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Letter from the Editor-in-Chief

Myanmar and Korea have many similarities and are complementary relationship. Therefore, we believe that research exchange will expand mutual understanding between Myanmar and Korea, and will be the cornerstone for mutual development.

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We hope that this journal will continue to promote understanding of the current status and potential capabilities of Myanmar and South Korea and promote in-depth international exchange and cooperation.

We would like to express our deepest gratitude to the editorial board and YUE and KOMYRA for their valuable support in The Myanmar Journal publication.

August 30, 2022

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Determinants of Labor Force Participation among Rural Women in Myanmar

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ABSTRACT : Women participation in economic activities plays a critical role in driving economic development throughout the world. This study aims to analyze the role and determinants of rural women's labor force participation in Myanmar. To carry out this, the study used a cross-sectional study design. The descriptive statistics, Chi-square test and binary logistic regression model are used in the study. The data from Myanmar Demographic and Health Survey 2015-2016 are examined and Logistic regression model is employed to analyze the determinants of rural women labor force participation. More than sixty percent of rural women participate in labour force. According to the results of Chi-square test and binary logistic regression model, women's age, education level, marital status, having children under five, exposure to media, household size and states and regions are statistically related to labour force participation among rural women. Rural women who are more educated and have exposure to media have positive effects on the labour force participation. In contrast, rural women who are married, have children under five and larger family size have negative effects on the labour force participation. Therefore, rural education program and improving women's access to job information through the media are also needed for employment opportunities and development of rural women. Government and policymakers should implement sustainable rural development plans.

Key words *: Labour force participation of women, Rural development, Socioeconomic characteristics, Binary logistic regression model.*

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I. Introduction

Labor is essential portion of the country's economy which comprises both men and women workforces. More than half of population are women in the world. Women are the back bone of society (Ayferam, 2015). In the worldwide, women comprise an essential role in the growing farm. Furthermore, women's employment can provide their families and communities. The participation of women in the workforce is one of the vital issues of various social and economic factors.

Women play an imperative part because of supporting family revenue and increasing labour market (Rahman and Islam, 2013). In developing countries especially Myanmar, employment opportunities are different not only between urban and rural areas but also gender. In 2018, the labour force participation rate in Myanmar was approximately 62 percent. The labour force amounted to about 22.68 million which 12.82 million were men and 9.86 million were women. The number of working men and working women are significantly different because women are responsible for giving birth and taking care of their families.

The participation of workforce in urban and rural areas has slightly increased (Myanmar Living Conditions Survey, 2017). The labour force participation rate of rural areas increased from 66 percent in 2004 to 69.9 percent in 2017. In urban areas, the participation of workforce is rising for both men and women. However, rural women have to wait a long time to start their work.

There are many factors (age, marital status, education level, family size, wealth index, number of children, gender of household head, spouse's income and education level) that determine decision of women to engage the workplace. The participation of women in the workforce has led to different levels of economic development from one country to another. Consequently, economic development of a country leads to better job opportunities and more social services for young women. In Myanmar, it is expected that the issues that may influence rural women's participation in workforce will be different from other countries.

II. Review of Literature

Many earlier authors have studied women's participation in the workforce. These studies observed the association between female participation in workforce and socioeconomic factors in countries which are United States (Mincer, 1962), Egypt and Germany (Hosney, 2016), India (Kishor and Gupta, 2009), Armenia (Dallakyan and Bakhtavoryan, 2013), Bangladesh (Amin, 2005 and Rahman and Island, 2013), Uganda

(Bbaale, 2014), and Myanmar (Mon, 2000), etc.

Mincer (1962) studied labour force participation of married women in Northern Standard Metropolitan Areas, United States. Mincer earnings regressions were applied. Mincer demonstrated a significant joint impact of marital status and age of children on labour force participation among women. In addition, married women with young children were less likely to take participation in the labour force relative to their counterparts with older children. This suggested that the need to care for young children in the family is major impedance to participating in the labour force.

Mon (2000) observed the deterministic factors of participation of workforce among women in urban area of Yangon, Myanmar. The binary logistic regression model was applied. The results of the study proposed that spousal income and marital status are the main impacts on the entry of urban women into the workplace.

Amin (2005) discussed that home-based businesses have encouraged the participation of women workers in Bangladesh. The author found that female-headed households, small family size, low educational attainment, residing in urban areas, low levels of household wealth and microcredit positively influence on participation of women workers.

Kishor and Gupta (2009) analyzed gender equality and women's empowerment in India. He found that the rate of employment varies significantly with marital status among women. Women who are divorced, separated, or widowed are more likely to be employed than married women, and single women are lower probability to be employed.

Dallakyan and Bakhtavoryan (2013) studied that impacting factors of participation of workforce among rural women in Armenia. The data from household survey of Caucasus Barometer for 2012 were analyzed using a logit model. According to the results of the study, age, knowledge of English language, education level, and marital status are important factors that affect the participation of women workers in rural Armenia.

Rahman and Island (2013) studied the trends, drivers and barriers of female labour force participation in Bangladesh. He found that the u-shaped relationship between economic growth and women's employment. It can be seen that the rapid expansion of micro finance in rural areas has supported women's employment in poultry and livestock. However, the economy of Bangladesh as a whole and women's employment in urban areas seem to be too dependent on a single industry as other sectors are growing are either too small or are not employing women in large numbers. Moreover, challenges relating to the level of and gender differential in wages, and other aspects of compliance with labour standards (working hours, safety and health in the work place, freedom of association and collective bargaining remain). This study indicated that further progress is needed in women's access to

education and skill training, productive assets like land and credit beyond microcredit and services of various government institutions.

Bbaale (2014) examined the relationship between female education and labor force participation and fertility rates for Uganda using the Demographic and Health survey 2006. The reduced form specifications used to estimate the determinants of fertility and the probit model used to estimate the determinants of female labour force participation. It is found that female education especially at the secondary and post-secondary school level reduces fertility and increases the likelihood of females being engaged in the labor force. Regarding the above findings, education has a huge impact on labor force participation.

Verick (2014) found that educational attainment is a major driver of better employment outcomes for women in both developed and developing countries. Education plays a critical role in determining the nature of employment taken up by women. In many developing countries, between educational attainment and participation of women in the labor force has a nonlinear (U-shaped) relationship. The most uneducated women in under developing countries are the most likely to participate in subsistence activities and informal employment, while women with a high school education may be able to afford to stay out of the labor force. When women have more than a secondary school education, they are encouraged by higher wages to join the labor force participation if the appropriate jobs are particularly available.

Hosney (2016) studied the key factors that influence participation of workforce among female in Egypt and Germany and comparing these two countries. Probit model is employed to determine which factors influence on participation of workforce among female in two countries. Findings of the study indicate that success of higher education actually predicts the potential for Egyptian women to enter the labour market. A comparative study found some of factors affecting the participation of women workers in both countries. In addition, years of schooling and age positively influence on participation of women workers. Although married women, residing in urban areas and having children negatively influence on participation of women workers.

According to Winkler (2016), labor force participation by women varies considerably across countries. Women's labour force participation rates are strongly related to increased educational achievement. A positive relationship between educational success and workforce participation is that women who invest in education are the most probability to reap the rewards of that investment. Women are more likely to pursue higher education because they expect a longer workforce.

As discussed above, various authors and researchers investigated the relationship between women labour force participation and demographic and socioeconomic variables. Hence, this study intends to analyze the influencing factor of participation

of workforce among rural women to develop rural areas in Myanmar.

III. Objectives of the Study

To achieve the aims of the research, the following objectives are specified as the framework of analysis.

(i) To describe the rural women's labour force participation and their demographic and socioeconomic characteristics in Myanmar

(ii) To examine demographic and socioeconomic characteristics which are related to rural women's labour force participation in Myanmar

(iii) To explore the determinants of labour force participation among rural women in Myanmar

IV. Methodology

This study uses dataset from the 2015-2016 Myanmar Demographic and Health Survey (MDHS). This study emphasizes on rural women between the ages of 15 and 49. While data from 12,885 women were obtained from MDHS in 2015-2016, this study was restricted to 9100 rural women. A sample of 9100 women was considered for this cross sectional study.

The descriptive statistics, Pearson's Chi-square test and binary logistic regression model are used for this study. The Chi-square test is used to analyze the association between demographic and socioeconomic characteristics and laour force participation among rural women. A binary logistic regression model was used when a response variable, such as women's labuor force participation (employed women and unemployed women), is dichotomous. The binary logistic regression model was carried out to observe the demographic and socioeconomic factors related to women's labour force participation.

Pearson's Chi-squared test ($\chi 2$) is a statistical test applied to test a null hypothesis stating that the frequency distribution of certain events observed in a sample is consistent with a particular theoretical distribution. The Chi-square test use to determine whether the association between two qualitative variables is statistically significant. The chi-square statistic is computed with the following formula:

$$\chi^2 = \sum_{i=1}^{n} \frac{(fi - fe)^2}{fe}$$

Where, fi is the observed frequency in the cell
fe is the expected frequency in each cell

Binary logistic regression is a prognostic model that is fitted when there is a dichotomous or binary dependent variable (Hosmer and Lemeshow, 2000). Since logistic regression calculates the probability of an event occurring over the probability of an event not occurring, the impact of independent variables is usually explained in terms of odds. With logistic regression, the mean of the response variable Y in terms of explanatory variables Xi, the binary logistic regression model can be written as

$$Y_i = E(Y_i \mid X_i) + \varepsilon_i$$

where $E(Y_i \mid X_i) = p_i = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_i X_i)}}$

$\beta_0 = the\ \ constant$

$\beta_i = the\ \ coefficient\ \ of\ \ the\ \ predictor\ \ variable\ \ i$

$\epsilon_i = the\ \ error\ \ term$

$p_i = probability\ \ of\ \ success$

$1 - p_i = probability\ \ of\ \ failure$

$$\text{Odds ratio} = \frac{p_i}{1 - p_i}$$

Taking the natural log of Equation (3) yields

$$\ln\left(\frac{p_i}{1 - p_i}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_i X_i$$

Measurements of Variables

In this study, the classification of dependent and independent variables considered for the model are exposed in below.

Dependent Variable Y= Rural women's labor force participation = 0 if unemployed = 1 if employed *Independent Variables* X_1= Age = 1 if 15-19 years = 2 if 20-29 years = 3 if 30-39 years = 4 if 40-49 years X_2= Education = 1 if higher level = 2 if primary and secondary levels = 3 if no education X_3= Marital status = 1 if married = 2 if separated, divorced and widowed = 3 if single X_4= Exposure to media (newspaper/ magazine, radio and television) = 1 if no exposure to media = 2 if at least one exposure to media = 3 if all exposure to media X_5= Having children aged under five = 1 if no = 2 if yes	X_7 = Household size = 1 if 1-3 = 2 if 4-6 = 3 if 7 and above X_8 = Wealth index = 1 if poorest = 2 if poorer = 3 if middle = 4 if richer = 5 if richest X_6 =States and Regions = 1 if Rakhine = 2 if Kachin = 3 if Kayah = 4 if Kayin = 5 if Chin = 6 if Mon = 7 if Shan = 8 if Ayeyarwady = 9 if Yangon = 10 if Mandalay = 11 if Magway = 12 if Bago = 13 if Tanintharyi = 14 if Sagaing = 15 if Nay Pyi Taw

V. Empirical Results

1. Descriptive Analysis

The demographic and socioeconomic characteristics of rural women are demonstrated to Appendix Table 1. The demographic and socioeconomic characteristics considered in this study are age, education, marital status, exposure to media, having children age under 5, household size, wealth quintiles and states and regions.

According to Appendix Table 1, the most of rural women (30.5%) are age group 30 to 39 years and followed by 29.6% of rural women are age group 20 to 29 years, 26% of rural women are age group 40 to 49 years and 13.9% of rural women are age group 15-19 years. Regarding the education level, most of the rural women (47%) have achieved primary level and followed by 32.6% have no education, 15.6% have achieved secondary level and 4.8% have achieved higher level of education. In relation to the marital status, 63.9% of rural women are married, 29.6% are unmarried and 6.5% are separated, divorced and widowed. In relation to having children age under five, 52.7% of rural women have no child but 47.3% of rural women have children. Concerning exposure to media, most of rural women (64.4%)

have at least one exposure to media and 18.3% of rural women have all exposures to media.

Dealing with the household size, the most of rural women (66.2%) lived in household size with 4-6 members. Regarding the wealth quintiles, 24.8% of rural women lived in the poorest households, 24.7% lived in the poorer households, 24.3% lived in the middle households, 18.9% lived in the richer households and 7.3% live in the richest households. According to states and regions, 9.1% of rural women lived in Sagaing Region, 8.3% lived in Magway Region and Rakhine State, 7.9% lived in Bago Region and Ayeyarwady Region, 7% lived in Mandalay Region, 6.6% lived in Shan State, 6.2% lived in Chin State, 6.1% lived in Mon State and Kayah State, 5.9% lived in Kayin State, 5.8% lived in Tanintharyi Region, 5.7% lived in Nay Pyi Taw, 5.2% lived in Kachin State and 3.9% of women lived in Yangon Region, respectively.

2. Bivariate Analysis

The bivariate analysis is performed using Chi-square test and the results are shown in Appendix Table 1. According to the results of Chi-square test, rural women' age, education, marital status, exposure to mass media, having children aged under five, household size, wealth quintiles and states and regions are significantly related to labour force participation of rural women at 1% significance level.

3. Multivariate Analysis

Binary logistic regression model is performed on labour force participation among rural women by using the predictor variables. The findings are shown in Appendix Table 2.

According to model evaluation criteria (Pseudo R2 = 0.0894), 8.94% of the variation in labour force participation of rural women can be explained by this model. LR Chi-square test of model coefficients shows that adding independent variables improved the predictive power of the model. Regarding the LR Chi-square test value, it has been found that the model is significant at 1% level (Chi-square = 1056.55, df = 30 and p value = 0.000). Hosmer-Lemeshow goodness of fit test states how closely the observed and predicted probabilities match. The results of Hosmer and Lemeshow statistic (Chi-square=7.95, df = 8, p-value = 0.4379 > 0.01) show that the data fit the model well.

Regarding the results of binary logistic regression model, rural women's age, education, marital status, exposure to media, having children aged under 5, household size and states/ regions are significant factors of labour force participation

among rural women. The results show that rural women's age groups of 20-29 years, 30-39 years and 40-49 years are about 1.95, 2.96 and 2.97 times more likely to participate in labor force compared to their age group of 15-19 years. In addition, umrried women and separated, divorced and widowed women are about 1.64 and 1.82 times more likely to participate in labour force than married women. Rural women who have at least one exposure to media and all exposure to media are about 1.18 and 1.3 times more likely to participate in labour force compared with those who have no exposure to media. In addition, women who lived in Kachin, Kayah, Chin, Mon and Shan States are about 1.82, 1.79, 3.05, 1.45 and 6.81 times more likely to participate in labour force compared to their residing in Rakhine State. Moreover, women who lived in Ayeyarwady, Yangon, Mandalay, Magway, Bago, Tanintharyi, Sagaing Regions and Nay Pyi Taw are about 2.26, 1.64, 9.41, 4.44, 2.85, 1.91, 2.14 and 2.11 times more likely to participate in labour force compared to their residing in Rakhine State.

In contrast, rural women who have accomplished primary and secondary levels schooling are about 0.22 time less likely to participate in labour force compared to those with higher level of schooling. Rural women who have under five children are about 0.3 times less likely to participate in labour force compared to those have not under five children. Rural women who live in household size with 7 members and above are about 0.2 times less likely to participate in labour force than their household size with 1-3 members.

VI. DISCUSSIONS

The findings of this research have pointed out that about sixty-four percent of rural women are working. Most of rural women who are age group between 30-39 years, married and have achieved primary level. Most rural women have at least one exposure to media (newspapers/magazine, radio and television). In addition, most rural women live in poor households and Sagaing Region.

The results of the study show that the labour force participation of rural women who have completed primary and secondary education is 22 percent lower than that of higher-educated rural women. This result is similar to the findings of Verick (2014), Winkler (2016), Bbaale (2014) and Hosney (2016). Therefore, education has a huge effect on workforce participation.

The results of this study also show that the age of women significantly influence on participation in the workforce. The older women are more likely to be involved in labour force than younger women. This result is similar to the findings of Hosney

(2016).

This study also found that rural women's marital status significantly influence on the labour force participation. Rural women who are divorced, separated and widowed are much more likely to participate in labour force than married women. This result is consistent with Kishor and Gupta (2009), and Hosney (2016).

According to having children under five, this study pointed out that women who have children aged under five are lower probability to be involved in labour force than those have not children. This finding is analogous to the results of Hosney (2016) found that having children have a negative impact on female labour force participation and Mincer (1962) found that married women with youngsters are lower probability to participate the workforce relative to their counterparts with older children.

Regarding the household size, it is observed that women who live in household size with 7 members and above are less likely to participate in labour force than those live in household size with 1-3 members. This result is similar to the findings of Amin (2005) showed that smaller family size have a positive impact on female labour force participation.

VII. CONCLUSION AND RECOMMENDATIONS

The findings of the study reveal that the labour force participation among rural women in Myanmar accounts for 64.3 percent. The rural women's age, education level, marital status, exposure to media and having children under five is significantly related with labour force participation. In addition, household size, wealth quintiles and states and regions is significantly associated with labour force participation.

The findings from the binary logistic regression model indicate that almost all the selected variables in the study influence on labour force participation. The older women, higher education level and having exposure to media have positive effects on the labour force participation. Rural women who have children under five and larger family size have negative effect on the labour force participation. Furthermore, married women have negative effects on the labour force participation.

Based on the findings of this research, it is recommended that government and policy makers should promote educational programs in rural areas. These educational programs can be provided the increase in participation of workforce among rural women. Because of the gender inequality, girls from poor families of rural areas are less likely to achieve higher education and to participate labour force. Therefore, the government should implement initiatives to improve the higher educational

attainment of its citizens. Moreover, achieving higher education helps to improve well-being and social development of rural women. Rules and regulations should be introduced to make schooling up to secondary level compulsory for all girls, and policies that aim to increase participation of workforce among rural women should be established.

The study deals with five outcome areas for government and policy makers:

(i) increased women's educational attainment and knowledge

(ii) increased the number of women in the workforce

(iii) reduced gender bias in the labour market

(iv) continued to remove gender differences in education and

(v) developed rural areas.

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Appendix

Table 1. Relationship between Demographic and Socioeconomic Characteristics and Labor Force Participation of Rural Women

Variables	Classification	Number	Percent	χ^2 value	P-value
Employment status*	Unemployed	3218	35.4		
	Employed	5880	64.3		
Age	15-19	1263	13.9	112.52***	0.000
	20-29	2690	29.6		
	30-39	2777	30.5		
	40-49	2370	26.0		
Education*	No education	1422	32.6	15.99***	0.000
	Primary level	4275	47.0		
	Secondary level	2966	15.6		
	Higher level	435	4.8		
Marital status	Unmarried	2692	29.6	51.30***	0.000
	Married	5813	63.9		
	Separated, divorced and widowed	595	6.5		
Having children aged under 5	No	4799	52.7	171.39***	0.000
	Yes	4301	47.3		
Exposure to media (newspapers/ magazine, radio and television)	No exposure	1572	17.3	24.85***	0.000
	At least one exposure	5864	64.4		
	All three exposure	1664	18.3		
Household size	1-3	1762	19.4	68.12***	0.000
	4-6	6027	66.2		
	7 and above	1311	14.4		
Wealth quilties	Poorest	2254	24.8	44.33***	0.000
	Poorer	2251	24.7		
	Middle	2216	24.3		
	Richer	1716	18.9		
	Richest	663	7.3		
Region	Rakhine	754	8.3	657.30***	0.000
	Kachin	470	5.2		
	Kayah	560	6.1		
	Kayin	539	5.9		
	Chin	561	6.2		
	Mon	555	6.1		
	Shan	605	6.6		
	Ayeyarwaddy	719	7.9		
	Yangon	354	3.9		
	Mandalay	642	7.0		
	Magway	757	8.3		
	Bago	716	7.9		
	Tanintharyi	524	5.8		
	Sagaing	824	9.1		
	Nay Pyi Taw	520	5.7		
Total		9100	100		

*Missing data on women's employment status for 2 cases and education for 2 cases.
Source: Myanmar, Ministry of Health and Sports and ICF International (2017).
Note: ***, **, * represent 1%, 5% and 10% levels of significance, respectively.

Table 2. Results of Binary Logistic Regression Model for Labor Force Participation of Rural Women by Demographic and Socioeconomic Characteristics

Independent Variables	Classification	Coef.	Odds Ratio	P-value	95% CI	
					Lower	Upper
Constant		-0.85	0.43	0.000	0.30	0.62
Age	15-19 (ref)					
	20-29	0.67***	1.95	0.000	1.66	2.30
	30-39	1.08***	2.96	0.000	2.48	3.52
	40-49	1.09***	2.97	0.000	2.46	3.57
Education	Higher level (ref)					
	Primary and secondary levels	-0.24**	0.78	0.045	0.62	0.99
	No education	-0.15	0.86	0.274	0.65	1.13
Marital status	Married (ref)					
	Separated, divorced and widowed	0.49***	1.64	0.000	1.34	2.00
	Unmarried	0.60***	1.82	0.000	1.59	2.09
Having children aged under 5	No (ref)					
	Yes	-0.36***	0.70	0.000	0.63	0.78
Exposure to media (newspapers/magazine, radio and television)	No exposure (ref)					
	At least one exposure	0.16**	1.18	0.015	1.03	1.35
	All three exposure	0.26***	1.30	0.003	1.09	1.54
Household size	1-3 (ref)					
	4-6	-0.06	0.95	0.381	0.83	1.07
	7 and above	-0.22**	0.80	0.012	0.68	0.95
Wealth quintiles	Poorest (ref)					
	Poorer	-0.08	0.92	0.248	0.81	1.06
	Middle	-0.04	0.96	0.561	0.83	1.10
	Richer	-0.11	0.90	0.160	0.77	1.04
	Richest	-0.05	0.95	0.622	0.76	1.17
States and Regions	Rakhine (ref)					
	Kachin	0.60***	1.82	0.000	1.42	2.34
	Kayah	0.58***	1.79	0.000	1.41	2.27
	Kayin	-0.10	0.90	0.403	0.72	1.14
	Chin	1.11***	3.05	0.000	2.40	3.87
	Mon	0.37***	1.45	0.002	1.15	1.84
	Shan	1.92***	6.81	0.000	5.21	8.90
	Ayeyarwaddy	0.82***	2.26	0.000	1.81	2.83
	Yangon	0.49***	1.64	0.000	1.25	2.15
	Mandalay	2.24***	9.41	0.000	6.96	12.71
	Magway	1.49***	4.44	0.000	3.50	5.63
	Bago	1.05***	2.85	0.000	2.27	3.58
	Tanintharyi	0.65***	1.91	0.000	1.50	2.43
	Sagaing	0.76***	2.14	0.000	1.72	2.66
	Nay Pyi Taw	0.75***	2.11	0.000	1.66	2.69
LR Chi-square		1056.55***(P-value=0.000)				
Hosmer and Lemeshow (H-L) Test		7.95 (P-value=0.4379)				
Pseudo R Square		0.0894				

Source: Myanmar, Ministry of Health and Sports and ICF International (2017).
Note: ***, **, * represent 1%, 5% and 10% levels of significance, respectively.

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