

RESEARCH ARTICLE

Development and Growth of Women Empowerment of Selected Indicators in West Bengal- An Empirical Study

Amrita Mukhuti¹, Somnath Mukhuti^{2*} Swagata Chakraborty³

¹Falakata Subhas Girls High School, Falakata, Alipurduar, West Bengal, India.

²Department of Commerce, Azad Hind Fouz Smriti Mahavidyalaya, Domjur, Howrah, West. Bengal, India.

³Department of History, University of Kalyani, Kalyani, Nadia, West Bengal, Bengal, India.

*Corresponding Author Email: mukhuti.edu@gmail.com

Abstract: Women empowerment is radically the route of increasing and progression of woman's position of mainly in financial, political, educational and social stage. Literacy and Education is considered as the main driving force of development for a nation. For improvement of women's are capable to take breaths without any fear of authoritarianism, indecision, exploitation, inequality-injustice and the common thinking of abuse and violence with women in a conventionally male dominated formation. The present research work mainly focuses on the development and growth of women on the basis of education and literacy, relationship between female literacy and sex ratio district wise, growth of women on the basis of economic conditions and the different areas of working and non-working women district wise in West Bengal. This study is based on both primary and secondary data obtained from many Block Development offices and Gram Panchayets and different websites. A complete scenario is made and recommendations for improving the overall condition and for further research are made. In the course of analysis, on the basis of total literacy rate (both male and female), maximum increased in Murshidabad district and women literacy rate was increased in Maldah district. Both undergraduate and post graduate level women enrolment is undergraduate education levels. Ranking wise top three districts are Kolkata 84.6%, Purba Medinipur 81.37% and North 24 Parganas 80.34% respectively. Spearman Correlation Coefficient results shows the two variables would not be well thought-out statistically significant or some negative correlation between the variables. Similarly, by using Pearson's Correlation Coefficient observed that there is a negative Correlation between the literacy and sex. Female working parameters and literacy rate as per 2011 census, positive relationship is observed i.e. r of LR and MW and r of LR and OW but the negative relationship is found with r of LR and C, r of LR and AL, r of LR and HI and r of LR and MGW.

Keywords: *Empowerment, Female Literacy and Sex/Gender Ratio, Economic Empowerment, Correlation Statistics.*

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Introduction

The word 'empowerment' means the authority or given power to someone to do something efficiently. The famous American Diplomat and politician **Hillary Diane Rodham Clinton** said regarding economic empowerment of women-"when women participate in the economy, everyone benefits" and also indicated 'Women are the largest untapped reservoir of talent in the world'.

Similarly, **Margaret Hilda Thatcher** who was a leader of the British conservative party and former Prime Minister believed and said that 'If you want something said, ask a man; if you want something done, ask a woman'.

So, women's and empowerment of women are most important in present day's not only national stage but also international stages for all types of efforts and job such as education, science and technology, social culture, politics, media, service sectors etc. Empowerment is clarified as the processes by which women take control and possession of their lives from end to end growth of their preferences [1].

Nowadays, economic developments of such marginalized citizen who don't have right to utilize the opportunities for becoming self-sufficient; have no other substitute except to depend on aid or benefit. Now, globalisation

in new generalised terms, is dominating the world socio-economic circumstances for the past two decades. Economic empowerment of women is a sensible requirement for sustainable development and overall progression, growth and the achievement of rural areas of the country [2]. In West Bengal, many women have engaged primarily in rural areas with self-help groups (SHGs), underdeveloped NGOs, PACs (Primary Agricultural Credit Societies), small female cooperative societies etc. and urban areas, most active women have apparent sensible to elevated stages on joint helpfulness, positive feelings, self-confident and self-efficacy by the way of insignificant intellectual and emotional distress.

Income generation activity of NGO, SHGs and PACs raises economic empowerment and mainly highly empowerment of women in government organisation or sector [3].

It increases women's right to use to profitable resources and chances as well as careers, services, property and other creative assets, skills development and market information. A Pakistani activist for female education and the youngest Nobel Prize laureate, **Malala Yousafzai** said 'I rise up my voice – not so I can shout, but so those without a voice can be heard, we cannot succeed when half of us are held back'.

Women Empowerment-West Bengal

In early 1950s in West Bengal, moderately well in urban areas however the socio-economic position of rural women was very poor.

There was no literacy and higher education also, no personal income level and early marriage was very popular in anywhere. But these scenarios turned out to be change slowly. Various programmes and schemes were taken in favour of women safety, welfare and empowerment by Government of West Bengal [4].

After 2011, **Chief Minister of West Bengal Mamata Banerjee** highlighted the great success of the 'Kanyashree Prakalpa' scheme for empowering the rural women of the state. It seeks to improve the status and well being of girls, specifically those from socio-economically backward families.

The main point of views is that,

- Pay some incentives to continue in education for long time and complete secondary or higher secondary education or corresponding in technical or vocational programs.
- Discouraging early and illegal marriage till at least the 18 years of age.
- The legal age of marriage for reducing the risks of early pregnancies, associated risks of maternal and child mortality and other weakening health conditions including those of undernourishment.
- It was also decided that the plan should confer more than just monetary support. It means of financial inclusion and an instrument for teenage girls empowerment.

Kanyashree Prakalpa, Government of West Bengal



Source: <https://wb.gov.in>, <https://www.google.co.in> search by 'Kanyashree Prakalpa'

Another scheme of 'Anandadhara' commenced in 2012, it was an anti-poverty programme for rural poor women, implemented all the way through organising of women into self-help groups (SHG). The

main aim of this scheme was to organize the rural poor and weak people into self-managed institutions and maintain them in support of livelihood collectives (Economics Times News, October, 2018).



Source: <http://www.wbprd.gov.in>

In the year 2013, 'Muktidhara'-a sustainable livelihood project was started. The major plan was to reduce the dependency of the livelihood of rural people on selling fuel wood by addressing concerns pertaining to

mono-cropping practices, traditional methods of cultivation, food sufficiency of rural families, effective market linkages and seasonal migration of farmers.



Source: <https://wb.gov.in>

Women Empowerment: Major Schemes of West Bengal

Except 'Kanyashree Prakalpa' Government of West Bengal has taken concerning several major initiatives for women. As a result,

- Urses, community health, readymade garment-making, wood carving, etc.

women have much benefitted all over the State.

- State Government's 'Sabuj Sathi' Scheme.
- 'Swabalamban' Scheme is a wide range of livelihood activities, e.g., zari craft, handloom weaving, beautician co



Source: <http://www.wbprd.gov.in>

- **Muktir Alo'** is a comprehensive scheme for the rehabilitation of sex workers.
- **'Maternity and Child Care Leave,'** for a total period of two years.

Many **self-help groups (SHGs)** have been formed. The State has also created employment opportunities, including many for women, through skill development in various sectors. A lot of the handicraft workers in the rural areas are women who are earning a decent livelihood. **Women's**

participation in MGNREGS, in which the State has achieved unique milestones, has increased to 41%, which is all-time high in the State.

Population Density: India and West Bengal

Total area of West Bengal is 88752 square kilometres. Density is **1,028** per square kilometres. As per report, population of West Bengal in 2018 is 9.88 Crore. In North 24 Parganas, The maximum population is more than 1 crore and lowest population is Dakshin Dinajpur that is 16, 70,931.

Table 1: Population Density: India and West Bengal

Year	India	West Bengal
1991	273	767
2001	324	904
2011	382	1028

Source: Economic Review, Government of West Bengal <http://censusindia.gov.in>

In 2017 it was 98,945,546 but now, at present West Bengal is the fourth most crowded state in India with a population of 100,193,142

(100million). Kolkata metropolitan area remains the most densely populated region in the state.

Table 2: Population Density of West Bengal (District wise as per 2011 census)

Districts	Total	Males	Females	Density of Population	Ranking
West Bengal					
Darjeeling	18,42,034	9,34,796	9,07,238	585	17
Jalpaiguri	38,69,675	19,80,068	18,89,607	621	16
Coochbehar	28,22,780	14,53,590	13,69,190	833	11
Uttar Dinajpur	30,00,849	15,50,219	14,50,630	956	10
Dakshin Dinajpur	16,70,931	8,55,104	8,15,827	753	14
Maldah	39,97,970	20,61,593	19,36,377	1071	9
Murshidabad	71,02,430	36,29,595	34,72,835	1334	5
Birbhum	35,02,387	17,91,017	17,11,370	771	13
Bardhaman	77,23,663	39,75,356	37,48,307	1100	7
Nadia	51,68,488	26,55,056	25,13,432	1316	6
North 24 Parganas	1,00,82,852	51,72,138	49,10,714	2463	3
South 24 Parganas	81,53,176	41,82,758	39,70,418	819	12
Hooghly	55,20,389	28,19,100	27,01,289	1753	4
Bunkura	35,96,292	18,40,504	17,55,788	523	18
Purulia	29,27,965	14,97,656	14,30,309	468	19
Howrah	48,41,638	25,02,453	23,39,185	3300	2
Kolkata	44,86,679	23,62,662	21,24,017	24252	1
Purba Medinipur	50,94,238	26,31,094	24,63,144	1076	8
Paschim Medinipur	59,43,300	30,32,630	29,10,670	636	15

Source: www.census2011.co.in

In Table 2, as per 2011 census, maximum density of population is Kolkata (24252), second Howrah district (3300) and third North 24 paraganas (2463). However, the maximum population is North 24 paraganas

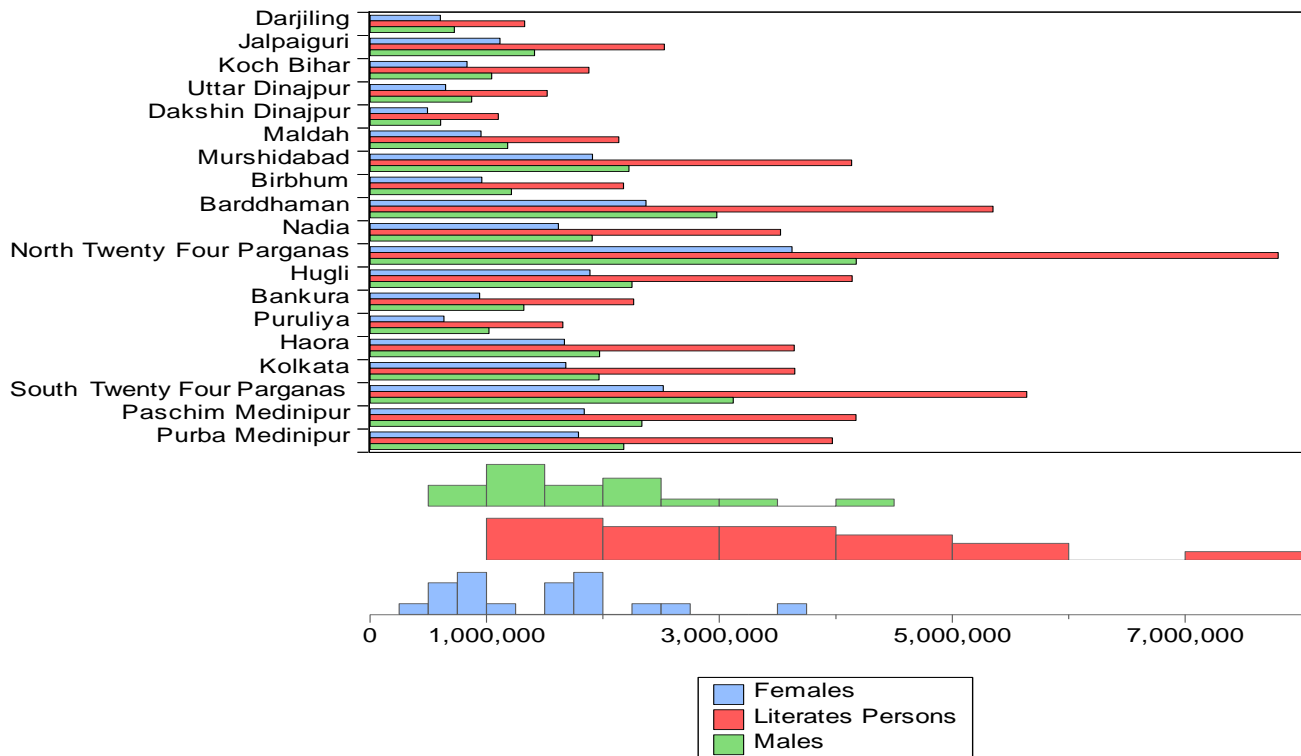
and lowest population Dakshin Dinajpur, as per density of population, Dakshin Dinajpur rank is 14. In Table-3, the maximum literate women are North 24 Parganas and lowest is Dakshin Dinajpur.

Table 3: Population in West Bengal (Literacy as per 2011 census)

Districts	Total Persons	Males	Females
West Bengal			
Darjeeling	13,28,218	7,23,711	6,04,507
Jalpaiguri	25,27,018	14,12,065	11,14,953
Coochbehar	18,79,984	10,45,903	8,34,081
Uttar Dinajpur	15,21,933	8,72,285	6,49,648
Dakshin Dinajpur	11,02,355	6,07,992	4,94,363
Maldah	21,36,898	11,82,672	9,54,226
Murshidabad	41,34,584	22,23,237	19,11,347
Birbhum	21,75,923	12,14,772	9,61,151

Bardhaman	53,50,197	29,79,074	23,71,123
Nadia	35,24,073	19,06,966	16,17,107
North 24 Parganas	77,98,722	41,74,559	36,24,163
South 24 Parganas	56,39,112	31,20,200	25,18,912
Hooghly	41,40,487	22,50,780	18,89,707
Bunkura	22,64,013	13,21,794	9,42,219
Purulia	16,56,940	10,21,455	6,35,485
Howrah	36,42,617	19,72,282	16,70,335
Kolkata	36,48,210	19,66,122	16,82,088
Purba Medinipur	41,73,522	23,33,679	18,39,843
Paschim Medinipur	39,69,750	21,78,611	17,91,139
Average	32,95,503	18,16,219	14,79,284

Source: www.census2011.co.in



Source: Authors own calculation using E-Views

Male-Female Literate Population in West Bengal District wise

Literature Review

A brief review of the different research areas regarding this field is attempted in the following paragraphs; firstly, on the basis of the financial, economic and social impact of microfinance really creates powerful women,

Pitt and Khandker [5], Bardhan and Klasen [6], Dijkstra [7], Malhotra and Schuler [8], Pitt et al [5]. The important issues of empowerment generation related Devika and Thampi [9], Deininger and Liu [10], Lal. Shiva Kumar [11] initiated the issues and challenges in empowerment of women through their participation in the Panchayet Raj Institution and covering in Allahabad district of Uttar Pradesh.

Mukherjee [12] conducted the term empowerment of women has different meanings in different socio-cultural and political contexts and should not forget that

history in a witness to the women who have in the past demonstrated unique leadership capabilities. Razia Sultana, Rani of Jhansi Laxmibai, Sarojini Naidu, Mother Teresa, and Indira Gandhi is the examples of women empowerment.

The **Cairo conference in 1994** organized by United Nation on Population and Development called attention to women's empowerment as a central focus and UNDP developed the Gender Empowerment Measure (GEM) which spotlights on three variables so as to replicate women's involvement in the society in all facets. 1995 UNDP complete report was dedicated to women's empowerment.

The intervention strategy for empowering women to have knowledgeable and useful alternatives on their physical condition and nutrition and for the growth of children and young people has to be multi-pronged. Such as, Antyodaya Anna Yojana in the year 2000,

National Rural Health Mission Programme in the year 2005 and for mothers, Janani Suraksha Scheme, 2005, Indira Sahara in the year 2000, Chief Minister Antodaya Pusthaar Scheme, 2009, by law Hindu Succession Act, 1995, Rashtriya Mahila Kosh for the act of 1993, Apna Beti Apna Dhan Scheme, 1994, Kamdhenu Scheme in Maharashtra state, All Girls Child Protection Scheme, in Andhra Pradesh state etc.

Chaudhary et al [13] mainly stated that three types of major approaches of women empowerment that is integrated growth and development approach, careful raising approach and monetary empowerment approach. Mainuddin [14] examined the education and women's contribution in Indian economy. This paper conducted the work participation rate (WPR) of women in Indian states based on the census conducted in 2001. Rajib Sen [15] explained the women's political participation through panchayati raj institution in West Bengal.

Das *et al* [16] investigated the impact of women self-help groups (SHGs) on rural entrepreneurship development. The area of this study is based on selected areas of West Bengal.

Sabharwal [17] introduced from the margin to the mainstream: micro- finance programmes and women empowerment: the Bangladesh experience. **Other** introduced the measure of gender inequality which criticized. Bhattacharya [18] explained the survey of empowerment of women.

Similarly, **Sen (**)** study on "Women's Political Participation through Panchayati Raj Institution in West Bengal" observed different points like India as well as international condition of women, evidence of disparities faced by women in Indian politics, women participation in local governments, panchayats and Gram Sansads meetings in West Bengal.

Sarkar [19] initiated the recent status of education, employment and empowerment of women in West Bengal. Ghosh, Chakravarti and Manshi [20] explained the Women's empowerment and education: Panchayats and women's Self-help Groups in India.

They discussed the most important steps for the empowerment of women; the Indian government gave constitutional status to Panchayati Raj institutions and reserved 33 percent of the seats in Panchayats for women. They additionally indicated that women were organized into Self-help Groups to mark the

beginning of a major process of empowering women. Prof. M. K. Ghadoliya entitled the topic of study, "Empowering women through self -help groups: Role of distance education" describes self-help groups as an instrument of economic empowerment and the study also indicates the success of any strategy of women empowerment depends upon some factors.

These factors are Level of education, hard work, Social custom, Family planning, small family, Health, medical services, cleanliness, Environment, tree growing, and kitchen gardening. This study examined the empowerment of women with respect of standard of living, economic class, status, development and growth of women on the basis of education in West Bengal. Furthermore, in this study, It has also been discussed the empowerment of women through participation in SHGs mainly who are disadvantaged groups and socially and economically backward.

Research Problem and Gap

Several facets of women empowerment have been investigated by different researchers of instance the psychological aspects of entrepreneurial behaviour. Several researches have been carried on characteristics, motivation and constrains of women entrepreneurship process, analysis based on a particular area and general entrepreneurship. But there is no review of literature revealed the economic status, women based on density of population, educational status and implemented schemes regarding girls and development related to women empowerment directly.

Objectives of the Study

The main objective of the present work is to make a study on the overall economic, financial, political, educational and social empowerment of women in West Bengal. Based on the study, suggestions and recommendations are made for the improvement of the scenario. More specifically, it seeks to dwell upon mainly the three following major issues:

- To study the development and growth of women on the basis of education and literacy.
- To examine the relationship between female literacy and sex ratio district wise.
- To study the development and growth of women on the basis of economic conditions.

- To study the different areas of working and non-working women district wise in West Bengal.

Research Methodology

The present research work is based on both qualitative and quantitative data and information in nature by understanding the female literacy and sex ratio. Similarly, some secondary data has used for comparing economic status, poverty, social and economic factors of women empowerment.

Data Source

All data and information are both primary and secondary based on 2011 census obtained from various important websites and databases i.e. censusindia.gov.in, planningcommission.nic.in, labourbureau.nic.in and bengalchamber.com.

Empowerment Indicators

This study is based on some important factor i.e. education and literacy, female workers and self-help group including financial inclusion. Development of women education has been discussed through the literacy rate of women in West Bengal, Gross Enrolment Ratio (GER) in school level, and Gross Enrolment Ratio (GER) in level of higher education.

Statistical Tools

Arithmetic Mean or Average, Spearman's correlation coefficient and rank correlation methodology, District wise growth of literacy rate as per census 2001 to 2011, average or mean has been considered.

$$\bar{X} = D_1 + D_2 + D_3 + D_4 + \dots + D_{19} / N$$

\bar{X} = Average/Mean, D₁= District Number-1, N= Total Number of Districts

Correlation between female Literacy and Sex

Ratio as per 2011 census, the data has been calculated using Spearman's correlation coefficient and rank correlation methodology. The following formula has been used:

$$\rho = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

Comparing female Literacy and Sex Ratio as per 2011 census, Pearson's correlation coefficient methodology also has been used in this study. The following formula has been used:

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

Or,

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n(\sum x^2) - (\sum x)^2][n(\sum y^2) - (\sum y)^2]}}$$

Calculation of simple correlation values using the following equation;

$$r = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N\sum x^2 - (\sum x)^2][N\sum y^2 - (\sum y)^2]}}$$

Women Empowerment through Education and Literacy

District wise Literacy Rate (Census 2001 to 2011)

Women's education in West Bengal has also been a most important concern of equally the state government and common society as well-informed women can occupy a very significant character in the development of the country. Since independence the position of males and females literacy rate was not satisfactory level but day-by-day it was very fast increased. It is not just helps to development of part of human resources, however in getting better the value of life at residence and the outside.

Table 4: Literacy Rate in West Bengal (District wise)

Districts	Literacy Rates (%) as per 2001 census			Literacy Rates (%) as per 2011 census			Difference or Changes		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Darjeeling	72.86	81.25	63.92	79.92	85.61	73.33	7.06	4.36	9.41
Jalpaiguri	63.62	73.64	52.90	73.79	79.95	66.23	10.17	6.31	13.33
Coochbehar	67.21	76.82	57.04	75.48	80.71	68.49	8.27	3.89	11.45
Uttar Dinajpur	48.63	59.27	37.16	60.12	65.52	52.17	11.49	6.25	15.01
Dakshin Dinajpur	64.64	73.30	55.12	73.86	78.37	67.03	9.22	5.07	11.91
Maldah	50.71	59.24	41.67	62.71	66.24	56.96	12	7	15.29
Murshidabad	55.05	61.40	48.33	67.53	69.95	63.07	12.48	8.55	14.74

Birbhum	62.13	71.57	52.21	70.90	76.92	64.14	8.77	5.35	11.93
Barddhaman	71.02	79.30	61.91	77.15	82.42	69.63	6.13	3.12	7.72
Nadia	66.55	72.67	60.06	75.50	78.75	70.98	8.95	6.08	10.92
North Parganas	24 78.49	84.35	72.13	84.95	87.95	80.34	6.46	3.6	8.21
South Parganas	24 70.16	79.89	59.73	78.57	83.35	71.40	8.41	3.46	11.67
Hooghly	75.59	83.05	67.72	82.55	87.03	76.35	6.96	3.98	8.63
Bunkura	63.84	77.21	49.80	70.95	80.05	60.05	7.11	2.84	10.25
Purulia	56.14	74.18	37.15	65.38	77.86	50.52	9.24	3.68	13.37
Howrah	77.64	83.68	70.93	83.85	86.95	79.43	6.21	3.27	8.5
Kolkata	83.31	84.07	77.95	87.14	88.34	84.06	3.83	4.27	6.11
Purba Medinipur	80.16	83.17	67.55	87.02	92.32	81.37	6.86	9.15	13.82
Paschim Medinipur	70.41	77.66	61.21	78.00	85.26	70.50	7.59	7.6	9.29
Mean (\bar{X})	67.30	75.56	57.60	75.55	80.71	68.74	8.27	5.15	11.13
Maximum	83.31	84.35	77.95	87.14	92.32	84.06	12.48	9.15	15.29
Minimum	48.63	59.24	37.15	60.12	65.52	50.52	3.83	2.84	6.11

Source: Census of India (2011) and own calculation
https://en.wikipedia.org/wiki/List_of_West_Bengal_districts_ranked_by_literacy_rate

Educated women not only tend to promote the education of their girl children, but also can provide better guidance to all their children. In 2011 census, literacy rate has been developed a very significant level as per average males 80.71 percent and females 68.74 percent than the previous year literacy rates i.e. males 75.56 percent and females 57.60 percent. In Table-2.1, on the basis of total literacy rate (both male and female), maximum increased in Murshidabad district (12.48%) and lowest percentage increased in Kolkata (3.83%) as per comparison of census report 2001 to 2011.

Similarly, the main focus of the study that is women literacy rate was increased in Maldah district (15.29%) and lowest in Kolkata (6.11%) as per report. Overall in this study, more than 10% female literacy rate increased in various districts in West Bengal for an example of Murshidabad district i.e. (15.01%). The percentage of male and female literacy rates compare to total values as per 2001 and 2011 census has shown graphically in chart-1 and chart-2. This is the clear view point based on objectives of the study.

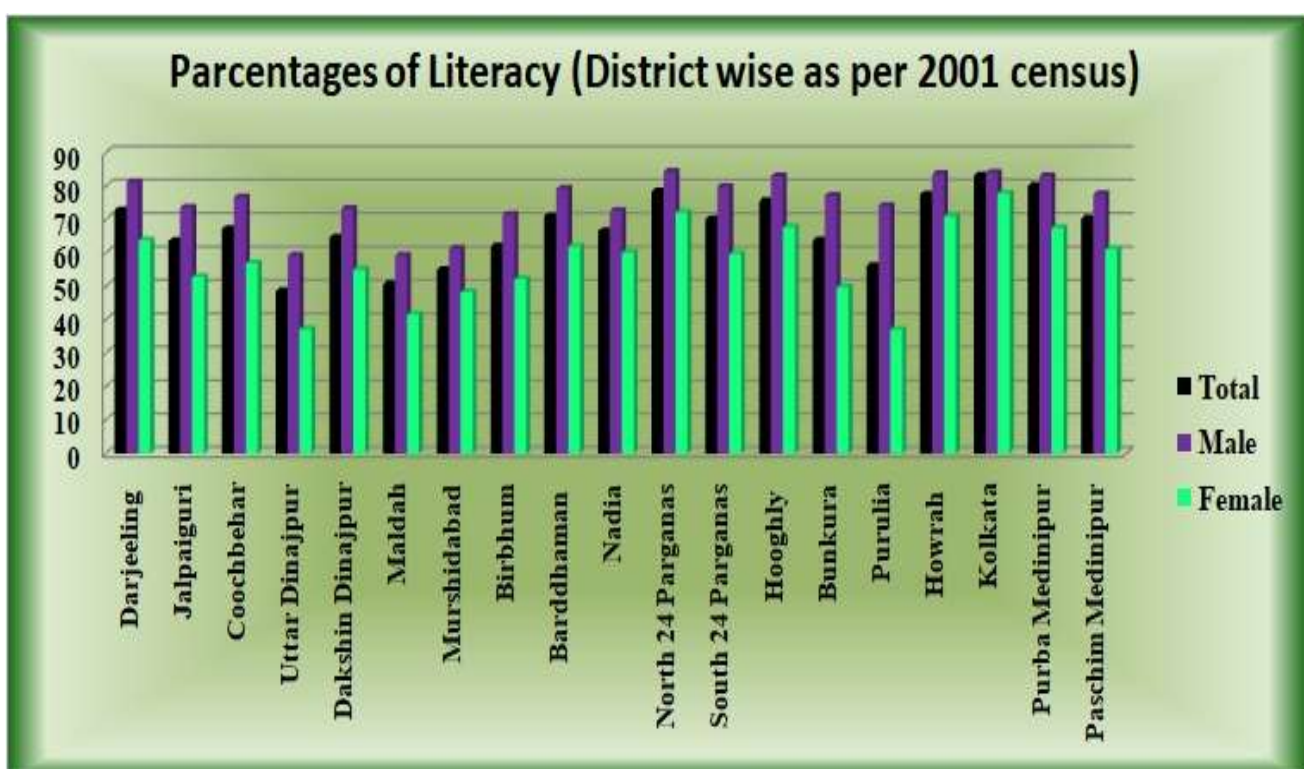


Chart 1: Literacy Rates (%) as per 2001 census

Source: Author's own contribution

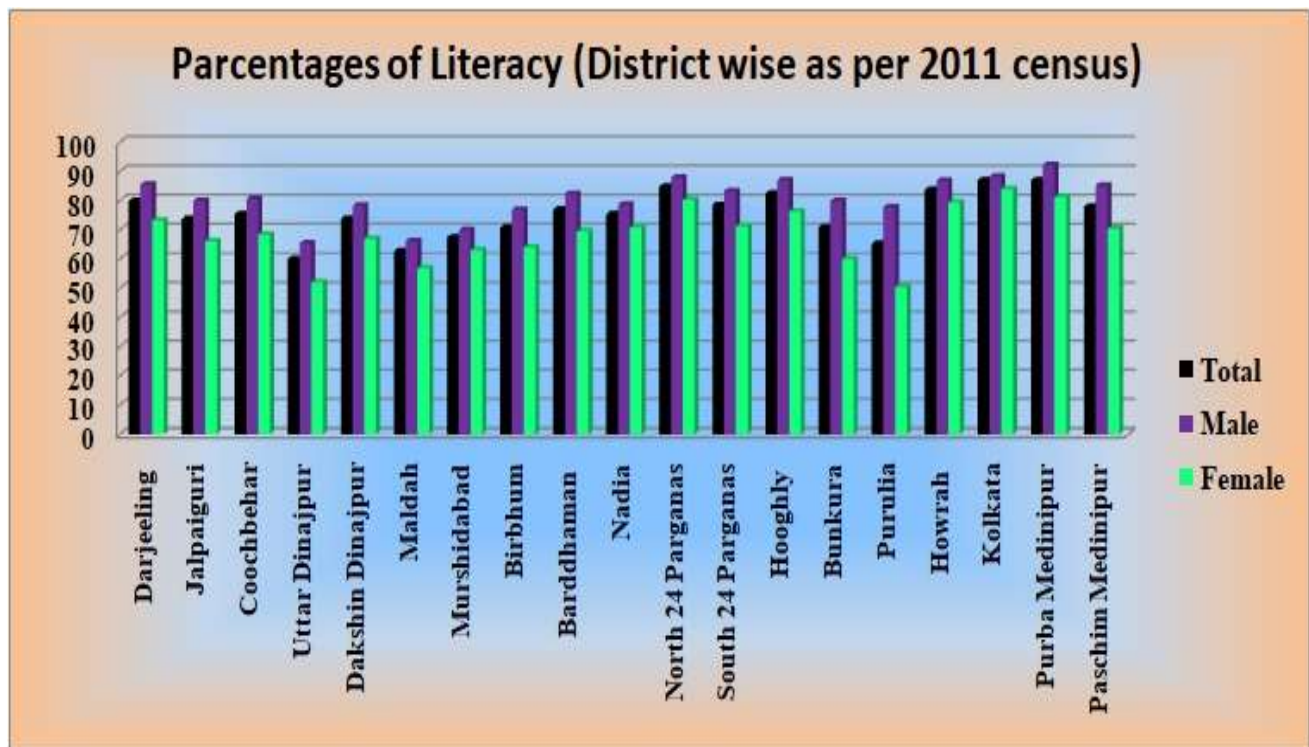


Chart 2: Literacy Rates (%) as per 2011 census
Source: Author's own contribution

District wise Female Literacy Rate (Census 1991 to 2011)

As per Table 5, comparable result according to the Census 1991, 2001 and 2011, the literacy rate of 19 districts in West

Bengal has increased on the basis of mean 42.95 per cent in 1991, 57.60 per cent in 2001 and 68.74 per cent in 2011. While as per district wise ranking, overall highest only female literacy rate was Kolkata (72.10% in 1991, 77.95% in 2001 and 84.06% in 2011).

Table 5: Female Literacy Rate Comparison in West Bengal (District wise, 1991-2011)

Districts	Female Literacy As per 1991 Census	Female Literacy As per 2001 Census	Female Literacy As per 2011 Census
Darjeeling	47.8	63.92	73.33
Jalpaiguri	33.2	52.9	66.23
Coochbehar	33.3	57.04	68.49
Uttar Dinajpur	27.9	37.16	52.17
Dakshin Dinajpur	27.9	55.12	67.03
Maldah	24.9	41.67	56.96
Murshidabad	29.6	48.33	63.07
Birbhum	37.2	52.21	64.14
Bardhaman	51.5	61.91	69.63
Nadia	44.4	60.06	70.98
North 24 Parganas	58	72.13	80.34
South 24 Parganas	40.6	59.73	71.4
Hooghly	56.9	67.72	76.35
Bunkura	36.5	49.8	60.05
Purulia	23.2	37.15	50.52
Howrah	57.8	70.93	79.43
Kolkata	72.1	77.95	84.06
Purba Medinipur	56.6	67.55	81.37
Paschim Medinipur	56.6	61.21	70.5
Mean	42.95	57.60	68.74
Maximum	72.1	77.95	84.06
Minimum	23.2	37.15	50.52

Source: Census of India (1991, 2001, 2011)

Assume that Medinipur and Dinajpur same percentage (%) calculated

Because at the time 1991 and 2001 census Medinipur was undivided.

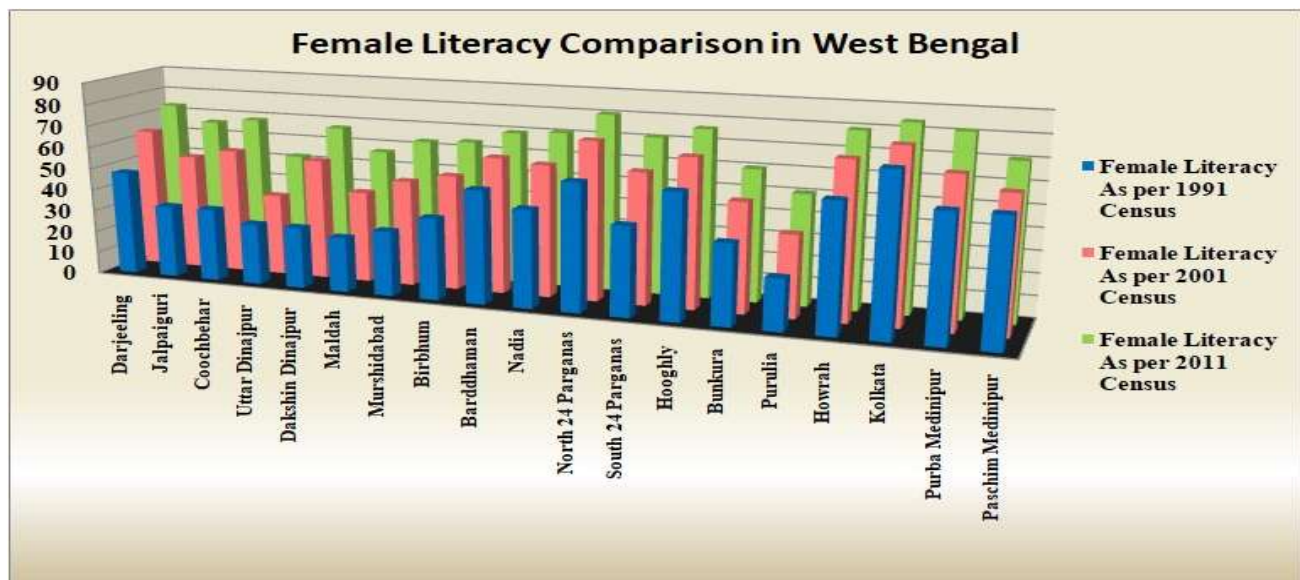


Chart 3: Female Literacy Rates (%) Comparison

Source: Author's own contribution

Sex/Gender Ratio in West Bengal

Gender or sex ratio is a most important indicator regarding women empowerment for that particular type of research. According to Census 1991, 2001 and 2011, the sex ratio per 1000 males of 19 districts in West Bengal has increased on the basis of mean or average i.e. 921.95 or 922 in 1991, 936.79 or

937 in 2001 and 947.05 or 947 in 2011 approximately. Whereas as per district wise ranking, overall highest sex or gender ratio was Bunkura 951 in 1991, Purba Medinipur and Paschim Medinipur both 955 in 2001 and Darjeeling 971 in 2011). Maximum increase in that ratio was Kolkata (799 in 1991, 828 in 2001 and 899 in 2011) as per Table 6.

Table 6: Sex ratio-female per thousand males

Districts	Sex Ratio-Female Per Thousand Males-As per 1991 Census	Sex Ratio-Female Per Thousand Males-As per 2001 Census	Sex Ratio-Female Per Thousand Males-As per 2011 Census
Darjeeling	914	943	971
Jalpaiguri	927	941	954
Coochbehar	935	949	942
Uttar Dinajpur	930	937	936
Dakshin Dinajpur	930	950	954
Maldah	938	948	939
Murshidabad	943	952	957
Birbhum	946	949	956
Bardhaman	899	921	943
Nadia	936	947	947
North 24 Parganas	907	927	949
South 24 Parganas	929	938	949
Hooghly	917	947	958
Bunkura	951	953	954
Purulia	947	953	955
Howrah	881	906	935
Kolkata	799	828	899
Purba Medinipur	944	955	936
Paschim Medinipur	944	955	960
Mean/Average	921.9473684	936.7894737	947.0526316
Maximum	951	955	971
Minimum	799	828	899

Source: Author's own contribution

Data collection from 1991, 2001 and 2011 census

Status of Women Education in West Bengal

The constitutional directive to provide free and compulsory education for all children up to the age of 14 years has remained

unfulfilled till now. Educational experts admit that this failure is mainly due to the slow progress of education among girls [2]. After Independence, there still exists a great disparity between male and female educational status. In this research work we will focus only growth and development of female education and literacy.

Table 7: Male-Female Literacy Rate of West Bengal Comparing to the Country

1971		1981		1991		2001		2011		
Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
India	47.60	25.65	55.95	33.20	73.13	48.64	79.67	57.80	87.23	70.73
West Bengal	-	-	59.9	36.10	64.10	39.30	77.02	59.61	81.69	70.54
Results	-	-	C	A	C	B	C	A	C	B

Source: Census of India (2011)

Increased denotes A, Decreased denotes B and no need to study C

Table 8: Female Literacy of West Bengal and the Country

	Female Literacy (%)
India	65.46
West Bengal	71.20

Source: Census of India (2011)

According to the Table 8, the comparison of female literacy rate had reached 65.46% in all India bases in the 2011 census and West Bengal is more than the average of India i.e. 71.20%

Table 9: Class level-wise Enrolment in School 2014-15

Level	All Categories		
	Male	Female	Total
Primary	67609	62892	130501
Upper Primary	34501	32664	67165
Elementary	102110	95556	197666
Secondary	20121	18180	38301
IX	122231	113736	235967
Senior Secondary(XI-XII)	12440	11061	23501

Source: Statistics of School Education, Ministry of Human Resource Development

Table 9 shows that, maximum number of women enrolled in XI standard in the year 2014-15 it was total 113736. Every year it has been increased and Table- shows the maximum female enrolment in the section of Under Graduate in 2014-15 (12705).

Table 10: Class level-wise Enrolment in Higher Education up to 2014-15

Level	All Categories		
	Male	Female	Total
Ph.D.	70	48	118
M.Phil.	14	19	33
Post Graduate	1867	1986	3853
Under Graduate	14467	12705	27172
PG Diploma	121	94	215
Diploma	1788	720	2508
Certificate	74	96	170
Integrated	87	55	142

Source: Statistics of School Education, Ministry of Human Resource Development

Table 11 shows 5 Year Trend of Female Enrolment in Higher Education Level. The maximum number of women has enrolled in under graduate level and it was increased than others level of education. In 2014-15, it was increased (729494) than the previous year 2013-14, it was 672908. There was a huge difference between the years i.e. 56586.

Table 11: 5 Year Trend of Female Enrolment in Higher Education Level (2011-15)

Level of Education	2010-11	2011-12	2012-13	2013-14	2014-15
Certificates	637	2286	2164	1534	4009
Diploma	4430	11818	12798	14025	23661
PG Diploma	1023	1176	1008	1376	1275
Under Graduate	465857	542656	619370	672908	729494
Post Graduate	88345	80468	81307	93471	101961
M.Phil.	749	695	433	404	345
Ph.D.	847	905	948	1368	1590

Source: Statistics of Higher Education, Ministry of Human Resource Development Assume that Certificates to Ph.D is Higher Education Level

Relationship between Literacy and Sex Ratio

As per Table 12, according to the Census 2011, the female literacy rate of 19 districts in West Bengal has increased to 68.74 per cent in 2011. But ranking wise top three

districts are Kolkata (84.6 per cent), Purba Parganas (80.34 per cent) respectively. Medinipur (81.37 per cent) and North 24

Table 12: Female Literacy and Sex Ratio as per Ranking

Districts	F-Literacy	R_1	Sex Ratio	R_2
Darjeeling	73.33	6	971	1
Jalpaiguri	66.23	13	954	7
Coochbehar	68.49	11	942	11
Uttar Dinajpur	52.17	18	936	13
Dakshin Dinajpur	67.03	12	954	7
Maldah	56.96	17	939	12
Murshidabad	63.07	15	957	4
Birbhum	64.14	14	956	5
Bardhaman	69.63	10	943	10
Nadia	70.98	8	947	9
North 24 Parganas	80.34	3	949	8
South 24 Parganas	71.4	7	949	8
Hooghly	76.35	5	958	3
Bunkura	60.05	16	954	7
Purulia	50.52	19	955	6
Howrah	79.43	4	935	14
Kolkata	84.06	1	899	15
Purba Medinipur	81.37	2	936	13
Paschim Medinipur	70.5	9	960	2
Average	68.74			

Now statistically measured in Table 13, the relationship between the two variables i.e. Rank of Female Literacy (X_{Ra}) and Rank of

Sex Ratio (Y_{Ra}) based on Spearman Correlation Coefficient technique.

Table 13: Calculation of Spearman Correlation Coefficient

X	Y	X_{Ra}	$X_{Ra} - M_x$	Y_{Ra}	$Y_{Ra} - M_y$	Sum Diffs.
73.33	971	14.00	4.00	19.00	9.00	36.00
66.23	954	7.00	-3.00	12.00	2.00	-6.00
68.49	942	9.00	-1.00	6.00	-4.00	4.00
52.17	936	2.00	-8.00	3.50	-6.50	52.00
67.03	954	8.00	-2.00	12.00	2.00	-4.00
56.96	939	3.00	-7.00	5.00	-5.00	35.00
63.07	957	5.00	-5.00	16.00	6.00	-30.00
64.14	956	6.00	-4.00	15.00	5.00	-20.00
69.63	943	10.00	0.00	7.00	-3.00	0.00
70.98	947	12.00	2.00	8.00	-2.00	-4.00
80.34	949	17.00	7.00	9.50	-0.50	-3.50
71.4	949	13.00	3.00	9.50	-0.50	-1.50
76.35	958	15.00	5.00	17.00	7.00	35.00
60.05	954	4.00	-6.00	12.00	2.00	-12.00
50.52	955	1.00	-9.00	14.00	4.00	-36.00
79.43	935	16.00	6.00	2.00	-8.00	-48.00
84.06	899	19.00	9.00	1.00	-9.00	-81.00
81.37	936	18.00	8.00	3.50	-6.50	-52.00
70.5	960	11.00	1.00	18.00	8.00	8.00

Source: Authors own calculation

X: X Values-Female Literacy and Y: Y Values-Sex Ratio

$R = \text{Covariance} / (X_{Ra} \text{ St. Dev.}) (Y_{Ra} \text{ St. Dev.})$
 X_{Ra} = Ranks of X Values

Y_{Ra} = Ranks of Y Values
 X rank minus mean of X ranks & Y rank minus mean of Y ranks:

$X_{Ra} - M_x$ & $Y_{Ra} - M_y$

Sum Diffs:

$(X_{Ra} - M_x) (Y_{Ra} - M_y)$

Details Results

X Ranks, Mean: 10, Standard Dev: 5.63,

Y Ranks, Mean: 10, Standard Dev: 5.61, Combined Covariance = $-128 / 18 = -7.11$; $R = -7.11 / (5.63 * 5.61) = -0.225$

$r_s = -0.22516$, p (2-tailed) = 0.35404. By normal standards, the association between the two variables would not be considered statistically significant. The value of r_s is: -0.22516.

P Value from Pearson (R)

The P-Value is 0.354382. The result is not significant at $p < .01$; The P-Value is 0.354382. The result is not significant at $p < .05$ and the P-Value is 0.354382. The result is not significant at $p < .10$. Spearman Correlation Coefficient results shows that two variables would not be well thought-out

statistically significant because $p < 0.10$ and the value of R_s is **(-0.2252)** which indicates the negative correlation between the variables as per Table 13. Similarly, by using Pearson's Correlation Coefficient method statistically in Table 14, the relationship

between the two variables i.e. Rank of Female Literacy (M_x) and Rank of Sex Ratio (M_y). It is observed that there is a fairly low and negative Correlation, that is, $r = -0.3185$ between the literacy and sex in West Bengal.

Table 14: Calculation of Pearson's Correlation Coefficient

X	Y	X - M_x	Y - M_y	(X - M_x) ²	(Y - M_y) ²	(X - M_x)(Y - M_y)
73.33	971	4.591	23.947	21.073	573.476	109.931
66.23	954	-2.509	6.947	6.297	48.266	-17.434
68.49	942	-0.249	-5.053	0.062	25.529	1.26
52.17	936	-16.569	-11.053	274.547	122.161	183.136
67.03	954	-1.709	6.947	2.922	48.266	-11.876
56.96	939	-11.779	-8.053	138.756	64.845	94.856
63.07	957	-5.669	9.947	32.143	98.95	-56.396
64.14	956	-4.599	8.947	21.155	80.055	-41.153
69.63	943	0.891	-4.053	0.793	16.424	-3.609
70.98	947	2.241	-0.053	5.02	0.003	-0.118
80.34	949	11.601	1.947	134.572	3.792	22.59
71.4	949	2.661	1.947	7.078	3.792	5.181
76.35	958	7.611	10.947	57.92	119.845	83.315
60.05	954	-8.689	6.947	75.507	48.266	-60.369
50.52	955	-18.219	7.947	331.949	63.161	-144.797
79.43	935	10.691	-12.053	114.287	145.266	-128.849
84.06	899	15.321	-48.053	234.719	2309.055	-736.192
81.37	936	12.631	-11.053	159.53	122.161	-139.601
70.5	960	1.761	12.947	3.099	167.634	22.794
		M_x : 68.739	M_y : 947.053	Sum: 1621.432	Sum: 4060.947	Sum: -817.329

Source: Authors own calculation

Taking,

X: X Values-Female Literacy and Y: Y Values-Sex Ratio

M_x : Mean of X Values and M_y : Mean of Y Values

Deviation scores and Deviation Squared, $X - M_x$ & $Y - M_y$ & $(X - M_x)^2$ & $(Y - M_y)^2$

Product of Deviation Scores:

$(X - M_x)(Y - M_y)$

$\sum X$: Values = 1306.05, Mean = 68.739, $\sum (X - M_x)^2 = SS_x = 1621.432$

$\sum Y$: Values = 17994, Mean = 947.053, $\sum (Y - M_y)^2 = SS_y = 4060.947$

X and Y Combined, N = 19,

$\sum (X - M_x)(Y - M_y) = -817.329$

R Calculation

$r = \frac{\sum ((X - M_x)(Y - M_y))}{\sqrt{(SS_x)(SS_y)}}$

$r = -817.329 / \sqrt{(1621.432)(4060.947)} = -0.3185$

Meta Numerics (cross-check) $r = -0.3185$

The value of R is **-0.3185**.

Again a negative correlation, the relationship between your variables is only weak correlation. The value of R^2 , the coefficient of determination, is **0.1014**. The value of R is: -0.3185.

P Value from Pearson (R)

The P-Value is 0.184581. The result is *not* significant at $p < .01$; the P-Value is 0.184581. The result is not significant at $p < .05$ and the P-Value is 0.184581. The result is not significant at $p < .10$

Development and Growth of Women on the basis of Economic Conditions

Now recent days, the economy turned down of West Bengal is one of the most important discussion topics in Indian media. Before independence, Bengal was almost certainly for the most part of advanced region of the sub-continent. But after independence it has been changed (Scroll.in-Jan 8, 2019 news).

That time women participation rate in economic activities was very low but now it has increased. Participation of women in economic actions and activities mainly is a most important issue facilitating the economic and social empowerment of women [19]. Just not only can service or employment, it is also a vital base of economic freedom of women. In this section we examine the work participation structure of women in West Bengal.

Different Female Work Participation Structure (District Wise)

Table 15: Work Participation Structure (District Wise) as per 2011 Census

District	MW	C	AL	HI	OW	MGW	Total Working Female	Non Working
Darjeeling	1,36,514	10,352	8,715	2,654	1,14,793	67,626	3,40,654	7,05,424
Jalpaiguri	2,31,583	13,870	45,756	4,781	1,67,176	1,89,966	6,53,132	14,68,233
Coochbehar	1,36,509	28,415	59,613	10,084	38,397	1,46,160	4,19,178	10,84,875
Uttar Dinajpur	1,35,573	15,231	55,528	11,856	52,958	1,40,426	4,11,572	11,80,069
Dakshin Dinajpur	98,892	13,885	45,288	10,110	29,609	1,04,535	3,02,319	6,15,650
Maldah	1,99,063	13,009	41,409	73,501	71,144	2,52,323	6,50,449	14,85,918
Murshidabad	3,59,459	9,528	29,778	2,18,076	1,02,077	2,44,781	9,63,699	28,72,003
Birbhum	1,27,196	9,699	48,573	15,770	53,154	1,74,637	4,29,029	14,09,651
Bardhaman	3,28,061	12,333	1,27,330	29,676	1,58,722	2,90,107	9,46,229	31,32,506
Nadia	1,90,689	6,608	25,267	52,300	1,06,514	97,828	4,79,206	22,25,315
North 24 Parganas	4,24,723	12,337	38,993	36,418	3,36,975	2,01,712	10,51,158	42,63,957
South 24 Parganas	2,54,971	20,289	31,639	33,173	1,69,870	3,52,952	8,62,894	33,80,260
Hooghly	2,51,212	10,017	82,765	19,890	1,38,540	1,88,050	6,90,474	22,65,230
Bunkura	1,54,305	11,765	83,272	9,409	49,859	2,61,093	5,69,703	13,43,181
Purulia	1,20,166	21,634	39,592	19,657	39,283	3,28,222	5,68,554	9,84,731
Howrah	1,91,832	4,524	7,611	49,756	1,29,941	1,29,843	5,13,507	20,27,535
Kolkata	2,82,153	2,711	2,136	11,976	2,65,330	1,01,121	6,65,427	17,56,654
Purba Medinipur	1,27,109	14,681	27,063	21,503	63,862	2,67,115	5,21,333	20,71,817
Paschim Medinipur	2,58,341	32,480	1,26,084	18,499	81,278	4,93,460	10,10,142	21,53,771
West Bengal	40,08,351	2,63,368	9,26,412	6,49,089	21,69,482	40,31,957		

Source: Data Census of India 2011

MW Main Workers, C: Cultivators, HI: OW Other Workers and MGW: Marginal Household Industries Workers

Table 16: Correlation between Literacy and Some Selected Parameters

District	MW	C	AL	HI	OW	MGW	LR
1	40.07409	3.038861	2.558314	0.77909	33.69	19.85	73.33
2	35.4573	2.123614	7.005628	0.732011	25.60	29.08	66.23
3	32.56588	6.778743	14.2214	2.405661	9.16	34.86	68.49
4	32.94029	3.700689	13.49169	2.880662	12.87	34.12	52.17
5	32.71114	4.592831	14.9802	3.34415	9.79	34.58	67.03
6	30.60394	2.000003	6.366218	11.30004	10.94	38.79	56.96
7	37.29992	0.98869	3.089969	22.62906	10.59	25.40	63.07
8	29.64741	2.260686	11.32161	3.675742	12.39	40.70	64.14
9	34.67036	1.303384	13.45657	3.136239	16.77	30.66	69.63
10	39.7927	1.378948	5.27268	10.91389	22.23	20.41	70.98
11	40.40525	1.173658	3.709528	3.46456	32.06	19.19	80.34
12	29.54836	2.351274	3.666615	3.844389	19.69	40.90	71.4
13	36.38254	1.450743	11.98669	2.88063	20.06	27.21	76.35
14	27.08517	2.065111	14.61674	1.651562	8.75	45.83	60.05
15	21.13537	3.805092	6.963631	3.457367	6.91	57.73	50.52
16	37.35723	0.881001	1.482161	9.689449	25.30	25.29	79.43
17	42.4018	0.407408	0.320997	1.799747	39.87	15.20	84.06
18	24.38154	2.81605	5.191116	4.124619	12.25	51.24	81.37
19	25.57472	3.21539	12.48181	1.831327	8.05	48.85	70.5
20	33.15974	2.438535	8.009662	4.975799	17.74	33.68	68.74

Source: Authors own calculation

PMW

Proportion of Main Workers to Total Female Worker, PC: Proportion of Cultivators to Total Female Worker

PHI

Proportion of Household Industries to Total Female Worker, **POW**: Proportion of Other Workers to Total Female Worker, **PMGW**: Proportion of Marginal Workers to Total Female Worker and **LR**: Literacy Rate as per 2011 census.

Districts shown as per previous table or Table 15

Calculation of correlation values using the following equation;

$$r = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N\sum x^2 - (\sum x)^2][N\sum y^2 - (\sum y)^2]}}$$

Calculation Example

Relationship between Literacy Rate and to Marginal Workers

X Values, $\sum = 663.195$, *Mean* = 33.16, $\sum(X - M_x)^2 = SS_x = 631.013$

Y Values, $\sum = 1374.79$, *Mean* = 68.739, $\sum(Y - M_y)^2 = SS_y = 1621.432$

X and Y Combined

N = 20, $\sum(X - M_x)(Y - M_y) = 502.594$

R Calculation:

$$r = \frac{\sum ((X - M_x)(Y - M_y))}{\sqrt{(SS_x)(SS_y)}}$$

$r = 502.594 / \sqrt{(631.013)(1621.432)} = 0.4969$
 $r = 0.4969$. Therefore, value of R is **0.4969** i.e. a positive correlation.

The value of R², the coefficient of determination, is 0.2469.

Table 17: Correlation Statistics

	AL	CO1	HI	LR	MGW	MW	OW
AL	1.00	*	*	*	*	*	*
CO1	0.55	1.00	*	*	*	*	*
HI	-0.37	-0.35	1.00	*	*	*	*
LR	-0.45	-0.37	-0.13	1.00	*	*	*
MGW	0.42	0.45	-0.19	-0.49	1.00	*	*
MW	-0.42	-0.45	0.19	0.49	-1.00	1.00	*
OW	-0.66	-0.53	-0.18	0.66	-0.79	0.79	1.00

Source: Own Calculation using E-views software

Table 18: Relationship and Results

Relationship Indicators	R	R ²	Decision
R of LR and MW	0.4969	0.2469	Positive Correlation between LR & MW:
R of LR and C	-0.3711	0.1377	Negative Correlation between LR & C: The weaker the relationship
R of LR and AL	-0.4456	0.1986	Negative Correlation between LR & AL: The weaker the relationship
R of LR and HI	-0.1346	0.0181	Negative Correlation between LR & HI: The weaker the relationship
R of LR and OW	0.6625	0.4389	Positive Correlation between LR & OW
R of LR and MGW	-0.4969	0.2469	Negative Correlation between LR & MGW: The weaker the relationship

As per Table 18, positive relationship is observed i.e. *r* of LR and MW and *r* of LR and OW but the negative relationship is found with *r* of LR and C, *r* of LR and AL, *r* of LR

and HI and *r* of LR and MGW. The worker in the rural field generally unskilled agricultural labour and there is no any pre-requisite condition of literacy and education.

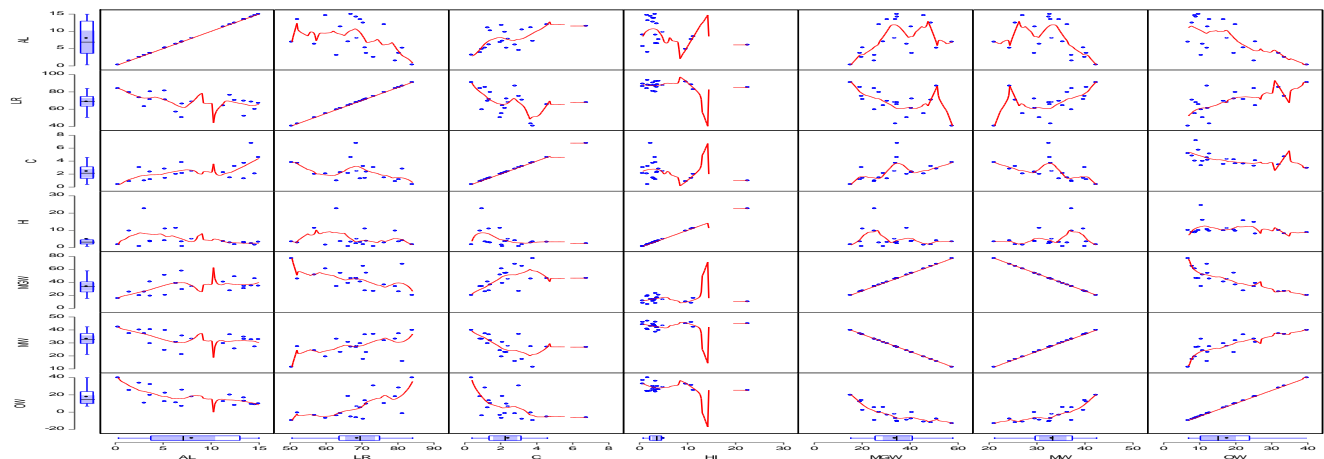


Chart 4: Scatter plot Matrix

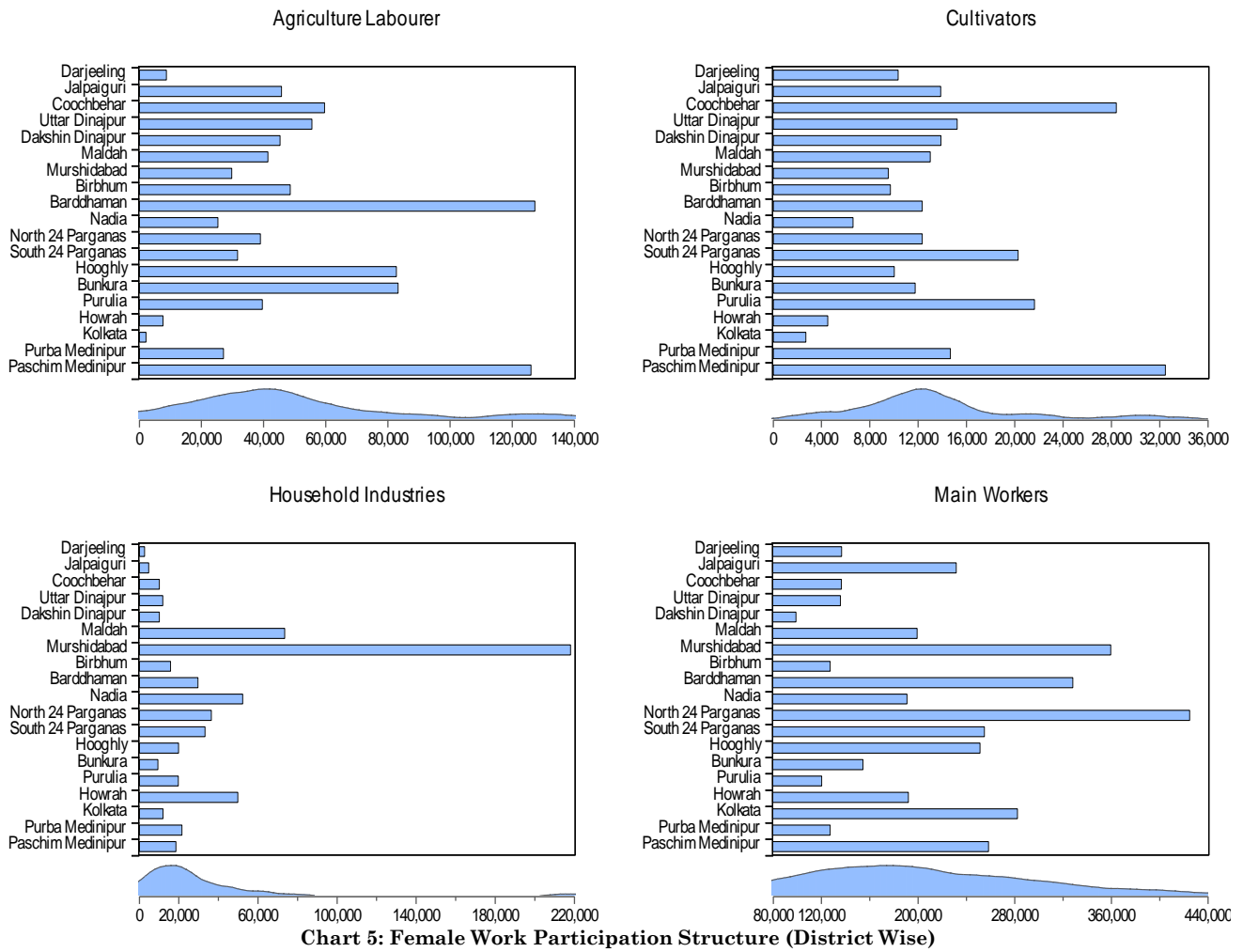


Chart 5: Female Work Participation Structure (District Wise)

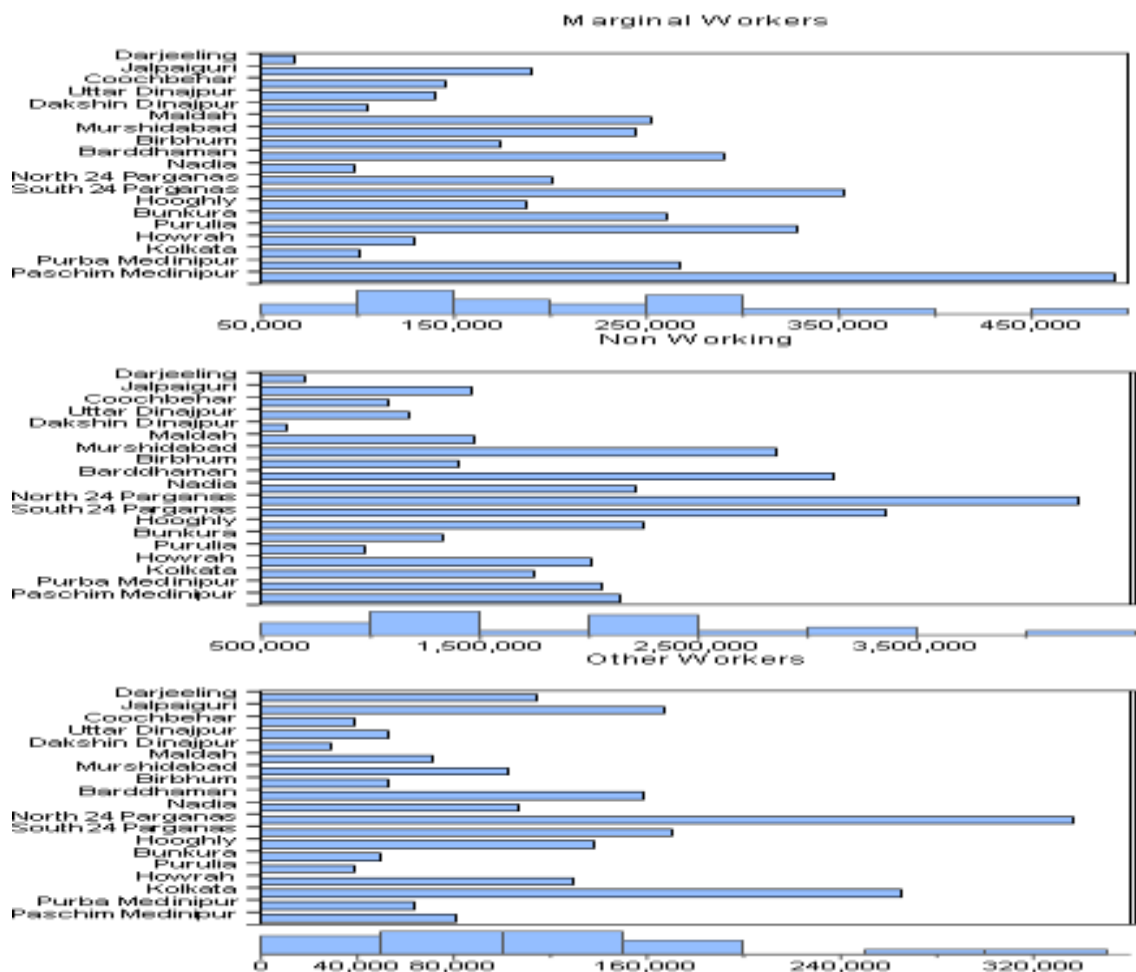


Chart 6: Female Work Participation Structure (District Wise)

Findings and Conclusions of the Study

The objectives of the study have brought about certain conclusions with respect to the study. In the above discussion,

Firstly I: Development and Growth of women on the Basis of Education and Literacy

In 2011 census, literacy rate has been developed a very significant level as per average males 80.71 percent and females 68.74 percent than the previous year literacy rates i.e. males 75.56 percent and females 57.60 percent. On the basis of total literacy rate (both male and female), maximum

increased in Murshidabad district (12.48%) and similarly, the main focus of the study that is women literacy rate was increased in Maldah district (15.29%). While as per district wise ranking, overall highest only female literacy rate was Kolkata (72.10% in 1991, 77.95% in 2001 and 84.06% in 2011).

Again can say, in for the most part of the cases it is shown that in both undergraduate & post graduate level women enrolment is higher than others education levels in West Bengal and maximum women are not interested in level of higher education such as M.Phil and Ph.D degrees.

Secondly II: Relationship between Female Literacy and Sex Ratio District Wise

According to the census 2011, the female literacy rate of 19 districts in West Bengal has increased to 68.74 per cent in 2011. But ranking wise top three districts are Kolkata (84.6 per cent), Purba Medinipur (81.37 per cent) and North 24 Parganas (80.34 per cent) respectively.

Spearman Correlation Coefficient results shows the two variables would not be well thought-out statistically significant because $p < 0.10$ and the value of R_s is **(-0.2252)** which

indicates the negative correlation between the variables. Similarly, by using Pearson's Correlation Coefficient, the relationship between the two variables observed that there is a fairly low and negative Correlation, that is, $r = -0.3185$ between the literacy and sex in West Bengal.

Thirdly-III: Development and Growth of women on the Basis of Economic Conditions

By using Proportion of Main Workers to Total Female Worker, Proportion of Cultivators to Total Female Worker, Proportion of Household Industries to Total Female Worker, Proportion of Other Workers to Total Female Worker, Proportion of Marginal Workers to Total Female Worker and Literacy Rate as per 2011 census. Positive relationship is observed i.e. r of LR and MW and r of LR and OW but the negative relationship is found with r of LR and C , r of LR and AL , r of LR and HI and r of LR and MGW . The worker in the rural field generally unskilled agricultural labour and there is no any pre-requisite condition of literacy and education.

Fourthly IV: Relationship between Different Areas of Working Class and Non-Working Class Women District Wise in West Bengal

In this section, maximum non working class of female in north 24 parganas (4263957), second is south 24 parganas (3380260) and third is Barddhaman (3132506). It will be discussed in future study separately after selecting important parameters.

Future Research

Finally, it can be said that there are so many research works has been available for future research in the area of women in politics, women in higher education, women in banking and SHGs, PACs and others [21-52].

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