Female Literacy: A Success Story of Maharashtra

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Executive Summary:

This paper makes in-depth study of the level of literacy among females and the extent of gender disparity in literacy in different districts of Maharashtra. This paper also shows causal links between various selected socio-economic and demographic variables on increase in female literacy rate. A crude projection has been made to predict the time required for 100 percent literacy in India, Maharashtra and in its different districts.

Introduction:

According to the National Institute for Literacy :"The Workforce Investment Act of 1998 defines literacy as 'an individual's ability to read, write, speak, compute and solve problems at levels of proficiency necessary to function on the job, in the family of the individual and in society.' The United Nations Development Programmes (UNDP's) Human Development report published every year, reflect that India is one of the least literate societies in the world with large rural-urban and male female disparities. The Constitutional amendment of 1976 included education in concurrent list (the official list of subjects for which the centre and states assume joint responsibility). This was an important step which called for a new sharing of responsibility between the union government and the states in this vital area of national importance. Female literacy is becoming important as growing research suggests that mothers play a central role in supporting children's education. Literate and educated mothers not only push their children to go to school, but are also able to help them with their school work when they do go to school. Therefore, it is argued, literate mothers are a strong weapon in the fight against illiteracy. Secondly, women have economic potential just as men do. If women remain illiterate, some of that economic potential is lost (as it is for men). Therefore, for a people or a nation to achieve development ideals, it is necessary that their female population be educated as well. Third point is that educated women tend to have fewer children than illiterate women.

Maharashtra is the third largest state in India, in terms of area (308 sq. km.) and second in terms of population (9,67,52,247 as per the 2001 census) which was 9.4 per cent of the total population (102.70 crore) of India. District-wise area, population density, sex ratio, proportion of scheduled castes, scheduled tribes, female literacy rate; infant mortality rate (IMR), Total Fertility Rate, Mean Age of Marriage shows inter-state inequalities of the region.

The districts are uniform neither in area nor in the distribution of population. The coefficient of variation (CV), which measures the extent of variation, is very high for the population, population density, the percentage of SC population as well as the percentage of ST population whereas CV is

very low in case of female literacy, infant and child mortality, the mean age at marriage and TFR in the districts of Maharashtra(See Appendix-1).

In this paper, an attempt has been made to discuss gender disparities in literacy in Maharashtra state. The first task is to measure the extent of existing gender inequalities in education and then identify the lagging districts so that micro level planning can be initiated to correct the imbalances. This involves the following: evaluating the educational development among females; measure inter-districts inequalities in female education and assessing the impact of female literacy on various socio-economic and demographic variables.

Levels of literacy among females:

In this unit, an attempt has been made to assess the trends in the female literacy levels and make a comparative analysis across different districts of the state. Female literacy rate of Maharashtra state is 67.03 percent in census 2001 which is above Economical national average of 65.4% and below 80 % (high literacy rate). According to Bowan and Anderson, a 40% literacy rate may be regarded as the general threshold for economic development. On this basis, the districts of Maharashtra state have been classified into four levels of literacy development. Districts with a literacy rate of up to 40 percent are said to be at a low level; those with 40-55 percent are considered to be at middle level; those having 55-70 percent literacy are regarded as having a high level of literacy development and those with 70 percent and above are considered to be at a very high level. This classification would help in analyzing the diversified patterns of literacy development among females which is presented in Table-I as per census 1991 and 2001.

On the positive side, when compared over two decades the census literacy figures suggest a remarkable growth in literacy

Table I: Frequency Distribution of districts by levels of female literacy over 1991 and 2001

Literacy Range In Percentage	FLR_!991	FLR_2001
Upto 40	Nandurbar, Dhule, Gadchiroli, Nanded, Hingoli, Prabhani, Jalna, Aurangabad, Bid, Latur, Osmanabad	
40-55	Jalgaon, Buldhana, Akola, Washim, Bhandara, Gondiya, Chandrapur, Nashik,Yavatmal,Raigad, Ahmadnagar, Solapur, Satara, Ratnagiri, Kolhapur,Sangli	Nandurbar, Gadchiroli, Hingoli, Prabhani, Jalna

| 55-70 | Amravati, Wardha, Nagpur,Thane, Pune, Sindhudurg | Dhule ,Jalgaon, Buldhana, Washim, Bhandara, Gondiya, Chandrapur, Yavatmal, Nanded, Aurangabad, Nashik, Raigad, Ahmadnagar, Bid, Latur, Osmanabad, Solapur, Satara, Ratnagiri, Kolhapur, Sangli |
| 70 onwards | Mumbai(Suburban), Mumbai | Akola, Wardha, Amravati, Nagpur, Thane, Mumbai(Suburban), Mumbai, Pune, Sindhudurg |

The Female literacy rate of 11 districts were around the threshold level in 1991 but which was crossed by all these districts within a decade showing a silver lining in the area of female education. In 1991, there were only two districts in very high literacy range which was changed to nine districts in 2001.

Disparities in Education:
In this unit, an attempt has been made to study the extent of male female educational disparity in the Maharashtra state. To measure this, tool suggested by Mahalanobis and Rao to Kothari Commission is used.

Disparity Index= FLR / MLR; where FLR= female literacy rate, MLR= male literacy rate

In case there is no disparity, the value is unity. Any deviation from the value of one is a measure of disparity. If the value is less than one, the disparity is in favour of males, which is generally observed. A value larger than one shows disparity in favour of females. Hence, it may be said that a higher degree of inequality corresponds to a lower level of social welfare.

The female literacy rate has increased from 52.32% in 1991 to 67.51% in 2001, an increase of 15.19% whereas the male literacy rate has been increased from 76.56% in 1991 to 86.27% in 2001, an increase of 9.71%. This means that in last 10 years, the female literacy rate has grown at much faster clip than the male literacy rate. This has resulted in the narrowing down the gender gap in literacy from 24.24% in 1991 to 18.76% in 2001.However the improvement in literacy rates is not uniform across all the districts (Fig.I).

Figure I: Gender Disparity in Education
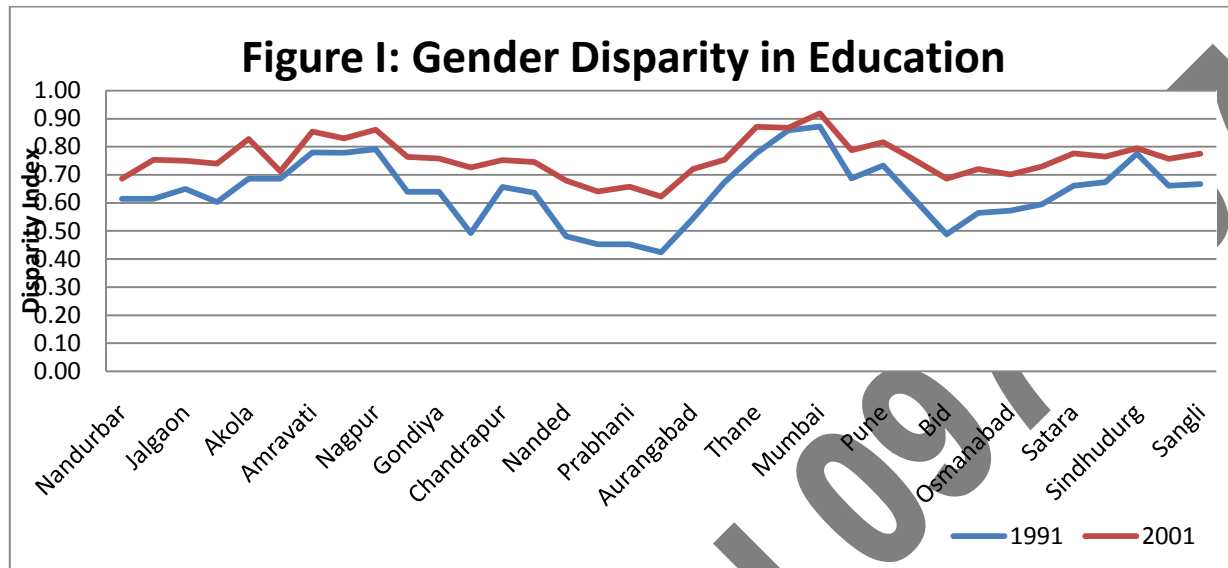
In 1991, only six districts of Maharashtra showed a high level of disparity, with female literacy being less than or equal to half the male literacy rate. Twenty one districts out of 35 districts in the region have shown a medium level of disparity, where the female literacy rate is more than half the male literacy rate, but below70% and eight districts have recorded a low level of disparity. In 2001, there was no district in Maharashtra state with high level of disparity. All the 29 districts were in low band whereas six districts were in medium band (Fig. I).

Impact of Female Literacy:

Several studies reported that determinants of female literacy vary from country to country, continent to continent, developed countries to developing countries and even within a country or state; it varies depending on the socio-economic, demographic factors. In this unit, an attempt is made to find out the factors associated with the rise in literacy level among females. For this stepwise multiple regression analysis has been used for all the districts of Maharashtra. Here the dependent variable is Female Literacy Rate and the set of nine independent variables includes male literacy rate(MLR), work participation rate of main and marginal female workers(FWR),Total Fertility Rate(TFR),Mean Age of Marriage(MAM), Infant Mortality rate(IMR), Per Capita District Domestic Product, People Below Poverty Line(BPL),Mean Number of Births(MNB),Percentage of Urban Population (PUrban).

The following model was found to be good fit:
FLR= -10.098+0.872 (MLR)-0.331(FWPR)-4.023(TFR) +1.160(MAM)

The research hypothesis for the F test claims that there is some predictive relationship between the X variables (independent) and Y variable (dependent) in the population.

ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2650.099	4	662.525	136.611	.000(a)
	Residual	145.491	30	4.850		
	Total	2795.590	34			

a Predictors: (Constant), mam, FWPR, MLR, TFR
b : Dependent Variable: FLR

Since the p-value found to be less than 0.05, hence the result found to be significant for the model.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.974(a)	.948	.941	2.20220

a Predictors: (Constant), mam, FWPR, MLR, TFR

R square value and adjusted R square value are almost same for the model as well as standard error of estimate is small for the model. Hence model found to be significant.


Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-10.098	18.224		-.554	.584
	MLR	.872	.105	.504	8.333	.000
	FWPR	-.331	.057	-.280	-5.779	.000
	TFR	-4.023	1.764	-.204	-2.281	.030
	MAM	1.160	.551	.174	2.104	.044

a Dependent Variable: FLR

The t test for each coefficient found to be significant in the model.
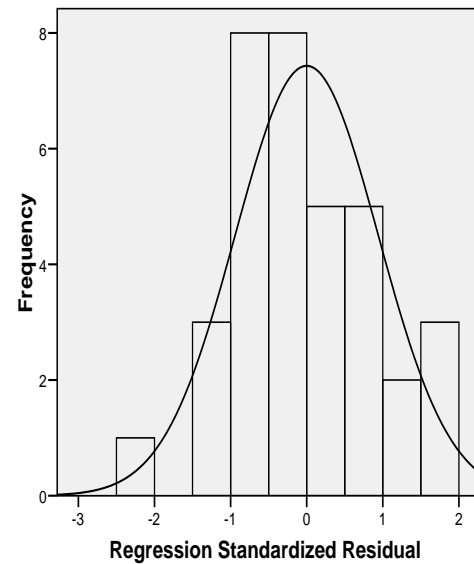
Scatter Plot

Dependent Variable: FLR
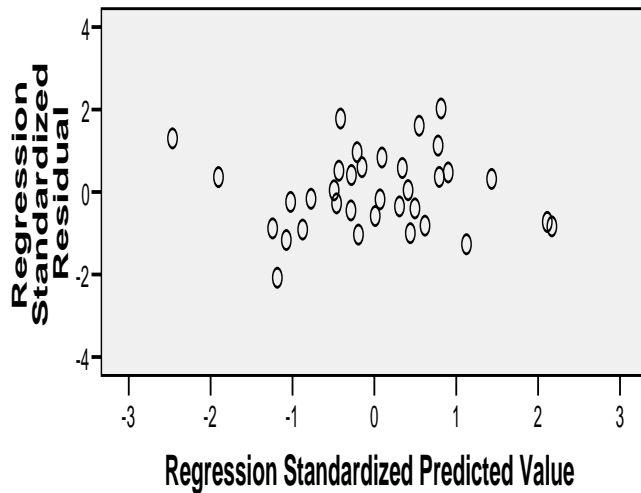
Histogram

Dependent Variable: FLR

The diagnostic plot shows no relationship. No problems are indicated. Some improvements may still be possible but the diagnostic plot cannot detect them.

Results: Factors responsible for increase in female literacy rate are increasing male literacy rate, slowly decreasing female work participation as marginal and main worker, decreasing total fertility rate and increasing mean age at marriage.

Projections

Complete literacy among the population aged seven and above is one of the major goals of the new education policy. It is interesting to estimate how long it would take to achieve the goal, known the past trends. In this unit, a crude projection has been made for all India, Maharashtra and districts of this state to achieve 100% female literacy rate.

Tool suggested by Sharma and Retherford in 1987 has been used to know the number of decade require achieving complete literacy, which is (100-X2)/(X2-X1) where X1 and X2 denote the literacy rates in 1991 and 2001 respectively. The projections are based on the trends observed in literacy among the population aged 7 years and above observed between 1991 and 2001 assuming that during each decade, it will increase in constant proportion.

The rough calculation shows that India will take 30 years to achieve full literacy whereas Maharashtra requires around 21 years. Nandurbar would take longest period of 80 years followed by sindhudurp (60 years), Amravati (50 years) for full female literacy. Akola will achieve the same by 2013 and rest of the districts will achieve in another 2 to 3 decades.

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Appendix-1

	Total Population	Dec.growth rate	Sex Ratio	Density	%SC Population
Coefficient of variation	68.82966349	44.13566311	6.151421	328.184	40.98336365
	%ST Population	**FLR**	**TFR**	**IMR**	**MAM**
	100.6255368	13.07351419	16.8934	23.812	6.995685445