other financial institutions if the bank charges more. So, it's a huge disadvantage for banks that these will lose their customers because of charging more fees. These charges may create financial exclusion instead of financial inclusion. Negative perception may create banks which will further reduce the number of customer retention. To solve these problems, banks should think about their fee structure (Djankov, 2008). Hence, the following hypothesis is established based on the above discussion:

H_5: ***Expensive services decrease the probability of opening bank accounts by ethnic minority women.***

Distance

Distance can create problems as it limits the access of individuals. Customers located in rural areas cannot get easy access. A lack of bank branches can reduce the number of financial inclusions. Also, distance creates inconvenience as some customers find it time-consuming and difficult to manage to go to banks from their workplace or home (Beck et. al., 2008). According to Manta (2019), Women who lives in underdeveloped areas where infrastructures are poor find it hard to visit banks in other areas on a regular basis so they avoid banking altogether. Customers may find it less worthy as they have to pay travel costs to receive financial services as well as they also pay for bank services (Beck et. al., 2008). Although online banking is available nowadays, the internet connection is poor in remote areas. Therefore, customers of those areas may feel the necessity of nearby bank branches. Distance also creates security Problems as customers have to carry a large amount of money with them to deposit it in the bank (Jiménez et. al., 2009). To overcome these limitations, banks should take more strategies to expand their digital services and other online platforms. Based on the discussion, the below hypothesis is developed:

H_6: ***Distance decreases the probability of opening bank accounts by ethnic minority women.***

Popularity of other services

Popularly other services can pose a disadvantage for banks in Bangladesh.

First of all, it will create competition as fintech companies and financial services provider companies are increasing day by day (Gauri and Galef, 2005). According to Berry (2006), women do not like dealing with banks as they require more collateral and documents. Non-banking services may operate at a lower cost which may not be possible for banks. Non-government organizations in Bangladesh are targeting women as their customers and these institutions have gotten the best result of giving loans to them as repayment is rate high. At present, NGOs are offering services like customers so these are getting popular day by day which may reduce the customer retention rate of banks (Fruttero and Gauri, 2005) and the following hypothesis is generated:

H_7: *Popularity of other services decreases the probability of opening bank accounts by ethnic minority women.*

Necessity of banking services

According to Ashraf et. al., (2010), special services for women attract them and they feel that there is the necessity of having an account to have those services. In general, people feel the necessity of banks as banks play a role in the modern economy. It helps keep money safe, offers many cards to make transactions easy, gives people access to credit, offers savings and other investment opportunities, offers financial management tools, and helps exchange currency (Pazarbasioglu et. al., 2020). People feel the necessity of banks due to their features and services. If customers do not feel interest in banks, they may use informal financial channels where regulatory intervention is less and fees are charged low, or they may manage their funds on their own (Thomas, 2013). If customers do not feel the necessity of banks, they may limit their financial access to formal tools and services, therefore, the following hypothesis is developed:

H_8: *Necessity of banking services increases the probability of opening bank accounts by ethnic minority women.*

3. Methods

3.1 Data and Sample

Convenient sampling was adopted to collect data from ethnic minority women of Chakma, Marma and Lushai communities living in four different hill areas (Rangamati, Khagrachari, Bandarban, Sitakunda) based on a close-ended questionnaire during the month of December, 2023. These communities were selected for this study since they are recognized as the part of main ethnic groups (Salam and Aktar, 2014) and most of them live in the mentioned areas. To collect sample data based on close-ended questionnaire, the study followed face-to-face surveys, where the interviewer met the respondent to ask questions and record the responses for further analysis. Moreover, the questionnaire also includes nominal and continuous responses to capture data on various demographic factors. Based on available budget and time, a total of 100 ethnic minority women were interviewed to collect required data.

3.2 Variables

3.2.1 Dependent and Independent Variables:

Bank account has been taken as the proxy for dependent variable financial inclusion which takes the value of either 1 or 0 depending on whether the ethnic minority women have a bank account (Fitzpatrick, 2015). The independent variables have

been selected based on extensive review of the previous literature where all the independent variables assume the dummy 1 or 0.

3.2.2 Control Variables:

Income and education level have been taken as control variables (Muller, 2002). These two variables are important to make women financially stable. The women who are educated are more concerned than less educated women about earnings and their capability to run a business (Gunther and Ghosh, 2018). Description of the variables is presented in Table 1.

Table 1: Description of the variables

Variable	Nature of variable	Symbol	Definition	Sources
Bank account	Dependent	BA	1 if ethnic minority women have a bank account, otherwise 0.	(Fitzpatrick, 2015).
Awareness of the bank's benefit	Independent	ABB	1 if ethnic minority women are aware of the banking services, otherwise 0.	(Saluja et. al., 2023; Ghosh and-Vinod, 2017;Manta, 2019).
Trust in bank	Independent	TI	1 if women of ethnic minority trust that bank will help secure their savings, otherwise 0.	(Peterson, 2001; Fungáčová et. al., 2019).
Financial literacy	Independent	FL	1 if ethnic minority women are familiar with the types of paper needed to get banking services, otherwise 0.	(Gonzales et. al.,2015; Montanari and Bergh, 2019; Bernasek, 2003).
Complex documentation	Independent	CD	1 if women of ethnic minority think that documentations needed for bank accounts are complex to them, otherwise 0.	(Beck et. al., 2008; Dyche, 2002; Ghosh and Vinod, 2017).
Expensive services	Independent	ES	1 if ethnic minority women assume that charges for banking services are expensive to them, otherwise 0.	(Djankov 2008; Stevenson and St-Onge, 2005).
Distance	Independent	DI	1 if ethnic minority women think the distance to bank branches is an obstacle to open a bank account, otherwise 0.	(Beck et. al., 2008; Jiménez et. al., 2009)
Popularity of other services	Independent	POS	1 if ethnic minority women use any other financial services other than banking services to manage their savings, otherwise 0.	(Gauri and Galef, 2005; Berry, 2006)

Necessity of banking services	Independent	NB	1 if women of ethnic group feel that a bank is needed to manage their savings, otherwise 0.	(Ashraf et. al., 2010; Pazarbasioglu et. al., 2020).
Educational level	Control	EDU	1 if ethnic minority women have Higher Secondary Certificate (HSC) or equivalent level of education and/or Graduation or higher level of education, otherwise 0.	(Gunther and Ghosh, 2018; IFC, 2011).
Income level	Control	INCOME	Level of income per year	(Muller,2002; IFC, 2011).

Above table indicates the variables used in this study. In this research, 1 dependent variable, 8 independent variables and 2 control variables have been employed.

3.3 Econometric Model

As the dependent variable is bank account which takes the dummy value of either 1 or 0 to see whether ethnic minority women have bank account or not, we considered logistic regression model to find out obstacles preventing their participation from financial inclusion since logistic model has become the standard technique for modeling dichotomous output (Allison, 1999). Now based on the discussion of the variables above, the following equation has been developed:

$$\ln[P(BA_t)/(1-P(BA_t)] = {}_0 + {}_1 ABB_i + {}_2 TI_i + {}_3 FL_i + {}_4 CD_i + {}_5 ESi + {}_6 DI_i + {}_7 POS_i + {}_8 NB_i + {}_9 EDU_i + {}_{10} INCOME_i + u_i$$

In the above equation, the dependent variable bank account is the log of the odds ratio P (BA_t) is the probability of an outcome coded with 1. u_i error term which captures the factors outside of the model.

4. Results and Discussion

4.1 Demographic Analysis

Table 2 shows the demographic analysis of the survey data based on frequency analysis. Under the demographic factor age, 34% (34 out of 100) ethnic minority women belong to the age range of 20-30 years. In terms of level of education, 28% (28 out of 100) women have completed Higher Secondary Certificate (HSC) or equivalent level of education, while 19% (19 out of 100) ethnic minority women have no formal education. It is also visible that 41% (41 out of 100) women have no income source which might have an impact on owning a bank account. Finally, we tried to find out the marital status of surveyed women to know whether financial institutions want a husband's signature on required documents before allocating loanable funds to ethnic minority women. We found that 77% (77 out of 100) women are married while single ethnic minority women were only 14% (14 out of 100).

Table 2: Demographic Analysis

Category	Subcategory	Responses	Percentage	Cumulative Percentage
Age	20-30	34	34%	34%
	31-40	26	26%	60%
	41-50	25	25%	85%
	Above 50	15	15%	100%
Level of education	No formal education	19	19%	19%
	Below SSC	18	18%	37%
	SSC or equivalent	20	20%	57%
	HSC or equivalent	28	28%	85%
	Graduation or higher	15	15%	100%
Income	No income	41	41%	41%
	Above BDT 0-10,000	25	25%	66%
	Above BDT 10,000 -20,000	22	22%	88%
	Above BDT 20,000-30,000	11	11%	99%
	Above BDT 30,000-40,000	1	1%	100%
Marital Status	Single	14	14%	14%
	Married	77	77%	91%
	Divorced	2	2%	93%
	Widowed	7	7%	100%

The above table demonstrates the demographic analysis of the study. Age, Level of education, Income and Marital Status have taken as demographic factors.

4.2 Descriptive Statistics

Descriptive statistics summarizes the characteristics of the data set and allows us to visualize a dataset and know its central tendency, measures of variability, and distribution (Mishra et. al., 2019). Table 3 provides a summary of the descriptive statistics of obstacles preventing ethnic minority women from opening bank accounts. Here, 49% (49 out of 100) of ethnic minority women have an account in the bank. Half of them do have not an account because only 56% (56 out of 100) of women are aware of bank benefits, 49% (49 out of 100) women are financially literate, 56% (56 out of 100) and 48% (48 out of 100) of women agree that bank has complex documentation and services given by banks are expensive respectively, 53% (53 out of 100) of women have agreed that other services (Non-government organizations) are popular. Some positive sides are that 95% (95 out of 100) of ethnic minority women trust the bank and 97% (97 out of 100) feel the necessity of banks. Only 39% (39 out of 100) women feel the distant problem. Here, education level has a mean value of 0.43 (43 out of 100) which indicates that 43% ethnic minority women had completed HSC or equivalent level of education and/ or graduation or higher education level. Besides, the average income level lies between BDT 0-40000. So, it can be said that women of ethnic minorities do not earn much which could be a reason that they have fewer bank accounts.

Table 3: Descriptive statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
BA	100	0	1	0.49	0.5
ABB	100	0	1	0.56	0.49
TI	100	0	1	0.95	0.21
FL	100	0	1	0.49	0.5
CD	100	0	1	0.56	0.49
ES	100	0	1	0.48	0.5
DI	100	0	1	0.39	0.49
POS	100	0	1	0.53	0.5
NB	100	0	1	0.97	0.17
EDU	100	0	1	0.43	0.50
Income	100	0	BDT 40,000	BDT 8,960	9722.06

This table represents the descriptive statistics of the study. BA is the dependent variable. ABB, TI, FL, CD, ES, DI, POS and NB are independent variables set as dummy variables. EDU and Income have been taken as control variables.

4.3 Multicollinearity Analysis

Pearson correlation matrix has been used to detect multicollinearity problem. It shows the positive or negative correlation between two independent variables where the value is in between -1 to 1 (Noh et. al., 2011). The multicollinearity problem arises when the relationship among independent variables is equal to or more than 0.80 (Knight, 2018). A high degree of relationship is not expected as it will represent more variables with the same objectives and will make the result less strong. In Table 4, we can see that there is no multicollinearity problem among the variables as the highest correlation is 0.63 between distance and popularity of other services which is lower than 0.80. Therefore, it can be concluded that the model does not suffer from the problem of multicollinearity.

Table 4: Pearson correlation matrix

	1	2	3	4	5	6	7	8	9	10
ABB (1)	1									
TI (2)	0.26	1								
FI (3)	0.56	0.04	1							
CD (4)	-0.60	-0.11	-0.54	1						
ES (5)	-0.43	-0.15	-0.42	0.05	1					
DI (6)	-0.53	-0.19	-0.62	0.63	0.42	1				
POS (7)	-0.51	-0.12	-0.48	0.58	0.38	0.63	1			
NB (8)	0.08	0.50	-0.06	0.08	-0.07	-0.10	0.07	1		
EDU (9)	0.19	-0.10	0.21	-0.17	0.09	-0.15	-0.25	-0.08	1	
Income (10)	0.02	0.01	0.13	-0.05	0.28	0.04	0.19	0.10	0.28	1

This table presents the results of mulcollinearity analysis based on Pearson correlation matrix. No sign of mulcollinearity problem has been found among all the independent and control vaiables.

4.4 Logistic Regression Results

To investigate the obstacles preventing ethnic minority women's participation in financial inclusion, ordinary logistic regression model has been run. Table 5 presents the result based on the logit model. According to Saluja et. al., (2023), each person must be aware of the benefits of banks to fulfill their financial needs, yet the result of Manta (2019) shows that women cannot access financial services and benefits of the formal financial system due to lack of awareness about financial knowledge and skills. However, the result indicates that awareness of bank benefits (ABB) (=1.67, p<10%) is positive and statistically significant, reflecting that an ethnic minority woman is 5.29 times more likely to open a bank account if she is aware of the benefits associated with banking services. In our opinion, the possible explanation could be that to bring women under sustainable financial inclusion, banks are now promoting awareness programs in social media such as Facebook, introducing women-led financial service delivery outlets and arranging financial literacy programs etc., thereby motivating women to have bank accounts.

According to IFC (2011), low income, low financial literacy and lower level of financial accessibility make women less accessible to have a bank account. Moreover, The Business Standard (2023) reported that women are likely to have less concern in learning about financial matters, which may demotivate them to take an active role in dealing with their finances or seek financial education. But the positively significant result of variable financial literacy (FL) (=2.08, p<10%) shows the likelihood of opening a bank account increases to 7.97, keeping other variables constant if ethnic minority women are financially literate.

The variable distance (DI) (=-2.28, p<10%) is found to be negatively significant, consistent with the finding of Manta (2019). If this variable increases by one unit, the probability of opening a bank account by ethnic minority women will decrease to 9.75. One of the possible explanations could be that ethnic minority women have been living in hilly areas of Bangladesh and they find it difficult to go for any bank transaction in other areas resulting in demotivation to open bank accounts.

The popularity of other services (POS) (=-2.26, p<10%) has also been discovered negatively significant to have an impact on bank accounts by women of ethnic minority groups similar to the outcome of Berry (2006). With other variables held constant, an ethnic minority woman is 0.10 times less likely to open a bank account if she is getting the same financial services with greater benefits from other non-bank financial institutions. Possible explanation could be that in the hilly areas of Bangladesh, there are numbers of non-governmental organizations (NGOs) and co-operative societies from where ethnic community women can take loans with easy terms and conditions and keep deposits with them whereas formal banking channel requires valid collateral and proper documents before granting loans resulting in reluctancy in opening bank account by these women.

Finally, the control variable income level (INCOME) (= 0.32, p<10%) has been observed positively significant in determining the obstacle preventing ethnic minority women from opening bank accounts thereby, restricting

financial inclusion consistent with the result of Demirgüç-Kunt and Klapper (2013). If this variable rises by one unit, the possibility of opening a bank account rises to 1.38. Possible explanation could be that when ethnic minority women earn less income, they are not afraid of keeping money in their house therefore, they may find it unnecessary to keep their savings in banks. However, if they have the scope of making sufficient income, they may open a bank account for safeguarding their hard-earned income.

The Omnibus test is a likelihood ratio of the chi-square test of the current and null model. A significance value of less than 0.05 indicates that the current model outperforms the null model (Weaver and Dubois, 2012). The Omnibus test had a chi-square value of 71.38 with ten degrees of freedom at a significance value lower than 0.001. This implies that our model is evaluated correctly and highly significant. This result is also supported by the Hosmer and Lemeshow test, which shows the goodness of fit when the value is greater than 0.05 (Teka et. al., 2020). The Hosmer and Lemeshow test had a chi-square value of 6.58 with a significance value greater than 0.05. The Pseudo R-squared values given by the Cox and Snell and the Nagelkerke R Square indicate how much variance of the dependent variable is explained by the independent variable . R-square values range from 0 to 1 and if the value is 1, it means the dependent variable is completely explained by the independent variable (Allison, 2013). Hence, Cox and Snell and the Nagelkerke R Square values show that between 51% and 69% of the variance of the dependent variable is explained by the independent variables.

Table 5: Logistic model for identifying obstacles preventing ethnic minority women's participation in financial inclusion.

Variables	Coefficients (β)	Standard error	Wald's χ^2	df	Odds ratio
ABB	1.67**	0.79	4.48	1	5.29
TI	39.45	19948.40	0	1	0.00
FL	2.08**	1.07	3.75	1	7.97
CD	-0.80	1.09	0.53	1	0.45
ES	-0.42	0.85	0.24	1	0.66
DI	-2.28**	1.07	4.49	1	9.75
POS	-2.26**	1.07	4.40	1	0.10
NB	-17.87	14753.90	0.00	1	0.00
EDU	0.32	0.27	1.33	1	1.37
INCOME	0.32***	0.11	7.56	1	1.38
Constant	-25.26	13426.12	0	1	0.00
Test			**^{2}**	**df**	

Goodness of fit			
Omnibus test		71.38	10
Hosmer and Lemeshow test		6.58	8
Pseudo R-squared			
Cox and Snell	0.51		
Nagelkerke	0.69		
Sample Size	100		

This table shows the results of the logit model for the model of obstacles preventing ethnic minority women's participation in financial inclusion. Output is estimated by IBM SPSS Statistics. ***p1%, **p5% and *p10% indicate statistical significance levels.

4.5 Robustness Test

To validate the result of the main model, we have conducted two exercises. We divided our sample into two sub-groups. Sub-group 1 is based on the data of married ethnic minority women and sub-group 2 has been created on the basis of educated ethnic minority women. In Table 6, under sub-group 1, awareness of the bank's benefit (ABB), financial literacy (FL), distance (DI), popularity of other services (POS) and income level (INCOME) have been found statistically significant to have either positive or negative impact on having a bank account by married ethnic minority women. Under sub-group 2, except financial literacy (FL), the results are almost identical to the results of the main model of the study. The regression results after performing the robustness test did not change significantly confirming the validity of the results of the main model which is based on the total sample.

Table 6: Re-estimating the model based on the sub-sample of married and educated ethnic minority women.

Variables	Sub-group 1 (Married ethnic minority women)		Sub-group 2 (Educated ethnic minority women)	
	Coefficient (Std. err.)	Odds ratio	Coefficient (Std. err.)	Odds ratio
ABB	2.76*** (1.08)	15.85	3.19** (1.26)	24.26
TI	38.08 (34468.82)	0.00	37.43 (21449.12)	0.00
FL	2.43* (1.28)	11.37	1.09 (1.07)	2.98
CD	1.44 (1.48)	4.21	-1.17 (1.26)	0.31

ES	-1.57 (1.03)	0.21	0-.95 (1.03)	0.39
DI	3.04** (1.39)	20.97	3.87** (1.57)	48.05
POS	-4.45*** (1.43)	0.01	-3.46** (1.51)	0.03
NOB	-18.50 (24373.13)	0.00	-17.64 (15717.89)	0.00
EDU	0.04 (0.81)	1.04	0.25 (0.83)	1.29
INCOME	0.48*** (0.24)	1.29	0.53 (0.39)**	1.00
Constant	-23.11 (24373.14)	0.00	-22.64 (14594.95)	0.00

Table 6 reveals the outcome of the re-estimated model when we have taken the sub-samples of married and educated ethnic minority women only. The outcomes are quite consistent with the results of the original model. The parentheses indicate standard errors. ***p1%, **p5% and *p10% indicate statistical significance levels.

5. Conclusion

The objective of this research is to find out obstacles preventing ethnic minority women from opening a bank account, thereby restricting financial inclusion. Analyzing survey data of 100 ethnic minority women of four hill areas of Bangladesh, this study identified that awareness of bank benefits, distance, popularity of other services, and income level are significant obstacles which are either preventing or encouraging them to join the process of financial inclusion. The outcomes of this study bring meaningful insights into the obstacles faced by ethnic minority women to participate in financial inclusion which can hardly be found in any previous studies especially in terms of emerging economy countries.

The findings of this research are of particular importance for achieving the purpose of financial inclusion since the study suggests that having a bank account will help women find a route to financial inclusion and financial independence. Also, the findings of the study are helpful for the economic development of emerging economic countries as women with bank accounts invest more in their business and education which ultimately lead to economic growth. The outcome of the research is also crucial for promoting women empowerment. Banks can provide products particularly designed for women to uphold the status of women domestically.

The results of the study are helpful for banks as the outcome indicates that banks should arrange financial literacy and other awareness programs to bring ethnic minority women under formal banking channel. Lastly, the paper could be imperative for policymakers and regulators for formulating future banking policies for women especially women of ethnic minority and introducing strict policy for banks to fulfill the purpose of financial inclusion program respectively.

6. Contribution of the study

The main contribution of this study is the identification of obstacles that are preventing the ethnic minority women from accessing banking services which is also keeping them away from financial inclusion. By surveying on 100 women, this study identifies key barriers such as lack of awareness of bank benefits, distance to banks, insufficient income level and popularity of other services. The result of this survey make us understand that opening a bank account can lead the ethnic women to the way of financial inclusion and preventing the barriers, tailoring the bank's product and service for women, can help them to increase their participation in financial inclusion which will further help in economic development and help to increase the financial independence of ethnic minority women living in hill area of Bangladesh.

This paper has limitations such as, the obstacles preventing ethnic minority women's participation in financial inclusion might also be influenced by macroeconomic and geographical factors other than bank specific and demographic factors. Hence, future studies can be conducted by including macroeconomic and geographical factors to identify the obstacles preventing ethnic minority women from financial inclusion. Finally, future studies can also be conducted to discover the obstacles preventing women of ethnic minorities from financial inclusion by making comparative studies between emerging economies and developed countries.

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