4. Research Methodology:

4.1 Sources of Data:

The census survey of India which conducted every ten years is the most comprehensive source of information on the size, distribution, living conditions and demographic characteristics of the population. For Female Literacy Rate, Male Literacy Rate at district level census 2001 and 2011 are used and rest of variables like Female Work Participation Rate, Total Fertility rate, infant and child mortality etc, census 2001 is used. There are two basic ways of obtaining infant and child mortality rates: direct method and indirect method. The direct method is based either on vital registration or on dated vital events from retrospective birth histories, and the indirect method uses number of children ever born and the proportion dead classified by five-year age groups of mothers. Indirect methods of estimation remain an important tool for gaining an understanding of infant and child mortality conditions in areas with limited, deficient or poor vital registration systems. The widely used Brass method estimates of mortality from reports of children ever born and children surviving are used by Prof S. Irudaya Rajan from the Center for Development Studies (CDS), Kerala et.al. with MORTPAK4 package and report published by them is used in this study.

Besides this, the Reproductive and Child Health (DLHS-RCH) programme that has been launched by Government of India (GOI) conducted during 2002-04 in 593 districts as per the 2001 Census is used. The DLHS-RCH was conducted in each districts of India for providing estimates on reproductive and child health indicators at the district level. Estimates are obtained for all the districts from all the states in India.

The underlying factors which may cause the differences at district level are identified from DLHS-RCH-2 survey and census. As census does not provide much information about the determining factors so it was necessary to depend on some survey data. DLHS-RCH-2 is selected because the time period of this survey is lying nearest to the year of census estimates.

Besides census and DLHS, the percentage of population below poverty line variable is taken from Below Poverty Line (BPL) Census for 9th Plan Period by India, Ministry of Rural Development and Monitoring Division. Whereas Variable District
Domestic Product (DDP) is taken from reliable source like planning commission of Government of India, Directorate of Economic and Statistics of various states.

4.2 Statistical Methods used in the Analysis of data:

Basic Statistical tool, Linear Multiple Regression used for analysis of data.

- **Basic Quantitative Technique** like mean, variance, ratio, proportion, coefficient of variation is used to obtain districts estimates and to understand measure of location and measure of dispersion. To study variation in detail Statistical tools like Check Sheet/ Frequency Table, Box and Whisker Plot, Line Graph/Line Chart will be used to study variation in several social, economic and demographic variables.

- For testing the second and third hypothesis formulated in the study I propose to use the **multiple regression analysis** which includes model fitting, computation of coefficient of determination, checking of linearity of each variable and validation of each assumption.

The variables to be used in the proposed study are as follows:

Tentative Variables are:

1) Female Literacy Rate (FLR)
2) Male Literacy Rate (MLR)
3) Total Fertility Rate (TFR)
4) Infant Mortality Rate (IMR)
5) Child Mortality Rate (CMR)
6) Mean Number of Births (MNB)
7) Female work participation rate (FWPR)
8) Percentage of urbanization (PUrban)
9) Percentage of Hindus (P_Hindu)
10) Percentage of Muslims (P_Muslim)
11) Percentage of Others (P_Others)
12) Mean age at marriage of females (MAM)
13) Percentage of girls marrying below legal age of marriage(PG<18)
14) Percentage of households with low standard of living(V02)
15) Percentage of households with high and middle standard of living(V01)
16) Percentage of households using adequate iodized salt (15ppm)-V03
17) Percentage of population below poverty line (BPL)
18) Districts Domestic Product (DDP)

Indicators are taken TFR, IMR, CMR, female literacy, male literacy, female work participation rate etc i.e. 1-11 from census are estimated and rest of them i.e.12-16 are calculated from DLHS-RCH data.

The Multiple linear regression model is as follows:
\[ y_i = b_0 + b_1 x_{i1} + \ldots + b_p x_{ip} + e_i \]

where
- \( y_i \) is the value of the \( i^{th} \) case of the dependent scale variable
- \( p \) is the number of predictors
- \( b_j \) is the value of the \( j^{th} \) coefficient, \( j = 0, \ldots, p \)
- \( x_{ij} \) is the value of the \( i^{th} \) case of the \( j^{th} \) predictor
- \( e_i \) is the error in the observed value for the \( i^{th} \) case

For the purpose of testing hypotheses about the values of model parameters, the multiple regression model also assumes the following:

- The error term is normally distributed with mean zero.
- The standard deviation of \( e_i \) is constant.
- The value of \( e_i \) associated with any particular value of \( y_i \) is independent of \( e_i \) associated with any other value of \( y_i \).

- Crude Projections will be made to assess the time required for 100 percent female literacy in India and its districts.
- Path analysis is also used to study the direct and indirect effects of female literacy in the pooled data of the districts of India.

5. NEED OF THE STUDY:

The above review reveal that Literacy is generally recognized as an important input for social upliftment especially in areas of population control, health, hygiene environmental degradation control, empowerment of women and weaker sections of the society. Another important fact is observed that female literacy is shown as determinant of
developments but developments can also leads to improvements in female literacy. This research is design to unravel the other side i.e. to identifying the factors responsible for increase in female literacy. The Indian subcontinent, with its large size, wide structure, socio-economic and gender disparities is better understood and better interpreted when studied at regional/districts level.

Socio-economic development particularly education plays a key role in reducing fertility, mortality and morbidity. But in recent years, question is that to what extents the socio-economic development linked with all vital rates in Indian context or is there over time attributed to some other factors. Some Study show positive correlation between female literacy rate and female work participation rate whereas some studies shows the same to be insignificant. Without using statistical tools one cannot show any causal linkage between female literacy rate, female work participation rate, fertility, mortality and development. This study may help in identifying problem areas so that policies can be framed for social and economical development of India.

This research aims to take a fresh look at the current position of education among women in general in India primarily on the basis of data provided using Provisional Total of Census of India 2001 and 2011. However various items included on education are evaluating the educational/ literacy level development among females, measuring inter-districts inequalities in female education. It will focus intensively to find out determinants for its variations in female literacy in various selected states and pooled data of districts of India as well as causal linkage between various socio-economic - demographic variables and female literacy using Census of India 2001.

6. ORGANISATION OF RESEARCH

The present thesis consists of six chapters.

Chapter I: Introduction

It includes Introduction, Review of the related literature, Need of the Study, Objectives of the Study, Organisation of Research.

Chapter II: Methodology
Various modes of data collection techniques (quantitative, qualitative) adopted are discussed in this chapter. It also explains the techniques used in the subsequent analysis.

Chapter III:  **Study Area and the Study Population**

This chapter consists of two major sections. First section describes the profile of the study area as well as study population and second section examines relationship between female literacy rate with each of Infant Mortality Rate (IMR), Child Mortality Rate (CMR), Total Fertility Rate (TFR), Female Work Participation Rate (FWPR) and mean number of births per ever married woman (MNB) at district level for India using Census 2001 data. Also an attempt is made to examine the possible impact of the educational attainment of female on their fertility behaviour in India and its states.

Chapter IV:  **Female Literacy: Trends, levels and Projection**

This chapter consists of three major sections. The first section demonstrates the educational development among females. The second section describes inter-districts inequalities in female education and the third section will be projecting time required to achieve 100% female literacy.

Chapter V:  **Factors influencing Female Literacy**

Chapter V deals with studying relationship between various socio-economic - demographic variables and female literacy using districts estimates. It includes casual linkage between various socio-economic - demographic variables and female literacy.

Chapter VI:  **Summary and Conclusion**

Chapter VI concludes the thesis with the recapitulation of major findings of the study. This chapter also examines the scope for further research. A few limitations of this study have also been included in this chapter.