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Determinants of Women Labor Force Participation: In Case of Boke Tiko Town

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ABSTRACT

Women labor force participation is vital for the enhancement and socio-economic development of a nation. This study had attempted to portray the determinants of women labor force participation in Boke Tiko town. The study was conducted by using primary and secondary sources of data. Primary data was gathered through questionnaire method from 99 sample respondents selected via simple random sampling technique. Secondary data were observed from different written materials such as published and unpublished books. To analyze the data, researchers had used both descriptive analysis techniques and econometric model of binary logistic regression. The result of the study indicated that women labour force participation was significantly determined by marital status, educational level, presence of young children and income level of the household. The study had recommended the necessity of giving emphasis for the expansion of family planning usage, creating work opportunities for educated women, and boosting the size of economic activities which could increase income level of women in the study area.

Keywords: Boke Tiko town, labour force participation, logistic regression model

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1. Introduction

Female labour force participation (FLFP) is defined as part of economically active women population who are employed or unemployed as compared to being part of economically inactive population of the economy and those not working nor seeking work (Kapsos. et.al, 2014). It is a crucial driving force for economic growth and development (Verick, 2014). Higher range of female labor force participation is a signal of better returns on human capital and education (World Bank, 2009). Female labor force participation is crucial for the enhancement and socio-economic improvement of a state since it promotes performance and equity. High rate of women participation in the labor market indicates development in the economic and social position, and empowerment of women (Mujahid, 2014).

According to World Bank (2013), women represent around 40% of the global labor force. Despite the notable growth in female labour force participation globally, there are still massive gaps among women and men in the labour market. In 2015 only 50% of the working age women are in the labor market as compared to 77% of men, with the least participation rate in Western Asia, Southern Asia, and Northern Africa (World Bank, 2016). Female workforce participation in low-income nations is far less likely than men to have a job or to be looking for a job (ILO, 2010).

Female participation in the economic activities is very low and mainly limited to household work and low salary tedious jobs in the formal economic environment which makes them

highly dependent on men for financial support. Despite all the challenges they face, most women's valuable contribution had never been considered in national GDP. However, women can verify to be a precious resource and an asset for a nation with their abilities such as dealing with more than one duty simultaneously, which may not be easy for their counter part of male workers (Afroz, 2010; Chalchissa and Emnet, 2013).

Ethiopia is one of the countries which had signed the international declarations supporting the legal rights and equality of men and women. Moreover, it has included this point in its constitution of Article (9)4 which states that "All international agreements ratified by Ethiopia are an integral part of the law of the land" (Constitution of the FDRE, 1995). However, available literatures shows that women still contain a very small proportion of those involving in public decision making (Yalem, 2011).

Women represent half of the Ethiopian population. Though women have legal rights for equal participation and advantage with men, they have seen separately from the overall economic and political improvement in the community. However, any political, economic and social activities which does not consider and benefit women cannot be fruitful since such an activity is based on half the manpower, half the knowledge, and half the effort (WCYA, 2013). The stagnation of women labor force participation has adverse effect on women's bargaining power, empowerment and the way through which they can benefit from economic progress attained at the nation's macro level. Which in turn would adversely disturb female and children health and wellbeing (Magidu, 2013).

Although an increasing trend in female labor participation had detected in recent years (Central Statistical Agency (CSA), 2012), Ethiopian women have been in difficult conditions as compared to other women in least developing countries. The labor force participation rate of Ethiopian women had continued significantly lower than their men counterparts, such that 56 women per 100 men participate in labor market in 2012, which is below 68 women per 100 men in the world in 2012 (UNDP, 2013, CSA, 2012).

It is vital to study the effects of demographic and socio-economic factors that may influence female labour force participation in order to recognize the main factors determining women's participation in the labour force. In the past, limited researches were conducted to identify the determinants of women labour force participation at country level in general and Boke Tiko town in particular. Furthermore, there is no detailed analysis on the demographic and socioeconomic factors responsible for the participation of women reside in Boke Tiko town. In line with this gap, this study had examined the demographic and socio-economic determinants of women labour force participation in Boke Tiko town.

1.1. Significance of the Study

This study has the purpose of investigating the major contributing factors that limit the number and magnitude of women labour force participation in the study area. It is vital for policy makers to understand these factors that can encourage women to either participate or opt out from the workforce in order to guide the economic growth and keep it healthy professionally. Moreover, clear understanding of such factors might help them to come up with new ways for solving problems that discourage females from participating in the labor market. In addition to this, it has a benefit of creating awareness for governmental and nongovernmental organizations to take intervention measures and set appropriate plan to improve the prevailing low level of women labour force participation at work place.

1.2. Conceptual Framework of the Study

Depending on the reviews made on various theoretical and empirical literatures, this study had drawn the following explanatory variables which are expected to affect women labour force participation in the study area. The selection of such variables for this study is based on the past experience in which researchers had observed their effect on women labour force participation in reality and wants to proof it through this study.

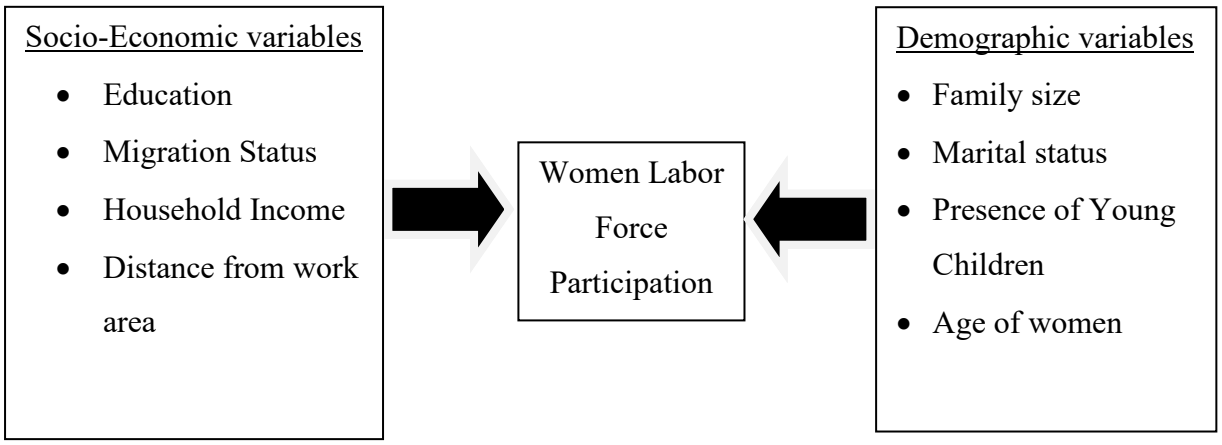

Figure 1: Conceptual framework of the study
Source: The author, 2021

2. Research Methodology

2.1. Description of the Study Area

Boke Tiko town is far 396 km away from Addis Ababa, the capital city of Ethiopia and 76 km from Chiro, the administrative town of west Haraghe zone. It is surrounded by Dera jambo in North and West, Haro bareda in South, and Haro bareda in East. The main economic activities of the town depend on trade and micro and small-scale enterprise works. The population size of the town is 30780. From such total populations, 16530 are male and the left 14250 are female.

2.2. Research Design

This study was based on descriptive research design which enables the researchers to investigate the existed reality in relation to the objective of the study.

2.3. Data type and Source

To undertake this study, A cross sectional quantitative and qualitative data was collected from primary and secondary sources.

2.4. Method of Data Collection

Both primary and secondary data collection methods were used. Primary data was gathered from respondents by using questionnaire and interview. While, the secondary data were collected through reviewing books, magazines, and newspapers.

2.5. Target Population

The target population of the study was all women who are able to participate in the labour force and live in Boke Tiko town. According to data obtained from the town administration, there are 9,214 women in the town that have an ability to participate in labor force.

2.6. Sample Size and Sampling Technique

This study had used simple random sampling technique for selecting representative number of women from the target population. The sample size, which represents the target population, was determined by using a simplified sample size determination formula provided by Yemane (1967) at 90% confidence level of precision as

$$n = \frac{N}{1 + N(e^2)}$$

Where, N = number of target population

n = sample size

e = margin of error occurrence, its value is 10%

By using the above simplified formula, the researchers have selected 99 representative samples for conducting this study.

2.7. Methods of Data Analysis

Quantitative methods of data analysis were used to analyze the collected data. In this method, both descriptive and econometric analysis techniques had employed. In descriptive analysis, tables, percentage and figures were used while the econometric analysis had employed logistic regression model to investigate the determinant factors of women labour force participation.

2.8. Model Specification

The logistic regression model for predicted variables can generally be given as

$$\text{Pi} = \frac{1}{1 + e^{-zi}} = \frac{e - zi}{1 + e^{-zi}} \quad (1)$$

Where;

Pi: is the probability that female labour force participation of i respondent is in work.

e^{-zi} stands for the irrational number e to the power of Zi and

Zi is a function of N-predictor variables which is also expressed as:

$$\text{Zi} = \beta_0 + \beta_1 X_1 + \beta_2 X_{2i} + \ldots + \beta_n X_{ni} + u_i \quad (2)$$

Where;

X_1, X_2 ... X_n are predictor variables

β_0 is the intercept and

$\beta_1, \beta_2 \ldots \beta_n$ are the logit parameters (slopes of the equation) in the model.

These coefficients show how the log-odds in favor of working labour force participation change as the value of predictor variables change. The value of *Pi* (the probability that a woman is in work) ranges between 0 and 1 and it is also nonlinearly related to the predictor variables.

The probability that the likelihood of a woman being outside of work (I -Pi) is given as:

$$\text{P-i} = \frac{1}{1+e^{z}} \tag{3}$$

Therefore, the odds ratio in equation 3 can be written as:

$$\frac{P}{1-P_I} = \frac{1+e^{zi}}{1+e^{zi}} = e^{zi} \tag{4}$$

Now, $\frac{P}{1-P_I}$ in the above equation is the odds ratio, which is the ratio of the probability, that a woman participates in the labour force to the probability that a woman did not participate in the labour force.

Finally, when the odds ratio in equation 4 is expressed in terms of log of the odds, the model for this study is expressed as;

$$\frac{log\ pro(working)}{log\ pro\ (not-working)} = \beta_0 + \beta_1 X_1 + \beta_2 X_{2i} \ldots\ldots + \beta_n X_{ni} + u_i \tag{5}$$

In this study, Hosmer and Lemeshow test was used to assess whether the model fits the data or not. Multicollinearity among predictor variables was also examined by using variance inflation factor (VIF).

2.9. Description of Variables and Research Hypothesis

The dependent variable, women labor force participation is a dummy variable which takes 0 if an individual i-woman respondent is outside labor force and 1 if the respondent involves in the labor force. The independent variables presented in table 1 below were selected by assessing various theoretical and empirical works conducted in the past in least developing countries and at the country level. The reason for selecting such independent variables for this study is the past experiences in which researchers had observed their effect on women labour force participation in reality but not proofed empirically.

Table 1.
Summary of independent variables that may determine women labour force participation and their expected effect

explanatory Variables	Description	Value/category	Expected sign
Rag	Age of the respondent	categorical	-
Mas	Marital status	Dummy	+
Pyc	Presence of young children	Dummy	-
Mis	Migration status	Dummy	+
Fs	Family size	Continuous	+
Edul	Education level	Categorical	+
HHincome	Household income	Continuous	+
Dfwa	Distance from work area	Categorical	-

3. Results and Discussions

3.1. Demographic Characteristics of Sample Respondents

3.1.1. Age of Respondents

Table 2 below shows that the respondent women fall into different age groups ranging from the lowest age of 15 years to maximum age of 60 years and above. The lowest age of respondent women is 15 years due to the fact that the study is deliberately confined to women which had ability to work only. The majority of the respondents (38.4%) have an age of 31 – 40 and the other 7(7%) of the respondents have an age of 51-60 years and above.

Table 2.
Age of the respondents

Age group (in years)	Number of respondents	Percentage (%)
15-20	11	11.1%
21-30	18	18.2%
31-40	38	38.4%
41-50	25	25.3%
51-60 and above	7	7%
Total	99	100

Source: Survey data, 2021

3.1.2. Marital Status of the Respondent

Table 3 below shows that most respondents (43.3%) are married women in Boke town. On the other hand, 26(26.3%) of respondents were single, 17(17.2%) were divorced, 10(10.1%) were separated and the remaining 3(3%) of respondent were widowed. This is an indication that the sample respondents are taken from all marital status group and is representative in terms of marital status.

Table 3.
Marital status of the respondent

Marital status	Number of respondents	Percentage
Married	43	43.4%
Single	26	26.3%
Divorced	17	17.2%
Separated	10	10.1%
Widow	3	3%
Total	99	100%

Source: Survey data, 2021

3.1.3. Presence of Children Below 5 Years

Table 4 shows, from the total of 99 women, (66.67%) of them had at least one young child less than 5 years. On the other hand, the remaining 33.33 % of respondents had no any young child below 5 years of age.

Table 4.
Presence of children below 5 years

The presence of child below 5 years	Number of respondents	Percentage
Yes	66	66.67%
No	33	33.33%
Total	99	100%

Source: Survey data, 2021

3.1.4. Migration Status of the Respondent

The migration status empirical figure of women in Table 5 showed that 14.14% of respondents were migrant, whereas 85.86% of them were non migrant.

Table 5.
Migration status of the respondent

Migration status	Number of respondents	Percentage
Migrant	14	14.14%
Non migrant	85	85.86%
Total	99	100

Source: Survey data, 2021

3.1.5. Family Size of Respondents

According to the survey result, there is a high child reproductive rate in Boke town. As it can be seen from table 6, 20.2% of the respondents had small family size of 1-4, 50.5% of them had a family size of 5-9 and 29.3% had a family size of more than 10 child. This shows that majority of the respondents were from large family size.

Table 6.
Respondent's family size

Family size	Number of respondents	Percentage
1-4	20	20.2%
5-9	50	50.5%
10 and above	29	29.3%
Total	99	100%

Source: Survey data, 2021

3.1.6. Distance from Work Area Versus Women Participation

Table 7 below presents the distance from where the women participate in work activity. 40.4% of the sample participants reported that they went less than 1km far from their labor work participation area, and 58.59% of the sample participants responded that they were far from working area around 1-5km.

Table 7.
Distance from work area

Distance from work area	Number of respondents	Percentage
<1km	40	40.4%
1-5 km	58	58.59%
>5km	1	1.01%
Total	99	100%

Source: Survey data, 2021

3.1.7. Educational Level of Respondents

As shown in table 8 below, out of the total respondents, 23.23% of respondent were illiterate; 22.22% were attended higher and preparatory education; 15.2% have attended primary education; and 14.1% of respondent were level III/IV/Diploma.

Table 8.
Education status of respondents

Educational status	Number of respondents	Percentage
1-4 class	15	15.2%
5-8 class	10	10.1%
9-12 class	22	22.22%
Certificate	5	5.05%
Level III/IV / Diploma	14	14.1%
Degree	5	5.05%
Non formal education	5	5.05%
Illiterate	23	23.23%
Total	99	100%

Source: Survey data, 2021

3.2. Econometric Results

In order to investigate the determinants of women labour force participation, the researcher had used logistic regression model. Before going to estimate the specified model, multicollinearity and heteroscedasticity tests were conducted to see whether the basic assumptions of the model are met or not. In addition, the goodness of fit of the model had tested trough Hosmer Lemshow test. Hence, the result of the tests are as follows.

3.2.1. Multicollinearity Test

To estimate binary logit, it was first important to identify whether the hypothesized variables have any associations or correlation with one another using variance inflation factor (VIF) and contingency coefficient (C). Variables were first tested to check the existence of multicollinearity.

The computed result of VIF values presented in appendix II, are less than five. This confirms that there is no serious problem of multicollinearity between explanatory variables. Thus, the variables at hand were used for running of the binary logistic regression.

3.2.2. Heteroskedasticity Test

Hetroskedasticity complicates analysis because many methods in regression analysis are based on the assumption of homoscedasticity or equal variance. In logit analysis, there is no equal variance or homogeneity of variance assumption and the variance of the error terms is not constant. As a result of this, breusch-pagan test for hetroskedasticity was applied. The result indicates the absence of heteroscedasticity problem.

3.2.3. Goodness of Fit Test

Hosmer – Lemeshow test were used in order to examine the fitness of the data to the model. As it has seen from the results in the appendix, the p-value of Hosmer - Lemeshow test is 0.0656. This indicates the data best fits the model.

The result of the logit model is presented in table 9 below. These consists the variables, the odds ratio, P value and P>|Z| for explanatory variables included in the model. The odds are the ratio of the probability of participating in the labour force to the probability of not to participate in the labour force. The odds ratio indicates the change in the odds of participate in labour force as opposed to not participate in labour force in response to one-unit increase in independent variables.

In the logistic regression model, age of household, marital status, presence of young children, migration status, family size, education level of household, household income, distance from work area were included. As it is evident from the logistic regression result which is presented in table 9, most of the variables included in the model had the expected sign except marital status, education Level, and distance from work area. Out of the eight explanatory variables included in the model, four variables were found as significant determining factors for women labour force participation while the remaining four did not show significant relationship with women labour force participation. Of the four significant variables, presences of young children, education level of household, household income are highly significant at 1% level of significance. The variable marital status is significant at 5% level. The detail discussion of the significant variables were made in the next paragraphs.

Marital status of the household: The model estimation for marital status and women labour force participation shows a significant negative relationship. The negative sign indicates that women who have married were less likely to participate in labour force than others. The result showed that the probabilities of women to participate in labour force decrease by odd ratio of .0027862 when they got married.

Presence of young children: As expected, presence of young children had strong negative relationship with the probability to participate in the labour force. This variable is significant in determining women labour force participation at 1% level of significance. This implies that as women have young children, their participation in labour force decrease by odd ratio of .0010932.

Household income: In line with the research hypothesis, household income was found as a positive determinant of women labour force participation at 1% level of significance. This implies that when the house hold income increases, the participation of women in the labour force also increase by odd ratio of 9.605894.

Table 9.
Logit estimates odd of determinants of women labour force participation

Logistics regression	Number of obs	=	99
	LR chi2 (8)	=	74.94
	Prob > chi2	=	0.0000
Log likelihood = -31.147586	Pseudo R2	=	0.5461

Economic participation status	Odd Ratio	Z	P>/Z/
HHAG	1.093895	1.22	0.224
Mas	.0027862	-2.39	0.017**
Pyc	.0010932	-3.21	0.001***
Mis	2.616362	0.95	0.340
Fs	.9765438	-0.13	0.896
EDUL	.2781793	-4.66	0.000***
hhincome	9.605894	4.27	0.000***
dfwa	1.589248	0.70	0.481
_cons	.0778768	-1.09	0.274

***, ** significant at 1% and 5% level of significance, respectively
Source: own computation through STATA 14 based on survey data, 2021

Household education level: The logistic regression result revealed that household education level was statistically significant at 1% level of significance. The negative sign in the logit regression shows an increase in the years of schooling decreases the probability of women to participate in labour force decrease. This means as years of schooling increase the participation of women in labour force decreases by odd Ratio of 0.2781793. This is because the level of economic activities in the study area cannot absorb those women who have highly educated and educated women do not want to participate in the economic activities available in the study area. Those highly educated women went to large towns to find job opportunities which is consistent with their educational level rather than staying and searching job in the study area.

4. Conclusion and Policy Recommendations

4.1. Conclusion

The aim of this study was to identify the main determinant factors of women labour force participation in Boke Tiko town. To achieve objective of the study, data were collected from 99 randomly selected women respondents. Data obtained from the respondents were analyzed through descriptive statistics and logistic regression model. The result obtained from logistic regression model revealed that marital status, presence of young children, household income and educational level were the significant factors determining women labour force participation in the study area.

4.2. Policy Recommendations

The following policy recommendations were forwarded depending on the findings of the study.

- There is a need to expand the economic activities in the study area across various sectors by using different mechanisms such as like expanding investment in these sectors so as to create job opportunities for educated women.
- It is advisable to fight early marriage through creating job opportunities for female at their early age and secure their future income level.
- It is important to intensify family planning programs and services in the area.
- Appropriate policies and institutions pertaining to women's development should be created.
- Existing programs and strategies relating to women labour force participation should be reviewed, revised and implemented to make the effort of supporting women more innovative and effective.

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Appendix

diagnostic test results for logistic regression model

A) Hosmer-Lemeshow test result: test for model of fitness

Number of observations = 99

Number of groups = 10

Hosmer-Lemeshow = 14.68

Prob >ch2 = 0.0656

B) Results from multicollinearity test

Variable	VIF	1/VIF
Mas	4.41	0.226522
Pyc	3.71	0.269667
HHag	3.49	0.286702
Fs	3.01	0.332047
Edul	1.96	0.509634
Hhincome	1.50	0.664720
Mis	1.34	0.748159
Dfwa	1.10	0.910715
Mean VIF	2.57	

C) Result for heteroscedasticity test

Breusch-pagan /cook-weisberg test for heteroscedasticity

H0: constant variance

Variance: fitted values of eps

Ch2 (1) =0.05

Prob > Ch2 =0.8248