

# **CHAPTER-I**

## **INTRODUCTION**

## 1.1 INTRODUCTION

The essential task of the social, political, economic and cultural system in a country is to provide legitimate, rational and acceptable bases for inclusion and exclusion of population in various spheres of its activity. Notwithstanding, the role played by technological advancement in increasing supply of different commodities and services, there has always been a need to restrict the demand, which is sought to be achieved through this system. The norms and values in a society, rooted in religious and cultural beliefs, conventions etc., are extremely effective instrument in this system. These instruments have been considered as useful in providing a framework for a holistic development of society and ensuring the inclusion of several vulnerable groups of people that would fail to do so, on their own. However, it would be unwarranted to exaggerate or romanticize the positive impact of the societal norms. Many of the socially constructed categories such as gender, ethnicity, religion, caste etc., that have evolved over a long period in history, often come in the way of certain sections of people assessing commodity, service, or even entry into the labour market. These norms and values are entrenched so deeply in cultural ethos that people often cease to view these as factors of discrimination. Another important factor in this context is the State, which intervenes directly and indirectly in the production and distribution system, often to ensure inclusion of people who do not have the affordability or the backing of the societal norms. This is achieved through legislation, administrative divisions, as also programmes and schemes, designed to bring about a politically desirable welfare distribution. Constitutional and legal provisions, stipulations for the functioning of public agencies, etc., for example, are often used to extend developmental benefits to persons belonging to certain age groups, social groups, residing at certain places, working in certain sectors, with certain levels of education, etc.

The population structure is an active factor that determines or conditions the trend of population growth and the nature and pattern of economic activity. The term structure refers to the distribution within a population of one or more individually carried traits and attributes. The characteristic grouping which make up the peculiar structure of a population at any particular time or its changing structure over a period are known as its composition. The characteristics by which population is classified include such basic

demographic variables as age, sex and marital status and such elementary indicators of social organization as nationality, race, language, religion, education and such economic tracts as labour force, occupation, and industry. Therefore, sex composition in a society is stated from the onset of the members of this organization. The composition of population according to sex is known as the sex structure. The universal characteristics of human population are fundamental to understanding demographic processes of fertility, mortality and migration. Sex composition may be summarized in terms of proportion of males and females in a society. More accurately, in India it is the number of females per 1000 males. Social development is about freedom of thought and speech, freedom to participate in decision making, and freedom to work without social bondage. It also demands equality of opportunity, that is, equal access to economic, social political and cultural opportunities to all citizens. Though for improving the quality of people's lives, the income and economic growth of a country are necessary conditions; but these are not always sufficient. In order to examine how India fares on this count, an important question relates to how equal women are vis-à-vis men. In other words, the sex structure of a country among its all societies is one of the most important parameters to examine the status of the quality of the people's lives in the country.

This study is an attempt towards a progressive overview of concerns about gender bias as they emerged in post-Independence period in the north Bengal region. The sex ratio indicates the differential survival of females versus males. Although more male babies are conceived, girls are biologically the stronger sex. In societies, where they are treated as well as boys and men, girls and women outlive the former. In keeping with this worldwide trend world over (with a few exceptions), if India had 1050 females for every 1000 males, as per the 1991 census there ought to be 512 million females. Instead, there were only 489 million women in the population. This implies that there are some 20-25 million 'missing' girls and women in India. The 2001 census indicates that now there are 35 million fewer females than males in the country.

Although, systematic and conclusive data on sex ratio at birth (SRB) are not available, it is generally agreed that sex ratio at birth is a strong indicator of prenatal sex selection. In addition to sex-selective elimination of girls, preferential treatment of boys and neglect of girls in intra-household allocation of resources worsening with age- the under-5 mortality rate is much higher for girls than boys, particularly in rural areas- reflect

inadequate medical care and nutritional disadvantage of growing girls, a phenomenon that has sometimes been termed as 'differed infanticide'.

However, ironically, states that are listed high on conventional development indicators are the ones hostile to their female population. In contrast, tribal women, despite their overall dismal poverty and income levels, have better survival chances. The adverse female to male ratio can be explained in terms of the social status accorded them by society; it is evident that despite constitutional guarantees, females are still second-class citizens.

The general sex ratios may be impacted by the migration pattern. The mobile character of people possesses an important effect on the sex structure of a region. For example, the general character of area of receiving migrants shows deficiency in female population as men dominate migrants. A single variable such as juvenile sex ratios in the age group of 0-6 years indicate disparate survival chances of girls vis-à-vis boys.

As mentioned by some scholars, this decline does not reflect a progressive rise in girls' mortality, but a fall in baby girls' chances of being born, which in turn is almost certainly connected with the increased availability and use of sex determination tests followed by selective abortion of female fetuses. This phenomenon is largely controlled by the social and cultural behaviour of the family members especially the husband. Another possible reason may be the status of women.

The notion of status of women is the essential location of gender roles and the women's access to resources and decision-making power within the family, household and community. Instead, 'increase in status' meant increasing women's self-reliance, internal strength and choices through enhancing their ability to gain control over material as well as non-material resources including gaining attention of the family members, access to education, access to credit, rights to own land property, political equality, and adequate protection against male violence etc. which have been defined as 'strategic gender needs'.

The structure and characteristics of population is also known as the composition of population covers all personal, social and economic characteristics or attributes like, age, sex race, nationality, religion, language, marital status, household and family

composition, literacy and educational attainment, employment status, occupation, income etc. of any population. These characteristics or attributes of population are sometimes classified into two groups: Ascribed characteristics and achieved characteristics. Ascribed characteristics may be considered to be biologically or culturally assigned and the individual cannot exercise his own choice. These include such characteristics as age, sex, race and mother tongue. Such characteristics as nationality, religion (and caste) may, of course, be later changed by an exercise of an individual's choice, though he/she is born with them, and in that sense may be considered to be ascribed characteristics. The achieved characteristics, on the other hand, are those, which are normally open to the individual's choice. Examples of such characteristics are those, which relate to marital status, educational attainment, labour force status, occupation, industry etc.

## **1.2 LITERATURE SURVEY**

Many scholars of social science dealt with the subject of variation in sex structure and its impact on the overall development of a region on various topics like patterns of sex ratio, socio-economic status of women in society - past and present, female education, health status of women – infant and maternal, women empowerment, gender justice, missing girls, sex selective abortions, women's rights, sex selective migration, women's decision making in family etc. Some of these have been discussed here-

*Agnihotri, Satish Balram* in his book "Sex Ratio Patterns in the Indian Population: A Fresh Exploration" (2000) discussed on different aspects of childhood mortality and juvenile sex ratio; disaggregation of juvenile sex ratios; female employment and sex ratios; estimation of female mortality rate. He also identifies some regions with homogeneous sex ratio patterns.

*Ahuja, Ram* in his book "Indian Social System (1999) mentioned about the social organization including Hindu philosophy, its unity and diversity. He also studied the family and kinship system, the marriage system and the problems of marriage, the caste system and its implication and its influence on social change and development as well as economic development of the society.

*Anand, A. S.* in the article “Dynamics of Gender Justice” (2001) has elaborated his ideas on gender related issues. He believed that, the question on gender equality should not be treated as a fight against men rather a fight against traditions that have chained them- a fight against attitudes that are ingrained in society- it is a fight against the proverbial ‘Lakshman Rekha’ which is different for men and different for women. He also argued that, for the emancipation of women in every field, economic independence is of paramount importance.

*Ansari H. Aijaz and Lubna Siddiqui* in the article “Growth of Muslim population in India 1981-‘91” (1999) showed the growth of Muslim Population, their effects on the standard of economic development of the area and people’s standard of living as well and also its effect on the female population that religion. They also discussed on the decadal growth rate of Muslim Population during 1981-’91 as well as factors affecting high and low growth rate.

*Azim, Shaukath* in the article “Gender Empowerment- Where Does India Stand?” wrote about GDI, GER, GEM and their difference with HDI. He also mentioned the way to measure all these and condition of India in terms of these Indexes.

*Barnes, Lindsay* in the article “Women’s Experience of Childbirth in Rural Jharkhand” (2007) seeks to enhance our understanding of childbirth-related practices among rural women in Jharkhand and the obstacles they face in seeking appropriate care. The findings are intended to bridge the gap between policy and programme makers on the one hand and poor rural women for whom the services are provided on the other.

*Barua, Alka and Hemant Apte* in the paper “Quality of Abortion Care: Perspectives of Clients and Providers in Jharkhand” (2007) explores the quality of care received by women seeking abortion services in Jharkhand and also discusses perceptions of abortion providers on the quality of care.

*Bhat, R. L. and Namita Sharma* in the paper “Missing Girls: Evidence from Some North Indian States” (2006) argued that the growth in incomes and education of women, variables that would grant women an equal status in society, have actually worked in a reverse direction in the states like Punjab, Haryana and Himachal Pradesh. Discriminations against females is engineered even before birth through female foeticide.

It seems that education and incomes, which were supposed to result in the emancipation of women, have actually increased, not lowered, the bias in favour of the male child.

*Bhatt, Sanjai* in the article “Foeticide: The Worst Form of Fomicide” discussed on the sex- selective abortions. According to him, though abortion is legal in India, but the selective abortion of the female foetus has neither legal nor ethical sanction. He further noted that, Govt. of India placed a bill to regulate the use of and to provide different punishment to stop the misuse of prenatal diagnostic techniques by the Prenatal Diagnostic Techniques Act, 1994.

*Bhotte, Anuradha* in her book “women Employees and Rural Development” discussed on the type of economy and their impact on developmental schemes. As a part of developmental schemes, various educational institutions and health care and family and child welfare programmes were planned and this introduction of schemes created various kinds of employment opportunities for women.

*Bondarage, Ashoka* in his book “Women, Population and Global Crisis” discussed on the neo-Malthusian viewpoints on gender analysis and according to him, the basic Malthusian assumption that population growth increases poverty, neo-Malthusian analysts argue that pregnancy leads to sufferings, powerlessness and the low status of women and that improvement of women’s status is a direct consequence of the acceptance of modern family planning.

*Borooah, Vani K., Sriya Iyer* in the article “Religion, Literacy, and the Female-to-Male Ratio” (2005) proposes a new explanation for religious differences in fertility in India by incorporating the issue of gender bias into the debate. This paper reports the results from an currently living children, by religion and by caste, for a sample of over 10,000 women.

*Bose, Ashish* in the article “Falling Fertility and Rising Anaemia?” (2006) revealed that a significant drawback of the National Family Health Survey, including the third survey of 2005-06, is the lack of district-wise data as the sample size does not permit generalization at the district level. The data on anaemia prevalence among women and children, however, is disturbing.

*Boserup, Ester* in the book “Women’s Role in Economic Development” discussed about the characteristics of economic development in terms of the division of labour. According to the writer since primitive stages the main criteria for the division being that of age and sex.

*Buvinic, Mayra* in the paper “Population Policy and Family Planning Programmes: Contributions from a Focus on Women” wrote on the women in the understanding of population dynamics and the design of family planning programmes.

*Chanana, Karuna* in the article “Globalisation, Higher Education and Gender (Changing Subject Choices of Indian women Students)” (2007) has argued that, globalization has meant privatization and increased individual cost of higher education. This paper looks at these myriad issues and asks how women have been affected by the increasing individual cost and the change in the subject options offered by higher education.

*Chandrashekar, S.* in the book “Infant Mortality, Population Growth and Family Planning in India” (1972) discussed on population census and vital statistics in India; measurement of infant mortality; causes and facts of infant mortality in India & the world; nutrition & infant welfare; relation among infant mortality & family planning; infant mortality and the small family norm etc.

*Cleland, John* in the paper “Different Pathways to Demographic Transition” published in edited book “Population- The Complex Reality” identify the conditions that have facilitated or impeded demographic transition in developing countries.

*Dabib, Neela and Mohua Nigudkar* in the article “Child abuse: Confronting Reality” (2007) highlights various forms of abuse experienced by the children and includes physical, sexual and emotional abuse. In addition the paper also covers the neglect experienced by girls.

*Das, Subrat, Yamini Mishra* in the article “Gender Budgeting Statement-Misleading and Patriarchal Assumptions” (2006) states that, the gender budgeting state presented in the union budget for 2006-07 covers a significant number of ministries/ departments and is hence a welcome step.

*Dasai, Neera and Vibhuti Patel* in their book “Indian Women- Change and Challenge in the International Decade 1975-’85”, (1990), they have mentioned that to understand the status of women, it is essential to examine the Indian social Structure which is characterized by institutions like caste, joint family and religious values and practices consolidating women’s subordinate position. The book also dealt with the caste system and women.

*Dasgupta, Partha* in the paper “The Population Problem” published in edited book “Population- The Complex Reality” wrote on the economic analysis to rural households in poor countries to see what one may mean by a “population problem”.

*Devi, Uma K.* in her article entitled “International Instruments for Women’s Rights” (2000) discussed about the International Human Rights commitments in terms of gender equality. She also discussed various gender related instruments.

*Eguavoen N.T. Agatha, Sims O. Odiagbe and Godfrey I. Obetoh* in the article “The Status of Women, Sex Preference, Decision-Making and Fertility Control in Ekpoma Community of Nigeria” (2007) examined gender relationships and how this affect sex preference and decision making in the home with particular reference to fertility in Nigeria. The findings revealed that people still holds to traditions and customs in matters affecting gender than the educational level. They have concluded that if encouraged, women empowerment will not only affect women’s autonomy but also will increase their worth, participation in family decision-making including reproductive decisions and reduce the preference for a particular sex by couples.

*Everingham, Jo-Anne* in the paper “Mahila Sanghas as Feminist Groups: The Empowerment of Women in Coastal Orissa” (2002) argued that, the increasing focus on the place of women in development by multilateral agencies, donor countries and non-governmental organizations results in various strategies of intervention. The paper deals with one such intervention in Orissa, redefining the position of poor illiterate womenfolk in contrast to the dominant discourses and gender ideology of state, religion and economy, to overcome culturally enshrined powerlessness.

*Forbes, Geraldine* in the book “The New Cambridge History of India: Women in Modern India” (1998) discussed on the education for women, the emergence of women’s

organizations, the movement for women's rights, roles of women in the Independent India etc.

*Gautam, V. K.* in the article "Human Resource Development Policy in India" (1999) discussed on the human resource development policies of India- both pre and post independent period. The article also deals with the human resource development through education, health and health care facilities with some emphasis on women.

*Ghosh, Madhusudan* in the article namely "Economic Growth and Human Development in Indian States" (2006) evaluates relative performance of 15 major Indian states on human development, and examines the two-way nexus between economic growth and human development.

*Ghosh, S. K.* in the book "Indian Women Through the Ages" (1989) dealt with the position of women in Indian society through different religions and various family structures.

*Guha, Mohua and Subhra Dutta* in the paper "Development, Status of Women and Demographic Outcomes in Madhya Pradesh: A Regional Analysis" (2008) examine the regional variation in Madya Pradesh in terms of socio-economic conditions, cultural traits, family welfare programme and demographic characteristics using data from Census of India 1991, NFHS-2 (1998-'99) and CMIE (1993). A number of variables were considered to represent each dimension of socio-economic development, status of women and family welfare programme. They also tried to find out the relative role of socio-economic conditions, cultural traits and family welfare programmes in explaining fertility and child mortality. The result of regression analysis shows that the strength of family welfare programmes in reducing fertility is more than socio-economic development.

*Gurumoorthy, T. R.* in the article "Self Help Group empower Rural Women" (2000) argued that the self-help group disburses micro credit to the rural women for the purpose of making them enterprising women and encouraging them to enter into entrepreneurial activities. Credit needs of the rural women are fulfilled totally through the self-help groups enhance equality of status of women as participants, decision-makers and beneficiaries in the democratic, economic, social and cultural spheres of life. Self-help

group encourages women to take active part in the socio-economic progress of our nation.

*Harrison, G.A., and A. J. Boyce* in their edited book “The Structure of Human Population” (1972) discussed about patterns of human fertility and mortality, various mathematical models in demography, factors associated with the sex ratio in human populations, social mobility, tropical ecology etc.

*Hussain, Sabina* in her paper “Gender and Reproductive Behaviour: The Role of Men” (2003) wrote that the entire reproductive process from pregnancy to child birth is a complex phenomenon that is socially and culturally determined, and women are excluded from decision making on issues concerning their own lives and bodies. Based on a larger study, the paper shows that, religion is a less influential factor than male dominance and cultural norms.

*Jacob, Sophy* in the article “Health Status of Women: A Reality Check” (2001) argued that the girl child is the most deprived where access to health care is concerned. She is discriminated against not only in nutrition, health and upbringing but also in the right to be born.

*Jacobson, Doranne and Susan S. Wadley* in the book “Women in India: Two Perspectives” (1999) wrote on socio-economic status of women in some villages of north and central India.

*Jain, Kalpana* in her article “Infant Mortality Rate Rising in Most States” (2001) argued that the infant mortality rate is an indication of the social and health status of women and children in the country and a proxy for the economic condition of a community. In spite of that, it is increasing in India while in some states the rise has been dramatic, which is not purely medical but a social problem.

*Jejeebhoy, Shireen J.* in the article “Sexual and Reproductive Health among Youth in Bihar and Jharkhand: An Overview” (2007) explores that young women in India are less likely than young men to be aware of sexual and reproductive health matters or be able to negotiate safe sex with spouses and partners. The paper also highlights the sexual and reproductive health situation among youth in Bihar and Jharkhand.

*Jones, H. R.* in the book “A Population Geography” (1981) discussed about fertility patterns, mortality patterns, patterns of growth rate, population policies, internal as well as international migration for both the genders.

*Jose, Sunny* in the article “Gender Bias in Resource allocation in India: Where do Household Models and Empirical evidence Intersect?” (2003) wrote about the discrimination faces by women in each and every sector of social, economic and cultural decision making in the country.

*Kalia, Anil* in his article “Health Crisis: Investing in Women’s Health- The Only Solution” (2001) revealed that the women’s burden of poverty, low social status and reproductive roles expose them to greater health risks. Investments in women’s health promotes equity, it ensures widespread benefits for this generation and for the next.

*Karl, Marilee* in the book “Women and Empowerment” wrote on the forms of participation of women in various activities as household participation, economic participation, socio-cultural and political participation. The writer thought that the inequalities in economic participation among two sexes have an adverse effect on women’s self-esteem and their status in society.

*Kaur, Ravinder* in his article “Dispensable Daughters and Bachelor Sons: Sex Discrimination in North India” (2008) attempts to move beyond currently available explanations of low sex ratios and daughter elimination. Author makes three arguments: one, that these strategies occurred together, two that one needs to go beyond this explanation to understand why daughters were the dispensable ones and three, that the number of sons wanted was by no means unlimited.

*Kessler, S. Evelyn* in the book “Women: An Anthropological View” (1976) discussed on the anthropological contribution to the study of women. The writer also dealt with an overview of the status of women in culture, in modern world; an anthropological view of the psychology of women etc.

*Keyfitz, Nathan and Kerstin Lindahl-Kiessling* in the topic “The World Population Debate: Urgency of the Problem” showed the international population debate from the economic and ecological viewpoints.

*Kidwai, Shaikh M. H* in the book “Women: Under Different Social and Religious Laws” (1976) discussed about religious effect on women’s status like, women under Christianity, women under Islam.

*Kundu, Amitabh and Niranjana Sarangi* in the article namely “Migration, Employment Status and Poverty- An Analysis across Urban Centres” (2007) analyse the pattern of both male and female migration in urban areas and its socio-economic correlates and suggests that, the probability of being poor is much less among the migrants compared to the local population, in all size classes of urban centers.

*Kuponiya, F.A and O.A.Alade* in the paper “Gender Dynamics and Reproduction Decision Making among Rural Families in Orire Local Govt. Area of Oyo State, Nigeria” (2007) investigated separate and joint roles of marital partners in reproduction decision-making which was carried out in the Orire Local Govt. area of Oyo State, Nigeria through the administration of validated interview schedule. They have recommended that, couples should be continuously educated on the values of decision making to ensure commitment by both partners. Information of family planning issues should be widely disseminated among the rural dwellers.

*Makhubu, P. Lydia* in the paper “The Role of Women in Relation to the Environment” attempts to highlight positive aspects of women’s roles and makes recommendations for the construction of a plan of action which will take into account women’s strengths and pave the way for their greater involvement in environment and development at the leadership and research levels.

*Mandal, R. B., Joseph Uyanga and Hanuman Prasad* in their book “Introductory Methods in Population Analysis” (1989) discussed about theory of population growth, sex structure, age structure, fertility, mortality and population projections.

*Mathus, Kanchan* in the article “Body as Space, Body as Site: Bodily Integrity and Women’s Empowerment in India” (2008) argued that the identification of women with their physical bodies is the root cause of their oppression in a patriarchal culture and society like India as most often women are denied the rights to emotional, mental, psychological and physical spaces. This paper highlights the struggles and spaces that Indian women have negotiated in their quest for empowerment.

*Menon, Latika* in her book “Gender Issues and Social Dynamics” (1997) discussed on fertility and status of women, women’s work and migration, women and social change, women in tribal community etc.

*Momsen, Janet Henshall and Janet G. Townsend* edited book “Geography of Gender in the Third World” (1987) discussed on geography of gender in developing market, sex ratio in South Asia, agriculture and gender etc.

*Mukherjee, Prabhati* in the book “Hindu Women: Normative Models” (1994) discussed on the property rights of women, effect of son’s inheritance, appraisal for ideal womanhood etc.

*Nanda, K. Aswini and Jacques Veron* in the paper “Child Sex Ratio Imbalance, Fertility Behaviour and development in India: Recent Evidence from Haryana and Punjab” (2004) wrote that, a sharp increase in the masculinity of the child population in Haryana and Punjab is a cause for concern as both the states are traditionally known for a strong son preference and have experienced agriculture led growth. Though economic development in these states improves the living standards of all family members including women, but it did not result in lesser female discrimination.

*O’Malley, L.S.S.* in the book “India’s Social Heritage” (1976) wrote about the marriage system, the purdah system, social changes, the family, the village community etc and the effects of these systems on status of women in the village.

*Pal, Mahi* in the article “Empowerment of Women through Panchayats- An Assessment and Tasks Ahead” (1999) discussed on the women’s participation in Panchayats and its impact on the women empowerment and how the involvement of women helps in the development of women socially and politically as well as economically.

*Pahad, Anjali and Anuradha Bhasin* in their article “The Unwanted Girl” published in Social Welfare (2001) discussed on the gender disparities in almost every aspect of the growing girl’s social and cultural environment. They also argued that, despite the improvement in the economy and provision of basic services in India, the sex ratio has been deteriorating from decade to decade in the 20<sup>th</sup> century. According to them, the

female infanticide and female foeticide appear to be having a growing negative influence on the sex ratio in a number of communities and geographical areas.

*Pradhan, Arabinda* in the article entitled “A Cherished Saga of Femillennium” (2000) discussed on the introduction of International Women’s Day and actions taken by the Govt. of India to implement it.

*Pruthi, Raj and Bela Rani Sharma* in their book “Women Education and Culture” (1995) discussed on various aspects of status of women through education, religion as well as employment pattern.

*Raj, Maithreyi Krishna* in the book “Women and Development: The Indian Experience” discussed on the women’s relation to development. The improvement of the status of women requires to change in the attitudes and roles of both men and women. She also argued that, the development process for rural areas has some implications mainly on the women’s participation in labour force and the marriage and kinship system which place women in a subordinate position.

*Rajan, S. Irudaya* in the article “District Level Fertility Estimates for Hindus and Muslims” (2005) provides the estimates of crude birth rates and total fertility rates for Hindus and Muslims for 594 districts of India and assesses the state and district level differentials across the country.

*Rajeev, P. V.* in the article “Towards Universal Literacy” (1999) stated various purposes of education for mass. The article also deals with the introduction of relevant curriculum for school children along with way of conducting examination in school level.

*Ramanna, Mridula* in the article “Maternal Health in Early Twentieth Century Bombay” (2007) states that colonial health reports from the mid-19<sup>th</sup> century onwards recorded alarmingly high rates of maternal and infant mortality in the then Bombay Presidency which was attributed to the practice of early marriage, the inferior status of women in society and tradition bound health habits.

*Rani, Sandhya, Saswata Ghosh and Mona Sharan* in their article “Maternal Healthcare Seeking among Tribal Adolescent Girls in Jharkhand” (2007) presents evidence from a cross-sectional survey on the extent of maternal healthcare seeking among adolescent

tribal girls in Jharkhand and the factors associated with this proclivity. The findings are intended to inform the development of policies and programmes that address the maternal and child health needs of this group in the country.

*Rao, Rajalakshmi Rama* in the article “The Missing women” (2001) revealed the fact that, there are numerous causes behind the decrease of sex ratio and also mentioned on the numerous crimes against women.

*Rawat, V. B.* in his article “Women’s Movement in India: Need to Learn from the Past Movements” showed the evolution of women’s movement in India and also compared today’s status of women with that of the past.

*Reddy M. M. Krishna* in the book “Marriage, Population and Society (1998)” wrote on types and characteristic features of marriages in India. He also mentioned various types of modern marriages and their demographic differences. The author also discussed a lot on the age at marriage in India with special reference to Andhra Pradesh.

*Rustagi Preet* in the article “Significance of gender related Development Indicators: An Analysis of Indian States” (2004) illustrates the complexities of gender-related development through an analysis of individual indicators covering issues of women’s work, education, health, survival safety and participation in public/ private decision making. State level comparisons based on selected individual gender-related indicators reveal divergent patterns of development, highlighting the problems that complexity and non-linearity pose for measuring gender development.

*Sabat, Kalpana Rani and Nirmal Chandra Das* in the article “Status of Kondh Women of Ganjam, Orissa” (1999) discussed on the status of women in India. According to them, the status of women can be ascertained by the educational achievements of women, legal rights and status given to them, employment opportunities and demographic characteristics of women in socio-cultural terms.

*Sethuraman, Kavita and Nata Duvvury* in the article “The Nexus of Gender Discrimination with Malnutrition: An Introduction” (2007) wrote that there is a complex relationship between gender discrimination and malnutrition, mediated by women’s empowerment and social status, that needs to be more fully understood in South Asia, a region where progress in raising the nutrition levels has slowed in recent years. This

paper is based on studies in three sites in India and Bangladesh that sought to find ways in which the health and nutrition status of girls and women could be improved.

*Sharma, Kumud* in the paper “Women Studies and Higher Education: The Troubled Journey” (2002) reviews the evolution and development of women’s studies in contemporary India from the 1970s to the present. The essay concludes by recognizing new sources of crisis as well as fresh challenges at the turn of the century.

*Sharma, R. C.* in the book “Population trends, Resources and Environment” (1975) discussed about population and education, population situation, population and quality of life, population and the quality of life, population and resources, population and environment, discussion problems, activities and investigations.

*Sharma, Ruchita, Shubhangna Sharma and Shipra Nagar* in the article “Extent of Female Dropouts in Kangra District of Himachal Pradesh” (2007) aimed at finding out the extent of school dropouts of girls in schools. Their major findings revealed a significant association between family type, income and education of mothers with incidence of dropouts.

*Shekhar, Medha, Saswata Ghosh and Pradeep Panda* in their article “Exploring Safe Sex Awareness and Sexual Experiences of Adolescents in Patna” (2007) correlates the awareness of safe sex and experience at the individual, family and peer levels. Maternal education and parental supervision of adolescent activities played an important role in promoting awareness among girls, suggesting that parenting issues are critical.

*Singh, J. P* in the book “Patterns of Rural-Urban Migration in India” (1986) discussed on patterns of inter and intra state migration, age and sex characteristics and marital status of migrants etc.

*Singh, Om Raj* in the article “Health Policy and Women” (2001) argued that several areas have been enumerated which require special attention if India’s health policy is to become gender effective in implementation.

*Singh, Prabhash P.* in the book “Women in India: A Statistical Panorama” (1991) discussed on various aspects of socio-economic condition of women like education, health, welfare, employment, politics etc.

*Singh, Rashmi* in the article “Towards a Gender- Just Indian Society” (1999) wrote on the question of gender equality in Indian society. Not only that she also discussed on the gender related indicators and how they affect on the gender equality and women empowerment in the Indian Society.

*Srinivasan K.* in his paper “Critical Factors affecting Population Growth in Developing” book “Population- The Complex Reality” wrote on the Human Development Index proposed by the United Nations and the Family Planning Programme efforts come out as the two significant predictors of fertility levels in a population, explaining over 85 percent of the variations in recent fertility levels.

*Srivastava, S. P.* in the article “The Perils of Pre-Birth Murder- A Sociological Analysis of Female Foeticide” (2001) has argued that the declining sex ratio has to be examined in the social context of discriminatory attitudes and practices that are mainly with the girl child. This article also probes the problem of the pre-birth elimination of the female foetus and holistically looks at the social beliefs which linger in the form of a cruel legacy.

*Sundaram I. Satya* in the article “Focus on Human Rights” (2000) discussed on the India’s position regarding the Human Development Index and also deal on the Human Rights based on Human Development Report 2000 regarding both the sexes.

*Sur, Malini* in her paper “women’s Right to Education- A Narrative on International Law” (2004) has underpins various legal and social constraints that deter the translation of the women’s right to education into a lived experience. Drawing briefly on constitutional provisions, progressive judicial interpretations and people’s movements for education, this article nevertheless cautions that despite assertions to the contrary, India is still slotted ‘at risk’ in not reaching minimal thresholds in gender parity.

*Tandon, Sheh Lata* in her article “Impact of Social Intervention on the Female Identity” revealed that the Indian social system and its effects on the state of womanhood is examined with practical directions for social work practitioners. According to her the



condition of women has to be viewed in totality but has to be treated on a situation specific and need specific basis.

The book “Demographic and Socio-Economic Aspects of the Child in India” edited by *K. Srinivasan; P.C. Saxena and Tara Kanitkar* (1979) discussed on various demographic and social aspects of the child and also various health and nutritional status of the child including girl child.

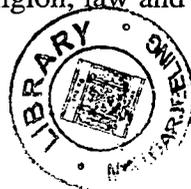
The book edited by *Shah A.M., B. S. Baviskar and E. A. Ramaswamy* discussed on the women’s employment and their familial role in India. It is contented that, for women belonging to the middle and upper classes, non-household employment not only means more consumer goods and upward mobility for the family but also result in the personal gains, such as larger participation in decision- making, less vulnerability in times of stress and greater confidence in their own capabilities.

The book “Human Population and Related Disasters” edited by *P.C. Sinha* (1998) discussed on population explosion and poverty, population growth & development, population development-environment syndrome etc.

The book “Methodology for Population Studies and Development” edited by *Kutton Mahadevan and Parameswara Krishnan* (1993) discussed on theory and research design, interdisciplinary methods, models for data analysis and development, projection and estimation, action research etc.

The book “Recent Advances in the Techniques for Demographic Analysis” edited by *P.C. Saxena and P.P. Talwar* (1987), discussed on various techniques for fertility analysis including measurement of current fertility, trends in fertility etc.; various techniques for mortality analysis like construction of life tables, estimation of infant mortality etc.; and also some multivariate and other quantitative techniques for demographic analysis like regression analysis, multiple classification analysis etc.

The book “Responses to Population Growth in India: Changes in Social, Political and Economic Behaviour” edited by *Marcus F. Franda* (1975) discussed about the dynamics of the Indian population growth, India’s population and International Affairs, effects of population growth in India on social interaction and religion, law and population change etc in terms of both sexes.



The book “Socialisation, Education and Women: Explorations in Gender Identity” edited by *Karuna Chanana* (1988) deals with the various aspects of social structure like education, religion etc and their relation with gender.

The book “Socio-economic Status of Indian Women” edited by *K. Murali Monohar* (1983) discussed on socio-economic status of Indian women through some case studies like, status of maid servants, sanitary workers, beedi workers, construction workers, petty traders and tribal migrants.

The book “Women and Population Dynamics: Perspective from Asian Countries” edited by *K. Mahadevan* (1989) discussed on various aspects of status of women based on the case studies in China, Thailand, Taiwan, Malayasia, Bangladesh, Pakistan, Iran and Kuwait. This book also dealt status of women in Indian society through case studies on some states of the country.

The book “Women as Subjects- South Asian Histories” edited by *Nita Kumar* (1994) deals with the gender, violence, power, politics in Garhwal and story on education of girls in Banaras.

The book “Women in India and Nepal” edited by *Michael Allen and S. N. Mukherjee* (1982) discussed on various socio-cultural view on women in India and Nepal.

*Vasudev, Shefalee* in her article “Missing Girl Child” (2003) showed that, rampant misuse of modern technology, a collective failure of medical ethics and an inability to shed notions of a male heir have pushed female foeticide in affluent India to a shocking high.

*Verma, G. R. and B. V. Babu* in the article “Son preference and Desired Family Size in a Rural Community of West Godavari District, Andhra Pradesh, India” (2007) studied the desired family size and preference of son and their socio-economic and demographic determinants among rural population of West Godavari district of Andhra Pradesh. Their study concludes the existence of son preference, which is undesired fertility behaviour among this population. They also warrant checking the possible gender bias in child health programmes.

*Visaria, Leela* in her paper “Improving the Child Sex Ratio: Role of Policy and Advocacy” (2008) analyses the challenges ahead against the backdrop of the text and implementation of the previous Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) and the role of advocacy measures to prevent an increasing deficit of women in the population.

*Unisa, Sayeed, Sucharita Pujari and R. Usha* in the article “Sex Selective Abortion in Haryana (Evidence from Pregnancy History and Antenatal Care)” mentioned that, a declining child sex ratio has been one of the important concerns of India’s demography and the present study aims to understand the magnitude of sex selective abortions and its reasons especially in Haryana. Interviewing a total of 2590 households and 2646 ever married women in the reproductive ages, the study provides indirect evidence of sex selective abortions based on the data on pregnancy history of women, spontaneous and induced abortions and ultrasound status.

### **1.3 CONCEPTUAL FRAMEWORK**

The structures of population have great subjective importance in all fields related to society with the growing emphasis on the regional planning and regional approach to the population policy and most important in the utilization of human resources. Since sex structure is an important attribute of population structure, hence no regional and economic development plan can afford to neglect them. Sex structures often vary significantly from population to population, set the future rates of fertility, mortality and migration and have substantial influence on the capacity or potential for population growth in future years. It primarily help to explain employment and consumption patterns, social needs, cultural patterns and perhaps the psychological characteristics of population.

The imbalances between two sexes lead to a number of social problems in terms of marriage patterns, social well-being, social behaviors as well as social decision making. On the other hand the direct economic implication of the imbalance in sex ratio is that it affects the rate of male and female participation in work pattern. Basically three factors determine the sex composition of a population and these are relatively pre-dominance of male births, relatively high incidence of deaths among males and sex selective migrations. Besides these three factors, which are generally considered as chief

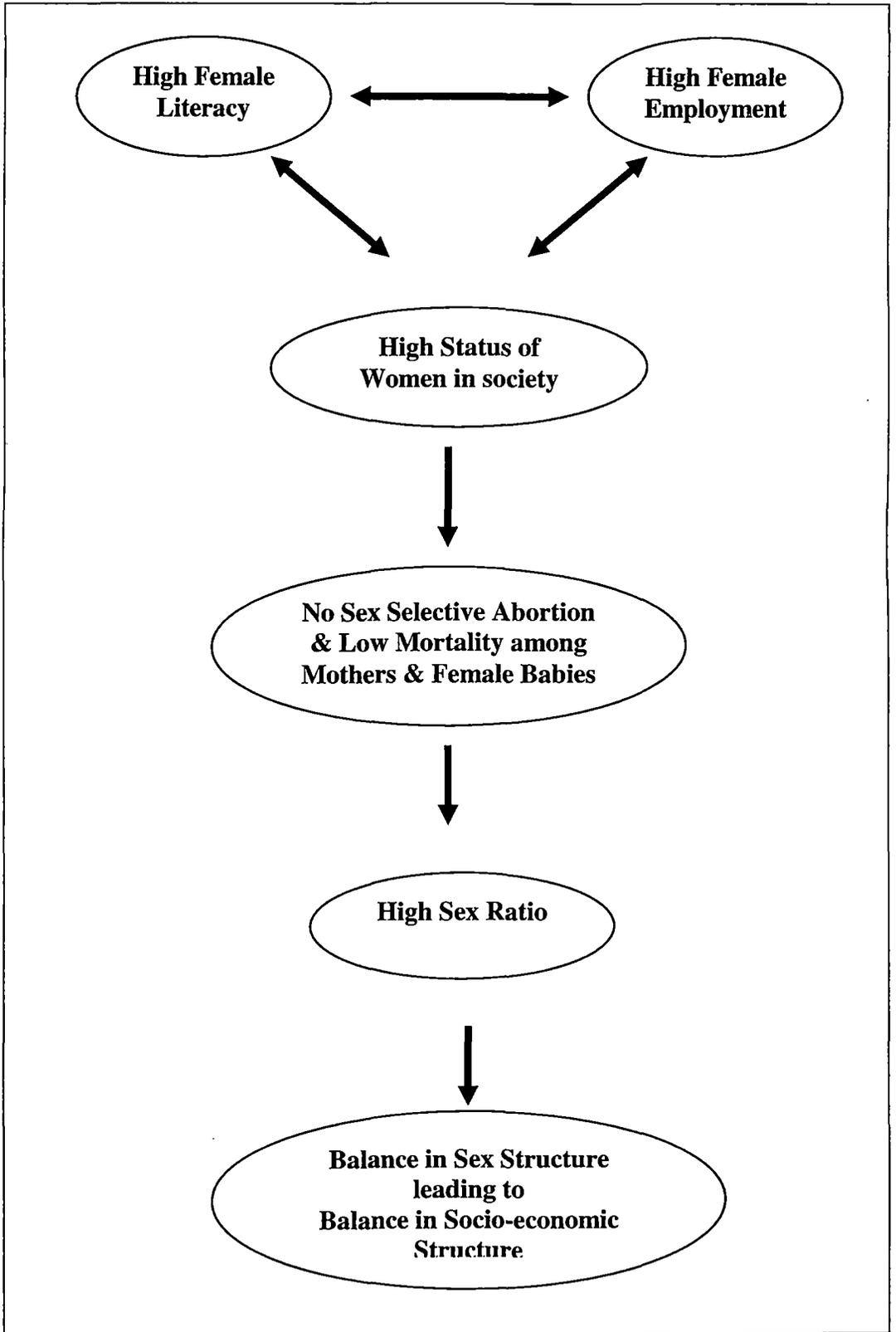
determinants, a fourth one that of social customs and traditions may also be recognized as a potent determinant of sex ratio especially in the conservative societies and the underdeveloped nations of the world. To be sure this fourth factor is the most effective controlling agent of the regional variations in sex structure found in India. In fact, the higher incidence of male births and higher survival expectancy of female babies are a universal phenomenon. What really brings about regional disparities and variation in the sex structure is either migration or the social attitudes along with social behavior in respect of males and females in the family and in the society. According to social scientists, there are strong evidences to show that in industrialized and developed countries or in countries of a certain abnormally abundant resource migration is the chief determinant of sex structure. But in traditional societies of long historic background with almost closed populations it is not the migration but the social factor, which is most effective. And Indian population provides a good example of this latter case.

In the analysis of population structure regions are relevant as they provide a frame for the study of areal variations in item specified variables of population structure. Likewise sex structure regions give generalizations about the selected set of structural variables, which separately exhibit different frequencies of occurrence by location and through time. Sex structure regionalization is the identification of locations that have similar associations of structures and the linking of these relatively homogeneous locations into areas. Some factors control sex structure regionalization, which may vary from region to region. Some are physical, economic, socio-cultural and some are political and demographic. Among these factors the nature of economy and the demographic determinants have a more significant effect on the development of regions as identified on the basis of sex structures. The economy effects sex structures of an area sometimes directly and sometimes indirectly whereas the demographic determinants have direct effect.

In the light of the above analysis of regional concepts and sex structure regions, a methodology may be worked out for the study of regional analysis of sex structure, and the concept of homogeneity of formal and functional regions may be utilized generally in those areas which have partial integration.

A conceptual framework may be formulated depicting the relationship between status of women and other social developmental indicators.

**Model: -**



## 1.4 THE PROBLEM

The above idea of high sex ratio remains merely an ideal in developed countries, where the number of sex selective abortion is almost nil as well as there is no negligency for female babies.

One of the most important factors influencing the sex ratio is the sex ratio at birth. It is usually 1000 for all the countries. This ratio is determined biologically and population-to-population variations are not very wide but only marginal. Sex ratio depends at the time of conception and also on foetal losses and deaths. Indirect observations have made scientists come to conclude that sex ratio at conception is much higher than the sex ratio of live births or foetal deaths as it is not possible to directly observe this ratio at the time of conception.

Another factor that influences the sex ratio is differential mortality of males and females. It has been found that more males die than females because biologically male foetus is more delicate than the female foetus. This results in higher proportion of male babies in still birth.

The most important demographic feature in the country is the small number of females compared to males and the sex ratio that is the number of females per thousand males is decreasing in majority of districts of the country. The study region also follows this trend. Though there has been an increase in the overall sex ratio from 927 in 1991 to 933 females per 1000 males in 2001 in the whole country and from 930 to 944 females per 1000 males respectively in the study region. This increasing trend is good news, but the worrying news is that the sex ratio figures of children below seven years has decreased markedly from 945 females per 1000 males in 1991 to 927 in 2001 in India and from 969 in 1991 to 965 females per 1000 males in 2001 in the study region. Except the southernmost district of Maldah, in whole North Bengal region, there is a sharp decline in the sex ratio of below seven age groups. Generally, in the whole country, there is a strong preference of son and the sharp decline in the under seven sex ratio is commonly assumed to be the result of the rapid spread of the use of ultrasounds and amniocentesis for sex determination, followed by sex selective induced abortions (Unisa, Pujari and Usha). According to social scientists, sex selective abortion is a matter of great concern in terms of social and demographic perspectives. In much of South Asia, sons are

preferred over daughters for a number of economic, social and religious reasons including financial support, old age security, property inheritance, dowry, family lineage, prestige and power, birth and death rituals and beliefs about religious duties and salvation

Another important factor leading to female mortality leading to low overall sex ratio is the high rate of maternal mortality. In villages, generally, the numbers of women patients are small because the doctors attending to patients are male. For childbirth, the very idea of hospitalization is mainly domestic and is mainly attending by village women and 'dais' (midwives). Linked with maternal health were the alarming rates of infant mortality. Concern for the health of children who survived infancy was limited to the promotion of vaccination. However, a review of maternity facilities of these years shows that the growing presence of Indian women doctors inevitably led to a rise in the numbers of women patients. Welfare measures promoting maternal and infant care had been initiated at the instance of reformers in the previous century. The 1900s, saw an expansion of these and the establishment of voluntary organizations, some wholly private and others semi-official, which were cooperative efforts of activist health offices, civic leaders etc. But inspite of these measures the maternal mortality rate is still there in remote areas.

## **1.5 OBJECTIVES OF THE STUDY**

The major objectives of the study are:-

- (i) To assess the spatial variation and temporal variation of the sex structure.
- (ii) To assess the rural-urban distribution of sex ratio of North Bengal.
- (iii) To assess the distribution of sex ratio in decennial age groups.
- (iv) To assess the rural-urban distribution of sex ratio in age groups by economic status.
- (v) To delineate the sex structure region.
- (vi) To assess the relationship between sex structure and other socio-economic variables.
- (vii) To suggest measures for development of the study area in social and economic dimension by balancing in sex structure.

## 1.6 HYPOTHESIS

In general, hypothesis may be defined as a proposition or a set of propositions set forth as an explanation for the occurrence of some specified group of phenomena either asserted as a provisional conjecture or accepted as highly probable in the light of established facts mainly to guide some investigation. The following hypotheses have been tested during the investigation of the study: -

*(1) Regional disparity in the sex ratio is the resultant effect of combination of factors like social and economic condition of the area in respect of males and females.*

Rationale: - The regional variation of sex ratio depends on a host of factors. The demographic differentials play a profound role in shaping the sex ratio of a population and the most important factors are fertility, mortality and migration. Besides demographic factors, socio-cultural, economic and political factors also responsible for the differentiation among sex structures sometimes directly and sometimes indirectly.

The variation and distribution of sex structures is a matter of direct relevance to the state or condition of the society in terms of past conditions, present conditions and future prospects. Besides, the economic status of the region also plays an important role in determining the sex ratio pattern of the region. The social and economic status of both the sexes in a society affect largely on the sex ratio pattern of that society. The education structure, caste structure, religious structure of the society, status of women in terms of decision making within the family, health status of women and above all the attitudes of all family members towards the female members are important social factors causing variation of sex structure of a society. Among economic factors, the work participation rate of both the sexes, standard of living of individual family, their income structure and above all the attitudes of all family members regarding the economic status of women act as strong economic force behind the variation of sex ratio of a society. The spatial analysis of sex structure acts both as cause and effect of the differentials of the overall geographic personality of a region. Sex structure can be measured in various ways. The sex ratio defined as the number of females per 1000 males is an important social indicator to measure the extent of prevailing equity between males and females in a society at a given point of time. It is mainly the outcome of the interplay of sex differentials in mortality, sex selective migration, sex ratio at birth and at times sex

differential in population enumeration. These factors depend on various socio-economic condition of the area mentioned before. Other causes of imbalance in the sex ratio in the study region seem to be excess of males over females at birth, higher rates of mortality among females due to relative neglect both at the growing period and the reproductive age and under reporting of females by orthodox and conservative respondents of the peasant families.

*(2) Migration explains high sex ratio in rural areas compare to that in urban areas.*

Rationale: - Migration is highly sex and age selective and it takes place due to socio-cultural, political and economic reasons. In India, most of the economically motivated migration that takes place from the rural to urban areas is highly male dominated. That is why, in the urban areas of the study region also, the sex ratios are highly female deficient. Migration, which is generally considered to be strongly male selective does not seem to be a determinant so far as the state is considered as a single unit. However, in the inter-district and urban-rural variations found within the state, the significance of migration as a determinant of sex ratio cannot be ruled out. But in case of North Bengal region, international migration plays a vital role in determining the sex structure of the region as since independence; the region had witnessed a large-scale illegal international migration mainly from Bangladesh and also from Nepal and Bhutan.

As in each and every districts of the study region, there is high rate of out- migration from rural areas to urban one in search of better job, better education, and better medical facilities and so on. Hence, in all of the districts, especially in rural areas, there is prevalence of comparatively high sex ratio compared to that of the urban areas. This high sex ratio is not due to better social and living conditions for women but mainly due to deficiency of males as a result of high rate of sex selective out- migration.

*(3) Improvement in sex ratio is directly related with medical and public health arrangement.*

Rationale: - Sex ratio of a region also affected by differential mortality among males and females. High infant mortality rate may lead to low sex ratio, whereas, low mortality may induce a high sex ratio. Majority of developed countries have low mortality rates are characterized by a relative as well as absolute male deficiency. But, in some countries, the male deficiency is the result of devastation caused by war than by infantile mortality

rates. Similarly in less developed countries and developing countries having high mortality rates, the female deficiency is common, but the fact is that, it is caused mainly by high female mortality in the reproductive age group.

Hence by improving the medical facilities, these high rates of female mortality rate will come down and the result will be the balance in the sex ratio of a region.

### **1.7 RATIONALE FOR SELECTION OF THE STUDY AREA**

Population structure includes all aspects of population as its social, cultural and economic compositions. Biologically, population is divided into two- males and females. Nature creates balance between these two sections of population in terms of their numbers. If there is any change in the male-female population ratio, it will effect badly on every aspects of the society. This imbalance also effects on the proper and effective developmental planning including socio-economic planning of a region. Not only that, the changes in sex structure also influences the birth and death rates, marital status composition, medical, housing and educational needs and structures, planning process and national as well as international migration. Not only that, this structure affects the area of social welfare, labour force and social planning.

The foci in this evaluation-study of sex structure are in districts and blocks of North Bengal region. The basis for selecting the North Bengal region, in particular, is analysed here below: -

Among the whole state of West Bengal, the northern part consists of both diversities and disparities within the districts of North Bengal. In spite of its physiographic diversity as well as cultural diversity, the region is lacking far behind from that of the South Bengal in terms of socio-economic development. For micro level study of the North Bengal region, Districts and Community Development Blocks have been selected because these will indicate the overall picture relating all socio-economic-cultural aspects of the region.

### **1.8 THE STUDY AREA**

The study area, North Bengal is the northern part of a larger regional entity, namely West Bengal, which is a state in the Indian Union. The North Bengal lies between latitude  $24^{\circ} 40' 20''$  and  $27^{\circ} 13' 00''$  in the northern hemisphere. The easternmost extremity is marked by the  $89^{\circ} 54' 35''$  east longitude and its westernmost extremity by  $87^{\circ} 45' 50''$  east

longitude. Six districts comprise the whole region and these are Darjiling, Jalpaiguri, Koch Bihar, Uttar Dinajpur, Dakshin Dinajpur and Maldah. As per recent estimates, the total area of the North Bengal measured as 21855 sq. km, out of which 21520.88 sq. km is treated as rural and 334.12 sq. km as urban area. Thus, North Bengal constitutes 24.62 percent of total area of the state.

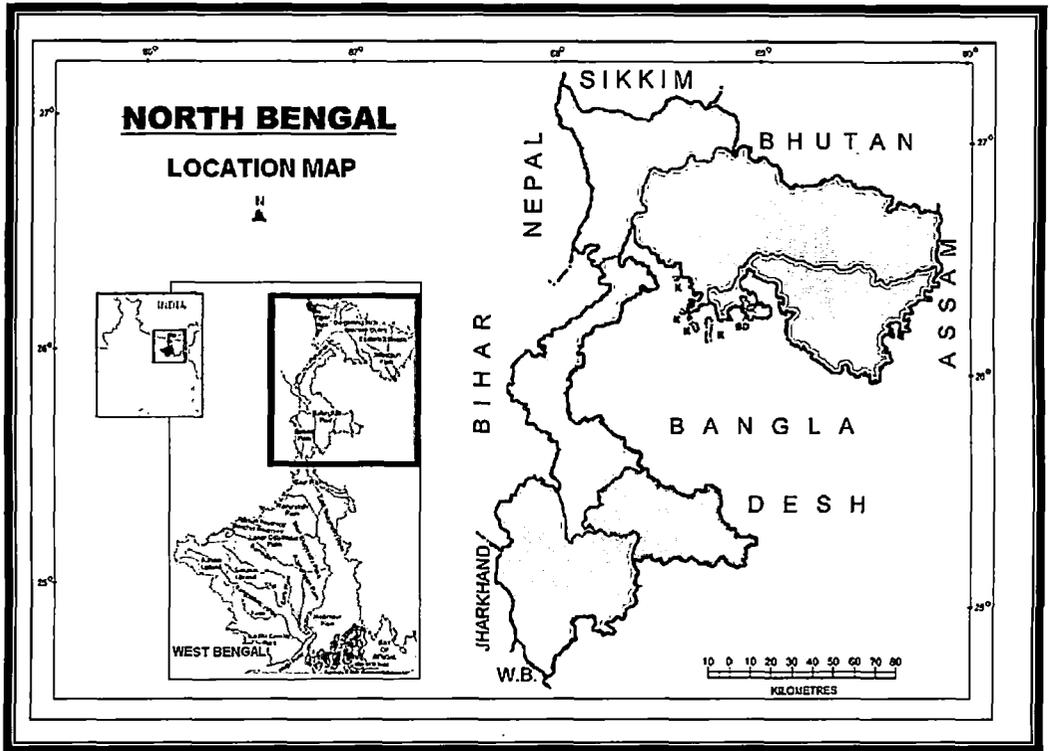
There are total 69 Community Development Blocks (C.D. Blocks) in the whole North Bengal. The region consists of total 18 sub divisions and 21 Municipalities and only one Municipal Corporation. Following is the Administrative Set Up of the study region-

**Table 1.1: - Administrative Set Up of North Bengal**

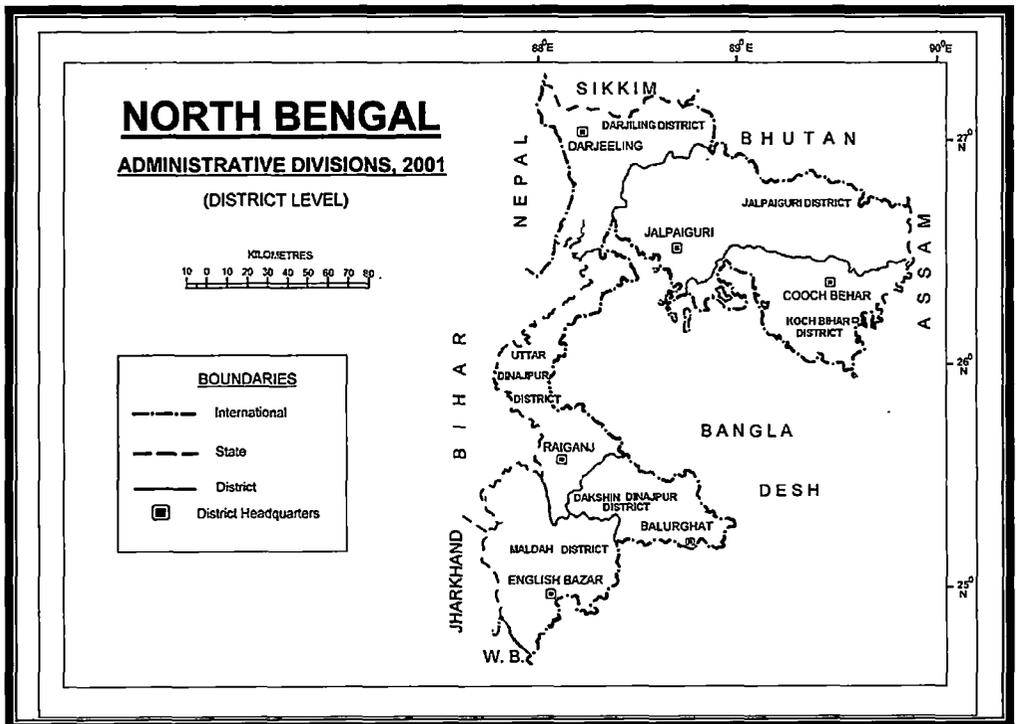
	Darjiling	Jalpaiguri	Koch Bihar	Uttar Dinajpur	Dakshin Dinajpur	Maldah
District	Head Darjeeling	Jalpaiguri	Cooch Behar	Raiganj	Balurghat	English Bazar
Sub-Division	04	03	05	02	02	02
Police Station	16	17	11	09	08	11
Inhabited Villages	620	734	1139	1477	1568	1641
Mouza	710	750	1168	1505	1634	1802
Municipal Corporation	01	--	--	--	--	--
Municipality	04	04	06	03	02	02
C.D. Block	12	13	12	09	08	15
Panchayat Samity	12	13	12	09	08	15
Gram Panchayat	134	146	128	99	65	147
Gram Sansad	1390	2097	1714	1470	925	2021
Area (sq. km.)	3149	6227	3387	3140	2219	3733

Source: -District Statistical Handbook, Darjiling, 2003,  
 District Statistical Handbook, Jalpaiguri, 2003,  
 District Statistical Handbook, Koch Bihar, 2003,  
 District Statistical Handbook, Uttar Dinajpur, 2003,  
 District Statistical Handbook, Dakshin Dinajpur, 2003,  
 District Statistical Handbook, Maldah, 2003

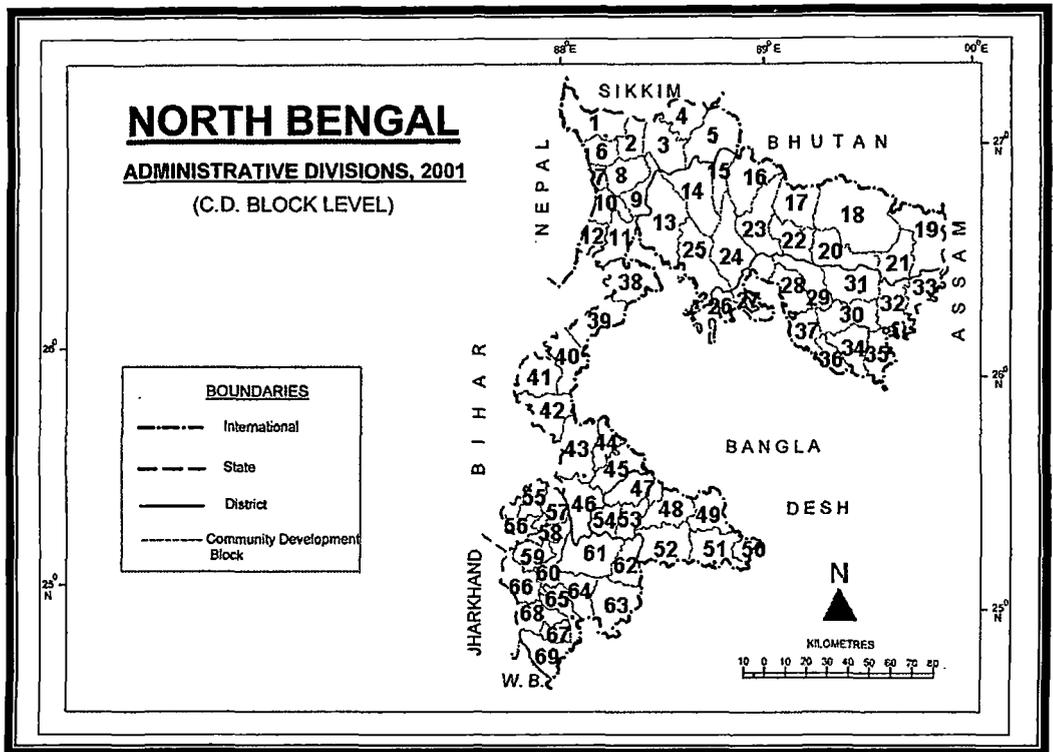
**Map 1.1:- Location Map of the Study Area**



**Map 1.2:- Administrative divisions of North Bengal- District Level**



**Map 1.3:- Administrative divisions of North Bengal- C.D. Block Level**



**NAME OF BLOCKS -**

1 Darjiling-Pulbazar	24 Maynaguri	48 Gangarampur
2 Rangli-Rangliot	25 Jalpaiguri	49 Kumaganj
3 Kalimpong-I	26 Haldibari	50 Hilli
4 Kalimpong- II	27 Mekhliganj	51 Balurghat
5 Gorubathan	28 Mathabhanga-I	52 Tapan
6 Jorebunglow-Sukhiapokhri	29 Mathabhanga- II	53 Bansihari
7 Mirik	30 Cooch Behar- I	54 Harirampur
8 Kurseong	31 Cooch Behar - II	55 Harishchandrapur-I
9 Matigara	32 Tufanganj- I	56 Harishchandrapur-II
10 Naxalbari	33 Tufganj - II	57 Chanchal- I
11 Phansidewa	34 Dinhata- I	58 Chanchal- II
12 Kharibari	35 Dinhata- II	59 Ratua- I
13 Rajganj	36 Sitai	60 Ratua- II
14 Mal	37 Sitalkuchi	61 Gazole
15 Matiali	38 Chopra	62 Bamomgola
16 Nagrakata	39 Islampur	63 Habibpur
17 Madarihahat	40 Goalpokhar-I	64 Maldah(Old)
18 Kalchini	41 Goalpokhar-II	65 English Bazar
19 Kumargram	42 Karandighi	66 Manikchak
20 Alipurduar- I	43 Raiganj	67 Kaliachack - I
21 Alipurduar- II	44 Hemtabad	68 Kaliachack-II
22 Falakata	45 Kaliaganj	69 Kaliachack- III
23 Dhupguri	46 Itahar	
	47 Kushmundi	

## 1.9 TECHNIQUE AND METHODOLOGY

In this paper, the methods applied for the spatial analysis of the sex structures of the population of North Bengal are –

### **(A) Calculation of Sex Ratio-**

The general pattern of sex ratio of the region's population and its comparison with the country as well as the state and also with the southern part of the state. That is to say, the identification of patterns of socio-economic development in relation to sex structure has been studied at macro level. This is also intended to provide an overall familiarity with composition of population by sex and its distribution among the districts of North Bengal. For this purpose, data on various important variables of socio-economic development along with indicators of sex structure have been collected for the whole region of North Bengal and the state. The regional pattern of socio-economic development has been correlated with the levels of sex structure. Sex structure is one of the most important of all demographic characteristics. It constitutes one of the most readily observable elements of population structure, and it is expressed as percent of males and females among population and as a ratio of males to females or vice-versa. The latter, i.e., females/males, known as the British system, is followed by the Indian Census for the computation of sex ratio. In addition to total sex ratio, differential sex ratios may also be computed for any sub-group of population. Here groups by ten-year slabs and by economic status are taken into account for the detailed analysis of sex structure.

### **Formula-**

#### **(1) Sex Ratio for Total Population-**

##### **(I) At District Level-**

For Total areas- Total number of females in the district/Total number of males in the district x1000

For Rural areas- Total number of females in rural areas of the district /Total number of males in rural areas of the district x1000

For Urban areas- Total number of females in urban areas of the district /Total number of males in urban areas of the district x1000

**(II)At C.D. Block Level-**

For Total areas- Total number of females in the C.D. Block/Total number of males in the C.D. Block x1000

For Rural areas- Total number of females in rural areas of the C.D. Block /Total number of males in rural areas of the C.D. Block x1000

For Urban areas- Total number of females in urban areas of the C.D. Block /Total number of males in urban areas of the C.D. Block x1000

**(III)For Urban Centres-** Total number of females in urban centres /Total number of males in urban centres x1000

**(2) Sex Ratio for Child (0-6 Ages) Population-**

**(I)At District Level-**

For Total areas- Total number of female child (0-6 Ages) population in the district/Total number of male child (0-6 Ages) population in the district x1000

For Rural areas- Total number of female child (0-6 Ages) population in rural areas of the district /Total number of male child (0-6 Ages) population in rural areas of the district x1000

For Urban areas- Total number of female child (0-6 Ages) population in urban areas of the district /Total number of male child (0-6 Ages) population in urban areas of the district x1000

**(II)At C.D. Block Level-**

For Total areas- Total number of female child (0-6 Ages) population in the C.D. Block/Total number of male child (0-6 Ages) population in the C.D. Block x1000

For Rural areas- Total number of female child (0-6 Ages) population in rural areas of the C.D. Block /Total number of male child (0-6 Ages) population in rural areas of the C.D. Block x1000

For Urban areas- Total number of female child (0-6 Ages) population in urban areas of the C.D. Block /Total number of male child (0-6 Ages) population in urban areas of the C.D. Block x1000

(III)For Urban Centres- Total number of female child (0-6 Ages) population in urban centres /Total number of male child (0-6 Ages) population in urban centres x1000

**(3) Sex Ratio for Literates -**

**(I)At District Level**-

For Total areas- Total number of female literates in the district/Total number of male literates in the district x1000

For Rural areas- Total number of female literates in rural areas of the district /Total number of male literates in rural areas of the district x1000

For Urban areas- Total number of female literates in urban areas of the district /Total number of male literates in urban areas of the district x1000

**(II)At C.D. Block Level**-

For Total areas- Total number of female literates in the C.D. Block/Total number of male literates in the C.D. Block x1000

For Rural areas- Total number of female literates in rural areas of the C.D. Block /Total number of male literates in rural areas of the C.D. Block x1000

For Urban areas- Total number of female literates in urban areas of the C.D. Block /Total number of male literates in urban areas of the C.D. Block x1000

(III)For Urban Centres- Total number of female literates in urban centres /Total number of male literates in urban centres x1000

**(4) Sex Ratio for Scheduled Castes (S.C.) Population-**

**(I)At District Level**-

For Total areas- Total number of female S.C. Population in the district/Total number of male S.C. Population in the district x1000

For Rural areas- Total number of female S.C. Population in rural areas of the district /Total number of male S.C. Population in rural areas of the district x1000

For Urban areas- Total number of female S.C. Population in urban areas of the district /Total number of male S.C. Population in urban areas of the district x1000

**(II) At C.D. Block Level-**

For Total areas- Total number of female S.C. Population in the C.D. Block/Total number of male S.C. Population in the C.D. Block x1000

For Rural areas- Total number of female S.C. Population in rural areas of the C.D. Block /Total number of male S.C. Population in rural areas of the C.D. Block x1000

For Urban areas- Total number of female S.C. Population in urban areas of the C.D. Block /Total number of male S.C. Population in urban areas of the C.D. Block x1000

**(III) For Urban Centres-** Total number of female S.C. Population in urban centres /Total number of male S.C. Population in urban centres x1000

**(5) Sex Ratio for Scheduled Tribes (S.T.) Population-**

**(I) At District Level-**

For Total areas- Total number of female S.T. Population in the district/Total number of male S.T. Population in the district x1000

For Rural areas- Total number of female S.T. Population in rural areas of the district /Total number of male S.T. Population in rural areas of the district x1000

For Urban areas- Total number of female S.T. Population in urban areas of the district /Total number of male S.T. Population in urban areas of the district x1000

**(II) At C.D. Block Level-**

For Total areas- Total number of female S.T. Population in the C.D. Block/Total number of male S.T. Population in the C.D. Block x1000

For Rural areas- Total number of female S.T. Population in rural areas of the C.D. Block /Total number of male S.T. Population in rural areas of the C.D. Block x1000

For Urban areas- Total number of female S.T. Population in urban areas of the C.D. Block /Total number of male S.T. Population in urban areas of the C.D. Block x1000

**(III) For Urban Centres-** Total number of female S.T. Population in urban centres /Total number of male S.T. Population in urban centres x1000

## **(6) Sex Ratio for Total Workers-**

### **(I)At District Level-**

For Total areas- Total number of female Workers in the district/Total number of male Workers in the district x1000

For Rural areas- Total number of female Workers in rural areas of the district /Total number of male Workers in rural areas of the district x1000

For Urban areas- Total number of female Workers in urban areas of the district /Total number of male Workers in urban areas of the district x1000

### **(II)At C.D. Block Level-**

For Total areas- Total number of female Workers in the C.D. Block/Total number of male Workers in the C.D. Block x1000

For Rural areas- Total number of female Workers in rural areas of the C.D. Block /Total number of male Workers in rural areas of the C.D. Block x1000

For Urban areas- Total number of female Workers in urban areas of the C.D. Block /Total number of male Workers in urban areas of the C.D. Block x1000

(III)For Urban Centres- Total number of female Workers in urban centres /Total number of male Workers in urban centres x1000

## **(7) Sex Ratio for Main Workers-**

### **(I)At District Level-**

For Total areas- Total number of female Main Workers in the district/Total number of male Main Workers in the district x1000

For Rural areas- Total number of female Main Workers in rural areas of the district /Total number of male Main Workers in rural areas of the district x1000

For Urban areas- Total number of female Main Workers in urban areas of the district /Total number of male Main Workers in urban areas of the district x1000

### **(II)At C.D. Block Level-**

For Total areas- Total number of female Main Workers in the C.D. Block/Total number of male Main Workers in the C.D. Block x1000

For Rural areas- Total number of female Main Workers in rural areas of the C.D. Block /Total number of male Main Workers in rural areas of the C.D. Block x1000

For Urban areas- Total number of female Main Workers in urban areas of the C.D. Block  
/Total number of male Main Workers in urban areas of the C.D. Block  
x1000

(III)For Urban Centres- Total number of female Main Workers in urban centres /Total  
number of male Main Workers in urban centres x1000

### **(8) Sex Ratio for Marginal Workers-**

#### **(I)At District Level-**

For Total areas- Total number of female Marginal Workers in the district/Total number  
of male Marginal Workers in the district x1000

For Rural areas- Total number of female Marginal Workers in rural areas of the district  
/Total number of male Marginal Workers in rural areas of the district  
x1000

For Urban areas- Total number of female Marginal Workers in urban areas of the district  
/Total number of male Marginal Workers in urban areas of the district  
x1000

#### **(II)At C.D. Block Level-**

For Total areas- Total number of female Marginal Workers in the C.D. Block/Total  
number of male Marginal Workers in the C.D. Block x1000

For Rural areas- Total number of female Marginal Workers in rural areas of the C.D.  
Block /Total number of male Marginal Workers in rural areas of the C.D.  
Block x1000

For Urban areas- Total number of female Marginal Workers in urban areas of the C.D.  
Block /Total number of male Marginal Workers in urban areas of the C.D.  
Block x1000

(III)For Urban Centres- Total number of female Marginal Workers in urban centres  
/Total number of male Marginal Workers in urban centres x1000

### **(9) Sex Ratio for Cultivators-**

#### **(I)At District Level-**

For Total areas- Total number of female Cultivators in the district/Total number of male  
Cultivators in the district x1000

For Rural areas- Total number of female Cultivators in rural areas of the district /Total number of male Cultivators in rural areas of the district x1000

For Urban areas- Total number of female Cultivators in urban areas of the district /Total number of male Cultivators in urban areas of the district x1000

(II)At C.D. Block Level-

For Total areas- Total number of female Cultivators in the C.D. Block/Total number of male Cultivators in the C.D. Block x1000

For Rural areas- Total number of female Cultivators in rural areas of the C.D. Block /Total number of male Cultivators in rural areas of the C.D. Block x1000

For Urban areas- Total number of female Cultivators in urban areas of the C.D. Block /Total number of male Cultivators in urban areas of the C.D. Block x1000

(III)For Urban Centres- Total number of female Cultivators in urban centres /Total number of male Cultivators in urban centres x1000

**(10) Sex Ratio for Agricultural Labourers-**

(I)At District Level-

For Total areas- Total number of female Agricultural Labourers in the district/Total number of male Agricultural Labourers in the district x1000

For Rural areas- Total number of female Agricultural Labourers in rural areas of the district /Total number of male Agricultural Labourers in rural areas of the district x1000

For Urban areas- Total number of female Agricultural Labourers in urban areas of the district /Total number of male Agricultural Labourers in urban areas of the district x1000

(II)At C.D. Block Level-

For Total areas- Total number of female Agricultural Labourers in the C.D. Block/Total number of male Agricultural Labourers in the C.D. Block x1000

For Rural areas- Total number of female Agricultural Labourers in rural areas of the C.D. Block /Total number of male Agricultural Labourers in rural areas of the C.D. Block x1000

For Urban areas- Total number of female Agricultural Labourers in urban areas of the C.D. Block /Total number of male Agricultural Labourers in urban areas of the C.D. Block x1000

(III)For Urban Centres- Total number of female Agricultural Labourers in urban centres /Total number of male Agricultural Labourers in urban centres x1000

### **(11) Sex Ratio for Household Industry Workers-**

#### **(I)At District Level-**

For Total areas- Total number of female Household Industry Workers in the district/Total number of male Household Industry Workers in the district x1000

For Rural areas- Total number of female Household Industry Workers in rural areas of the district /Total number of male Household Industry Workers in rural areas of the district x1000

For Urban areas- Total number of female Household Industry Workers in urban areas of the district /Total number of male Household Industry Workers in urban areas of the district x1000

#### **(II)At C.D. Block Level-**

For Total areas- Total number of female Household Industry Workers in the C.D. Block/Total number of male Household Industry Workers in the C.D. Block x1000

For Rural areas- Total number of female Household Industry Workers in rural areas of the C.D. Block /Total number of male Household Industry Workers in rural areas of the C.D. Block x1000

For Urban areas- Total number of female Household Industry Workers in urban areas of the C.D. Block /Total number of male Household Industry Workers in urban areas of the C.D. Block x1000

(III)For Urban Centres- Total number of female Household Industry Workers in urban centres /Total number of male Household Industry Workers in urban centres x1000

## **(12) Sex Ratio for Other Workers-**

### **(I) At District Level-**

For Total areas- Total number of female Other Workers in the district/Total number of male Other Workers in the district x1000

For Rural areas- Total number of female Other Workers in rural areas of the district /Total number of male Other Workers in rural areas of the district x1000

For Urban areas- Total number of female Other Workers in urban areas of the district /Total number of male Other Workers in urban areas of the district x1000

### **(II) At C.D. Block Level-**

For Total areas- Total number of female Other Workers in the C.D. Block/Total number of male Other Workers in the C.D. Block x1000

For Rural areas- Total number of female Other Workers in rural areas of the C.D. Block /Total number of male Other Workers in rural areas of the C.D. Block x1000

For Urban areas- Total number of female Other Workers in urban areas of the C.D. Block /Total number of male Other Workers in urban areas of the C.D. Block x1000

(III)For Urban Centres- Total number of female Other Workers in urban centres /Total number of male Other Workers in urban centres x1000

## **(13) Sex Ratio for Juvenile Population-**

### **At District Level-**

For Total areas- Total number of female population of 0-14 age group in the district/Total number of male population of 0-14 age group in the district x1000

For Rural areas- Total number of female population of 0-14 age group in rural areas of the district /Total number of male population of 0-14 age group in rural areas of the district x1000

For Urban areas- Total number of female population of 0-14 age group in urban areas of the district /Total number of male population of 0-14 age group in urban areas of the district x1000

#### **(14) Sex Ratio for Mature Population-**

##### At District Level-

For Total areas- Total number of female population of 15-59 age group in the district  
/Total number of male population of 15-59 age group in the district x1000

For Rural areas- Total number of female population of 15-59 age group in rural areas of  
the district /Total number of male population of 15-59 age group in rural  
areas of the district x1000

For Urban areas- Total number of female population of 15-59 age group in urban areas  
of the district /Total number of male population of 15-59 age group in  
urban areas of the district x1000

#### **(15) Sex Ratio for Senile Population-**

##### At District Level-

For Total areas- Total number of female population of age group 60 and above in the  
district/Total number of male population of age group 60 and above in the  
district x1000

For Rural areas- Total number of female population of age group 60 and above in rural  
areas of the district /Total number of male population of age group 60 and  
above in rural areas of the district x1000

For Urban areas- Total number of female population of age group 60 and above in urban  
areas of the district /Total number of male population of age group 60 and  
above in urban areas of the district x1000

#### **(16) Sex Ratio by 5-Year Age group**

##### At District Level-

For Total areas- Total number of female population by 5-year age group in the  
district/Total number of male population by 5-year age group in the  
district x1000

#### **(17) Sex Ratio by Decennial Age group**

##### At District Level-

For Total areas- Total number of female population by decennial age group in the  
district/Total number of male population by decennial age group in the  
district x1000

There are variations in sex ratio in rural areas, urban areas, economic status, age groups, etc. So therefore, sex differential by age structure, by economic status, by residence has been analysed.

## **(B) Socio-Economic Indicators- Number and List of Indicators-**

### (I) Density of Population-

The density is the most important measure to understand the distribution of population of a place. The density of population in an area is a function of complex interplay of natural, economic, social and technological forces. In a predominantly agricultural economy of the study region, density of population is an important tool to identify the capacity of resources to sustain a certain number of people of the existing level of technological development. As and when the number groups beyond a certain limit, loosely described as the population optimum the search for a new equilibrium becomes imperative. It is ordinarily expressed by calculating the number of inhabitants per unit area. In this study, density of population is expressed by calculating the number of people living per square kilometer of land area. The peculiar geographical location of the study region has made for sharp contrast of physical characteristics in its different parts.

### (II) Index of Concentration-

The concentration index has been calculated by dividing the actual population of any area during a particular period of time by the average population of the area during the same time. It presents the demographic situation of the North Bengal in terms of the population concentration in this paper. It is evident from the study that, the region's population is unevenly distributed over its various districts. The present population distribution over the various regions is indicative of the historical adjustment of population to resources over thousands of years. It also reflects the differential growth rates of population of the various sections of North Bengal.

### (III) Size of House Hold-

To show the pattern of distribution of settlement along with the size of settlements the Size of Household is an important measure. It is measured as the ratio between total population and number of household.

### (IV) Growth of Population-

To show the pattern of distribution of population over time, i.e., the increase or decrease of population in the whole North Bengal as well as its six districts and all sixty-nine community development blocks has been calculated to identify the decadal growth of population. The same calculation has been applied to total population, rural and urban population, scheduled castes population and scheduled tribes population.

### (V) Index Number of Population-

An index number is a number which is used to measure the level of a given phenomenon as compared to the level of the same phenomenon at some standard date. Changes in various socio-economic phenomena can be measured and compared through index numbers. Averages are used when the series is in same units, but when the units are different some relative measurements are used to reduce the figures to a common base. One such method is index numbers. This is done by expressing the figures as percentages of some specific figure on a certain date. It has been used to show the growth of population in the study area. In this paper, this method has been calculated by assuming the 1901 and 1951 as base year and with respect of these years the cumulative rate of increase of population has been calculated till the census year 2001.

### (V) Percentage of Population-

Percentage share has been calculated for various indicators at district level, C.D. Block level for total areas, rural areas, urban areas and for urban centers.

### (C) Pearsonian Correlation-

To identify the casual relationship between sex structure and socio-economic development has been worked out with the help of correlation technique. Correlation refers to the relationship of two or more variables. It generally measures the degree or

extent to which two variables fluctuate with reference to each other. Correlation analysis deals with the association of co-variation between two or more variables and helps to determine the degree of relationship between two or more variables. Correlation is classified into positive and negative; simple and multiple; partial and total and linear and non-linear. (i) Positive and negative correlation depend upon the direction of change of the variables. If two variables tend to move together in the same direction, then the correlation is called positive or direct correlation. But if they move in opposite direction, then the correlation is called negative or inverse. (ii) When we study only two variables, the relationship is described as simple correlation. But in multiple correlation we study more than two variables simultaneously. (iii) The study of two variables excluding some other variables is called partial correlation. In total correlation, all the facts are taken into account. (iv) If the ratio of change between two variables is uniform, then there will be linear correlation. In a curvilinear or non-linear correlation, the amount of change in one variable does not bear a constant ratio of the amount of change in the other variables.

In this thesis paper, Pearsonian correlation has been used to determine the relationship between sex ratio and other socio-economic variables. Karl Pearson's coefficient of correlation (or simple correlation) is the most widely used method of measuring the degree of relationship between two variables. Following features are important characteristics of coefficient:-

- (i) there is linear relationship between the two variables;
- (ii) the two variables are casually related which means that one of the variables is independent and the other is dependent; and
- (iii) a large number of independent causes operate in both variables so as to produce a normal distribution.

This coefficient is determined as under:

$$\text{Karl Pearson's coefficient of correlation } (r) = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{n \cdot \sigma_x \cdot \sigma_y}$$

Where,  $X_i$  = ith value of X variable

$\bar{X}$  = mean of X

$Y_i$  = ith value of Y variable

$\bar{Y}$  = mean of Y

$n$  = number of pairs of observations of X and Y

$\sigma_x$  = Standard deviation of X

$\sigma_y$  = Standard deviation of Y

The value of 'r' lies between  $\pm 1$ . Positive values of 'r' indicate positive correlation between the two variables. Hence, changes in both variables take place in the same direction, whereas negative values of 'r' indicate negative correlation means changes in the two variables taking place in opposite directions. A zero value of 'r' indicates that there is no association between the two variables. When 'r' is (+)1, it indicates perfect positive correlation and when it is (-)1, it indicates perfect negative correlation, meaning thereby that variations in dependent variable (X) explain 100 percent of the variations in the dependent variable (Y). The value of 'r' nearer to +1 or -1 indicates high degree of correlation between the two variables. For a unit change in independent variable, if there happens to be a constant change in the dependent variable in the same direction, then correlation will be termed as perfect positive. But if such change occurs in the opposite direction, the correlation will be termed as perfect negative.

Hypothesis testing helps to decide on the basis of a sample data, whether a hypothesis about the population is likely to be true or false. Out of all types of tests of significance, in this paper, t-test has been used. It is based on the t-distribution and is considered an appropriate test for judging the significance of difference between the means of two samples in case of small sample(s) when population variance is not known.

The level of significance is a very important concept in the context of testing of hypothesis. In the context of hypothesis testing, there are two important tests. These are two-tailed and one-tailed tests. A two-tailed test rejects the null hypothesis if the sample mean is significantly higher or lower than the hypothesized value of the mean of the population. But there are situations, when one-tailed test of significance is considered appropriate. A one-tailed test would be used when we are to test, whether the population mean is either lower than or higher than some hypothesized value. The hypotheses are tested on a pre-determined level of significance and as such the same should be specified. Generally, in this paper either 5 percent level or 1 percent level have been used for the purpose.

For identifying influence of sex ratio on development, some demographic and socio-economic characteristics of the blocks on their total, rural as well as urban areas along with urban centers have been taken into account.

To find out the relationship between sex ratio and socio-economic indicators two methods have been used and these are the 'Z' score value and the GDI value.

### **(D)'Z' Score Value-**

To have a comprehensive picture of sex structure and its implication, one composite index has been worked out to construct a new variable, which have been respectively termed as 'Sex Structure Region'. For constructing composite index, the method of Standard Score and Composite Standard Score has been used. This technique is a very useful as it allows us to calculate the probability of a score occurring within a normal distribution and also this technique enables us to compare two scores that are from different normal distributions. The standard score does this by converting or standardizing scores in a normal distribution to z-scores in what becomes a standard normal distribution.

To identify the sex structure regions, all the demographic, social, cultural and economic variables are analyzed with the help of 'Z' score or standardized score statistical technique for the period of 2001.

The technique has been explained as follows: -

$$Z_{ij} = \frac{X_1 - \bar{X}}{\sigma}$$

Where,  $Z_{ij}$  = Standard score of the observation

$X_1$  = Original value of the observation

$\bar{X}$  = Mean value for all the values of X

$\sigma$  = Standard divisions of X

Further, the results of standard score obtained from the different indicators were aggregated by Composite Standard Score (CSS). In this way, the regional disparities in the level of development of North Bengal region may be obtained on a common scale.

It is expressed as-

$$\text{Composite Standard Score (CSS)} = \sum \frac{Z_{ij}}{N}$$

Where  $Z_{ij}$  indicates, 'Z' score of an indicator 'j' in town 'i' and 'N' refers to number of indicators.

The 'Z' score of these indicators finally added to determine the overall pattern of sex structure region to assess the inequality in the levels of development among these regions mainly in terms of status of women and other gender related indicators. In order to measure the overall development, the composite standard score value of six districts and sixty nine community development blocks of the North Bengal region in total, rural and urban areas are grouped into the following categories, viz., Very High, High, Medium, Low and Very Low sex structure regions.

All the variables on the C. D. Block level have been calculated on three ways of total areas, rural areas and urban areas. Based on the Sex Structure Region at the C.D. Block level on the three areas of total, rural and urban, the magnitude of Socio-economic Development has been compared in relation to the interaction level of the blocks.

#### **(E) Gender Development Index (GDI)-**

Gender Development Index (GDI) is a simple measure of gender disparity based on income, health and educational attainment parameters. The calculation of GDI consists the estimation of three basic dimensions of health (expressed through longevity, that is life expectancy at birth), knowledge (expressed as a combination of the literacy rate and the school enrolment ratio) and the standard of living (expressed as a combination of per capita income, per capita consumption expenditure and population living above the poverty line). The GDI adjusts the average achievement in respect of these three dimensions, in order to reflect the inequalities between men and women. For this purpose, each of these dimensions is calculated separately for men and women, according to the formula-

$$\text{Calculation of each dimension index} = \frac{\text{Actual Value} - \text{Minimum Value}}{\text{Maximum Value} - \text{Minimum Value}}$$

Each of the three indicators is defined as a dimension with reference to maximum and minimum values. The measures for life expectancy and education are straightforward since separate data exists for males and females. For income, the share of women or men in all workers and the ratio of females to males wage are taken as proxies for the share of income, with equal wage. After this, the female and male indices in each dimension are combined such as to penalize the differences between men and women to generate what is called “the equally distributed index” in each dimension. This assesses the difference between men and women in various field of social and economic indicators. This index is used to derive the different equally distributed dimension indices. The simple unweighted average of these three is taken to achieve the Gender Development Index (GDI).

### **Techniques:-**

Cartograms such as bar graph both vertical and horizontal, pie graph, line graph etc have been used to depict the results of the analysis. To show the analysis in maps both at district level and C.D. Block level, choropleth technique have been used.

Representation of quantities by bars is the easiest type of diagram. Bars may be shown by a straight line or like a pillar or column with some uniform width. Their length may vary in proportion to the quantity to be represented on a selected scale. They may be Vertical and Horizontal and they have been used in this paper to represent various types of data.

Pie diagrams are also known as Circular diagrams. The basic principle underlying these diagrams is that the area of the circle is made proportional to the quantity or number represented by it. It gives a good visual idea of the fact it represents and also looks pleasant. First the circle is drawn with the help of total figure of any region or area or a town or district. After that, the whole circle is divided into some divisions based on the number of observations. To do this, all the observations are converted into degrees between 0 and 360. This technique is used in many parts of the paper to show the distributional pattern of various indicators of district level analysis of North Bengal.

Like diagrams, statistical data are also represented by graphs. Graphs involve the drawing of regular lines- smooth or curved, each point on them being determined by two

co-ordinates. The graphs are notable for their accuracy and exactness. Their drawing is also relatively easy. They clearly bring out the relationship between two facts or elements as both of them are shown together, along the horizontal axis and the other along the vertical axis. They are generally used to show relation between time and certain elements. In this paper, this technique has been used to show growth of population from year to year and decade to decade in order to explain district level and block level variation.

Age-Sex Pyramid is used to show the distribution of age wise sex structure in a particular area. In this diagram, two rectangular blocks are drawn for each and every age group of either 5 years interval or 10 years interval. Out of these two rectangles, one (drawn on left side of age gap) represents the proportion of males and the other (drawn on right side of the age gap) represents the proportion of females either in terms of percentage or in absolute figure.

The pattern of distribution of any one element based on some definite statistical data is represented by distributional maps. They resemble cartograms in that they, too, express a single idea and actual location of other features may be altered in them also. The difference lies in the fact that, the former is much less diagrammatic than the latter. Chorochromatic Map is one type of distribution maps. It is also called colour or tint method. This method, in general, makes use of different colours to make the distribution of various features distinct on the map. Here a colour index is necessary to be shown in a corner of the map. This technique is used many times in the paper to show the distributional pattern sex ratio among various socio-economic indicators at both levels- district and C.D. Block.

The results obtained from the mathematical expressions of these models are put into tabular forms and are used in the study of the total differential regional distributions of sex structures of the population of North Bengal for 1991 and 2001.

A cartographic representation of the index sex structure and the index of socio-economic development have been made by the technique of choropleth. The values of these two indices have been superimposed on some maps to illustrate the relationship between the sex structure and the socio-economic development clearly.

For further in-depth analysis of the pattern of socio-economic development based on the sex structure, village households have been selected. The selection of households has been made by adopting the method of stratified random sampling. At the outset, an exhaustive list of the village households has been prepared with the help of the Panchayat members of the respective villages.

A household level questionnaire has been used for conducting the household survey and to generate data relating to their interaction with the people and also the levels of their development.

### **1.10 DATA BASE**

The research work is based on secondary data oriented and supported by primary data obtained through the field surveys, i.e., interviewing the villagers with a schedule of questions (questionnaire have been attached at the appendix).

The secondary data bases are-

1. Census of India, West Bengal 1951, 1961, 1971, 1981, 1991 and 2001
2. Primary Census Abstract, Darjiling District 1951, 1961, 1971, 1981, 1991 and 2001
3. Primary Census Abstract, Jalpaiguri District 1951, 1961, 1971, 1981, 1991 and 2001
4. Primary Census Abstract, Koch Bihar District 1951, 1961, 1971, 1981, 1991 and 2001
5. Primary Census Abstract, West Dinajpur District 1951, 1961, 1971, 1981, 1991 and 2001
6. Primary Census Abstract, Maldah District 1951, 1961, 1971, 1981, 1991 and 2001
7. District Census Handbook, Darjiling, 2002
8. District Census Handbook, Jalpaiguri, 2002
9. District Census Handbook, Koch Bihar, 2002
10. District Census Handbook, Uttar Dinajpur, 2002
11. District Census Handbook, Dakshin Dinajpur, 2002
12. District Census Handbook, Maldah, 2002
13. Statistical Abstract of West Bengal, 2002

14. West Bengal Statistical Handbook, 2003
15. District Statistical Handbook, Darjiling, 2003
16. District Statistical Handbook, Jalpaiguri, 2003
17. District Statistical Handbook, Koch Bihar, 2003
18. District Statistical Handbook, Uttar Dinajpur, 2003
19. District Statistical Handbook, Dakshin Dinajpur, 2003
20. District Statistical Handbook, Maldah, 2003
21. Economic Review, Govt. of West Bengal, Darjiling, 2002
22. Economic Review, Govt. of West Bengal, Jalpaiguri, 2002
23. Economic Review, Govt. of West Bengal, Koch Bihar, 2002
24. Economic Review, Govt. of West Bengal, Uttar Dinajpur, 2002
25. Economic Review, Govt. of West Bengal, Dakshin Dinajpur, 2002
26. Economic Review, Govt. of West Bengal, Maldah, 2002
27. Secondary Data collected from Block Offices, S.D.O. Office, Municipality Offices, P.W.D. Offices, District Libraries etc.
28. District Maps with Community Dvelopment Block boundaries obtained from the Primary Census Abstract, West Bengal, 1991.

## **1.11 RESEARCH DESIGN**

The research work is spelt out into eleven chapters and these are as follows: -

### **CHAPTER-I**

Introduction

### **CHAPTER-II**

Physical Setting of the Study Area

### **CHAPTER-III**

Socio-Economic Setting of the Study Area

### **CHAPTER-IV**

Population Growth, Distribution and Characteristics

### **CHAPTER-V**

Spatial Variation of the Sex Ratio

### **CHAPTER-VI**

Temporal Variation of the Sex Structure

### **CHAPTER-VII**

Sex Ratio of Rural and Urban Areas

### **CHAPTER-VIII**

Sex Ratio by Economic Status

### **CHAPTER-IX**

Sex Structure Region

### **CHAPTER-X**

Sex Structure and its Implication on Socio-Economic Development

### **CHAPTER-XI**

Conclusion