

Trends and Factors Affecting to Female Labour Force Participation Rate in India

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Abstract

Greater involvement from women in the labor force has both an economic and a social impact. The Female Labour Force Participation Rate (FLFPR) for India remains appallingly low at around 27 % when the male labour force participation rate is 79.9%. Labor force participation rate, female (% of female population ages 15+) in India has reduced from 31.11% in 1990 to 27.45% in 2016. Labor force participation rate, female (% of female population ages 15+) has declining trend during 1990 to 2016. In the present paper factors affecting to female labour force participation rate in India have been estimated using regression analysis for the time period 1990 to 2016. Data on all the relevant variables have been taken from World Development Indicators, World Bank. It has been found that Labor force participation rate, female (% of female population ages 15+) has strong negative linear correlation with LN GDP (constant 2010 US\$), LN GDP per capita, PPP (constant 2011 international \$), School enrollment, tertiary, female (% gross) and Literacy rate, youth female (% of females ages 15-24). Results of regression analysis suggests that 87.9% variations in Labor force participation rate, female (% of female population ages 15+) in India are together explain by independents variables. The aim is not only to increase participation of female in labour force, but to create environment, providing opportunities and freedom to women for decent and dignified work that will contribute significantly in economic empowerment and holistic development of women. This requires comprehensive approach for wider participation of women in the labour force.

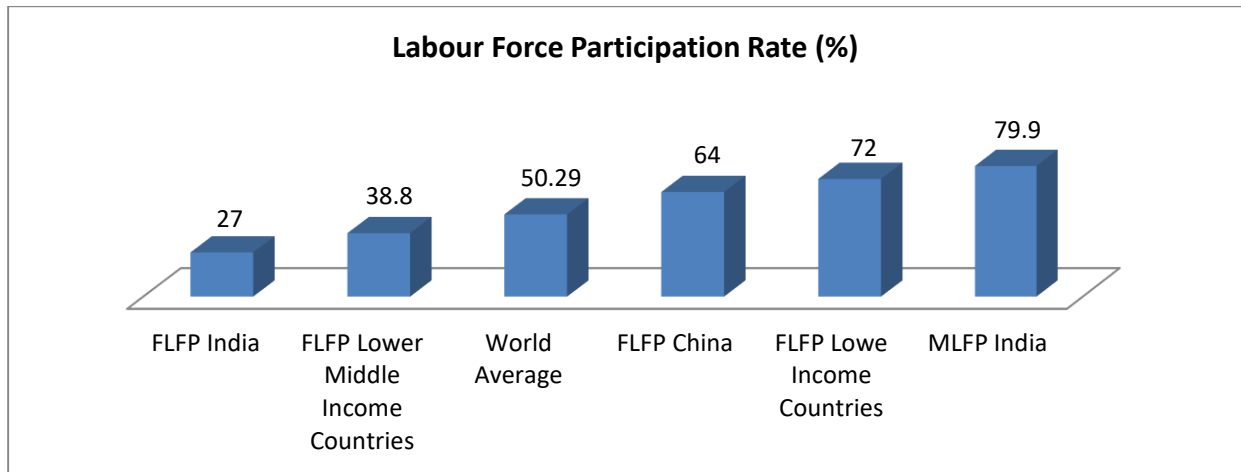
Keywords: Female Labour Force Participation Rate, Correlation, Regression Analysis, World Development Indicators, India

INTRODUCTION

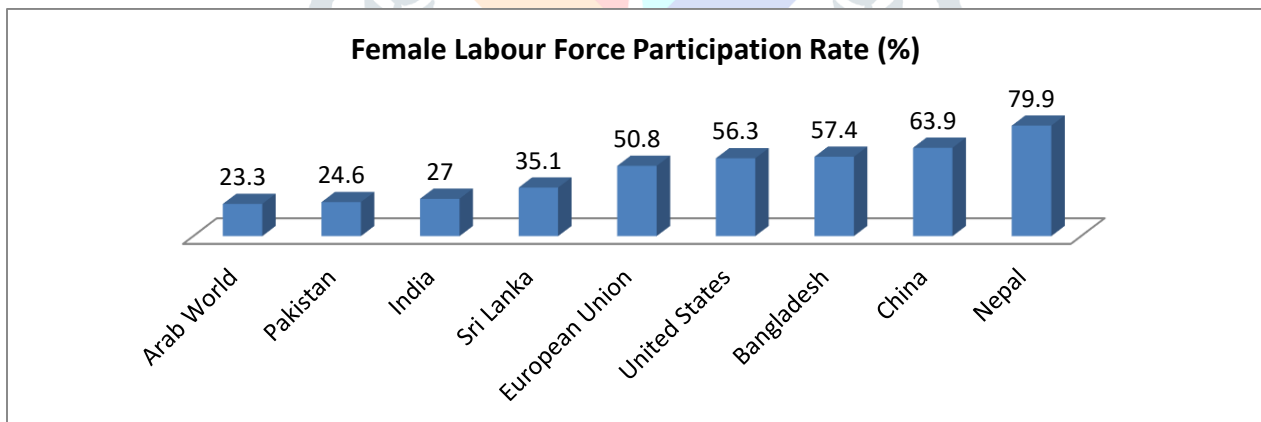
Across the world India has very low female labour force participation rate. Low female labour force participation rates (FLFPRs) enact restraints on a country's development, the empowerment of its women, and the outcomes for its kids. Higher participation from women in the labor force has social and economic impact. In recent time period India is enjoying favourable demographic and economic conditions that would lead to increase in female labour-force participation rates. In India, economic growth rate has been increasing and high, substantial reduction in fertility rate; and significant increase in female education are noteworthy in India. India is passing through phase of 'demographic dividend', as the proportion of working-age people is quite high, this can boost per capita growth rates through labour force participation along with savings and investment effects. But if women largely are not participating actively in the labour force, this effect will be much weedier and India could run up labour shortages in key and leading sectors of the economy. Empirical evidences suggesting that employed women have greater negotiating power with positive repercussions on their own well-being along with their families. Increase in women's participation in the labor market is one of the key challenges of India's development (World Bank, 2001). An increase in female labour force participation rate and earning can lead to rapid growth and development, decrease poverty and enhance prosperity. It is evident that earning of women will have positive impact, not only on their own health but on the health and education of their children.

Comparatively female are investing more than men from their earning in the education and health of their children (Qian, 2008).

The Female Labour Force Participation rate for India remains abysmally low at around 27 % when the male labour force participation rate is 79.9%. The surprising part is that FLFP was 33.9 % in 2005 and has declined ever since. Clearly, the economic progress in India has not permeated to women, at least when you use FLFP as a proxy for women's economic progress. What is more astounding is that the FLFP for a country with similarly large population – China– is 64% and for the USA, a democracy like India, is 56.3% (World Bank, 2017).



Source: World Development Indicators, World Bank



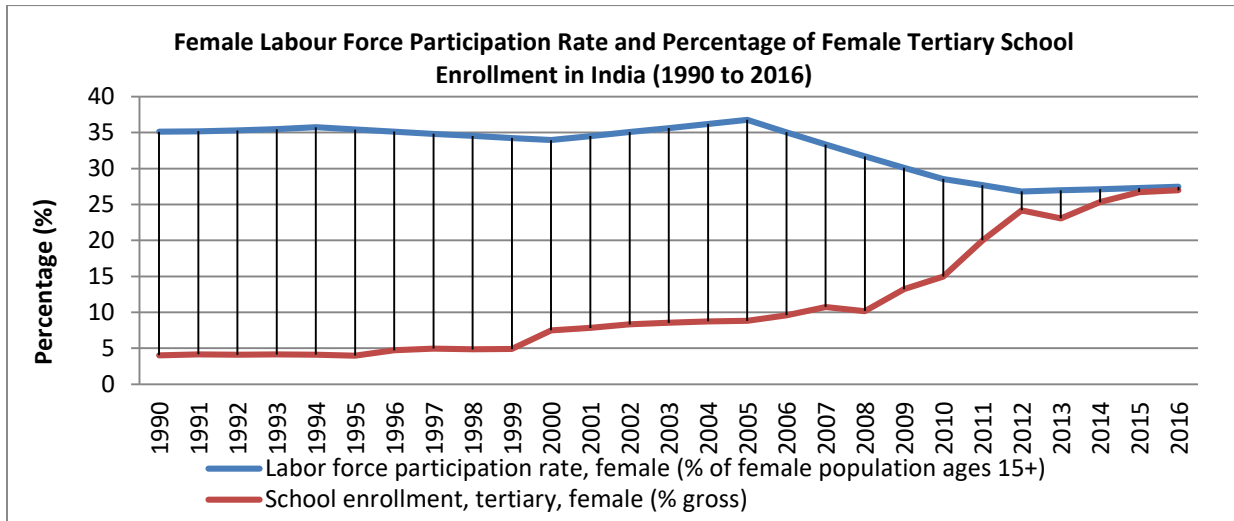
Source: World Development Indicators, World Bank

India's female labour force participation was 27 percent which is lower compare to world average (50 %) and much lower compare to its competitor China (63.9%). Nepal has very high female labour force participation rate i.e. 79.9% whereas Pakistan has 24.6% female labour force participation rate which is lower compare to India. Overall labour force participation rate in general is higher in rural areas¹ (54.7%) than in urban areas (47.2%). Moreover, 57% of employment, during the year 2015-16, given under the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) scheme in India, was to women. This further signifies a trend of increasing rural FLFP. However, there is no denying the fact the FLFP for India remains a point of contention, and economic and societal progress both remain linked to the number of women in the workforce (Economic Survey of India, 2016).

¹ <http://pib.nic.in/newsite/PrintRelease.aspx?relid=136875>

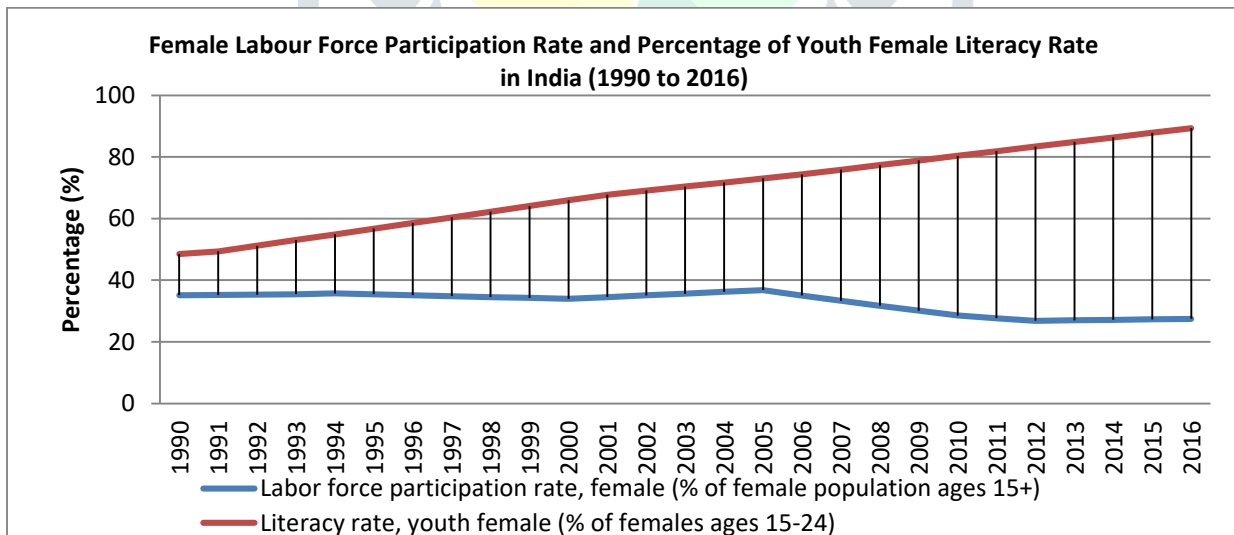
Interrelationships between Female Labour Force Participation Rate and Education

Education should lead to jobs; this logical link is broken in India. In rural India, 67% of girls who are graduates do not work. In towns and cities, 68.3% of women who graduate don't have paid jobs (UNDP, 2015). Even more inexplicably, women went missing from the workplace at precisely the same time that girls were making massive advances in education. In India, the enrolment rate of girls in elementary education is nearly 100%.



Source: World Development Indicators, World Bank

Female tertiary school enrollment in India has increased significantly from 4.03% to 26.96% during 1990 to 2016. During the same time period Literacy rate, youth female (% of females ages 15-24) has also increased significantly from 48.45% to 89.34%.



Source: World Development Indicators, World Bank

REVIEW OF LITERATURE

Declining in female labour force participation rate in India has been a dilemma for academicians, researches and policy makers. It is difficult to measure the participation of women in labour force;

because of the nature of the work they do i.e. home-based work, agricultural labour, etc. (Nigam Aditi, 2013).

Women in India are over-represented in certain occupations; about 26% women were engaged in elementary occupations, 19% women were associated with craft and related trade works and 11% women were working in sales and service along with technicians. Only 7% women workers were in administrative, executive and managerial occupations. There is a clear separation of women in sectors that are characterized by low wages, long hours and informal working engagements. Even within the sectors where women dominate, they rarely hold upper managerial posts and key positions (Yoshiteru Uramoto, 2013, Adapted from Nigam Aditi).

Despite being Indian women wish to join labour force in higher proportion but they are lagging behind in adequate skills, moreover social norms limiting their mobility. Women who work apart from agriculture are normally associated in informal sector and home-based occupation (Rohini Pande, Jennifer Johnson & Eric Dodge, 2016).

In India, there were four key factors which were responsible for declining in female labour force participation rate during recent years; (i) rising enrolment in secondary schooling (ii) increase in household incomes, which pulled women out of the agricultural labour (iii) mismeasurement of women's participation in the labour force and (iv) the lack of employment opportunities for women in the non-farm sector. Indian women with a graduate education have a 30% higher chance of being in regular salaried work in rural areas, and 20% higher probability in the case of urban areas in comparison to illiterate women (Dasgupta and Verick, 2016).

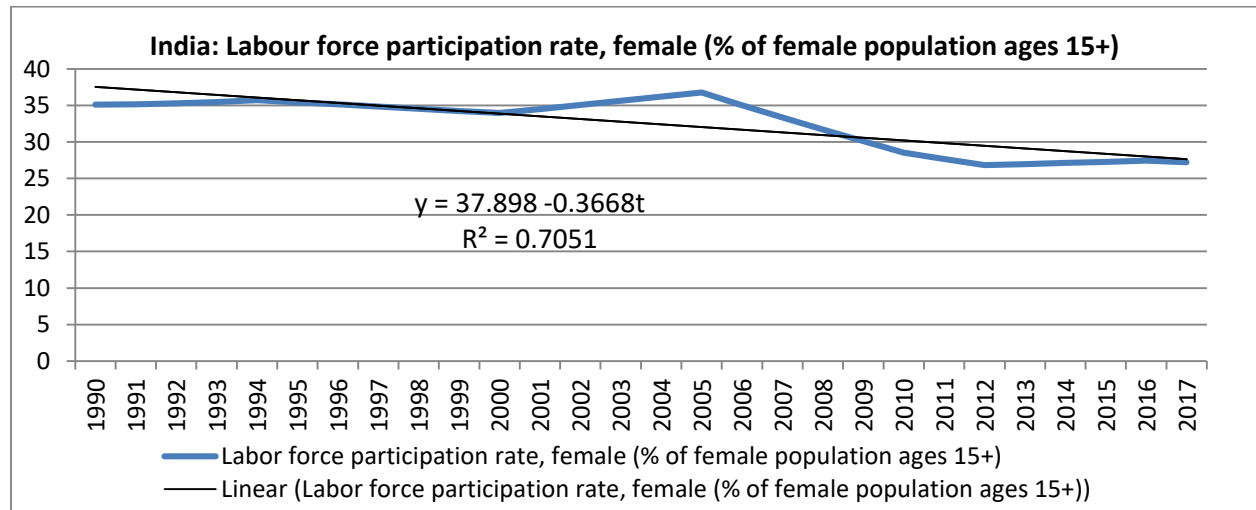
In India female labour force participation and education followed U-shaped pattern, with the lowest participation rates experienced by women with secondary schooling (Kapsos et al. 2016).

Reasons for Low and Declining Female Labour Force Participation Rate in India

World Bank has discussed and described various reasons for low and declining female labour force participation rate in India in its publication entitled 'India Development Updates: Unlocking Women's Potential' (World Bank, 2017). The reasons are as follows:

- (1) Around 30% decline in female labour force participation in India is due to younger women staying in school longer as both secondary and tertiary enrolment rate increased substantially.
- (2) Female labour force participation declines along the rural-urban gradation. It means as area become more urbanized, women who reside in those areas become less likely to work.
- (3) 42% of India's science and technology graduates are women; this is a significant 'brain drain' from modern service sector.
- (4) The female labour force participation rate for college graduate and above is only around 34%.
- (5) During 2009-10, the female labour force participation rate declined for women of all level of education compare to 2004-05
- (6) Jobs for Indian women remain primarily in agriculture sector. The share of women in service and industry is less than 20% which is lower compare to overall female labour force participation rate.
- (7) Women enter the workforce at older age and exit early. Nearly all men between the age group of 24-49 are in the labour force.
- (8) Among the working age (15+), only 25% of working age women work, compare to nearly 80% working age men in 2011-12.
- (9) During 2011-12, the female labour force participation rate declined for women of all ages compare to 2004-05.

Trends of Female Labour Force Participation Rate in India (1990 to 2016)



Labor force participation rate, female (% of female population ages 15+) in India has reduced from 31.11% in 1990 to 27.45% in 2016. During this time period Labor force participation rate, female (% of female population ages 15+) has declining trend. As per liner trend regression it has reduced by 0.366 percent every year. From 2012 onwards Labor force participation rate, female (% of female population ages 15+) in India has started increasing.

To know the exact direction and magnitude of association between above variables; Pearson correlation method has been applied. Following is the correlation matrix between Labor force participation rate, female (% of female population ages 15+) with (1) LN GDP (constant 2010 US\$) (2) Literacy rate, youth female (% of females ages 15-24) (3) LN GDP per capita, PPP (constant 2011 international \$) and (4) School enrollment, tertiary, female (% gross) during 1990 to 2016 in India.

Correlations						
		Labor force participation rate, female (% of female population ages 15+)	Literacy rate, youth female (% of females ages 15-24)	School enrollment, tertiary, female (% gross)	LN GDP (constant 2010 US\$)	LN GDP per capita, PPP (constant 2011 international \$)
Labor force participation rate, female (% of female population ages 15+)	Pearson Correlation	1	-.803**	-.929**	-.851**	-.868**

** . Correlation is significant at the 0.01 level (2-tailed). N = 27

Calculated value of correlation coefficient using Pearson method between Labor force participation rate, female (% of female population ages 15+) and LN GDP (constant 2010 US\$) is -0.851 whereas correlation coefficient between Labor force participation rate, female (% of female population ages 15+) and LN GDP per capita, PPP (constant 2011 international \$) is -0.868. Results of Pearson correlation coefficient suggests that there is strong negative linear correlation exists between Labor force participation rate, female (% of female population ages 15+) and LN GDP (constant 2010 US\$) and LN GDP per capita, PPP (constant 2011 international \$).

Correlation coefficient between Labor force participation rate, female (% of female population ages 15+) and School enrollment, tertiary, female (% gross) is -0.929; this means there is strong negative linear

correlation exists between Labor force participation rate, female (% of female population ages 15+) and School enrollment, tertiary, female (% gross) in India.

Correlation coefficient between Labor force participation rate, female (% of female population ages 15+) and Literacy rate, youth female (% of females ages 15-24) is -0.803; this indicates there is strong negative linear correlation exists between Labor force participation rate, female (% of female population ages 15+) and Literacy rate, youth female (% of females ages 15-24) in India. All the calculated correlation coefficients are statistically significant at 0.01 level; i.e. 99% confidence level.

Determinants of Female Labour Force Participation Rate (FLFPR) in India

Based on above review of literature and results of correlation analysis following determinants (explanatory / independent variables) have been used in liner regression analysis to estimate Labor force participation rate, female (% of female population ages 15+) – dependent variable - in India. Data for all the relevant variables have been taken from World Development Indicators, World Bank from 1990 to 2016 (See Appendix for data).

(1) LN GDP (constant 2010 US\$), (2) Literacy rate, youth female (% of females ages 15-24), (3) LN GDP per capita, PPP (constant 2011 international \$) and, (4) School enrollment, tertiary, female (% gross)

Two different regression model have been estimated separately for LN GDP (constant 2010 US\$) and LN GDP per capita, PPP (constant 2011 international \$).

Labor force participation rate, female (% of female population ages 15+) = $a \pm b_1$ LN GDP (constant 2010 US\$) $\pm b_2$ School enrollment, tertiary, female (% gross) $\pm b_3$ Literacy rate, youth female (% of females ages 15-24) ----- (Model -1)

Labor force participation rate, female (% of female population ages 15+) = $a \pm b_1$ LN GDP per capita, PPP (constant 2011 international \$) $\pm b_2$ School enrollment, tertiary, female (% gross) $\pm b_3$ Literacy rate, youth female (% of females ages 15-24) ----- (Model -2)

Results of Regression Analysis: Model – 1

Model - 1	Unstandardized Coefficients				F	Sig	Adjusted R Square
	B	Std. Error	t	Sig.			
(Constant)	377.971	142.072	2.660	.014	64.111	.000	.879
LN GDP (constant 2010 US\$)	-13.659	5.662	-2.412	.024			
School enrollment, tertiary, female (% gross)	-.293	.099	-2.970	.007			
Literacy rate, youth female (% of females ages 15-24)	.512	.201	2.548	.018			
Dependent Variable: Labor force participation rate, female (% of female population ages 15+)							

Value of Adjusted R Square in Model Summary suggests that about 87.9% variations in Labor force participation rate, female (% of female population ages 15+) in India are together explain by LN GDP per capita, PPP (constant 2011 international \$), School enrollment, tertiary, female (% gross) and Literacy rate, youth female (% of females ages 15-24). Estimated value of F Statistics is 64.11 and its associated significance value is .000 which is lower compare to 0.01; this suggests that model is specify correctly and all explanatory variable are meaningful in explaining variations in dependent variable at 99% confidence level.

Keeping School enrollment, tertiary, female (% gross) and Literacy rate, youth female (% of females ages 15-24) constant; 1 percent increase in LN GDP (constant 2010 US\$) will reduce Labor force participation rate, female (% of female population ages 15+) by 13.65. When LN GDP (constant 2010 US\$) and Literacy rate, youth female (% of females ages 15-24) remains constant; 1 percent increase in School enrollment, tertiary, female (% gross) will reduce Labor force participation rate, female (% of female population ages 15+) by .293. When LN GDP (constant 2010 US\$) and School enrollment, tertiary, female (% gross) remains constant; 1 percent increase in Literacy rate, youth female (% of females ages 15-24) will increase Labor force participation rate, female (% of female population ages 15+) by .512. Estimated value of t – statistics and associate significance level for all explanatory variables were less compare to 0.05; this suggests that all the estimated beta coefficients i.e. b_1 , b_2 and b_3 are statistically significant at 95% confidence level; it means they are non-zero.

Results of Regression Analysis: Model – 2:

Model - 2	Unstandardized Coefficients				F	Sig	Adjusted R Square
	B	Std. Error	t	Sig.			
(Constant)	122.490	36.536	3.353	.003	63.863	.000	.879
LN GDP per capita, PPP (constant 2011 international \$)	-14.032	5.867	-2.392	.025			
School enrollment, tertiary, female (% gross)	-.270	.107	-2.531	.019			
Literacy rate, youth female (% of females ages 15-24)	.369	.145	2.549	.018			
Dependent Variable: Labor force participation rate, female (% of female population ages 15+)							

Value of Adjusted R Square in Model Summary suggests that about 87.9% variations in Labor force participation rate, female (% of female population ages 15+) in India are together explain by LN GDP per capita, PPP (constant 2011 international \$), School enrollment, tertiary, female (% gross) and Literacy rate, youth female (% of females ages 15-24). Estimated value of F Statistics is 63.86 and its associated significance value is .000 which is lower compare to 0.01; this suggests that model is specify correctly and all explanatory variable are meaningful in explaining variations in dependent variable at 99% confidence level.

When School enrollment, tertiary, female (% gross) and Literacy rate, youth female (% of females ages 15-24) remains constant; 1 percent increase in LN GDP per capita, PPP (constant 2011 international \$) will reduce Labor force participation rate, female (% of female population ages 15+) by 14.03. When LN GDP per capita, PPP (constant 2011 international \$) and Literacy rate, youth female (% of females ages 15-24) remains constant; 1 percent increase in School enrollment, tertiary, female (% gross) will reduce Labor force participation rate, female (% of female population ages 15+) by .270. LN GDP per capita, PPP (constant 2011 international \$) and School enrollment, tertiary, female (% gross) remains constant; 1 percent increase in Literacy rate, youth female (% of females ages 15-24) will increase Labor force participation rate, female (% of female population ages 15+) by .369. Estimated value of t – statistics and associate significance level for all explanatory variables were less compare to 0.05; this suggests that all the estimated beta coefficients i.e. b_1 , b_2 and b_3 are statistically significant at 95% confidence level; it means they are non-zero.

CONCLUSION:

The aim is not only to increase participation of female in labour force, but to create environment, providing opportunities and freedom to women for decent and dignified work that will contribute significantly in economic empowerment and holistic development of women. This requires comprehensive approach for wider participation of women in the labour force.

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