

Subrata SAHA,
Arifa SULTANA,
Sanjoy Kumar SAHA¹

Mawlana Bhasani Science and Technology University, Tangail, Bangladesh

DETERMINANTS OF FEMALE LABOR FORCE PARTICIPATION IN TANGAIL DISTRICT IN BANGLADESH: A LOGISTIC REGRESSION ANALYSIS

Original
Research

Keywords

*Female labor force;
Economic activities; Unemployment;
Education;
Logistic regression;*

JEL Classification

J01; J2; O15

Abstract

This study is conducted to find the determinants of female labor force participation in Tangail, Bangladesh. The study examines the relationship of female labor force participation in this district with different factors like family type, education, training facilities and credit facilities. We purposively collect data from 300 females in Tangail district using the schedule method and use logistic regression. Later Hosmer and Lemeshow test, cooks distance test, and VIF test are used to diagnose whether the results are valid or not. Analysis shows that: (1) females from nuclear families are thirteen times more likely than those from joint families to be engaged in economic activities; (2) agriculture and service-oriented household's women are less interested in joining the labor force than those from other income sources; (3) participation of women aged 55 to above is less in the labor force than those of others; (4) higher education, training facilities, and microcredit all have a positive impact on women's labor force participation because educated women participate much more than uneducated women; (5) females who receive training facilities are 32 times more likely, and women who receive microcredit are three times more likely to enter the labor force than their counterparts.

¹ Corresponding author, saha.sk2021@mbstu.ac.bd

INTRODUCTION

The problem of unemployment and underemployment in Bangladesh is traditional because of the domination of the previous rulers. Since its birth, different initiatives have been taken to increase the labor force participation of the country. Hopefully, male labor force participation has increased over time, but female labor force participation has not increased so much for various reasons, like social norms towards women, religion, agriculture-based economy, lack of education of females, male domination, etc. Women's contributions will be overlooked because they are unable to participate in economic activities for a variety of reasons. Like the other regions, Tangail district also faces a problem of unemployment and that is more acute for females. Many studies were conducted on women's activities, but all were for the whole country, not for a single district. As several systems, socio-economic conditions, norms, different facilities, types of land, climate, etc. are not the same for all districts, so, a district-wise study is very important to find out the reasons behind the low female labor force participation. Tangail district has a population of 3.8 million and its female population is 48.95% of its total population. Females constitute half of the labor force of this district. So, there is a big necessity to increase the female labor force participation in this district and the other districts also. To find out the way to increase the total female labor force participation, we see that various factors are responsible for such kind of participation.

Females constitute almost half of the population of Tangail district, but in labor force participation, only 28% of the total labor force is from females. Our country's government has implemented various policies to increase women's labor-force participation, and local governments have also implemented various policies, as we have seen. Despite these policies, female labor force participation has not increased in this district. So, the reasons should be found out. Sometimes it happens that females do not take the facilities that are given to them at all. Sometimes it also happens that they take the facilities but do not think that they are given these facilities for being a human resource. In both cases, the government's policies do not affect much. If female labor force participation is increased, it will contribute to gross domestic product and Bangladesh can attain the Sustainable Development Goals (SDGs) by 2030. Education, training facilities, and interference of various government and non-government institutions are needed to increase women's employment. For these reasons, a study like this is

needed to identify what factors affect the female labor force participation in a particular district. This study is conducted to fulfill the following objectives:

1. To find out the factors that affect the female labor force participation in Tangail district.
2. To recommend some suggestions based on findings to overcome barriers of female labor force participation.

Our study is based on data from the Tangail district. So, it has great significance to find out the reason behind the low female labor force participation in this district, and also it can recommend some measures based on the study. By "Female labor force participation" here we mean any kind of paid activities of women aged from 15 to 64 that makes them economically active.

LITERATURE REVIEW

Majumder and Dey (2020) investigate the socio-economic and demographic determinants of female labor force participation in Bangladesh using BDHS 2014 data with the Logistic regression analysis and their findings show that only 32.2 percent of village women are engaged in economic activities. According to their study age of a female, education level, NGO membership, husband's wish, marital status, family type, etc. influence women's participation in economic activities largely.

The study by Ehsan and Akter (2020) uses microdata from Bangladesh Integrated Household Survey (BIHS) 2015 and shows that different adverse shocks like less education, employment of the household head, outstanding loans, income, productive land, etc. are responsible for low female labor force participation in rural Bangladesh. (Ahmed and Hyndman-Rizk, 2020) conclude that though the education rate for women is increasing day by day, women do not enter the job market at the same rate because they have a lack of technical education and skills. The study suggests that by increasing technical education and job-related skills, female labor force participation can be increased. Klasen, Le, Pieters and Silva (2020) find out the factors of female labor force participation of urban married women in eight low-and middle-income economies: Bolivia, Brazil, India, Indonesia, Jordan, South Africa, Tanzania, and Vietnam. They want to show the result at a micro-level. Results show that the rate of participation of females in economic activities and their returns are largely differentiated by the countries, education, economic necessities, and different social barriers. Moon (2019) shows that if female labor force participation is increased, it will contribute to GDP and Bangladesh can attain the Sustainable

Development Goals (SDGs) by 2030. Education, training facilities, and interference of various government and non-government institutions are needed to increase women's employment.

Tatli and Barak (2019) find that energy consumption affects female labor force participation negatively as the Granger causality test shows bidirectional causality between energy consumption and female unemployment rate. The study by Kaur and Nagaich (2019) investigates the determinants of female labor force participation in the Himachal Pradesh of India and shows that the difference between rural and urban areas of highly developed districts regarding cultivators is significant. Klasen (2019) finds that fertility decline, expansion of female education, and favorable economic conditions are responsible for the increase of female labor force participation in developing countries, though trends in FLFP are heterogeneous as it rises in Latin America, nearly fixed in many other regions, increases modestly in the Middle East and fell in South Asia.

Kabir, Marković and Radulović (2019) conduct a study in Jinaigati Upazila of the Sherpur district in Bangladesh and show that education, income source, experience and training, credit facilities, decision-making ability positively affect rural women's income and high interest rate, small farm size lower their income. Maqsood, Baneen, and Maqsood (2019) conducted a study on three South Asian countries; Bangladesh, India, and Pakistan using the world bank data from 1989 to 2015 to investigate the relationship between female labor force participation and infant mortality and find that the factor lowers infant mortality.

According to Kousar, Sabir and Zafar (2019), various types of barriers, such as cultural, social, and industrial barriers, lower the FLFP. Seneviratne (2019) uses 23 years of Sri Lankan survey data to show that various factors such as falling fertility rates, increasing education, and declining income effects among younger people positively affect female labor supply with a positive trend, but other factors such as social stigma and barriers to married women reduce the positive trend in many cases. The study by Heintz, Kabeer and Mahmud (2018) indicates some factors like rising levels of female education, access to electricity and mobile phones, the emergence of the garment industry, and the possibility of migration have positive effects on female labor force participation. On the contrary, marriage and traditional gender norms have negative effects on female labor force participation. Kabeer (2017) thinks that empowerment positively changes the lives of individual women and their interpersonal relations.

According to Sutradhar, Sarker, and Hossain (2017) some factors such as women's age, household headship, women's education, poverty status, small family size, husband's unemployment,

and rural location have a significant positive effect on labor force participation. On the contrary, the husband's asset ownership and high educational qualification have had a negative impact. Married women engage in work when the family faces crucial financial needs. Ahmed, Feeny, and Posso (2016) show the factors of labor force participation of women in the manufacturing sector and concluded that farm size significantly impacts women's empowerment and they are more likely to be engaged in unskilled labor-intensive industries.

The study by Husain (2016) shows a relationship between female labor force participation rate and Economic Growth for Bangladesh over the period 1991 - 2012 that supports the validity of nonlinear quadratic U-shaped function. The study also shows that marriage is not an important factor in women's labor force participation. Husain (2016) also finds that higher education has an important positive impact on FLFP. Low-paid households inspire their spouses to get engaged in work, but high salaried heads strongly disagree with getting engaged their spouses to work. The number of children also impacts negatively the FLFP.

Gonzales, Jain-Chandra, Kochhar, and Newiak (2015) find that restrictions on women's rights to inheritance and property, as well as legal impediments to undertaking economic activities, lower labor force participation of women. These also cause macro-level problems by lowering the GDP growth rate. Blunch and Das (2015) investigate attitudes toward women and discover that, in most cases, women receive less education than their male counterparts and that raising children is a significant impediment to their labor force participation. Romke (2014) indicates education as the most important predictor of both entry into the labor market and wages. However, microcredit has a positive impact and occupational sex segregation has a negative impact on FLFP. Azam and Rafiq (2014) shows that age; education and marital status have a significant effect on FLFP. The findings show that educated women and women from joint families are more likely to participate because of financial pressure. Heath (2014) shows women who are uneducated or less educated and younger at their first marriage and who have experienced domestic violence enter the labor market. There is a positive correlation between domestic violence and FLFP.

Gaddis and Klasen (2014) concludes that the feminization U hypothesis as an overarching secular trend that upgrades female labor force participation in the development process has almost no empirical support. Hossain, Zebun, and Islam, (2013) show the determinants of female labor force participation in rural farm and nonfarm activities. They find that age and husband's income have a negative and significant impact, whereas, the wage of woman's labor has a positive influence on

women's participation in economic activities. They also find that women's decision to participate in rural farm activities is free from their education and husband's profession.

The study by Mahmud and Tasneem (2011) finds that if economic activities are defined in a narrow sense, then the female labor force participation rate ranges between 4% and 16% in the eight districts. Women, on the other hand, work at home; if that work is included in economic activities, the rate of labor force participation will rise. Bridges, Lawson, and Begum (2011) think that extreme poverty influences women to participate in outside work and rigid social and cultural norms are responsible for lower female labor force participation in Bangladesh, especially in rural areas. Jaim and Hossain (2011) shows that age, irrigated area of female worker's household, microcredit, remoteness of the village, and agricultural wage rate positively affect female labor force participation, but the education of household hinders women's participation in the labor market. Bose *et al.* (2009) investigates both the economic and socio-cultural factors and find that economic activities in households have a weak impact on female empowerment. Anderson and Eswaran (2009) investigates which type of work is more important for women, earned or unearned. They find that earning a living and working outside of their husband's farm are more important for women's autonomy. Bloom, Canning, Fink, and Finlay (2009) estimates that a birth reduces a woman's labor supply by almost 2 years during her reproductive life on average. Dale, Fieldhouse, Shaheen, and Kalra (2002) think that the religious practice of Islam may not hinder women's labor force participation.

RESEARCH DESIGN

Methodology and Research Design

This is an analytical study based on primary data collected from 300 women in the Tangail district using a schedule method of data collection.

Econometric Model (Logistic Regression Model)

The Binary logistic regression model is used to analyze the female labor force participation concerning various explanatory variables as our dependent variable has two categories: 'yes' or 'no'. We use nine individual, social, and household-level variables to see their effect on the FLFP of Tangail. The model can be written as

$$FLFP = \ln\left(\frac{p_i}{1-p_i}\right) = \alpha + \beta_i X_i + u_i \quad (1)$$

Where, FLFP (female labor force participation) is the binary dependent dummy variable =1 if the

female participates in economic activity and 0 otherwise.

α is the intercept term.

β is the coefficient of the independent variable.

u is the error term.

With all the independent variables our model can be written as,

$$\begin{aligned} FLFP &= \beta_0 + \beta_1 \text{household type} + \beta_2 \text{income source} \\ &+ \beta_3 \text{age group} + \beta_4 \text{education level} \\ &+ \beta_5 \text{training facilities} + \beta_6 \text{hh. microcredit} \\ &+ \beta_7 \text{religion} + \beta_8 \text{sex head} + \beta_9 \text{marital status} \\ &+ u \end{aligned} \quad (2)$$

The dependent and nine independent Variables names with their criteria and reference category are shown in table 1.

Instruments

Data is recorded on SPSS software and analyzed with this software through logistic regression and also with Microsoft excel. Binary logistic regression is used to find out the effects of different factors on female labor force participation. For model fit, we use the Hosmer & Lemeshow test of the goodness of fit. For influential cases, we use the cooks distance method to see the undue effect on our dependent variable. Finally, we test either our variables have co-linearity or not through VIF (variance inflation factor).

Participants

Working-age women of the Tangail district are the population of the study. Due to time constraints, we collect 300 samples from the Tangail Sadar, which is the most representative area. 300 samples combine the working-age females of Tangail district from all the Upazilas.

RESULTS ANALYSIS AND DISCUSSION

Results analysis of the Logistic Regression

See Table 2 & Figure 1

In Tangail district, only 28% of females aged 15 to 64 are engaged in economic activities. This percentage is very low as women constitute almost half of the population of this district. The study then uses the results of the logistic regression to explain why female labor force participation in the Tangail district is so low.

The Odds ratios (EXP (B)) show to what extent each category of an independent variable affects the female labor force participation and the statistical significance levels (sig) show that if the value of the odds ratios is statistically significant or not at 95% confidence interval (Table 3).

The first independent variable is **Household type**, which has two categories: 'joint family' and 'nuclear family'. The reference category is "joint family". The b coefficient for the nuclear family is significant and positive, indicating that increasing affluence is associated with increased odds. According to the Exp (B) column (the Odds Ratio), females from nuclear families are thirteen (13.285) times more feasible than females from joint families to engage in economic activities because the joint family structure engages women at home for child-rearing and various unpaid household chores, and most joint families are agricultural families with many indoor jobs.

The income source of the family has three categories; 'Agriculture', 'Service' and 'Otherwise' (working proprietors, industry, manufacturing, remittance, etc. other than the first two). Here, "otherwise" is the reference category. The Odds ratio shows that females from both agriculture and service-based households are less inclined to participate in economic activities than others. Both the agriculture and service categories have beta coefficients with odds ratios of less than one, 0.203 and 0.273, respectively. This means that both agriculture and service income source-oriented families have a negative association with female labor force participation. Females from agricultural families are 0.203 times more interested in engaging in economic activities and females from service-oriented families are 0.273 times more likely to engage in economic activities. The reason behind the scenario may be that in most cases, in the agricultural family, women have to perform the indoor activities of crop production that are unpaid, so we do not include these in female labor force participation. So, they get less incentive and time to engage in economic activities. Another reason is that most agricultural families are joint family and they provide their women with less education. For these reasons, their women have very little engagement in economic activities. The odds ratio of the service category also shows very little participation of women in the labor force. This may be the case that those who have a better job can earn a lot and for higher-income facilities, they do not send their female members into the labor force. In many cases, guardians want only to educate their females but don't want to make them human resources. So, they don't think about their women's empowerment at all.

The Age group variable has three categories: "15 to 34", "35 to 54", and "55 to above". The reference or baseline category here is the age group of "55 to above". The Odds ratios here indicate that females from both the age group of 15 to 34 and 35 to 54 are more interested in engaging in economic activities than females from the age group of 55 to

above category as the beta coefficient is positive and statistically significant. Females between the ages of 15 and 34 are three (3.442) times more reasonable to work than females between the ages of 55 and above, and females between the ages of 35 and 55 are five (4.95) times fairer to engage in economic activities than those between the ages of 55 and above. So, we conclude that the age group has a positive relationship with the female labor force participation up to a certain period, after that period it has a negative impact on FLFP. The reason behind the scenario could be that in the last 25 years, the government has been trying to increase the education rate of females. The Govt. has provided many stipends, scholarships, free books, training facilities, and other facilities for females. Those who have taken those facilities are now at the age of 35 to 54. So, their participation in economic activities is higher. Another reason is that social norms towards females are changing day by day. Females from the age group of 15 to 34 are slightly less inclined to engage in economic activities than females from the age group of 35 to 55, though they still get all the educational facilities from Govt. The reason behind this is that many of them in this age group have not completed their education, so do not engage in economic activities. The reason behind the least participation in the labor force of the females of the age group 55 to above is that they got fewer education facilities and social norms were against them at their time to prepare themselves as human resources.

Education level which is the most important factor of female labor force participation has three categories: 'Primary education', 'Secondary or higher secondary education' and 'Graduation or post-graduation'. The reference or baseline category here is primary education. The Beta coefficient and the Odds ratio show that higher education increases the labor force participation of a female as education makes a female more capable of engaging in the competitive job market and education makes a person a human resource by raising his or her skills, way of understanding, etc. In this study, the logistic regression shows that females with a secondary or higher secondary education level are six (5.847) times more acceptable to engage in economic activities than women with primary education, and women who completed their graduation or post-graduation level are eight (8.468) times more acceptable to engage in economic activities than females who only completed their primary education. So, this study, like the other studies, shows a positive relationship of female labor force participation with the education level.

Training facilities have a great impact on female labor force participation according to our results.

Here, in our study by "training facilities" we mean the voluntary training that is organized several times by the Govt. and different NGOs. We do not take job-oriented training into account because job-oriented training is provided after getting the job to improve professional skills, but our goal is to find out the determinants of female labor force participation or factors that help or hinder a female to get a job when she is jobless. Taking females not getting training facilities as a reference category, this study shows that females who get training facilities are thirty-two (31.526) times more inclined to engage in economic activities than females who do not get any training facilities and the impact is statistically significant. The reason behind this scenario is that in recent years, the Govt. has provided females with different training facilities like computer training, training in small and cottage industries, poultry farming, animal husbandry, etc. Many NGOs provide different training facilities and lend money to women. This is a reason also.

The next variable is **household with microcredit**. It has two categories; 'Household with microcredit' and 'household without microcredit', reference category is household without microcredit. The odds ratio says that females from households with microcredit are three (2.944) times more reasonable to participate in economic activities than females from households without microcredit as the beta coefficient is statistically significant at a 5% significance level (p value .034). Nowadays, microcredit plays a great role in increasing the labor force participation of women. They provide conditional loans for certain work purposes and sometimes provide training facilities to females and this increases female labor force participation. Though the effective interest rate of microcredit is very high, it helps women to engage in economic activities effectively by the strict installment collection per week. The high-interest rates have the advantage of requiring a woman to work tirelessly to repay the loan, as the installment must be paid each week. As a result, microcredit or, in a broader sense, loan facilities, have a significant impact on women's empowerment; however, microcredit benefits rural women because they do not typically go to banks for loans due to traditional norms toward them.

Our **Religion** independent variable has an interesting finding in that the category 'Muslim' has a positive relationship with the FLFP, as our odds ratio is 3.729 and the beta coefficient is 1.316, which is statistically significant (p value.014). This means that Muslim females are four times more feasible to engage in economic activities than females of other religions. This result indicates Muslim females are overcoming social norms like

purdah day by day. Traditionally, Muslim girls face very rigid practices of religion. They face many hardships attending schools, colleges, universities and finally face big trouble when they want to work with man. Strict adherence to such religious norms renders many girls inactive and careless about their self-esteem, and they have little interest in working, preferring to raise children, and perform household chores at home.

Other religions, on the other hand, have no such religious practice of purdah, and girls of other religions engage in more economic activities than those of the Muslim religion. Now, this recent study indicating that Muslim girls are more active in the labor force is a very positive sign for the country. This may be the reason that we collect data from Tangail Sadar as the most representative area and here, the literacy rate of women is high, the education level and consciousness of guardians is high, different types of training facilities are available for all girls irrespective of religion. As women of all religions get the same kind of facilities in Sadar, the impact of Muslim religious views is not acute here, rather acute in rural areas. Furthermore, 68% of females in our study are Muslim, which may have an impact on such a result, and this result may change if data is collected from both rural and urban areas rather than just urban areas. In this variable we have two categories; 'Muslim' and 'otherwise' (Hindu, Christian, and other religions) and we take otherwise as a reference category.

The next independent variable is **Sex of the head of the household** and the reference category is "Female". The model shows that if a male is the head of the household, then the female from that family is two (1.554) times fairer to engage in economic activities. However, this result is not statistically significant as the p value is greater than .05 (.488). So, this variable has not so much impact on FLFP and this study does not take this result for prediction. The reason may be that, as nowadays, male-dominated households are very rare, especially in the case of women's empowerment. Both the male and female household heads want to engage their girls in economic activities for their self-reliance.

The last variable of the logistic regression is the **Marital status** of the female, which has two categories; 'married' and 'otherwise' (unmarried, divorced, widow, etc.). Taking otherwise as the reference category, we see that married women are .099 times more interested in participating in economic activities than other women. This result is statistically significant and the beta coefficient shows a negative relationship with the married female. This may be the reason that married females have more family responsibilities that

create bindings to engage in economic activities. On the other hand, in our society, single women who do not have a husband or children must engage in economic activities for their financial and social security. For these reasons, married women have lower labor force participation.

Diagnostic Tests of the Logistic Regression

1. Influential Cases When the value of a Cook's distance becomes larger than one, it means that the model is unduly affected by the explanatory variables. In our case, no Cook's distance is one or more than one. So, our model is free from the undue effect of the explanatory variable.

2. Linearity of the Logit

Table 4 & Table 5

The -2LL value for this model (141.377) is what is compared to the -2LL(214.395) for the previous null model in the 'omnibus test of model coefficients' told us there was a significant decrease in the -2LL which means that the model with explanatory variables fits better than the null model and this is statistically significant. The R^2 values show how much variation in the outcome is explained by the model. Nagelkerke's R^2 here shows that 74% of the variation in the outcome is explained by the model.

The **Hosmer and Lemeshow test** is a good test of how well our model fits the data. The model is well fitted when the test is statistically insignificant. Here the X^2 (Chi-square) test shows if the model is an adequate fit for the data or not. The Chi-square for our Hosmer and Lemeshow test is .112, which is greater than .05, so we cannot reject our null hypothesis and our model fits the data well (Table 6).

3 Multicollinearity Test

Table 7

In the table, all the VIF (variance inflation factor) values are less than 10 and all the tolerance values are greater than 2, so we can say that our model does not face a multicollinearity problem and the independent variables are not correlated. Sig value for only one variable is greater than 0.05 (.896), hence we do not take this variable (sex of the head of the household) for prediction.

RESULTS AND DISCUSSION

This study finds that women who belong to nuclear families have more participation in economic activities rather than women from joint families. Majumder and Dey (2020); Sutradhar et al. (2017) support this finding but Azam and Rafiq (2014) oppose this finding as their study shows that women from joint families are more likely to be

engaged in economic activities because of the financial crisis. This study finds that women with incomes other than agriculture and service are more inclined to engage in economic activities, as do Majumder and Dey (2020); Hossain et al. (2013) & Sutradhar et al. (2017).

Another finding of this study is that the age of women has a positive relation in a certain period and after that, it has a negative association with female labor force participation and Majumder and Dey (2020); Sutradhar et al. (2017); Azam and Rafiq (2014); Hossain et al. (2013) & Jaim and Hossain (2011) support this finding. This study, like many others, finds that education is one of the most important factors in female labor force participation, with women who completed their graduation and post-graduation being eight times more acceptable to be engaged in economic activities, and women who completed higher secondary education being six times more acceptable. Several scholars like Majumder and Dey (2020); Ehsan and Akter (2020); Moon (2019); Heintz et al. (2018); Sutradhar et al. (2017); Khatun (2015); Romke (2014); Blunch and Das (2015); Heath (2014) & Goldin (1994) support this but Md. Hossain et al. (2013) think that educational qualification of women does not affect their labor force participation decision.

Ahmed and Hyndman-Rizk (2020) also show that only education cannot increase female labor force participation, but education with technical skills can increase women's participation in the labor force. Training facilities have a significant positive impact on female labor force participation as the study shows that trained females are 32 times more reasonable to participate in economic activities. This result is consistent with the studies of several scholars: Ahmed and Hyndman-Rizk (2020); Moon (2019); Ahmed et al. (2016). One of the important results of the study is that women from families with microcredit are 3 times more feasible to be engaged in the labor force. This result is compatible with some of the former researchers' like Romke (2014) & Kabeer (1999) results. An intriguing finding of the study is that Muslim women participate in economic activities four times more than those of other religions, which is strong evidence of improvement of Muslim women's socioeconomic status as they can break societal prejudices against themselves, and that result is supported by some former researchers: Dale et al. (2002), but Bridges et al. (2011) do not. The last result of this study is that married women participate less in economic activities than unmarried, divorced, and widows because they later face more financial crises. This finding is supported by Majumder and Dey (2020), Heintz et al. (2018) but opposed by Sutradhar et al. (2017).

CONCLUSIONS

Various factors are affecting the female labor force participation in this district that are found out in this study using logistic regression. Our finding using the logistic regression is that only about 28% of females aged from 15 to 64 are engaged in economic activities and others are mainly outside of economic activities. Behind the scenario, various individual, social, and household level factors are responsible, such as household type, agriculture, and service as a main income source of the family, joint family, lack of loan facilities, lower education level, religious practices, sex of the head of the household, etc. This study shows that nuclear families, different income sources of the household except for agriculture and service, 15 to 55 age group, higher education, training facilities, microcredit have a positive impact on female labor force participation. On the other hand, joint family, agriculture and service-oriented family, age group of 55 to above, marital status have a negative association with female labor force participation. Religion has an interesting impact in this regard, as Muslim females are four times more likely to be involved in economic activities. However, the sex of the head of the household has no significant impact on female labor force participation in the Tangail district.

Policy Recommendations

Over the years, the Bangladesh government has implemented various policies to increase female labor force participation. Besides these, there are some policy recommendations based on the study that may be effective in increasing female participation in economic activities, especially in Tangail District.

- As education has a statistically significant positive impact on female labor force participation, then women's access to education should be increased. The reason behind the inaccessibility in education should be investigated and solved.
- Training facilities increase the labor force participation of women, so, more and more females should be provided training facilities in different jobs such as small and cottage industry, dairy farming, etc. Training facilities should be enlarged in rural areas.
- Microcredit has a positive impact on FLFP but its effective interest rate is very high, nearly 30%. If interest rates can be decreased, then more families take loans and that will have a better impact on female labor force participation.
- To increase literacy among women, the government provides different scholarship stipends to women. In that case, monitoring is

necessary to ensure that the facilities go to the women who need them.

- Social norms and prejudices in our country, in many cases, are against women that should be removed from society by raising the awareness of the people.
- In our country, women often suffer from insecurity outside the home. The Govt. should ensure the safety of women in every place.
- Women's work is frequently dismissed as unimportant, and they are paid less than men. On the one hand, there is workplace insecurity, and on the other hand, lower wages than males cause guardians to refrain from sending their daughters to economic activities. So, a proper wage rate should be ensured for females.

Ethics and Limitations

Data is collected from 300 women of Tangail municipality because of time and resource constraints. So, this study faces a problem of small sample size and the results may not be the same sometimes when the study is conducted based on the population or large sample size. Another limitation is that this study considers only some important factors of female labor force participation, but there are so many factors of FLFP that are not included here because of time and resource constraints.

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Table 1
Variable Names, Level, Criteria, and Reference Category

Variable serial	Variable name	Variable level	Criteria	Reference category	Remarks
D1	FLFP	Female labor force participation	=1 if currently engaged in economic activities, 0 otherwise.	Engaged in economic activities	Dependent variable.
E1	Household Type	Household type of the female	=1 if joint family, 2 if nuclear family	Joint family	Explanatory variable
E2	Income source	Income source of the household	=1 if agriculture, 2 service, 3 otherwise.	otherwise	Explanatory Variable.
E3	Age group	Age group of the female	=1 if '15 to 34', 2 if '35 to 54', 3 if '55 to above'.	54 to above	Explanatory Variable.
E4	Education level	Education level of the female	=1 if primary, 2 if secondary to higher secondary, 3 graduation or post-graduation.	primary	Explanatory variable
E5	Sex.head.HH	Sex of the head of the household	=1 if male, 2 if female	female	Explanatory variable
E6	Training facilities	Either getting training facilities or not	=1 if get, 2 if do not get	Do not get	Explanatory variable
E7	HH.microcredit	Household with micro credit or not	=1 if with microcredit, 2 if not	Household not with microcredit	Explanatory variable
E8	Religion	Religion of the female	=1 if muslim, 2 otherwise	otherwise	Explanatory variable.
E9	Marital	Marital status of the woman	=1 if married, 2 otherwise	otherwise	Explanatory variable

Note: FLFP = Female labor force participation, HH = Household.

Table 2
Number and percentage of female labor force participation in Tangail district

	Frequency	Percent	Valid Percent	Cumulative Percent
no	216	72.0	72.0	72.0
yes	84	28.0	28.0	100.0
Total	300	100.0	100.0	

Source: Author's calculation based on Primary data

Table 3
Beta coefficient, significance level, Odds ratio, and confidence interval of the Logistic Regression

Variables	B	S.E.	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
						Lower	Upper
Household.type(1)	2.587	.582	1	.000	13.285	4.246	41.570
Income.source			2	.021			
Income.source(1)	-1.577	.770	1	.041	.207	.046	.934
Income.source(2)	-1.298	.594	1	.029	.273	.085	.874
Age.group			2	.027			
Age.group(1)	1.236	.609	1	.042	3.442	1.044	11.352
Age.group(2)	1.599	.612	1	.009	4.950	1.493	16.417
Education.level			2	.002			
Education.level(1)	1.766	.620	1	.004	5.847	1.734	19.714
Education.level(2)	2.136	.606	1	.000	8.468	2.580	27.791
Training.facilities(1)	3.451	.539	1	.000	31.526	10.969	90.612
HH.microcredit(1)	1.080	.509	1	.034	2.944	1.086	7.984
religion (1)	1.316	.535	1	.014	3.729	1.306	10.652
Sex.head.HH(1)	.441	.636	1	.488	1.554	.447	5.403
marital (1)	-2.316	.580	1	.000	.099	.032	.308

Source: Author's calculation based on Primary data.

Note: B = Beta coefficient, S.E = Standard error, df = Degrees of freedom, Sig. = Significance level, Exp(B) = Expected beta coefficient, C.I = Confidence interval.

Table 4
Omnibus tests of model coefficients

	Chi-square	df	Sig.
Step	214.395	12	.000
Block	214.395	12	.000
Model	214.395	12	.000

Source: Author's calculation based on primary data

Table 5
Model summary

-2 Log likelihood	Cox & Snell R Square	Nagelkerke's R Square
141.377	.511	.735

Source: Author's calculation based on Primary data.

Table 6
Hosmer and Lemeshow test

Chi square	df	Sig.
12.998	8	.112

Source: Author's calculation based on Primary data.

Table 7
VIF (variance inflation factor) And Tolerance of variables

Variables	Sig	Collinearity Statistics	
		Tolerance	VIF
(Constant)	.000		
Family type of the household	.000	.809	1.236
Main income source of the household	.007	.799	1.252
Age group of the correspondent	.024	.979	1.021
education level of the correspondent	.000	.891	1.122
Either getting training facilities or not	.000	.755	1.325
Household with microcredit or not	.004	.922	1.085
religion of the female	.009	.916	1.092
Sex of the head of the household	.896	.927	1.078
Marital status of the female	.000	.956	1.046

Source: Author's calculation

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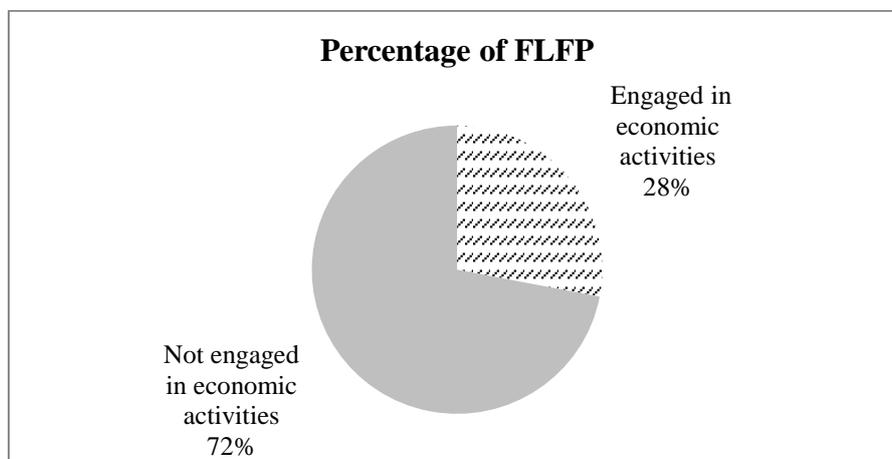


Figure 1
Percentage of female labor force participation in Tangail distric