SPATIAL DISPARITY IN SOCIO-ECONOMIC DEVELOPMENT IN DISTRICT LAWNGTLAI, MIZORAM

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MIZORAM UNIVERSITY

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By

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Submitted

In partial fulfillment of the requirement of the Degree of Doctor of Philosophy in

Department of Geography & Resource Management of

Mizoram University, Aizawl

MIZORAM UNIVERSITY

AUGUST, 2019

DECLARATION

I, C.Hmingsangzuala, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/Instituted.

This is being submitted to the Mizoram University for the degree of Doctor of Philosophy in Geography and Resource Management.

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CERTIFICATE

This is to certify that C.Hmingsangzuala, registered under MZU/Ph.D./614 of 02.05.2014 is a research scholar working under my supervision on a thesis entitled 'Spatial Disparity in Socio-Economic Development in District Lawngtlai, Mizoram'. He has fulfilled all the requirements laid down in the Ph.D. regulations of the Mizoram University. I further certified that the thesis in this form is the result of the research scholar's original work. Neither the thesis as a whole nor any part of it was ever submitted to any other University for any research degree.

I recommend the thesis for due evaluation and recommendation.

Dated: Aizawl
The 30th August, 2019

(Prof. P. RINAWMA)

Acknowledgement

It is a genuine pleasure to express my heartiest gratitude and honorable sense of thanks to my supervisor Professor P.Rinawma, Head, Department of Geography and Resource Management, Mizoram University for his prestigious suggestions, encouragement and inspiring enthusiasm. I am fortunate to have competent and persuader supervisor. His timely advice, sympathetic understanding and meticulous scrutiny helped me a very great extent to accomplish this thesis.

I am really thankful to Professor V.P. Sati, Department of Geography, MZU for giving me valuable suggestions and evocative solidity. I owe a debt of gratitude to Dr. Benjamin L. Saitluanga, Asst. Professor, Department of Geography, Mizoram University for valuable feedback and I have received depth understanding of statistical techniques. My heartfelt thanks go to Dr. K.C. Lalmalsawmzauva, Asst. Professor, Department of Geography, Mizoram University for sparing his valuable time whenever i needed from the initial stage of my research. I wish to extend my heartfelt thanks to Professor Rintluanga Pachuau, Department of Geography, Mizoram University, who firmly stands and helped me a lot in my career advancement which directly supports for completion of my thesis.

I would like to express my special thanks of gratitude to all my comrades, Mr. Vanlaltanpuia, Assistant Professor, Government Aizawl North College for enlightened me GIS software for mapping purpose and also worked out maps in this thesis. I am deeply indebted to Mr J. Laltanpuia (Lecturer, Farkawn HSS), Mr

Thanghnuna (Lecturer, Zokhawthar HSS), Mr T.C. Rochungnunga (Para-Extension Officer, Open Door) and my nephew Lalhmingfaka who helped me in the course of collection of primary data. Without their help, it would be difficult to complete collection of information through thousands of schedules in various parts of the study area. I am grateful to all of them.

I wish to extend my heartfelt thankfulness to faculty members and staff of Geography Department, MZU, faculty members of Department of Geography ICFAI University Mizoram and Government Hnahthial College for their support and gave consent to take responsible during the research.

I have been blessed with a loving family who has supported me during the course of my studies and research work. My son Vanlalhriata Chawngthu, who is born on 7th February 2019 has been growing up with this research and giving me exciting and challenging life. My wife Deborah Vanlalmawipuii helped me in tabulation of data, construction and arrangement of thesis. Without her patience, reminiscent support and contributions, this thesis might not be completed. Unstop prayer of My Mother Vanlaltlani, my brothers and sister with their kids have been making my life success in many ways.

Last but not the least; I take this opportunity to extend my sincere thankfulness to the Almighty God for given me an opportune time, strength and ability to complete this study.

C.Hmingsangzuala

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INTRODUCTION

1.1 Introduction:

A spatial area is a geographic or areal unit with certain limits and bounds. The unit may consist of a few villages or a number of countries. A region may, therefore, be thought of as an area or spatial organization of varying dimensions (Mishra, 2002). Spatial disparities in level of development exist in almost all countries of the world. The incidence of inequality is, in general, a special characteristic found among the developing nations (Neogi, 2010). If there are differentiations in the quality of life between different people or groups within a society, one can speak of socio-economic disparity, concern about the inequality or difference in some respect.

Spatial inequality refers to a condition in which different spatial or geographical units are at different levels on some variable of interest, usually average income (Lall and Chakravorty, 2004). It can also be defined as the uneven distribution of human well-being within or among geographical elements such as countries, cities, rural/urban areas, and regions. Kanbur and Venables (2005) defined as inequality in economic and social indicators of well-being across geographical units within a country. It is caused by many things, such as religion, culture, race, and the economies of agglomeration (Jessie & Schwartzman, 2018). Definition of spatial inequality relates more to socio-economic status, well-being and condition relating to a geographical unit and not mere measurement and comparison of the indicators depicting states. However, Spatial inequality is typically thought of as a construct arising out of variations in economic endowments, geography and socio-political structure (Adefila, 2012) which requires a

deeper understanding and explanation in the unequal amounts of qualities or resources and services depending on the area or location.

Development has been appropriately conceptualized as a process which improves the quality of life of people (Farasat and Hussain, 2010). In the socio-economic context, development means the improvement of people's lifestyles through improved education, incomes, skills development and employment. It is also the process of economic and social transformation base on cultural and environmental factors. Socio-economic development, therefore, is the process of social and economic development in a society (Bhatia and Rai, 2004). The process of development involves a significant change which is manifest on physical landscape in a geographical dimensions, but, owing to the presence of physio-cultural and socio-economic diversities as well as political one, the socio-economic facilities are distribute unequally leading to differential levels of development across the regions. Such uncheck and uncontrolled process of growth leads to regional disparities, results in numerous economic, social and cultural problems (Rao, 1984).

Even during the first quarter of the nineteenth century, many countries like USA, Canada, UK, France, Netherlands and Sweden had experienced its severity to a considerable extent (Williamson, 1965). Since the start of reforms in 1978, spectacular economic growth and poverty reduction in China have been accompanied by sharp rises in inequality and increasingly frequent manifestations of social tension through unrest of various types (Shenggen, et al. 2009). Brazil has long been characterized by extreme regional disparities, with the richer south and southeast regions displaying much better socio-economic indicators than the poorer north and northeast (Kumar, 2012). A more

accurate representation is that the income of the US middle class hardly changed in the three decades before the 2008 global financial crisis (Stiglitz, 2012). Middle East was the epicenter of uprisings against governments, which were perceived to foster social, political, and economic inequality. The dramatic shift to the left in the leadership in Latin America in the past fifteen years can be traced to the deep-seated inequality in that region (Castaneda, 2006). In fact, the problem of disparity in the levels of social and economic development is a universal phenomenon, but it differs in certain degree. The seriousness of the socio-political and implications of such disparities prompts any national government to take action in terms of specific economic policies to tackle this problem sooner or later in the course of the development of the national economy (Dholakia, 1985).

The works of Kundu, Mohanan and Varghese (2013) in 'Spatial and Social Inequalities in Human Development: India in the Global Context' stated that the major anxiety in the context of the targets set through Millennium Development Goals (MDGs) to be achieved by 2015 is that there will be significant deficits in achievement and these will be particularly high in the developing countries, including the emerging economies. The deficits are likely to be high in terms of health and education linked indicators, which can be attributed to the inequalities in availability and access to the related facilities across states, regions, cities as also across social and religious groups. These, at the second level can be attributed to the inequality in access to basic services, particularly, safe drinking water and sanitation.

India introduced phase manner development through five year plan since 1950s; more emphasis was given on infrastructure, communication, education, agriculture and

livestock subsequently to uplift the socio-economic status. But, removal of regional imbalances in development has remained the avowed goal of planning in India (Mohan, 2005). These centralize planning was implemented for eliminating inequalities and to enhance the quality of life of people as well as their social and economic well-being, but it still remains a serious problem in India. Besides massive investment in backward regions, public policies were directed at encouraging private investment in these regions. In spite of planning, however, there has been a steady increase in disparities among the states (Haseen, 2011). The draft plan of Eleventh Five Year Plan states 'a wide spread perception all over the country is that disparities among states, and regions within the states, between urban and rural areas, and between various sections of the community, have been steadily increasing in the past few years and that the gains of rapid growth witnessed in this period have not reached all parts of the country and all sections of the people in an equitable manner' (GOI, 2008). Regional disparities in India have widened day by day (Joshi, 1997, Khrishan, 2001, and Singh, 2006). India, glaring disparities in the socio-economic and cultural development are found both at inter and intra region (Dabapriya, 2000 and Mohanty, 2006).

Athough rising of global interest in inequality, emerging economies have not been studied enough, due to the lack of sufficient data and differences in economic and social structures. It is important to measure the extent of spatial inequality to understand the growth trajectories between various population groups. The study of socio-economic inequality have not been given adequate attention in India because of the argument that inequality is a natural by-product of rapid growth, and, partly because the levels of consumption expenditure inequality in India appear to be lower than that in many other

developing countries (Himashu, 2018). There is now a greater understanding of the negative effects of inequality and the nature of economic growth that leads to it. Spatial inequality has received increased attention from the Indian policy makers due to the fact that it has found a way to interfere with the political, cultural and ethnic process. High spatial inequality may be bad not just for the poverty reducing impact of growth but also for the growth rate itself: it may heighten risks of conflict (Ostby, 2008), or may require more redistributive government spending (McKay and Emille, 2009).

1.2 Significance of the study:

Socio-spatial disparity is now an imperative subject manner of human geography, exists almost everywhere irrespective of level of development or ideological disposition (Obu, et al., 2015) presents in the developed countries where it has long been a focus of public policies (Smith, 1979). Inequality among people and between geographical areas is a critical developmental issue in today's developing world just as it was in developed countries in the early stages of their development (Williamson, 1965). There are diverse forms of disparity, but the imbalance in development among different spatial units in the country is more striking and serious (Obu, et al., 2015). Although the developing countries were late to recognize the defects of regional imbalance, most of them are now implementing several policies directed at achieving balanced development in their space economies (Obu, et al., 2015).

The main thrust of the study is to examine the intra state disparities in socio-economic development of Mizoram and Lawngtlai district in particular. Even though a young state, Mizoram is facing stages of development with its own unique obstacles. It is

observed that developments have been accelerated by governing system in the last couple of decades especially after statehood, resulting disparity adamantly acting day by day which requisites depth analysis and veracious investigation. It is estimated that there might exist negative or positive association with the distinct characters of the state. Measure of development at district level would be of interest since there has been a growing consensus about the need of district level planning in the state, as Mizoram being the second most urbanized state as well as second rank in terms of proportion of literates amongst the 29th states of India. However, the attainment of this progress has spread highly uneven particularly urban and rural areas due to various factors like educational level, accessibility, mass media exposure, political behaviors and many more. The fast growing unequal socio-economic condition set forth a sense of relative deprivation between the people of various communities which results in social disharmony in the region (Nunchunga, 2008). If the disparities are allowed to continue unabated, it could lead to social and political discontent in the area. Violent behavior and panic cannot be solved unless the root cause is dismantled politically and economically. In order to design appropriate policy response to rectify the problem, the phenomenon needs to be investigated in detail.

In such scenario, identification of the level of disparities and backward regions of the country, state and even at district level in terms of developmental components is an alarming rate. The inequalities could lead to serious impediment in the domain of economy as well as policy in central and periphery areas of the state which have enfold different tribal ethnic groups, and these disparities are capable of assuming serious dimensions and threatening the very existence of a nation (Hmingsangzuala & Rinawma,

2016). It also important to identify backward areas in order to empower the government and community to formulate suitable schemes and programme to be implemented in an integrated manner by actions for the improvement and uplift of such areas. Therefore, present study attempts to chalk-out meaningful strategy to curb the problem and endorse balance socio-economic development amongst the districts of Mizoram in general and Lawngtlai District in particular. The finding may also be helpful for developmental planning to reduce inter-district, inter-block and intra-block developmental disparities.

1.3 Research Questions:

By considering the problem and significance of the study, we can represent research questions as follows:-

1) There exists socio-economic disparity among the districts of Mizoram.

2) Level of socio-economic development is lowest in Lawngtlai district.

3) There is development disparity among Rural Development Blocks in Lawngtlai District.

4) Lowest level of development in Lawngtlai district is Chawngte Rural Development Block.

5) Major factors of development are Education, Health, Mass-Media Exposure and Geographical location (distance).

1.4 Aims and Objectives:

The main aim and objective of the present study is to find out the socio-economic status and its disparity by using social and economic dimensions. Considering the above research questions, the sub-objectives have been formulated:-

1) To examine the socio-economic status and categorize them into various levels of development in Mizoram.

2) To study intra and inter-block development disparity in Lawngtlai district.

3) To classify level of development in selected villages of Lawngtlai district.

4) To analyze the factors behind the growth of disparities in Lawngtlai district.

1.5 **Theoretical framework and Review of Literatures:**

1.5.1 Concept of Spatial Disparity:

The term ‘concept’ has been defined in several ways. According to Merriam Webster - it is an abstract or generic idea generalized from particular instances or organized around a main idea or theme. Concepts are mental representations, abstract objects or abilities that make up the fundamental building blocks of thoughts and beliefs (Carey, 1991). From the perspective of cognitive science, concepts are mental constructs about the nature of material and abstract things, and the relationships that obtain between them (Grossner, 2017). The spatial concepts lie at the heart of geography as a multifaceted academic subject, and the professional practice of geography that began with the fundamentally spatial tasks of measuring earth features and describing their spatial relations.

It is a dimension of over-all inequality, but it has added significance when spatial and regional divisions align with political and ethnic tensions to undermine social and political stability (Venables and Kanbur, 2013). Disparities in income and living standards across countries and between regions within countries (spatial inequality) have been the subject of much debate and research in recent years. It is a construct arising out of variations in economic endowments, geography and socio-political structure across the relevant economic space (Dutta and Nagaraja, 2005). It is present in the developed and developing countries where it has long been a focus of public policies.

Although geography is thoroughly spatial, the most fundamental of spatial concepts are by no means exclusive to geography. There are distinctive disciplinary perspectives on many, and some spatial terms (i.e., lexical concepts) can have multiple

meanings (Grossner, 2007). A spatial concept for geographers is location, position, and place which are often used interchangeably along with site and locale. In the most general terms, a place is a location about which we have something to say (Haggett, 2001). However, the qualities of a place are understood by many geographers to include not only metrical location, but also (or alternatively) individual or collective human experiences there (Tuan, 1977). These are primitives in a sense, from which derive more complex concepts and principles concepts are used metaphorically in reasoning about spatiality as well.

The contemporary scholars of geographical knowledge have proposed to "think of geography as a tradition that evolves like a species over time" (Livingstone 1992). The concept of space began to feature in the study of inequality in limited ways (Deverteuil, 2007). A number of fundamental spatial concepts are common to the discovery and description of form and patterns. The form of a geographic object or feature is described in terms of its size and shape, as delimited by its boundary, and by its structure – the number and arrangement of component parts or features. Patterns of spatial distributions and of connectivity are intrinsically dynamic. They are the product of processes that transpire over time and their properties are time dependent. The qualities, magnitude, and identity of many things in the world are in continual flux, and so a significant proportion of our scientific observations, measurements, and analyses seek to explain spatial change (Grossner & Janelle, 2014).

Spatial inequalities are multidimensional and exist almost everywhere irrespective of level of development or ideological disposition. This is due to the fact that aside from the traditional forms of inequalities, new forms of inequalities have emerged. The

traditional forms range from different levels of human capabilities and opportunities, participation in political life, consumption, and income, to disparities in living standards and access to resources, basic services and utilities (UN-HABITAT, 2008a). The newly emerged forms of inequalities include disparities in access to communication technologies and skills, which have led to digital exclusion resulting in the marginalization of regions within a globalizing economy (UN-HABITAT, 2008a). Overlapping reasons such as historical and cultural development, differential endowments in natural resources, human capital and local political economy have all been identified as contributory factors for the existence of intra-national spatial inequality. These could be broadly grouped into socio-cultural, economic and political factors of inequalities among spatial units. The various theories of economic geography provide different causal explanations for spatial inequality and elicit different policy responses to combat inequality. In general, spatial inequality is the net result of the balance of forces of concentration and dispersion (Michael and Clifford, 2015). Kim (2008) argues that spatial inequality is fundamentally determined by the location decisions of the state.

1.5.2 Concept of Development:

The term 'development' is used in many disciplines and serves in exercise to define a recognized field of research. It is a dynamic concept and has different meaning for different people in different angles of observations. There is no consensus on the meaning of development among planners and thinkers. Academician, politician and economist given different interpretation but all of them agreed that development improves the standard of living of people. In fact, the concept of development has

emerged as a distinctive field of practice and theoretical enquiry, but it still lacks precise definition as it is growing over a period of time.

According to Hariss, theorizing about development did not begin in the middle of the twentieth century and we may look for the roots of contemporary development theories in the work of classical economists such as Adam Smith, in that of Marx and Engels, or in that of Friedrich List, who, writing in the 1840s, was critical of Smith and advocated state intervention to ensure national prosperity. Its extensive use in western societies from Greco-Roman civilizations to the late 19th century as a generic construct that designates the most varied aspects related to humanity's well-being, however, made the concept come closer to that of a doctrine (Soares and Rogério, 2008). Development is an activity of society which can be stimulated, directed or assisted by government policies, laws and distinct drivers, but it cannot be compelled by government or bureaucracy unless supported by the native masses.

According to Soares and Rogério (2008), the paradigm of development, however, had already reached its peak in the 19th century, under the form of social evolutionism. The term development, in this new paradigm, prevailed on concepts such as modernization or liberation. Such predominance seems to result from the need for a broader concept to represent the multiple dimensions necessary for humanity's well-being. Another international milestone in development question took place in 1968, with the creation of the Rome Club. This brought together professionals from various areas and different countries to form a free association of scientists, technocrats and politicians, whose objective was to reflect on and seek solutions to various world problems. This new forum published a report entitled Growth Limits in 1972, in which it recognizes the

finitude of natural resources and the seriousness of the problems that were already devastating the environment and jeopardizing human survival on Earth. Some of the development phenomenon's new dimensions acquired space and legitimacy in this way. The World Commission for Environment and Development published a report entitled 'Our Common Future' in 1987 known as the Brunt-land Report, which was an instrument used to spread the recently created concept of sustainable development.

In 1980, Myint distinguish two general approach of development as (Szirmai):-

i) Fight against poverty: - This approach focuses on the problems of widespread poverty, hunger and misery in order to realize improvements of the situation in the short term. The characteristic of this approach is a strong involvement with the problems of developing countries and their inhabitants which is closely linked with development policies and strategies at international, national, regional or local levels. Some people choose a technocratic interpretation, focusing on policies, instruments and projects; others choose a more radical political interpretation. The latter argue for political action in order to achieve dramatic changes in the existing order of things.

ii) Analysis of long term economic and social development:- This approach concentrates on comparing developments in different countries, regions and historical phases in order to gain better understanding of the factors that have long term effects on the dynamics of socio-economic development. It emphasizes that economic growth in its modern form is intimately associated with the economic development of the western countries since the mid-eighteenth century (Landes, 1998; Madison, 2001). An objection to this approach is that it seldom offers neat solutions to the kind of practical problems

and choices policy makers, politicians, entrepreneurs or aid workers are inevitably faced with on a day-to-day basis.

Development is a broad concept that entails social, economic, political and human development. Human development constitutes the foundation on which the first three concepts are based. According to Burkey (1993) economic and political development must translate into social development. As a broad concept, development has been extensively explored with a view to realize economic growth and social development. The concept of development has also been traditionally associated with economic development, but more recently it has evolved to encompass both social and economic development. In this integrated perspective, economic development is initially viewed as an engine for social development with several positive effects on economic progress at later stages (Nahar, 2014). Although the concept of social development is inclusive of economic development, it differs from it in the sense that it emphasizes societal development at all levels of economic, political, social, and cultural aspects (Gore, 1973).

Economic development is thus a multivariate concept; hence there is no single satisfactory definition of it. In economic terms, development has been understood as achieving sustainable rate of growth of income per capita to enable the nation to expand its output faster than the population (Todaro and Smith 2011). Economics of development refers to the problems of economic development which focus on problems that were statistic in nature and largely related to social and cultural institutions. After the Second World War, the poverty and backwardness became extremely conspicuous and economists started devoting attention towards analyzing the problems of underdeveloped countries and formulating theories and models of development. Economic development is

a sustainable improvement in the standards of living of the people of a country. It infers an increase in the per capita income, leads to the creation of more opportunities in the sectors of education, healthcare, employment, conservation of environment and many more things aiming at the overall well-being of the citizens of a country, as they are the ultimate beneficiaries of the development of the economy of their country.

Kindleberger and Herrick (1958) opined that the economic development is generally defined to include improvements in material welfare especially for persons with the lowest incomes, the eradication of mass poverty with its correlates of illiteracy, disease and early death, changes in the composition of inputs and output that generally include shifts in the underlying structure of production away from agricultural towards industrial activities, the organization of the economy in such a way that productive employment is general among working age population rather than the situation of a privileged minority, and the correspondingly greater participation of broad based groups in making decision about the direction, economic and otherwise, in which they should move their welfare.

Economic development can also be described as a process that influences growth and restructuring of an economy to enhance the economic well-being of a community. The main goal of economic development is improving the economic well-being of a community through efforts that entail quality of life. Communities differ in their geographic and political strengths and weaknesses. Each community, therefore, will have a unique set of challenges for development.

Social Development is the promotion of a sustainable society that is worthy of human dignity by empowering marginalized groups, women and men, to undertake their

own development, to improve their social and economic position and to acquire their rightful place in society (Bilance, 1997). The Copenhagen Social Summit 1995 defined social development in terms of three basic criteria:- i) Poverty eradication ii) Employment generation and iii) Social harmony.

Social Development is equality of social opportunities (Sen, 1995). It also terms as an upward directional movement of society from lesser to greater levels of energy, efficiency, quality, productivity, complexity, comprehension, creativity, choice, mastery, enjoyment and accomplishment. Development of individuals and societies results in increasing freedom of choice and increasing capacity to fulfill its choices by its own capacity and initiative. The development of social organization takes place within a larger evolutionary context in which the consciousness of humanity is evolving along a continuum from physical to vital to mental. As society advances along this continuum, development becomes more conscious and more rapid, and, occurs only at the points where humanity recognizes its power to determine results. Human beings are the ultimate resource and ultimate determinant of the development process. It is a process of people becoming more aware of their own creative potentials and taking initiative to realize those potentials. Human awareness, aspiration and attitudes determine society's response to circumstances.

Amartya Sen (1999) has argued for an even broader concept of development focusing on the concept of freedom. He sees development as an integrated process of expansion of substantive freedoms. Economic growth, technological advance and political change are all to be judged in the light of their contributions to the expansion of human freedoms. Among the most important of these freedoms are freedom from famine

and malnutrition, freedom from poverty, access to health care and freedom from premature mortality. Development proceeds rapidly in those areas where the society becomes aware of opportunities and challenges and has the will to respond to them. Development strategies also effective when identifying areas where the social will is mature and can provide better means for the awakened social energy to express itself.

Bilance, the development agency in Netherlands (1997) mentioned the three components of social development such as the fight against poverty, development by people themselves and a rightful place in society. Social development implies evolution and transformation through which people and societies maximize their opportunities, and become empowered to handle their affairs (Mohan and Sharma, 1985). It is directed towards the release of human potential in order to eliminate social inequities and problems (Meinert and Kohn, 1987). The goal of social development is the promotion of social welfare. It occurs when social problems are satisfactorily managed and opportunities are created. Social development advocates believe that a commitment to achieve social well-being for all can best be realized through a dynamic multifaceted development process that utilizes social investments and harnesses the power of economic growth for social ends (Nahar, 2014). The present study comprises social and economic aspects as a study of development which is a process of betterment for a large human group and includes both economic development and social transformation in the process of development of a region.

1.5.3 Review of Literature:

1.5.3.1 Literature on International studies

The thought on the pattern of regional disparities was observed in the 1950s. Early thought on spatial economic phenomena were limited to location theories of Von Thunen (1826) which concerned the geographic location of economic activity; become an integral part of economic geography, regional science, and spatial economics. The main aim of Von Thunen's analysis was to show how and why agricultural land use varies with the distance from a market. Alfred Weber (1909) formulated a theory of industrial location in which an industry is located where the transportation costs of raw materials and final product is a minimum. This theory is based on the 'least cost principle' which is used to account for location of industry. The theory is based upon a single, isolated country with homogeneous conditions. Some of the natural resources in this setting are found everywhere, while some have fixed locations. The workforce has fixed locations. Transportation costs, in this situation, are a function of cargo weight and the distance. Demand is uniform throughout for all products; hence, there is uniform price for all products at all locations. The theory claims that the costs will get influenced by transportation costs, labour costs and by the agglomeration factor and Losch theory of 'Profit Maximisation' in the year 1954 totally discarded the least cost location theory of Weber. In fact, he suggested that, 'profit maximization' is the only objective of the entrepreneur, whether it is state or an individual to find out the place where maximum profits occur.

The spread-backwash concept was introduced in the 1950s with the nearly simultaneous publications of Hirschman (1958) and Myrdal (1957) provided the concept

of “spread” or “trickling – down” effects, and “backwash” or “polarization” effects by explaining theoretical generalizations about the pattern of spatial development over time and the process of transmission growth of one region to another. The idea of backwash originated in international trade theory in a book by Gunner Myrdal (1957). He noted that an increase in exports from a region may stimulate capital and labor flows into the region to the detriment of the localities from which the resources came. Thomas Vietorisz and Bennett Harrison (1973) later proposed that spread and backwash feedbacks between labor markets contributed to a divergence of technology levels, labor productivity, and wages in these markets. Gary Gaile (1980) used backwash concepts to describe the potential negative effects of urban growth on peripheral areas. Hirschman’s ‘trickling down’ of urban influence on outlying areas is conceptually analogous to Myrdal’s spread effects. According to Hirschman (1958), the most important of the positive effects are the more developed region’s “purchases and investments” in the less developed region. In contrast, Hirschman’s negative (backwash or polarization) effects include migration from the rural area to the more developed region, especially of the more skilled and trained workers, and weak production in the outlying region, caused by superior urban competition (Ganning et al., 2013).

Hanna (1958) observed a pronounced narrowing of inter-state differential while studying the differences among the state per capita incomes of the forty eight states of the United States during the period of 1919 – 1954. Hanna formulated the hypothesis that as the national level of income increases the regional disparities decreases, which is known as convergence hypothesis. The regional economic growth of the US economy during the period of 1870-1950 studying by Perloff, et al., (1960), observed the tendency of

convergence of per capita income differentials among the States during the period of 1870-1950. Kuznets and Easterlin (1960) found, “The growth in per capita income in various parts of the countries was accompanied by a marked narrowing of relative inter-state differences” which was studied on the US economy during the period of 1880-1945-1951.

Williamson (1965) taking per capita income as the indicator of the development studying the economies of a large number of developed and developing countries, including India. He observed, “rising regional income disparities and increasing North-South dualism is typical of early development stages, while regional convergence and a disappearance of severe north-south problems is typical of the more mature stages of national growth and development.

A variant of the Cumulative Causation theory, emphasizing the operation of increasing returns to scale in the industrially advance areas of a country which is benefited due to increasing return to scale when trade opens up between the developed and backward regions (Kaldor,1970). Karopeckyj (1972) examined empirically the record of socialist countries of East Central Europe and (erstwhile) USSR in regard to the disparities of regional development by taking industrial employment as representative of the regional level of industrialization and of the economic development, and found the validity of Williamson’s hypothesis. Francis (1988) describes the impact of mass communication on development. Meredith (2010) explores how mass media functions and how media concepts are related to economic impact of the Mississippi Gulf Coast after the deep water horizon oil spill. The behavior of the economy can be impacted by how the media presents information towards the public.

Moss (2002) explores the interrelationship of gender equity and socio-economic inequality and how they affect women's health at the macro - (country) and micro - (household and individual) levels. She found that inequality between and within households contributes to the patterning of women's health; relationships may vary depending upon women's life stage and cohort experience. The empowerment of women and improvement of their socio-economic status are essential ingredients of economic, political and social development. Khan (2006) study the gender related interventions introduced by the Aga Khan Rural Support Program (AKRSP) in District Chitral of Pakistan. Though these interventions have improved the socio-economic conditions of women to a greater extent in the area, their sustainability requires regular monitoring and follow-up of training.

Edwards (2010) examines the direct effect that gender inequality has on economic growth and social development, and then the indirect effect that is transmitted through institutions and governance. Edwards find that there is not an efficiency/equity trade off with respect to gender, and equality is actually economically efficient with respect to long-term economic growth and social development. Policy implications are considered with respect to the current direction of international policy.

Mandy and Biddle (2010) analyzed three dimensions of socio-economic disparity: Indigeneity, gender, and geography. They explore the development of a similar gender-related index as a tool to enable a relative ranking of the performance of Indigenous males and females at the regional level across a set of socio-economic outcomes. The initial findings suggest that although there is a substantial development gap between

Indigenous and non-Indigenous Australians, the development loss from gender-related inequality for Indigenous Australians is relatively small.

Wu and Li (2013) examine the subjective consequence of rising income inequality amidst the rapid economic growth in China. They employ multi-level models to show that, while personal income improves life satisfaction, the effect decreases with the level of local economic development; moreover, the rate of local economic growth has a positive effect, but local income inequality has a negative effect, on individuals' life satisfaction.

Umaru and Dauda (2013) analyzed the crucial role of mass media, in reversing the burgeoning socio-economic challenges of Northern Nigeria. They further suggest that the media in Northern Nigeria can strengthen their internal competence and ethical capacity for professionalism and adopt peace journalism in coverage of diversity and conflict, in their programming to illuminate the cherished values of the people and to guide and direct social conduct, socio-economic development and behavior for sustainable development.

1.5.3.2 Literature on Studies of India:

The regional variations of state income and per capita state income for the period 1950-51 to 1965-66 highlighted by Indian Institute Public Opinion (1960), calculated the rate of growth of state income and state per capita income and found that rate of growth over different parts of India was markedly unequal. The extent of spatial disparities in India was also measured by using various developments indicators other than per capita income. Mitra (1961) used a large body of district level data for finding out the levels of regional development in India for the year 1961. He adopted the ranking method for

studying the level of development of 327 districts of India and found that there existed widespread disparities among the districts.

The Bureau of Applied Economics and Statistics (BAES), west Bengal, in 1971 using indicators of development and by adopting ranking method examined the backwardness of the districts of the State in the early part of 1960s. Agarwala and Hazarika (2004) studies the analysis of inter-district development disparities in Assam was carried out on the basis of twenty five selected indicators out of which seven indicators related to agriculture, four indicators related to industry and fourteen indicators related to Basic Infrastructure and Services (BIS). They have analyzed inter-district development disparities in the state of Assam on the basis of three composite indices namely – a) Equal Weightage Index Method, or Indexing Method, b) Deprivation Method and c) Principal Component Method.

National Council of Applied Economic Research (NCAER) in 1963 examined the extent of district wise disparities of 14 states with 289 districts of India on the basis of estimated district wise per capita income for the year 1955-56 and found that there was considerable inequality in income (distribution) by districts. The Council, however, observed that there was no association between the industrialization and disparity of income within a State.

Williamson's (1965) study on the basis of per capita income of 18 states for the years 1950-51 and 1955-56, estimated by the Indian Institute of Public Opinion pointed towards increasing regional dualism in India. Disparity was measured by the coefficient of variation of per capita income.

The State Statistical Bureau, West Bengal (1965) estimated district incomes of the States for the years 1951-52, 1955-56 and 1960-61 and examined the inter district disparity in growth rates. It was shown that there were differences in growth rate, the lowest rate being for Malda and the highest being West Dinajpur.

Mohapatra (1978) taking states per capita income of 17 major States of India found that inter regional disparities were increasing at a much faster rate during the post 1966-67 period although divergence of per capita incomes was continuing during 1960-61 to 1973-74. Mahajan (1972) using state income claim that the pattern of regional inequalities in the fifties. Thus, it was contrary to the conclusion reached by Williamson in respect of the pattern of disparities amongst the states of India in the fifties.

Sampath (1977) measured the disparity by weighted and unweighted coefficients of variations of per capita income of the fifteen constituents states of India and found that their existed wide inter - state inequality at the beginning of the planning era and it declined steadily until 1964-65. Since then, up to 1970-71, it increased steadily. The method of Principal components was used for combining development indicators in order to have a composite index of development. The composite index constructed by this method is used for measuring spatial variations.

Pal (1968) used the principal components analysis for analyzing the economic development in the macro-region of south India and also for comparing Indian districts according to the levels of development. For measuring the regional disparities in India at the district level, Pal (1975) again used this method for the year 1961 and found that for the states of West Bengal, Purulia was the most backward district in the state. By using

the principal component analysis Gupta (1971) claimed that this method gives a far better classification of districts then those given by the Census Commission (1961).

Kundu (1980) for studying the processes of urbanization and its impact on the spatial structure of Punjab, Haryana and Rajasthan also adopted principal component analysis. The National Committee on the Development of Backward Areas (NCDBA) in 1981 conducted a study on the basis of 14 development indicators by adopting ranking, indices and principal component methods and identified 179 districts of India as backward.

Rao (1981) while studying the Center - States financial relations, measured the inter-state disparities and identified the backward states of India for the year 1956, 1961 and 1965 by applying the principal component analysis. Her study shows that during the period of 1956 to 1965 inter-state disparities were decreasing.

The study of Sarker (1982) evaluates disparities from theoretical and methodological points of view. Various methods have been used to examine the inter-state disparities in output (per capita income) to reach conclusion about the level and trend of disparity in income for the period from 1960-61 to 1989-90. The pattern in development process of states has been identified using cluster analysis based on k-means algorithm. The tree diagram i.e. dendrogram has been used to identify the same visually without imposing any prior conditions on the number of clusters. The development pattern of states and the changes therein have been examine using another graphical technique, correspondence analysis, which has identified the indicators closely associated with development of a particular states. The level as well as the pattern of development in change that have taken place over the period under review have been examined by

plotting two dimensional graphs using Principal Component scores. An examination of the nature of relationship between development, size of the state and plan outline with the help of regression analysis also has been carried out.

Ray (2001) reviews the prevalent social, economic and demographic features in India. The diverse issues as overview of health statistics, fertility, internal migration, women and development, gender disparities in the educational system, language planning and linguistic diversity, understanding semantics of language development, socio-economic status and child abuse, quality of life vis-à-vis consumer behavior and sustainable development have been discussed.

Narain et al. (2004) study the level of development of various districts of Madhya Pradesh was estimated with the help of composite index based on optimum combination of socio-economic indicators for the year of 1994-95. Gopal (2005) measure the extent and time pattern of the change of inter - state disparities in India during the period before and after economic reform. Inter district disparities in the overall and sectoral socio-economic behavior in West Bengal during the period of 1960-61 to 1990-91 was measured. For measuring disparities in West Bengal, Kendall's index has been modified by dividing the values of seventeen selected indicators by the respective based year (1960) value. After constructing the sectorial and over all development indices for all the times points, the districts have been classified for regional analysis on the basis of the Average Range (AR) method. The AR is the different between the highest and the lowest index values divided by the number of observations. The identification of backward and developed districts has been done on the basis of the respective year's State average

index values. Spatial disparities have been measure by the co-efficient of variations of the overall and sectoral indices.

Hussain et al. (2008) investigate the impact of education on socio-economic status of rural life in Faisalabad district. An empirical result reveals that economic growth of any economy not only depends on physical capital but also on the human capital. Education is most the important and valuable factor on overall environment of society, but primary education has fewer effects on the behavior of rural residents in a selected village of Punjab.

Arora (2012) study using access to education and health as the indicators of gender inequality, examines gender inequality and state level openness in the different states of India. Arora show that the sub-national level in India higher per capita income is accompanied with lower gender inequality. However, in some high income states gender inequality is also very high. High gender inequality was also observed in the states which score high in the openness index.

Sundaram (2012) examines the impact of Self-help Group in Socio-economic development of India. He found that the Self-help Groups have been playing considerable role in training of Swarozgaris, infrastructure development, marketing and technology support, communication level of members, self confidence among members, change in family violence, frequency of interaction with outsiders, change in the saving pattern of SHG members, change in the cumulative saving pattern of SHG members per month, involvement in politics, achieving social harmony, achieving social justice, involvement in community action and financial value.

Chander and Kumari (2012) study the impact of education and media exposure on adoption of Small Family Norms (SFN) in the scheduled castes families. They found that all respondents had heard about small family norms and they wanted to adopt SFN for the reason of having only two children. Education and exposure to mass media significantly enhanced the knowledge level of respondents about small family norms. His investigation concluded that education and mass media exposure favorably contribute to the knowledge and formation of one's attitude towards small family norm and their socio-economic development.

1.5.3.3 Literature on the Studies of North East India:

Narain et al., (2004) study the level of development of hilly states of the country has been estimated with the help of composite index based on optimum combination of socio-economic indicators. The states of Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura and Uttaranchal have been included in the study. The data for the year 2000-2001 on seventeen socio-economic indicators have been used. The level of development has been separately estimated for agricultural, infrastructural and overall socio-economic fields. In case of overall socio-economic development, the State of Mizoram has been ranked first and the State of Arunachal Pradesh is ranked last.

Neogi (2010) studies north-eastern part of India, comprising of seven states, is a lowly developed, tribal population dominated region in India. In spite of the common Mongoloid origin and lifestyle of majority of the population residing here, sharp differences exist in the status of their socio-economic development. His analyses find out the extent of this disparity, especially on the socio-economic front through a state-wise

analysis. Neogi illustrates the situations prevailing in health, education, economic and social cohesion sector. Discussion on the implications of such disparity on social stability finds that the causes of frequent insurgency activities, that have been penetrating the region for a long time, thereby creating communal conflicts, can be traced in the economic deprivation and disparity.

Sharma (2012) analyzed the Inter-State disparities in socio-economic in north east region of India. The level of development of north east region has been estimated with the help of composite index based on optimum combination of socio-economic indicators. The level of development has been separately estimated for agriculture, livestock, and infrastructure and over-all socio-economic field. In case of socio-economic development, Assam has been ranked first and Meghalaya is ranked last. Wide disparities were obtained in the level of the development amongst different states. Positive significant association is found between the Agriculture and Infrastructure fields. Literacy rate is also influencing the level of development in the positive directions. But, the level of Education, provision of health services, banking facilities, and transport and communication system did not significantly influence the agricultural development. Sharma clearly found that the north eastern states require improvement of various dimensions in some of the indicators for enhancing the level of over-all socio-economic for unified balance integration of curative, preventive and promotional health services.

Chandra, Phatik and Medhi (2012) study the importance of infrastructure development for sustained economic development. They found that the Infrastructure development contribute improving the poverty scenario of Assam. Inadequate and

inefficient infrastructure can prevent the economy from realizing its full growth potential regardless of the progress on other fronts.

Dutta and Debnath (2009) studied the socio-economic development in rural Assam. The local government and NGOs can play a useful role in health, education, rural water supply, improvement of industry and infrastructural development which could provide employment as well socio-economic development in their study area.

1.5.3.4 Literature on the Studies of Mizoram:

The literature which concern about the development of socio-economic is not much especially for the state of Mizoram of which Nunchunga (2008) study the inter-district developmental disparities of Mizoram on the basis of primary, secondary and tertiary sector; into high developed, less developed and least developed district using certain statistical tools like Indexing method, Deprivation Method and Principal Composite Analysis. He selected thirty five variables/indicators of which nine are from primary or agricultural and allied sector, eight from secondary/industrial sector and the remaining eighteen from service/basic and infrastructural services. Aizawl, the state capital of Mizoram stood the top scoring point nine in the ordinal scale, it is categorize as 'Highly Developed District'. Kolasib is at the second position scoring eight in the ordinal scale, Champhai at the third position scoring point seven in the same scale; followed by Serchhip scoring six in the scale. These three districts may be called be categorized 'Relatively developed district'. Lunglei district score point three and may be categorized 'Less leveloped district' whereas Mamit, Saiha and Lawngtlai district respectively score point two, two and one so that they may be categorized as 'Least developed district' within the state of Mizoram.

Lalmalsawmzauva (2012) analyzed the Reproductive Healthcare of Mizoram, availability of healthcare services, inter - district variations of development and reproductive healthcare and factors influencing Reproductive Health seeking Behaviour of the state. He studied reproductive healthcare from various aspects ranging from pure medical perspective focusing on biological morbidity and epidemiological analysis to socio-economic related environments. He identified spatial variation in the status of reproductive healthcare in the state and examined the problems and constraints through a case study of Champhai district by collecting information all the way through intensive field survey. He found that there exist regional differences regarding availability of health centre at the village level and analysis of the selected indicators in Mizoram clearly reveals intra-state variations, rural-urban differences characteristics with regard to reproductive health. Availability of facilities, Education and mother's mass media exposure has an impact on mother's health and attitude.

Saithangpuia and Saitluanga (2008) measured inter-block disparity of Aizawl District using sixteen indicators and Z-score technique and other statistical methods. They found that level of development in Aizawl district reveals that disparity in development is very high implicating the dominance of Aizawl city and urbanization is one of the most important forces of development in the transformation of regional economy of Mizoram.

Sundaram (2012), Explorative and Descriptive research designs were used to study the increasing transformation of socio-economic condition of life style of the tribal in Mizoram. The change of socio-economic conditions of the tribal households is an indicator of well-being and future challenges to meet the minimum requirement of

demand in day-to-day life to achieve a satisfactory standard of life generalized as lacking in many respects. Most of the planning and programmes benefited to the society unequally distributed over the earth. There may be no denial of the fact that rich people and better off regions are the chief gainer in the process of Development (Dubey, 1992).

1.6 Organization of the study:

The first chapter is an introduction of the study which includes the significance of the study, aims and objectives, research questions and literature reviews. Review of literatures includes review of existing theories and literature on spatial disparity in socio-economic development - divided into various categories at the international, national, regional and local level.

The second chapter deals with the methodology of the study. It consist of the research design including determination of sampling and sample size, a detail description of techniques of analysis like Z-score, Factor analysis and Principal component analysis. Karl Pearson's coefficient of correlation, choropleth mapping by Jenks natural breaks classification method with the help of ArcGIS and diagrammatic presentations of the output.

The third chapter deals with one of the themes of the study - disparity of socio-economic development in Mizoram. This chapter can be broadly divided in to two sections. The first section is a general discussion of the physical and environmental setting of Mizoram including Relief and slope, vegetation, climate, drainage and transport network. The second section concerning about the inter-district spatial disparity in socio-economic development of Mizoram including various development indicators like

Agriculture, Health, Industry, Sericulture and Fisheries, Livestock and Veterinary, Electricity, Transport and Communication, Education, Social Welfare, Social Security, Banking and over-all development.

The fourth chapter is a detail analysis of the socio-economic characteristics, physical and environmental settings of Lawngtlai District like relief and slope, vegetation, climate and drainage system. The socio-economic developmental studies includes 16 developmental dimension viz., type of houses, household amenities, income, occupation and working status, fuel use for cooking, distance level from different places, source of water supply, transportation, mass-media exposure, electricity, health, age and sex structure, market, banking, religion, level of social security and over-all development in Lawngtlai District.

The fifth chapter is about the study of factors responsible for disparity in socio-economic development along with the relationship of the developmental indicators. The relationships of indices were categorized into two disciplines like the relationship of various indicators in inter-districts and intra-districts as well as within the block itself.

The last chapter is conclusion and summary of major findings.

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CHAPTER – II
METHODOLOGY

2.1 Introduction:

The Methodology of the study includes preparation of location map, determination of sample size and sampling techniques, analysis of tabulated data with the help of appropriate statistical techniques like Percentile, Z-Score, Principal Component Analysis, Factor Analysis and Karl Pearson's Coefficient of Correlation. The Graphical method, Choropleth mapping techniques and diagrams were also employed for mapping the outputs.

2.2 Sampling techniques and Sample size:

Sample or sampling techniques is one of the important factors that determine accurate and reliable information about the data within minimum cost, time and energy and to set out the limits of accuracy of such estimates (Gupta, 2010). It is the name or other identification of the specific process by which the entities of the sample have been selected. Various literatures were surveyed before taking sample to determine sample size and sampling method appropriate for the study. Sample size determination is the technique of electing the number of observations to include in a sample. The sample size is an important feature of any study or investigation in which the aim is to make inferences about the population from a sample. Statistical power is the chance that a statistical test will indicate a significant difference when there truly is one. Statistical power is analogous to the sensitivity of a diagnostic test (Browner and Newman 1978), and one could mentally substitute the word sensitivity for the word power during statistical conclusions (Singh and Musuku, 2014).

Development is a multidimensional process and it is continuous process of improvement of levels of living (Narain et al. 2005). The level of development in different dimensions cannot be evaluated fully by any single indicator. Moreover, a number of indices individually do not provide an integrated and comprehensive picture of veracity. Hence, there is a need for building up of a composite index of development based on various socio-economic indicators combined in an optimum manner. The study of socio-economic disparities were operated both qualitative and quantitative techniques. Collection of data was also broadly divided into two kinds as the analysis of data cover-ups the two aspects like study of Mizoram and an intensive analysis of Lawngtlai district.

To study the spatial disparity in the socio-economic development of the eight districts in Mizoram, the districts were used as the unit of analysis. Secondary information were collected from State Level Banker's Committee Meeting for Mizoram, under the convener of State Bank of India on 29th June 2017 (Thursday), Statistical Abstract of Mizoram: 2011, 2015 & 2017 published by Directorate of Economics & Statistics, Government of Mizoram, Census of India (2011) to represents fourteenth (14) developmental dimensions such as Agriculture, Education, Health, Transport, Communication, Industry, Electricity, Banking, Sericulture and Fisheries, Livestock and Veterinary, Social welfare, Consumer affairs, Social Security and Working status comprises one hundred and twenty four (124) developmental variable indicators.

Collection of precise and reliable data provides accurate products especially in the fields of development analysis. To meet the requirement of an in-depth analysis of spatial inequality in the socio-economic characteristics both at selected rural and urban area of Lawngtlai district, multi-stage sampling method was applied for determination of sample

size which is more complex form of sampling contains two or more stages in sample selection. It is the probability sampling technique wherein the sampling is carried out in several stages such that the sample size gets reduced at each stage.

Villages or towns were considered as suitable units of spatial analysis due to small size, cohesive and presence of sense of belongings among its residents. Small areas are appropriate of study and it had been encouraged that studies on intra-block disparity with more visible and had been considering the possibility of critical analysis. In the first stage, Systematic random sampling (Oktay and Rustemli, 2011) was based on selection of units (village and town) situated at a certain predetermined interval called the sampling interval. The four rural development blocks of Lawngtlai district like Sangau, Lawngtlai, Chawngte and Bungtlang S', consisting of 169 villages with a total 22,984 households were considered for an intensive analysis. Since the sampling unit is very large and inaccessibility of some places, a sample of 40 villages (10 villages in each blocks) out of total villages were selected for the determination of final study area constitutes the sample size for each villages. In the second stage, by considering the bases on geographical elements such as availability of accessibility, educational institution, literacy rate, location and direction of the villages (east, west, north and south), a sample of 20 units i,e.,16 villages and 4 rural development blocks (4 villages and 1 rural development block in each ruaral development blocks) were considered for collection of primary data due to specific reasons and peculiarity of government structure in the rest of the ditricts of Mizoram. In the third stage, a total 1,703 schedules were supplied to the respondents and face to face interviews were also conducted at their residences during the months of March 2015 – April 2016 (13 months). Each schedule contained an

information sheet mentioning that the identity of the respondents and his/her family should not be revealed and were free to decline answering the questions. However, another 25 schedules were assigned to the prominent citizen encircle of an overview of the villages which is only for collection of basic knowledge of the study area, containing 92 questions and not counted in the analysis of data. At last, a total 1,678 households, a sample of 25 per cent household constitutes the sample size for each locality. One of each schedule constitute more than 170 questions relating to socio-economic information, some of them are following Likert scale to indicate their level of satisfaction, feeling of security/insecurity, voting and political behavior.

Selection of household was made to represent all sections of the population within each villages and town unit. Household were selected from each types of locality – periphery or fringe areas, central or core, street structure as well as direction (north, south, east, west) and types of house like thatch, Assam-type, cement concrete in proportionate to the total numbers of houses, depends upon the availabilty of the villages. Sometime, the villages which have two or more village council (VCs) were based on its stratification of VCs boundaries and existing division of Young Lai Association's (YLA) branch, Young Chakma Association's Branch (YCA) branch and other any possibility of the villages.

2.3 Techniques of Analysis:

Various quantitative and cartographic techniques were used in the analysis part of the study. Secondary information regarding the inter-district development level, and, primary data of inter and intra-block disparities were analyzed using z-score techniques that it recognizes how far a score is from the mean in terms of standard deviation units and identify exact locations within a distribution means that z-scores can be used as

descriptive statistics and as inferential statistics. The advantage of standardizing distributions is that two (or more) different distributions can be made the same.

The main techniques for analyzing the socio-economic development in the present study are multivariate techniques like Factor Analysis (FA) and Principal Components Analysis (PCA) to construct a composite index using uncorrelated components, where each component confinements the largest possible variation in the original variables and measure of association like correlation was used for primary data analysis. The graphical methods like scattered plots, line graphs, histograms and choropleth maps were also employed.

Factor analysis and Principal Component Analysis are powerful multivariate techniques to reduce a large number of socio-economic variables to a smaller number of factors, to concisely describe the relationship among observed variables, or to test theory about underlying process (Tabchnick and Fidell, 2013). An advantage of the PCA is that it reduces measurement problems, such as recall bias, and that it reduces the complexity of correlated data, which can be easily collected as single indicator variables in household surveys (Vyas and Kumaranayake, 2006). These techniques of data reduction methods that derive a composite, smaller set of correlated but independent variables known as factors or component from a large may set of variables. Each of the factors or components may be thought as a ‘super variables’ (Saitluanga, 2016).

PCA can be understood as a special case of factor analysis (FA) and is usually, but not always, the first step in a FA. Both of them are almost similar except in preparation of the observed correlation matrix for extraction and in underlying theory. According to Ashley Crossman (2017) the specific goals of PCA or FA are to summarize

patterns of correlations among observed variables, to reduce a large number of observed variables to a smaller number of factors, to provide a regression equation for an underlying process by using observed variables, or to test a theory about the nature of underlying processes. These two methods are applied to a single set of variables when the researcher is interested in discovering which variables in the set form coherent subsets that are relatively independent of one another. Variables that are correlated with one another but are largely independent of other sets of variables are combined into factors. These factors allow condensing the number of variables in analysis by combining several variables into one factor.

Factor analysis is related to principal component analysis (PCA), but the two are not identical (Bartholomew, et al., 2008). The two main factor analysis techniques are Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). CFA attempts to confirm hypotheses and uses path analysis diagrams to represent variables and factors, whereas EFA tries to uncover complex patterns by exploring the dataset and testing predictions (Child, 2006). PCA can also be considered as a more basic version of exploratory factor analysis (EFA) that was developed in the early days prior to the advent of high-speed computers. Both PCA and factor analysis aim to reduce the dimensionality of a set of data, but the approaches taken to do so are different for the two techniques. FA is clearly designed with the objective to identify certain unobservable factors from the observed variables, whereas PCA does not directly address this objective; at best, PCA provides an approximation to the required factors (Jolliffe, 2002).

Principal Component analysis is used to extract maximum variance from the data set with each component thus reducing a large number of variables into smaller number

of components (Tabachnick & Fidell, 2007). PCA is a data reduction technique and the issues of whether it is truly a factor analysis technique has been raised (Costello & Osborne, 2005). That is, PCA produces components whereas Principal Axis Factor produces factors. There are also differences in how the correlation matrix is constructed and how the communalities are calculated when comparing these techniques (Kline, 1994; Tucker & MacCallum, 1997). In the present study of spatial disparity in socio-economic development, Principal Component analysis as the first step to reduce the data, then follow-up with a 'true' factor analysis technique.

2.3.1 Principal Component Analysis (PCA):

PCA is a statistical procedure and special case of factor analysis that uses an orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of lineary uncorrelated variables which can be used to summarize the data (Jolliffe, 2002). It was invented in 1901 by Karl Pearson (Pearson 1901), as an analogue of the principal axis theorem in mechanics; it was later independently developed and named by Harold Hotelling in the 1930s (Hotelling, 1933).

It is a useful technique for transforming a large number of variables in a data set into a smaller and more coherent set of uncorrelated (orthogonal) factors. The principal components account for much of the variance among the set of original variables. Each component is a linear weighted combination of the initial variables. The components are ordered so that the first component accounts for the largest possible amount of variation in the original variables. The second component is completely uncorrelated with the first component, and accounts for the maximum variation that is not accounted for the first. The third accounts for the maximum that the first and the second not accounted for and so

on (Krishnan, 2010). PCA is also used for different purposes - finding interrelations between variables in the data; interpreting and visualizing data; decreasing the number of variables for making further analysis simpler and for many other similar reasons.

The results of a PCA are usually discussed in terms of component scores, sometimes called factor scores (the transformed variable values corresponding to a particular data point), and loadings (the weight by which each standardized original variable should be multiplied to get the component score) (Shaw, 2003). The main objectives of PCA can be summarized as under-

i) PCA reduces attribute space from a larger number of variables to a smaller number of factors and as such is a "non-dependent" procedure (that is, it does not assume a dependent variable is specified).

ii) PCA is a dimensionality reduction or data compression method. The goal is dimension reduction and there is no guarantee that the dimensions are interpretable (a fact often not appreciated by (amateur) statisticians).

iii) To select a subset of variables from a larger set based on which original variables have the highest correlations with the principal component.

Mathematically, principal components are linear combinations of variables with weights in terms of their Eigen vectors. These Eigen vectors are derived from the correlation matrix of the variables. Each principal component is a linear combination of X's obtained as

$$Y_1 = e_{11}x_1 + e_{12}x_2 + \cdots + e_{1p}x_p$$
$$Y_2 = e_{21}x_1 + e_{22}x_2 + \cdots + e_{2p}x_p \ldots.$$
$$Y_p = e_{p1}x_1 + e_{p2}x_2 + \cdots + e_{pp}x_{pm}$$

Where $x_1, x_2 \ldots x_p$ are the variables (indicators), *p* the number of variables and Y_i (i=1….,p) represents the principal components. a_{ij} are the component loadings which are chosen as weights applied to the variables x_j in equation (1) so that the principal component Y_i satisfy the following conditions: i) they are uncorrelated (orthogonal) and ii) the first principal component accounts for the maximum possible proportion of the variance of the set of x_s, the second principal component accounts for the maximum of the remaining variance, and so on until the last of the principal components absorbs all the remaining variance not accounted for by the preceding components, and

$$a^2_{ij}+a^2_{i2}+\ldots a^2_{ip} = 1, \text{ where } i=1,2,\ldots,p,.$$

PCA involves finding the Eigen values λ_j, where j = 1,2,…,p, of the sample covariance matrix *CM* as –

$$CM = \begin{pmatrix} cm_{11}\ cm_{12}\ \ldots\ cm_{1p} \\ cm_{21}\ cm_{22}\ \ldots\ cm_{2p} \\ \ldots\ldots \\ cm_{p1}\ cm_{p2}\ \ldots\ cm_{pp} \end{pmatrix}$$

Where the diagonal element cmii is the variance of xi and cm_{ij} is the covariance of variables of x_i and x_j. The eigenvalues of the matrix *CM* are the variances of the principal components and can be found by solving the characteristic equation where *I* is the identity matrix and λ is the vectors of eigenvalues.

An important property of the eigenvalues is that they up to the sum of the diagonal elements of CM, that is, the sum of the variances of the principal components is equal to the sum of the variance of the original variables:

$$\lambda_1 + \lambda_2 + \ldots + \lambda_p = cm_{11} + cm_{22} + \ldots + cm_{pp}$$

In order to prevent some variables having undue influences on the principal components, variables are standardized first to have zero means and unit variances at the

start of the analysis. The co-variance matrix *CM* then takes the form of the correlation matrix. Given that the correlation matrix rather than the covariance matrix is used in PCA, all individual indicators are assigned equal weights in forming the principal components (Chatfield and Collins, 1980).

To calculate PCA, the raw data are transformed into percentage variables, and then the variables are converting into normalized values with the following formula:

$$NV_{ij} = 1 - \left(\frac{(BestXi - ObservedXij)}{(BestXi - WorstXi)}\right)$$

Where, i = i^{th} observation, and, j = j^{th} town/village

The Best and Worst values depend upon the nature of particular indicators. In case of a positive indicator, the highest value can be treated as the best value and the lowest will be considered as the Worst value. Similarly, if the indicator is negative in nature, then the lowest value considered as the Best value and the highest, the Worst value. Once the normalized values are obtained for all the indicators, factor loadings and weights are assigned to these normalized values by using one such software, namely Statistical Package for Social Scientists (SPSS) to identify initial Eigen values which are more than one. The Eigen values are used to obtain weights of the variables.

After weights are assigned to each indicator, the following formula is used to determine the first Index:

$$I = \frac{\Sigma\, Xi\, (\Sigma\ |\ Lij\ |.\, Ej)}{\Sigma\, (\Sigma\ |\ L\, ij\ |.\, Ej\ )}$$

Where, I is the Index
X_i is the ith indicator;
L_{ij} is the factor loading value of the ith variable on the jth factor;
E_j is the eigen value of the jth factor

After obtaining an index for the first set of component other indices are computed for each set of indicators by following the same procedure getting the output in the form of Eigen values and Extracted Component Matrix. Based on the group of index, assign rank in an ascending order and obtained normalized value from the highest index with rank one treated as the Best, and the lowest index with last rank considered as the Worst, compute each sub-group of indicators which are then used to compute composite and final index for the level of development. On the basis of final index, the ranks of all village and towns are given to classify developmental level into various categories of the study area.

2.3.2 Factor Analysis (FA):

Factor analysis is a significant instrument which is utilized in development, refinement, and evaluation of tests, scales, and measures (Williams, Brown et al. 2010). It has its origins in the early 1900's with Charles Spearman's interest in human ability and his development of the Two-Factor Theory; this eventually lead to a burgeoning of work on the theories and mathematical principles of factor analysis (Harman, 1976). The method involved using simulated data where the answers were already known to test factor analysis (Child, 2006).

Factor analysis as a multivariate statistical procedure, is commonly utilized in the fields of information system, psychology, commerce and education and is considered the approach of choice for interpreting self-reporting survey (Byrant, Yarnold et al. 1999). It is also used in many fields such as behavioral and social sciences, medicine, economics, and geography as a result of the technological advancements of computers.

FA is an exploratory technique applied to a set of observed variables that seeks to find underlying factors (subsets of variables) from which the observed variables and correlated variables in terms of a potentially lower number of unobserved variables. It operates on the notion that measurable and observable variables can be reduced to fewer latent variables that share a common variance and are unobservable, which is known as reducing dimensionality (Bartholomew, Knott, & Moustaki, 2011). These unobservable factors are not directly measured but are essentially hypothetical constructs that are used to represent variables (Cattell, 1973).

To perform a FA, there has to be univariate and multivariate normality within the data (Child, 2006). It is also important that there is an absence of univariate and multivariate outliers (Field, 2009). Also, a determining factor is based on the assumption that there is a linear relationship between the factors and the variables when computing the correlations (Gorsuch, 1983). For something to be labeled as a factor it should have at least 3 variables, although this depends on the design of the study (Tabachnick & Fidell, 2007).

The procedure to construct FA is similar to PCA. However, while PCA is based simply on linear data combinations, the FA model assumes that the data is based on the underlying factors of the model, and that the data variance can be decomposed into that accounted for by common and unique factors (Saitluanga, 2016)

The mathematical equation of FA (more than one factor) may be given as -

$$X_1 = \lambda_{11}F_1 + \lambda_{12}F_2 + \ldots + \lambda_{1m}F_m + e_1$$
$$X_2 = \lambda_{21}F_1 + \lambda_{22}F_2 + \ldots + \lambda_{2m}F_m + e_2 \quad \ldots.$$
$$X_n = \lambda_{n1}F_1 + \lambda_{n2}F_2 + \ldots + \lambda_{nm}F_m + e_n$$

Where X_i (i=1,…,n) represents the original variables but standardized with zero mean and unit variance; $\lambda_{11}, \lambda_{12} \ldots, \lambda_{nm}$ are the factors loadings related to the variable Xi_1= $F_1, F_2 \ldots, F_m$ are *m* uncorrelated common factors, each with zero mean and unit variance; and e_i are the *n* specific factors supposed independently and identically distributed with zero mean. In other terms, the factor analysis model expresses the variation and co-variation in a set of observed continuous variables y(j = 1 to *p*) as a function of factors η(k = 1 to *m*) and residuals ε(j = 1 to *p*). For indicators i,

$$y_{i1} = \nu_1 + \lambda_{11}\, \eta_{i1} + \lambda_{12}\, \eta_{i2} + \ldots + \lambda_{1k}\, \eta_{ik} + \ldots + \lambda_{1m}\, \eta_{im} + \varepsilon_{i1}$$

$$y_{ij} = \nu_j + \lambda_{j1}\, \eta_{i1} + \lambda_{j2}\, \eta_{i2} + \ldots + \lambda_{jk} \eta_i k + \ldots\ldots + \lambda_{jm} \eta_{im} + \varepsilon_{ij}$$

$$y_{ip} = \nu_p + \lambda_{p1}\, \eta_{i1} + \lambda_{p2}\, \eta_{i2} + \ldots + \lambda_{pk} \eta_{ik} + \ldots\ldots + \lambda_{pm}\, \eta_{im} + \varepsilon_{ip}$$

Where, ν_j are intercepts, λ_{jk} are factor loadings, η_{ik} are factor values and ε_{ij} are residuals with zero means and correlations of zero with the factors.

2.3.3 Steps in Factor Analysis:

According to Fabrigar Wegener, et al., (1999), there are five methodological issues that researchers should consider for utilizing FA. First, researcher should determine if the FA is the most appropriate statistical method to achieve the purpose of the study. Second, the variables of the study, sample size and nature should be selected. Third, the extraction procedure should be chosen and then determine the method to decide the number of factors to retain. Fifth, researcher need to select the rotation method to yield a final interpretable solution. Failure to make a proper decision about one or more of above mentioned methodological issues may lead to erroneous results and limit the utility of the EFA (Hogarty, Kromrey et al. 2004).

According to Ho (2014), there are three basic steps to factor analysis including PCA such as i) Computation of the correlation matrix for all variables ii) Extraction of initial factors iii) Rotation of the extracted factors to a terminal solution.

i) Computation of the Correlation Matrix:

Factor analysis is based on correlations between measured variables; a correlation matrix containing the inter-correlation coefficients for the variables must be computed. The variables should be measured at least at the ordinal level, although two-category nominal variables can be used. If all variables are nominal variables, then specialized forms of factor analysis, such as Boolean factor analysis (BMPD, 1992), are more appropriate (Taherdoost, Shamsul and Neda, 2014).

To the extraction of the constructs, there are some tests which must be conducted to examine the adequacy of the sample and the suitability of data for FA (Burton and Mazerolle, 2011). Sampling adequacy provides the researcher with information regarding the grouping of survey items. Grouping items into a set of interpretable factors can better explain the constructs under investigation. Measures of sampling adequacy evaluate how strongly an item is correlated with other items in the EFA correlation matrix (Burton and Mazerolle, 2011).

The sampling adequacy can be assessed by examining the Kaiser-Meyer-Olkin (KMO) (Kaiser 1970) which is a statistic for comparing the magnitudes of the observed correlation coefficients. KMO statistic is computed for each individual indicator, and their sum is the KMO overall statistics. It is suggested when the cases to variable ratio are less than 1:5. It ranges from 0 to 1, while according to (Hair, Anderson et al. 1995; Tabachnick and Fidell 2001), 0.50 considered suitable for FA. On the other hand,

Netemeyer, Bearden et al. (2003) stated that a KMO correlation above 0.60 - 0.70 is considered adequate for analyzing the EFA output. A KMO overall should be .60 or higher to proceed with factor analysis (Kaiser and Rice, 1974).

$$KMO = \frac{\sum \sum_{i \neq j} r_{ji}^2}{\sum \sum_{i \neq j} r_{ji}^2 + \sum \sum_{i \neq j} a_{ji}^2}$$

Where, r_{ij} is the correlation matrix or correlation coefficient of variable i and variable j, and a_{ji} is the partial covariance matrix or partial correlation coefficient

Another test of the strength of the relationship among variables was done using the Bartlett's (1954) test of sphericity provides a chi-square output that must be significant. The Bartlett's Test of sphericity tests the null hypothesis that the variables in the population correlation matrix are uncorrelated.

The results of analysis showed a significance level of 0.00, a value that is small enough to reject the hypothesis (the probability should be less than 0.05 to reject the null). It can be concluded that the strength of the relationship among variables is strong or the correlation matrix is not an identity matrix as is required by factor analysis to be valid. These diagnostic procedures indicate that factor analysis is appropriate for the data. It indicates the matrix is not an identity matrix and accordingly it should be significant ($p<.05$) for factor analysis to be suitable (Hair, Anderson et al. 1995a; Tabachnick and Fidell 2001).

ii) Factors extraction: The two basic methods for obtaining factor solutions are Principal Component analysis and common Factor Analysis. There are several ways to extract factors: principal components analysis (PCA), principal axis factoring (PAF), image factoring, maximum likelihood, alpha factoring, unweight least squares,

generalized least squares and canonical (Tabachnick and Fidell 2001). The choice of factor extraction lies with the objective of the researcher. The decision whether to use PCA and PAF is fiercely debated among analysts (Henson and Roberts 2006), although the practical differences between the two are often insignificant (Thompson 2004) and when factors have high reliability or there are thirty or more factors, there is not significant differences (Gorsuch, 1983),. According to Costello and Osborne (2005), maximum likelihood or principal axis factoring will give researcher the best results, depending on if data are generally normally-distributed or significantly non-normal, respectively. Principal-axis factoring and PCA are the two most common extraction methods in geography (Clark, Davies and Johnston (1974).

In the present study, Principal Component analysis is used to determine composite index of socio-economic developments which is appropriate when the purpose is no more than to reduce data to obtain the minimum number of factors needed to represent the original set of data while the primary objective is to identify theoretically meaningful underlying dimensions, the common FA method is the appropriate model (Ho, 2006).

iii) Determination of number of factors: There are two conventional criteria for determining the number of initial unrotated factors to be extracted. These are the Eigenvalues criterion and the Scree test criterion (Ho, 2006). However, some researchers point out that Parallel Analysis is the best method to determine how many factors to retain (Humphreys and Montanelli 1975; Zwick and Velicer 1986; Glorfeld 1995) (Thompson and Daniel 1996; Ledesma and Valero-Mora 2007).

The Eigen values criterion is also called Kaiser's criterion, constructs the eigen values greater than retained for interpretation. Another popular used method for

determining the number of factors to retain is Cattell's Scree test (Cattell 1966) which involves the visual exploration of a graphical representation of the Eigen values for breaks or discontinuities. This test is used to identify the optimum number of factors that can be extracted before the amount of unique variance begins to dominate the common variance structure (Hair, Anderson, Tatham, & Black, 1995).

The Kaiser's method is followed in the present study, and, may be the best known and most used in practice (Fabrigar, Wegener et al. 1999) because of its theoretical basis and ease of use (Gorsuch 1983). Using of the eigenvalue criterion is that the amount of common variance explained by an extracted factor at least equal to the variance explained by a single variable (unique variance) if that factor is to be retained for interpretation. An eigenvalue greater than 1 indicates that more common variance than unique variance is explained by that factor (Ho, 2006).

iv) Rotation Method: Mc Donald (1985) defines rotation as "performing arithmetic to obtain a new set of factor loadings (v-*f* regression weights) from a given set" and Bryant and Yarnold (1995) define it as "a procedure in which the eigenvectors (factors) are rotated in an attempt to achieve simple structure. In order to produce a more interpretable and simplified solution, rotation will help by maximizing high item loadings and minimizing low item loadings (Taherdoost, Shamsul and Neda, 2014). Oblique and orthogonal rotations are two types of rotation technique. Oblique rotation allocates the factors to correlate or in other words, producing constructs structures that are correlated. Quartimin, direct oblimin and promax are commonly available methods for oblique rotation. According to Ho (2014), 'orthogonal rotation assumes that the factors are independent, and the rotation process maintains the reference axes of the factors at 90˚'

while the oblique rotation process does not require that the reference axes be maintained at 90˚ which allows for correlated factors instead of maintaining independence between the rotated factors. There are several methods for orthogonal rotation for such as quartimax, varimax, and equamax.

Of the two rotation methods, the choice depends upon the purpose and structure of the study. Oblique rotation is more flexible because the factor axes need not be orthogonal (Ho, 2006). At the theoretical level, it is more realistic to assume that influences in nature are correlated and often represents the clustering of variables more accurate. However, Costello and Osborne (2005) stated that orthogonal rotation produces more easily interpretable results and is slightly simpler than oblique rotation. Therefore, one orthogonal rotation method 'varimax' which was developed by (Thompson 2004) is the most common form of rotational methods for exploratory factor analysis and will often provide a simple structure is applied in PCA and 'direct oblimin' of oblique rotation method is used for Factor Analysis.

v) Factor Scores: Factor scores are the composite (latent) scores for each subject on each factor (Thompson, 2004; Wells, 1999). Factor scores are analogous to the Ŷ scores in the regression equation and are calculated by applying the factor pattern matrix to the measured variables (Odum, 2011). In short, it is a numerical value that indicates a person's relative spacing or standing on a latent factor.

The present factor scores produced with the help of Bartlett's approach which can be computed using a procedure similar to that used to obtain the regression factor scores, but including the option scores=Bartlett, and, only the shared (i.e., common) factors have an upshot on factor scores. The sum of squared components for the 'error' factors (i.e.,

unique factors) across the set of variables is minimized, and resulting factor scores are highly correlated to their corresponding factor and not with other factors. However, the estimated factor scores between different factors may still correlate. The production of factors scores by the Barlett estimation method in statistical software (IBM SPSS) is used for classifying and mapping the factor score of each indicators of disparity in socio-economic development of the study area.

Distefano, Zhu and Mindrila (2009) stated that Bartlett factor scores are computed by multiplying the row vector of observed variables, by the inverse of the diagonal matrix of variances of the unique factor scores, and the factor pattern matrix of loadings. Resulting values are then multiplied by the inverse of the matrix product of the matrices of factor loadings and the inverse of the diagonal matrix of variances of the unique factor scores.

One advantage of Bartlett factor scores over the other two refined methods presented here is that this procedure produces unbiased estimates of the true factor scores (Hershberger, 2005). This is because Bartlett scores are produced by using maximum likelihood estimates – a statistical procedure which produces estimates that are the most likely to represent the "true" factor scores (Distefano, Zhu and Mindrila, 2009).

2.3.4 Z-Score:

Z-score is a linear transformation of the original data in such a way that its mean becomes zero and its standard deviation become unity. It has been used to develop a composite score for each set of indicators in order to arrive at the general levels of social and economic disparities, for the state as a whole, inter block and intra-block disparity in Lawngtlai district. The method used to find out the composite index may explained as-

i) Data obtained from secondary source for inter-district analysis and primary sources for inter and intra-block analyses were transformed into variables used as socio-economic indicators.

ii) To transform data matrix into scale free matrix, indicators were standardized by subtracting the mean from each individual variables and divided by their standard deviation as the following formula – $Z_i = (X_{ij}-X_j)/SD_j$

Where, Z_i is the Z-score for the ith unit

X_{ij} is the x variable in the ith unit and j^{th} variable

X_j is the mean of the jth variable and

SD is the standard deviation of the jth variable

Standardization was done using statistical software called 'IBM SPSS' to get the scores in each indicator. Z-scores may also be positive or negative, with a positive value indicating the score is above the mean and a negative score indicating it is below the mean. Positive and negative scores also reveal the number of standard deviations that the score is either above or below the mean.

iii) After obtaining Z-score for every indicator, composite score was obtained by adding up all individual Z-score or standardized data - $C = \sum Z$

Where C_i is the composite score and $\sum Z$ is the summation of Z-scores or standardized scores.

2.4 Correlation:

Correlation (co-relation) refers to the degree of relationship (or dependency) between two variables. It is a statistical tool that helps to measure and analyze the degree

of relationship between variables which are useful because it can indicate a predictive relationship that can be exploited in practice. There are several correlation efficients, often denoted ρ or r, measuring the degree of correlation. The most familiar measure of dependence or correlation between two quantities is the Pearson product-moment correlation coefficient, or 'Pearson's correlation coefficient', commonly called 'correlation coefficient'. It is obtained by dividing the covariance of the two variables by the product of their standard deviations. Karl Pearson developed the coefficient from a similar but slightly different idea by Francis Galton (Rodgers and Nicewander, 1988).

The Pearson correlation coefficient (PCC) also referred to as the Pearson's r, is a measure of the linear correlation between two variables x and y. The Pearson correlation is +1 in the case of a perfect direct (increasing) linear relationship (correlation), −1 in the case of a perfect decreasing (inverse) linear relationship (anti-correlation), and some value in the open interval (−1, 1) in all other cases, indicating the degree of linear dependence between the variables (Dowdy and Wearden,1983). The Pearson correlation coefficient indicates the strength of a linear relationship between two variables, but its value generally does not completely characterize their relationship (Mahdavi, 2012).

Calculation of Karl Pearson's Correlation Coefficient:–

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

Where,
- n = number of pairs of scores
- Σxy = sum of the products of paired scores
- Σx = sum of x scores
- Σy = sum of y scores
- Σx^2 = sum of squared x scores
- Σy^2 = sum of squared y scores

2.5 Diagrams and Choropleth map:

The purpose of data presentation is to summarize data and present them in a form which is more precise, but still gives an accurate view of data. Some of the final product of the factor scores and standardized scores were displayed in the form of diagrams and choropleth mapping to represents unblemished portraits of the developmental level in the selected area. Following are the two detail representation techniques of the present study:-

2.5.1 Diagrams:

A diagram is a symbolic representation of information according to some visualization technique. Diagrams have been used since ancient times, but became more prevalent during the enlightenment (Eddy, 2014). Drawing that illustrates or visually explains a thing or idea by outlining its component parts and the relationships among them or collection of points whose coordinates satisfy a given condition or relation as in a mathematical function is known as diagram. Amongst the various types of diagrams, the following three diagrams were used for presenting scores:-

i) Scattered diagram: The Scattered Diagram Method is the simplest method to study the correlation between two variables wherein the values for each pair of a variable is plotted on a graph in the form of dots thereby obtaining as many points as the number of observations. Then by looking at the scatter of several points, the degree of correlation is ascertained. To represent the degree of over-all indicators with each of the individual developmental indicators in the present study were presented by using this method.

In this method, the degree to which the variables are related to each other depends on the manner in which the points are scattered over the chart. The more the points

plotted are scattered over the chart, the lesser is the degree of correlation between the variables. The more the points plotted are closer to the line, the higher is the degree of correlation. The degree of correlation is denoted by r**.**

ii) Histogram and Bar graph: A histogram is an accurate representation of the distribution of numerical data. It is an estimate of the probability distribution of a continuous variable (quantitative variable) and commonly used in statistics to demonstrate how many of a certain type of variable occurs within a specific range while bar graph presents categorical data with rectangular bars withheight or length proportional to the values that they represent and can be plotted vertically or horizontally. These diagrams are commonly used as it presents a very clear image of the village disparities in the selected area which is incompatible with choropleth map.

iii) Line Graph: A Line Graph is most frequently used to show trends and analyses how the data has changed over time. It is a type of chart which displays information as a series of data points called 'markers' connected by straight line segments (Burton,1965), and, used to display quantitative values over a continuous interval or time period which are drawn by first plotting data points on a Cartesian coordinate grid, then connecting a line between all of these points. Generally, the y-axis has a quantitative value, while the x-axis is a time scale or a sequence of intervals. Negative values can also be displayed below the x-axis. The advantage of line graph is that showing of graphical presentation of the rise and fall of data points which is convenient for showing inequality. Missing data can be plotted along the line with some degree of certainty or error probability.

2.5.2 Choropleth Mapping:

A choropleth map is a thematic map in which areas are shaded or patterned in proportion to the measurement of the statistical variable being displayed on the map. It is a common technique for representing enumeration data where enumeration units, such as countries, states, district or blocks are shaded a particular color depending on that unit's data value. The choice of hue, color value and color saturation are vital effort which becoming fairly standard owing to decreasing costs of color printing and increased use of virtual maps. It gives more symbolization options, introducing a higher degree of complexity and subjectivity into the design process.

In the present study, shading or coloring of the units to classify the spatial disparity of district and blocks in the selected area by the outputs of the variables followed the Jenks natural breaks classification method with the help of ArcGIS. Data clustering method calculated to determine the best arrangement of values into different classes, seeking to minimize each class's average deviation from the class mean, while maximizing each class's deviation from the means of the other groups is called Jenks normal classification method, also called Jenks optimization method. In other words, the method seeks to reduce the variance within classes and maximize the variance between classes (Jenks, 1967).

2.6 Limitation of the study:

All questions in the scheduled were not included in the analysis part due to unrequited of the respondents while collecting primary data. Most of the primary information was collected during day time for possibility of surveyors and respondents. There might be a minor error to follow stratified random sampling as some of the respondents were engaged in agricultural fields, and, difficult to follow the techniques definitely, considering information were taken from the next household.

The other limitation is that the respondents may not provide reliable answers in certain degree depending on their personal integrity, aspirations and level of knowledge as the different ethnic groups have their own dialects in the study area. Sometime, it require to hire local people who understand about English and Mizo language.

One of the limitations of Factor Analysis is that naming the factors can be problematic. Factor names may not accurately reflect the variables within the factor. Further, some variables are difficult to interpret because they may load into more than one factor which is known as split loadings (Yong and Pearce, 2013).

The socio-economic indicators of the present study are not definitive. Some of the indicators were dropped for final outputs to conform to technical specifies required by the statistical techniques employed. And, the present study may also limited to study developmental characteristics as impracticality of presenting time-series data.

Factors produced in the initial extraction phase are often difficult to interpret. This is because the procedure in this phase ignores the possibility that variables identified to load on or represent factors may already have high loadings (correlations) with previous factors extracted.

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CHAPTER – III

DISPARITY IN SOCIO-ECONOMIC DEVELOPMENT OF MIZORAM

3.1 Introduction:

The term Mizoram is derived from two words, *'Mizo'* and *'Ram'*. 'Mizo' is the name used to call the native inhabitants of the highlanders and 'ram' means 'country' or 'land' and thus Mizoram means 'land of the Mizo or the land of the Highlanders'. And, 'zo' may also mean 'cold and high altitude region', and therefore, Mizo may also signify people of high altitude with certain favourable climatic region. The resulting isolation and separation created numerous tribes and sub-tribes. The great majority of the state population consists of different ethnic group who are either culturally or linguistically linked. These ethnic groups, Mongoloid stock origin in Mizoram are collectively known as Mizo which are spread throughout the northeastern states of India, Burma and Bangladesh. They belong to numerous tribes; however, to name a particular tribe as the largest is difficult as no concrete census has ever been undertaken.

The origin of the Mizo like those of many other tribes is shrouded in mystery. Even though the course of migration and subsequent cultural diffusion is completely accounted, about 95 per cent of population is of assorted tribal origins who settled in the state, mostly from Southeast Asia, over waves of migration starting about the 16th century but mainly in the 18th century (Lloyd, 1991). The majority of the tribes classified as Mizo today most likely migrated to their present territories from the neighboring countries in several waves, starting around 1500 CE (Singleton, et al., 2010). According to Rintluanga (2009), 'migration of tribal groups seems to have taken place as early as the beginning of the 15th century, A.D. This migration following different routes by each clan at different stage with halt ages at certain locations for longer and lesser periods through

Shan state, Chindwin valley and Chin Hills in Myanmar. It is obvious that the first batch entered in the present Mizoram between the periods of 1600 to 1700 A.D. Kumar (2001) stated that most of the people entered in Indian parts in the 2nd half of the 17th Century. After reaching the present state, found the land very healthy and contended with embracing climate and admitted that it was the land which nature has provided for them. They were predominantly agriculturists in the primitive form of shifting cultivation; as the first settlers in a new and virtually untouched environment have to exist in a self-sufficient (Rintluanga, 2009), having their own jurisdiction under the guide, protect and govern by the 'chief' in the village in respect to occupation, community development and security.

The Indo-Aryan origins of Bru (Reang), Chakma and Tonchangya, who were migrated from Arakan Mountain are other small ethnic groups who are living in the south and south western part of Mizoram, and Nepali Gorkhas were heartened to settle in core region and few of them are found in the periphery areas during the British colonial times (Hamlet, 2001).

The state of Mizoram, earlier known as the Lushai Hills formed one of the districts of Assam since the colonial period and continued to be so even after the reorganization of the Indian states. The Lushai Hills District was changed into Mizo District in 1954 by the act of parliament, till its formation into Union Territory status in 1972 as Mizoram – the land of the Mizo. Ultimately, Mizoram was conferred statehood on 20th February 1987 following a Peace Accord signed between the hostile MNF and the Government of India on 30th June 1986 and became the 23th state of the Indian Union under 53th Amendment of the Indian Constitution.

Mate (2005) stated that Mizo economy was sustained by Jhum cultivation and supported by other ancillary activities like hunting, fishing, raids and wars, domestication of animals, cottage industries, etc. in the pre-colonial period. The entire population can be classified as agriculturists or cultivators as except only a few people like blacksmith and professional priests lived on contributions of rice and meat given to them in exchange for service rendered to the community. But during the Colonial period, jhumming continued to be the mainstay of the Mizo economy. It was the backbone of the society, the sole source of survival and around this activity were intertwined their customs, cultures, measures of time quantities and distances (Sailo, 2006). Trade and commerce sectors developed in the region after colonial period even they had started barter system in the early days. The new political status in 1960-1980's gave the new sight of service sectors, still the highest contribution of Gross State Domestic Product (GSDP) in the state.

As per 2011 census, the decadal growth rate of population from 2001 to 2011 was 22.78 per cent. The state has density of 52 persons per sq km with a high literacy rate of 91.58 per cent out of the total population of 10, 91,014, of which 89.40 per cent female and 93.72 per cent male literates. The estimate annual birth rate in the state was 16.6 against the death rate of 4.4 per cent with 34 per cent of infant mortality rate. The sex ratio of the state was 976 females per thousand males, higher than the national ratio 940.52 per cent of the population lives in urban areas which is much higher than India's average.

3.2 Physical and Environmental setting of Mizoram:

The physical and environmental setting includes all the over-all natural conditions of the earth surface. It may be understood as the integrated study of location, geology, relief features, drainage, land use/land cover, climate, soil and vegetation in the present study.

3.2.1 Location:

Mizoram has been unique characteristics and, located in the north east corner of India that is commonly designated as the seven sisters of north east India sharing 722 kilometers with international borders of Myanmar and Bangladesh in the southern part, and northern part shares domestic boundaries with Manipur, Assam and Tripura. It is the fifth smallest state of India, covers an area of approximately 21,087 square kilometers (the sum of the areas of eight districts, taking into account all the fractions after decimals is 21,087. However, one would find the area of Mizoram elsewhere written as 21,081 sq km. The figure is the sum that omits decimal fractions. Therefore, the exact area of Mizoram should be understood as 21,087 square kilometers) which is extends from 21°56' N to 24°31' N and 92°16' E to 93°26' E longitudes (Pachuau, 2009) proportionate to the total area of India is 0.64 per cent.

The tropic of cancer passes through the state almost two equal halves in its 285 km north-south stretch while maximum east-west stretch extends 115 km. Apart from having an independent ethnic identity; its location along the international boundary makes the state strategically and politically significant and might also provide direct and indirect influences of socio-economic development in the state.

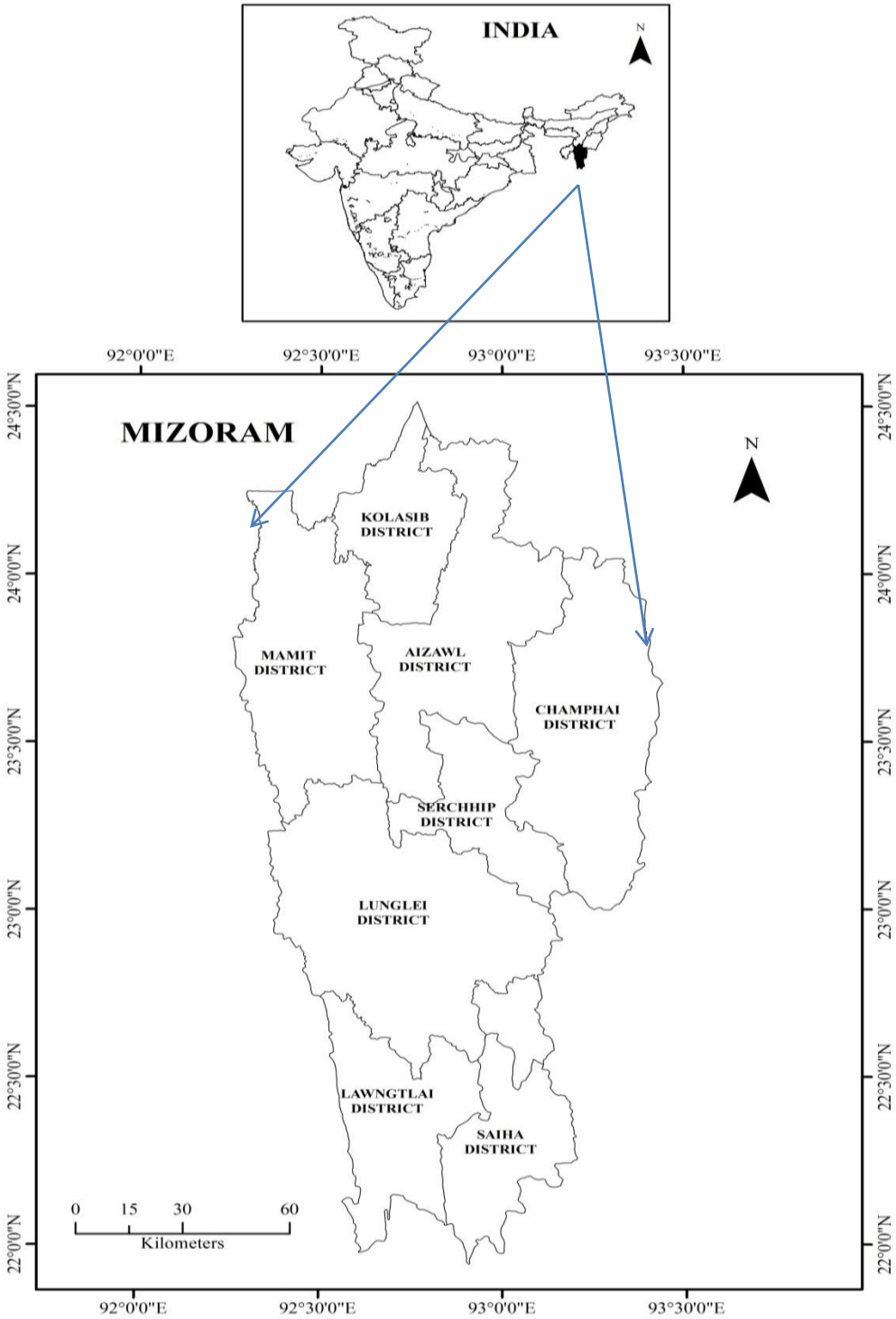

Figure: 3.2.1 Location Map of Districts in Mizoram

3.2.2 Geology:

The geological structure, its complexities and geomorphological diversities of the present relief feature of Mizoram embraces lofty young fold mountain of the Himalayas. The tectonic movement of both endogenic and exogenesis forces have been consistently working to form the landforms of this region as it extends in the eastern Himalayan ranges. The general geology of Mizoram exhibits repetitive succession of Neogene sedimentary rocks of Surma Group and Tipam Formation. These sequences are folded into a series of approximately N-S trending longitudinal plunging anticlines and synclines. The litho-units include mostly sandstone, silt stone and shale. The topographic expression of the area often imparts fairly good indication of their lithology. The arenaceous and argillaceous group of rocks occupies relatively higher and lower grounds respectively. It is a continuation of the rocks forming the Patkai range and Cachar hills, and most probably laid down in delta or estuary of a large river discharged from the Himalayas in the Tertiary period (Rinawma, 2008).

The major litho unit exposed in the state of Mizoram is mainly the rock system of Surma group and is represented by Bhuban and Bokabil formations. Based on the lithological characters, physical characteristics and order of superposition, Bhuban formation are further sub divided into Lower, Middle and Upper. Bokabil formation conformably overlies Upper Bhuban formation and their contact is also gradational. It mainly occurs on either flank on the anticlinal ridges or in the core of the synclines. It is predominantly argillaceous comprising shale, siltstone and thinly bedded sandstone alternation with sub-ordinate friable, buff-coloured, and medium to fine grained, micaceous sandstone. The shale is khaki, brown, purple coloured, micaceous and breaks

into splintery fragments. Tipam formation conformably overlies Bokabil Formation with a gradational contact. It is a dominantly arenaceous unit and occurs in northern and western parts of Mizoram. In the lower horizon, the sandstone becomes bluish grey in colour and comparatively hard. Fossil wood (drifted) has been recorded from this formation.

3.2.3 Relief:

The topography and physiographic expression of the state is imparted by approximately North-South trending steep, mostly anticlinal, parallel to sub-parallel hill ranges and narrow adjoining synclinal valleys with series of parallel hummocks or topographic highs. In general, the western limbs of the anticlines are steeper than the eastern limbs. Faulting in many cases have produced steep fault scarps, especially along the steep-dipping fault planes. The other geomorphic elements are the highly dissected ridges with the formation of deep gorges, spurs, keels and cols, which has developed due to intensive erosion. The difference of elevation between valley floors and hill tops varies greatly from west to east and ranges from 200 meters to 1200 meters. The steep hills ranges occur are more towards the eastern part of the state.

Pachuau (2009) classified the topography of Mizoram into three province based upon relief, lithological, structural set up and landforms such as i) Mountainous Terrain Province – altitude scale from 400-2157 metres. The elevation of this province is in the order of 1000 metres and elevation difference between ridge top and valley varies between 200-600 metres. ii) Ridge and Valley Province – relief in this province varies between 20–700 metres with average elevation is 450 metres covering Mamit and Hachhek ranges, and, iii) the Flat lands includes Champhai, Tuiphai, Chamdur,

Buhchangphai, Zawlpui in various parts of the state iv) The Lakes – includes Palak in the south, Tamdil in the north east and Rengdil in the south western part of the state. Kumar (2012) also stated that the physiographic division of Mizoram may not be very distinct in their spatial distribution and broadly divided into three physiographic units on the basis of structural and relief characteristics like i) Eastern High Hills including Sialkal-Hrangturzo range, Chalfilh-Tawi-Lurh-Phawngpui range, Kawnpui-Aizawl-Hmuifang range, Reiek range and Hachhek-Mamit range ii) The Western Lowlands – valleys of River Tut along with that of River Teirei, River Serlui in the north, in the south and southern River Deh, R.Marlui and River Tuichawng coalesce to form the lowlands iii) Intermontane Plains does not formed any continuous patch and widely scattered.

3.2.4 Drainage:

The state is drained by a number of rivers and streams mostly found a parallel drainage system which is a pattern of rivers caused by steep slopes with certain relief. Because of the steep slopes, the streams are swift and straight with very few tributaries, and, flow in the parallel direction based on the relief features. Rivers are small and generally occupy narrow north-south trending basins. Most of them are perennial rivers with receives good amount of rainfall during rainy seasons but their volumes is very low in dry seasons. It has been observed that running water in the region is the most decisive agent, conveys positive aspects regarding agriculture and allied activities. However, some small stretches of the alluvial low lying areas are not well-equipped for cultivation. Based on the flow of the rivers, the major drainage system can broadly be classified into two categories:-

i) North flowing river: The major north flowing rivers are Tlawng, Turial and Tuivawl. River Tlawng (Dhaleswari in lower courses, outside Mizoram) is one of the longest rivers in Mizoram traversing about 185.5 kilometres inside the region. It originates from Zopui hill of Lunglei district and flows towards north and finally join Barak rivdr in Cachar district of Assam. River Tuirial is originated from Hmuifang hills in Aizawl district which flow northward and join Barak River. Tuivawl River originates near Chhawrtui village, flowing toward north and confluents with Barak River.

ii) South flowing rivers: The major south flowing rivers are Tiau, Khawchhaktuipui and Tuichawng. Tiau River flow southward direction in the eastern corner of Mizoram forms a boundary between India and Myanmar. It rises near Khuangphah village of Champhai District is flow both direction and merges with Tuipui River and meet River Chhimtuipui in an opposite direction which forms a very interesting encounter of two currents. Chhimtuipui River, also known as Kaladan originates from the western part of Myanmar near Vanum villages flowing southward direction and passes through Saiha and Lawngtlai district in the southern part of Mizoram. After entering Mizoram, it changes the direction toward of north. The direction diverted towards north-west after meeting with River Tiau and meet Tuichang, eventually flows towards south where Mat and Mengpui river confluent it. It continues south and is joined by the Kawrthindeng River from the right. It again enters Chin State at Raithaw Ferry just northwest of Khenkhar. The Mi River joins from the left and enters the Rakhine state of Myanmar at Ngame and continues south to Sittwe where it enters the Bay of Bengal.

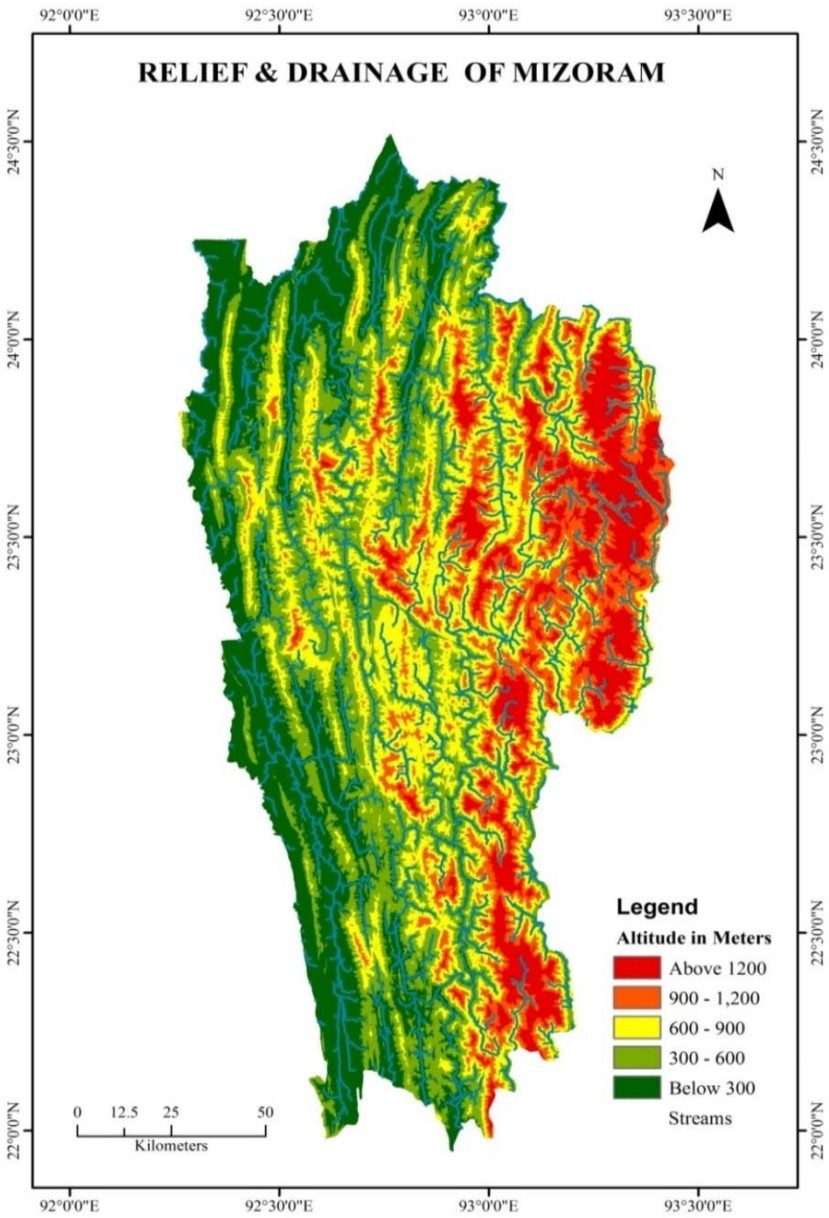

Figure: 3.2.2 Relief and Drainage Map of Mizoram

Khawthlangtuipui River also known as Karnaphuli River with it numerous tributary streams form the south western part of Mizoram. The main tributaries include Kawrpui River, Tuichawng River, Phairuang River, Kau and De streams. The mouth of the river hosts Chittagong's sea port, the main port of Bangladesh making a useful

transport route and trade with its neighboring countries. In recent days, India and Bangladesh have decided to construct a bridge to facilitate trade and improve communication between the two countries. The decision was taken after officials from both the side met at Tlabung town in Lunglei district of Mizoram. The proposed bridge is expected to serve as an important link between India and Bangladesh. It would improve road connectivity and expected to strengthen the ties between the people of the two countries.

3.2.5 Climate:

Rainfall and Temperature parameters are the most important indicators of climatic variation in the case of tropical area. Knowledge of climate and its variability including temperature and rainfall affects the distribution and agricultural which may enhance an integrated planning, regulation and engineering standards for buildings and infrastructure to ensure safety and capacity to operate under extreme conditions. Probably, the most important factors of all the geographical influences affecting man (Kumar, 2012). The potential economic activity, particularly crop producing ability, of a given area is dependent primarily upon the existing climatic and soil conditions. Climatic factors exert mainly a regional influence on plant life, the difference in the behavior of a crop or group of crops over extensive area, as in given state or group of states may be considered due to primarily to difference in climatic condition (Klages, 1958).

Due to fairly altitudinal high and alignment of hill ranges, Mizoram enjoys a favorable moderate climate throughout the year. The region falls under the influence of the South West Monsoon and Jet Stream on the onset of burst of monsoon generally from

the later part of April to the part of September and dry period from October to March which has had influences ranges of temperature and humidity in the region. According to Rintluanga (2009), the average annual rainfall is 257 cms per annum. The north western portion of the state receives highest rainfall, more than 350 cms per annum. The rainfall also increase southward with increase in humidity. Kumar (2009) stated that 'the phenomena though not yet fully comprehended may have to do with the northward movement of jet stream that establishes itself just south of the Himalayas in lower stratosphere by May and results in northward expansion of ITCZ (Inter Tropical Convergence Zone) with associated disturbances in the lower stratosphere'.

The influence of Jet Stream on the onset of south west monsoon over Indian subcontinent is heralded by its sudden shift toward in Tibetan Highland which results in the burst of Monsoon in most parts of India. However, the western pacific cyclonic movement caused by the northward movement of the ICTZ results in rains over South East Asia before break of Monsoon in India. The North East state including Mizoram comes under its influence that causes pre-monsoon rains to continue without breaking till the south west monsoon overtakes this region. The relief features of the north eastern parts of the country plays a significant role in arresting moisture laden pre-monsoon cyclonic rains caused by the interplay between the Jet Stream and ICTZ that are independent of the normal planetary wind systems over these parts. By the middle of September the position of jet stream and ITCZ starts getting reversed with apparent with southward shift of the sun. The atmospheric and Oceanic circulations assume the conditions similar to that of pre-monsoon period. Thus, with the withdrawal of south west monsoon cyclonic disturbances bring about rain in North East India almost in continuous

succession'. The salient thermo-characteristic of Mizoram is that temperatures do not fluctuate much throughout the year due to its physical features excepting in the low lying valley sites. The low level region which is the western belt of the state experienced extreme climatic conditions for a few months (40°C in Chawngte during summer). The global climatic phenomena (ITCZ, South West Monsoon, and western Disturbances), deforestation and local practice of shifting cultivation directly or indirectly influenced the variation of rainfall pattern and temperature of the region which observed that there has been a steady increase in the annual temperature. The hottest months begins in the later part of April to July. However, the pre-monsoon keep moderate temperature in these months except in the sunny day. The onset of monsoon brings down the temperature and continues to fall with the break of the monsoon and it minimized in the months of December and early part of February. The coldest month observed in the month of January. Temperature in the pre rain season (February to March) generally fluctuates between 18°C to 23°C (Kumara 2012). According to Pachuau (2009), these winter season records normally between 11°C to 23°C while summer temperature usually between 25°C to 34°C. In autumn, the temperature is usually between 18°C to 25°C. The places at higher altitude experience lower diurnal range of temperature while places at lower altitude experience have higher temperature ranges.

3.2.6 Soil:

The soils of Mizoram were classified by Sanker and Nandy (1976) into three orders of soil taxonomy: (i) Entisols (ii) Inceptisols and (iii) Ultisols followed by Anon (1998), Hrahsel (1988), Singh and Dutta (1989) and Saithantluanga (1997), and Pachuau (2009). According to Pachuau (2009) 'the soils of Mizoram are dominated mainly by loose sedimentary formations. They are generally young, immature and sandy. Derived the soils with red, loamy texture is also found with high level of laterite. The soil acidity is high; low in potash and phosphorous. But in an un-eroded soil, the content of nitrogen is quite high fostered by accumulation of organic matters. The soils of different physiographic units are of homogenous nature as far as the genetic aspect of soil formation is concerned. They are mainly derived from sandstones, shales and siltstones. The hill slopes and valleys have the soils order of Utisols and Entisols respectively with combinations of Inceptisols. The types of soils at sub-order level are Udults, Ochrepts and Orthents. On the top of ridge are mostly shallow on underlain by weathered rock and have thin depth. They have poor moisture supply and are capable of supporting only scrubs and low trees. In narrow valleys, the soils are young and sandy; the extents are very much limited and of least importance of land use. The soils in flat lands are poorly drained and have high ground water-table. The soil of Mizoram as a whole, are well drained in few flat land, and are capable of providing substantial oxygen supply for plant growth'.

Young, immature and sandy soils of Mizoram vary according to altitude. The surface soils are thin with dark, highly leached and poor in bases, rich in iron and have low pH values ranging from 4.5 - 5.5 i.e., highly acidic. Soil textures are loam to clay

loam with clay content increasing in depth. The pH and organic carbon content decreases with the increase in depth. They are capable of providing substantial oxygen supply for plant growth and retaining moisture for sufficient supply of oxygen throughout the year. According to Kumar (2012), on ridge tops soils generally exhibit organic matter with heavy and coarse texture varying from high to medium. Lower slopes have shallow texture, poor, and light and contain low organic matter with increasing amount of silt and sand. National Bureau of Soil Survey and Land Use Planning, ICAR, Nagpur, with cooperation of Agriculture Department, Government of Mizoram (2000) has classified the soil of Mizoram into four sub-order associations (Pachuau 2009):-

i) *The Udalfs-ochreps:* In the most part of Aizawl, Kolasib and Champhai districts, southern part of lunglei district and Serchhip district are dominated by this type of soil.

ii) *The Udalfs-ochreps-Aquepts:* The western part of Lunglei district and Lawngtlai district covers in this type. It also extended to Mamit district. Infact, it is covering almost the whole western margin of the state.

iii) *The Ochreps-Aquepts-Prevent:* These types of soil are found in the northwest and south eastern part of the state. It is dominant in Saiha district and also found in some part of Serchhip and Mamit district.

3.2.7 Vegetation:

Vegetation is an assemblage of plant species and the ground cover they provide (Burrows, 1990). It is a term used to describe the total plant cover in an area or on the surface of the earth. And, also used for describing plant environment as a region on the earth surface covered with plants. The state of Mizoram is well endowed with a vegetative cover ranging from tropical evergreen forest to montane sub-tropical alpine type. The terrain, soil and rainfall attributes provide it with large potential for plants growth and development. However, increasing population pressure, urbanization, and practicing traditional method of shifting cultivation, unhindered domestic and commercial exploitation for timber, bamboo and fuel wood are some of the major reasons of deforestation.

Assessment of forest cover using satellite data on a two-year cycle has been an important activity of Forest Survey of India (FSI) since 1986. Forest cover is defined as an area more than 1 ha in extent and having tree canopy density of 10 percent and above. Thus, all species of trees (including bamboos, fruits or palms, etc.,) and all types of lands (forest, private, community or institutional), satisfying the basic criteria of canopy density of more than 10 percent have been delineated as forest cover while interpreting data. According to the report of Forest Survey of India, Mizoram has an abundant growth of vegetation and area under forests is reported to be 18,653 sq. km. i.e., about 86.27 per cent of its total geographical area. Out of this, 131 sq. km. is classified as very dense forest, 5,861 sq. km. as moderately dense forest and 12,194 sq. km for open forest (FSI, 2017). The total forest cover has been slightly increasing from 75.5 per cent to 86.27 percent during 1987 – 2017 and decreasing from 87.2 per cent in 2003 to 86.2 per cent in

2017 even the area covered by forest change in some decades because of the way and proportion of cultivation in the state. During 1987 – 2001, the forest cover was classified into three category such as Dense forest (crown density 40 per cent and above), Open forest (crown density 10 per cent to less than 40 per cent), Mangrove and scrub (tree lands with less than 10 per cent crown density). In 2003, FSI added more classification like very dense forest (all land with tree canopy density of 70 per cent and above), moderately dense forest (all land with tree canopy density of 40 per cent and more but less than 70 per cent), Open forest (all land with tree canopy density of 10 per cent and more but less than 40 per cent) and scrub (degraded forest land with canopy density less than 10 per cent).

Table 3.2.1 Forest Cover in Mizoram (1987– 2017)				
Year	Forest cover (%)	Dense forest (Sq km)	Open Forest (Sq km)	
1987	75.5	2938	16154	
1989	86.2	3883	14295	
1991	89.4	4279	14574	
1993	88.7	4238	14459	
1995	88.1	4281	14295	
1997	89.1	4348	14427	
1999	86.99	3786	14552	
2001	82.98	8936	8558	
Year	Forest cover (%)	Very Dense forest (Sq Km)	Moderately dense (Sq Km)	Open Forest (Sq Km)
2003	87.42	84	7404	10942
2005	88.63	133	6173	12378
2007	91.27	134	6251	12855
2009	90.68	134	6149	12900
2011	90.68	134	6086	12897
2013	90.38	138	5900	13016
2015	88.93	138	5858	12752
2017	86.27	131	5861	12194
Source: Forest Survey of India, 1987-2017				

The above table 3.2.1 showed that the dense forest covering area tremendously increasing from 2,938 sq km to 8,936 sq km while decreasing open forest from 16154 sq km to 8558 sq km during 14 years of FSI report (1987 to 2001) due to low pressure of population on land and community participation for prevention forest fire in the state. In spite of a positive growth of forest cover in certain reports, the declining growth rate of forest cover (87.42 per cent to 86.27 per cent from 2003 - 2017), area of very dense forest (133 sq km to 131 sq km from 2005 - 2017), moderately dense forest (7,404 sq km to 5,861 sq km) and open forest (12,378 sq km to 12,194 sq km from 2003 - 2017) were recorded in the state.

Generally, the forest of Mizoram can be simply described as wooded forests in the higher altitudes and bamboo forests in the lower ridge – normally below 500 metres, including riverine low lands. The vegetation type is defined by characteristic dominant species, or a common aspect of the assemblage, such as an elevation range or environmental commonality (Ornduff, Faber and Todd, 2003). The three broad types of forest can be classified as under:-

i) Tropical Evergreen Forest: This type of forest is found in the western part of Mizoram which receives a large amount of rainfall from the south west monsoon.

ii) Tropical Semi-evergreen Forest: It covers about 50 per cent of the total area of Mizoram, occupies the central part of Mizoram.

iii) Sub-Tropical Pine Forest: This type of forest concentrated in the higher altitude of the eastern region. They are mainly found in the south eastern portion which remarkably presents the highest mountain range of Phawngpui.

3.3 Disparity in Socio-Economic Development of Mizoram:

Development disparity is a ubiquitous phenomenon at global, continent, country and province levels (Kutwal, 2015). Inequality among people and between geographical areas is a critical developmental issue in to-day's developing world just as developed countries was in the early stages of development. The poor countries are characterized by large and growing regional disparities, and, rich countries are generally characterized by small and diminishing gap (Williamson, 1965).

Noorbakhsh (2003) finds that inequalities in production and consumption, growth in such inequalities, and the relatively fewer number of convergence clubs, have together contributed to spatial polarization. Datt and Ravallion (2002) pointed out the extremely variable initial conditions in rural development and human capital development that are obtained in rural India as causes for persistent and often increases in spatial inequality. Lall and Chakravorty (2004) stated that the spatial inequality is a construct arising out of variations in economic endowments, geography and socio-political structure across the relevant economic space. It refers to a 'condition in which different spatial or geographical units are at different levels on some variable of interest, usually (average) income'. It can also be defined as the uneven distribution of economic and social indicators of human well-being within or among geographical units such as countries, cities, rural/urban areas, and regions (Aryeetey et al., 2009). High spatial inequality may be bad not just for the poverty reducing impact of growth but also for the growth rate itself: it may heighten risks of conflict (Østby, 2008).

Spatial inequality relates more socio-economic states of well-being and condition pertaining to a geographical unit which requires deeper understanding, description and

investigation of the concept of space or spatial disparity. Analyses of socio-economic development disparity convey a bridge between rural to urban, core-periphery and rural to rural variation. The inter-district disparity of socio-economic development in Mizoram determining by using Z-score techniques from 124 indicators under 14 dimensions such as Agriculture, Health, Industry, Education, Sericulture and Fisheries, Livestock and Veterinary, Transportation, Mass-Communication, Social Welfare, Social Security, Working Status, Consumer Affairs, Electricity and Banking.

3.3.1 Level of Agriculture Development in Mizoram:

Agricultural development is a pre-requisite of economic growth in the state. It is important not only to meet ever growing and ever pressing demand for food and fibers for human consumption but also for providing forage for animals, raw materials for non-agricultural sector, employment opportunities to rural population and improves their standard of living. It is the backbone of the state.

According to Mizoram Economic Survey (2014-15), more than 60 per cent of the total population depends on agricultural sector as it is the biggest source of livelihood for rural areas. Jhumming, Wet Rice Cultivation (WRC) and Terraced farming are the major methods of cultivation. Various kinds of crops like are rice, maize, pulses, oilseeds, fruits and vegetables such as pineapple, orange, mangoes, lemons, carrot, lady‘s finger, cabbage, and pea are grown in the state. The agriculture sector contributed to the Gross State Domestic Product (GSDP) was 30 per cent in 1994, 14 per cent in 2009 due to economic growth of other sectors (Birthal, 2010). Agriculture and allied activities sharing only 14 per cent at GSDP in 2014 is a serious threat (GOM, 2014). Analysis of agriculture development for sustainable socio-economic development is an alarming rate

to improve spatial disparity in various scales. However, the total net sown area has been increasing during the last decades from 94.187 thousand hectares to 218.608 thousand hectares.

Table 3.3.1 Net Sown Area in Mizoram (2006-2016)		
Sl No	Year	Net area Sown (Area in '000)
1	2006-07	94.187
2	2007-08	92.813
3	2008-09	103.835
4	2009-10	130.226
5	2010-11	130.121
6	2011-12	131.230
7	2012-13	130.821
8	2013-14	130.049
9	2014-15	214.184
10	2015-16	218.608
Source: Directorate of Agriculture (Crop Husbandry), Govt. of Mizoram		

Based on the available data, indicators of the agricultural development can broadly be classified into five sectors such as:-

i) Average yield of important agriculture crops (2014-'15) with yield kilogram per hectares of Paddy, Maize, Pulses, Sugarcane and Potato.

ii) Number of district wise project complete, number of beneficiaries, command area and area irrigated up to March 2015 for enhancing productivity and provide adequate supply of water.

iii) Number of agricultural holdings (2010-11) in terms of marginal, small, semi-medium, medium and large were ascertains to provide actual depiction.

iv) Area under cash crop plantation (area in ha) 2016-17 in selected three plantation like Rubber, Coffee and Broom and production of horticulture crops.

Table 3.3.2 Indicators of Agriculture Development in Mizoram

Sl No	District	Average yield of important Agriculture Crops (2014-15)						District-wise Project Completed and Area irrigated upto March 2015					Number of Agricultural Holdings (2010-11)					Area under different cash crop Plantation (area in ha) 2016-17		
		Paddy	Maize	Pulses	Oil Seeds	Sugar Cane	Potato													
		Yield (Kg Per Ha)	Yield (Kg Per Ha)	Yield (Kg Per Ha)	Yield (Kg Per Ha)	Yield (Kg Per Ha)	Yield (Kg Per Ha)	No of MI Projects completed	No of Farmers benefited by the projects	Gross Command area	Culturable Command Area	Net Irrigated Area	Marginal	Small	Semi-Medium	Medium	Large	Coffee	Rubber	Broom
1	Mamit	1392	1400	1638	451	30000	4470	41	553	1764	1639	1639	4304	3294	2069	633	138	10	541	14
2	Kolasib	1850	1240	1229	1326	25000	7038	78	1378	4101	3745	3827	2183	1451	1566	615	110	2	307	164
3	Aizawl	1610	1572	1862	1318	35000	0	63	1178	2561	2379	2698	9861	5286	1124	52	6	3	21	174
4	Champhai	1561	1441	1394	9819	13195	0	88	2392	3923	3806	3939	9629	8724	1657	190	0	1	0	55
5	Serchhip	1743	1240	1087	1425	35000	0	51	951	2680	2528	2549	4130	2041	1086	165	10	15	85	20
6	Lunglei	1523	3101	1488	921	30000	0	60	768	2644	2129	2159	9083	5216	1424	31	0	46	259	107
7	Lawngtlai	1750	1394	650	532	20000	5133	33	561	1406	1387	1387	8275	2931	476	0	0	5	105	56
8	Saiha	1502	1793	821	1333	35000	4692	25	249	696	516	615	2745	810	520	45	0	16	0	11

Source: Directorate of Agriculture (Crop Husbandry), Govt. of Mizoram @ Statistical Abstract of Mizoram (2015 &2017)

Table 3.3.3 Indictors of production of Agriculture (Horticulture crops) in Mizoram (2016-17)													
Sl No	District	Orange	Banana	Grape	Cabbage	Passion Fruit	Tomato	Birdeye Chilly	Chow Chow	Turmeric	Ginger	Anthurium	Rose
		Yield (MT/ Ha)	Yield (MT/ Ha)	Yield (MT/ Ha)	Yield (MT/ Ha)	Yield (MT/ Ha)	Yield (MT/ Ha)	Yield (MT/ Ha)	Yield (MT/ Ha)	Yield (MT/ Ha)	Yield (MT/ Ha)	Yield (MT/ Ha)	Yield (MT/ Ha)
1	Mamit	1.73	11.56	0	13.25	1.07	9.27	1.84	16.56	10.83	14.15	0	6.51
2	Kolasib	1.75	12.59	14	13.25	1.9	9.29	0.72	16.59	15.96	6.72	11.19	0
3	Aizawl	2.47	14.01	7.08	15.25	2.35	9.61	1	18.08	2.49	6.45	13.11	2.74
4	Champhai	2.42	12.54	6.84	15.7	2.63	9.78	1.08	16.54	1.95	6.22	0	4.58
5	Serchhip	3.61	12.13	5.87	4.07	2.98	9.13	0.74	16.6	3.09	5.6	13.45	0
6	Lunglei	2.98	12.94	7.62	13.63	1.73	12.35	0.83	16.27	2.22	7.13	47.12	0
7	Lawngtlai	4.03	13.29	8.78	59.3	2.02	9.21	0.79	17.05	6.33	8.61	0	0
8	Saiha	2.66	13.99	14.98	12.94	1.63	9.12	1.38	16.58	1.94	9.12	0	0

Source: Directorate of Agriculture (Crop Husbandry), Govt. of Mizoram @ Statistical Abstract of Mizoram (2017)

Kolasib district has recorded the highest average Paddy yield kilogram per hectares (1,850 kg per ha) followed by Lawngtlai district (1,750 kg per ha) and Serchhip district (1,743 kg per ha). The lowest districts was Mamit with a recorded of 1392 kg per ha. Aizawl district (1,610 kg per ha), Lunglei district (1,523 kg per ha) and Siaha district (1,503 kg per ha) were at the middle. In the yield of Maize, Kolasib and Serchhip districts were recorded the lowest yield per ha (1,240) followed by Lawngtlai (1,394), Maimit (1,400) and Champhai districts (1,441). The highest yield of Maize was found in Lunglei district (3,101) followed by Saiha and Aizawl districts with 1,793 and 1,572 kg per ha. The yield per ha in Pulses and Oil seeds has recorded a very high variation. The highest yield of Pulses recorded in Aizawl district (1,862 kg per ha) whereas the lowest yield was found in Lawngtlai district (650 kg per ha). 9,819 yield kg per ha was the highest production of Oilseeds in Champhai district while Mamit district recorded only 451 yield kg per ha. Aizawl and Saiha districts were the largest producer of sugarcane in terms of yield kg per ha. Champhai district was the lowest producer of sugarcane. Out of eight districts in the state, only four districts grew potato which recorded 7,038 yield kg per ha in Kolasib district, Lawngtlai district (5,133 kg per ha), Saiha district (4,692 kg per ha) and Mamit district with a total of 4,470 kg per ha.

In the study of district-wise project completed and area irrigated up to March 2015, Champhai district was recorded highest in all indicators like number of MI projects completed, number of beneficiaries, gross and culturable command area with net area irrigated while Saiha district recorded the lowest area in all respects. Agricultural holdings are divided into five categories such as marginal, small, semi-medium, medium, small and large. Champhai district with an area of 20,200 ha and 4,120 ha in Saiha district were shown under largest and smallest area during 2010-11.

During 2016-17, Maimit and Saiha districts were certified the highest and lowest area under different cash crop plantation. In case of horticulture crops, Lawngtlai and Serchhip districts were recorded highest and lowest yield amongst various crops (table 3.3.3)

All districts of Mizoram have been categorized as very high, high, medium, low and very low level of development. Kolasib district having a score value of 9.70 with first rank falls under very high development. Three districts of Aizawl (9.25), Champhai (8.89) and Lunglei (6.95) ranging between a score value of 5.5 to 9.5 which falls under high level of development followed by Mamit district (-5.29). Saiha district scored lowest value of -14.28. Lawngtlai (-7.92) and Serchhip (-7.31) districts categorized under very low and low level of agricultural development.

Table 3.3.4 Level of Agriculture Development in Mizoram (2014-2015)

Sl No	District	Score	Rank	Level	Score	District
1	Mamit	-5.29	5			
2	Kolasib	9.70	1	Very high	9.5 Above	Kolasib
3	Aizawl	9.25	2	High	5.5 to 9.5	Aizawl, Champhai, Lunglei
4	Champhai	8.89	3	Medium	-5.5 to 5.5	Mamit
5	Serchhip	-7.31	6	Low	- 5.5 to - 9.5	Serchhip, Lawngtlai
6	Lunglei	6.95	4	Very low	Below - 9.5	Saiha
7	Lawngtlai	-7.92	7			
8	Saiha	-14.28	8			

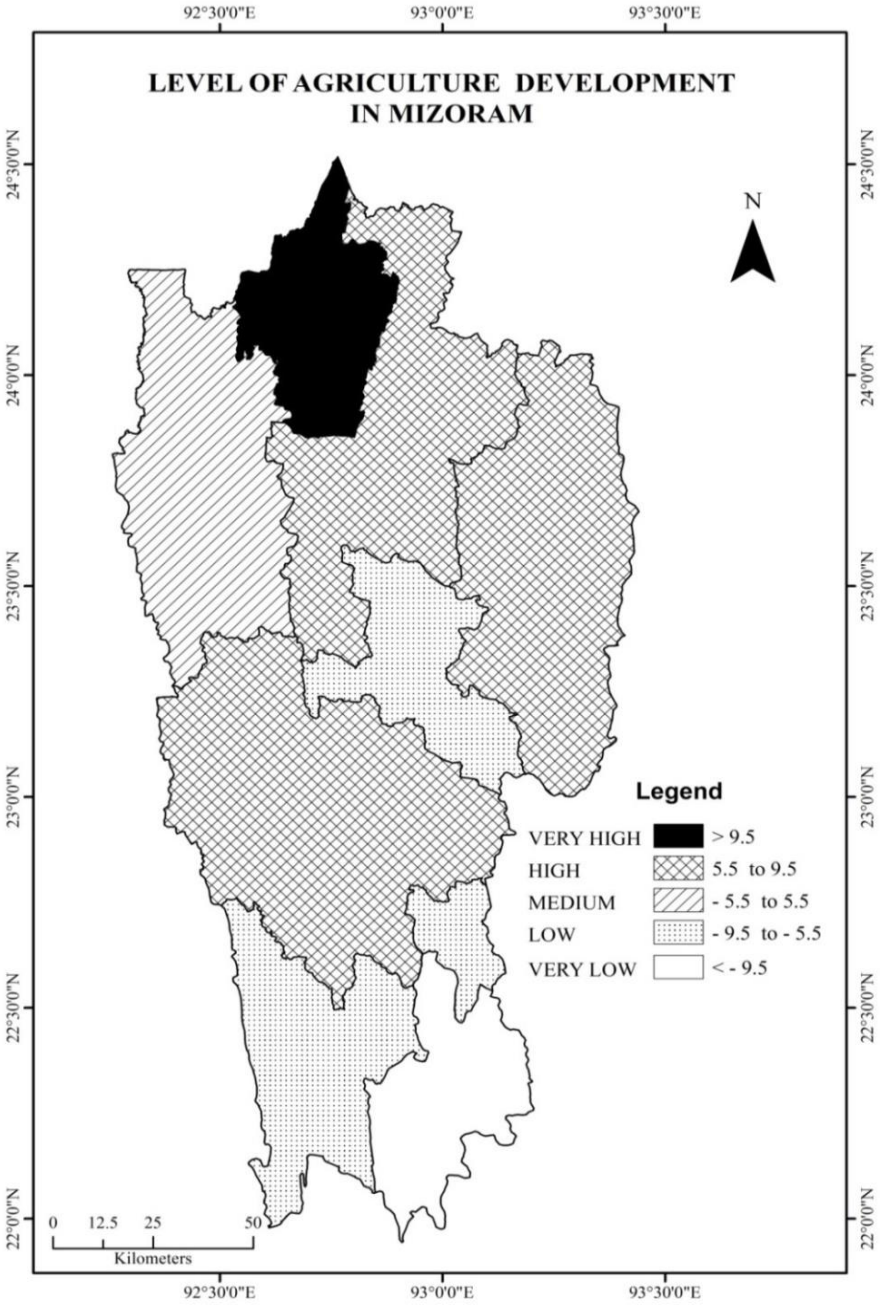

Figure: 3.3.1 Level of Agriculture Development in Mizoram

3.3.2 Level of Education Development in Mizoram:

Education is one of the most important drivers of social and economic development (Misra, 2011). It provides a foundation for development, the ground work on which much of our economic and social well-being is built and increasing economic efficiency and social consistency (Ozturk, 2001). Ahmed (1979) strongly believes that education plays a great role in social change which is crucial in the area of value transmission, attitude and knowledge. Raza (1986) considers it as the future of human beings that enables societal exchange within the course of development process. Mukherjee (2011) asserts that education is the basic requirement for the development process and is one of the fundamental rights of the people.

In the context of Mizoram, education plays an instrumental role in two different ways: through economic production and social change. It plays a vital process that contributes all round development of a society - improving the quality of life of the people, eradicating poverty and accelerating economic growth. During the pre-colonial period, Mizo were without written languge. Lalhmasai (2014) stated that the 'Formal education was introduced to Mizoram by the Christian missionaries. The two pioneer missionaries Rev. J.H. Lorrain and Rev. F.W. Savidge from England who came to Mizoram in 1894 reduced the Mizo language to writing by using the Roman script and produced 'A Grammar and Dictionary of the Lushai Language' which later on became one of the strong foundations of education in Mizoram. On 15th February 1898, another missionary Rev. D.E. Jones from Wales who came to Mizoram in 1897 opened a school in Aizawl. This was the first school of formal education in Mizoram which continued, grew and developed into a full-fledged recognized school'. Elementary education was look after by Christian Mission and started opening new school in few villages such as Khawrihnim, Phulpui and Chhingchhip in1901 and

continued opening more schools in different places. By 1909, the first ever Middle Schools were opened in Aizawl and Serkawn respectively. After 35 years, the first High School was started in 1944 at Aizawl by public donations. The opening of high school marked a new epoch of event in the educational development in the state of Mizoram.

The progress of education in the post independent period is quite remarkable which was mainly accomplished by the efforts of government, private players and dynamic participation of the community. The first five decades of the 20th century shows the expansion and steady consolidation of the first level of education and beginning of the second level. In 1952, the management of primary education was hand over to the District Council as it was set up this year. After the political status of Mizoram was raised to Union Territory, the administration and management of elementary education, i.e. Primary and Middle School were transferred to the hands of state government in 1972. The Higher Secondary Schools came into existence only in the year 1996 when the Pre-University class equivalent to Class XI & XII was shifted from colleges to schools. At present, there are as many as 1,968 primary schools, 1,542 middle schools, 640 high schools, 163 higher secondary schools with 21 colleges including Law College, 15 training institutes and one Central and Private University in the state of Mizoram (Statistical Abstract, 2017). Since then there has been phenomenal growth quantitatively.

It may be said that Mizoram is a late appetizer in the field of general education with a literacy rate of 0.9 per cent in 1901 census, 88.49 per cent in 2001 census and now achieved a literacy rate of 91.58 per cent in 2011 census. Within a hundred years of education, it remains at the top list of the second highest literacy rate amongst the state of India. Therefore, the role of education is very significant for it act as a great

agent of change in an essence transmission of society from one generation to another. It strengthening the fabric of society brings growth in several aspects and conduits the primitive forms of life to an advance modern fecund. However, the affirmative role of education becomes questionable when it is associated with disparity (Fernandes, 1982). The differences in availability of infrastructure, gender, rural urban operative, caste and ethnic, social values and governmental policies might generate inter-district educational variation a long with its attainment level in the region.

Table 3.3.5 Indicators of Education Development in Mizoram

Sl No	District	P_p*	M_p*	H_p*	HS_p*	C_p*	L_p*	G_num*	Mlit*	Flit*	LitPer *
1	Mamit	1.97	1.41	0.45	0.05	0.02	0.49	9.92	89.13	80.35	84.93
2	Kolasib	1.64	1.38	0.46	0.07	0.01	0.36	16.09	94.57	92.38	93.50
3	Aizawl	1.24	1.07	0.52	0.14	0.02	0.47	40.35	98.11	97.67	97.89
4	Champhai	1.81	1.55	0.65	0.11	0.02	0.79	16.31	97.21	94.59	95.91
5	Serchhip	1.88	1.56	0.59	0.11	0.02	0.75	17.31	98.28	97.53	97.91
6	Lunglei	1.64	1.68	0.71	0.19	0.02	0.43	18.74	92.04	85.49	88.86
7	Lawngtlai	2.51	1.59	0.47	0.06	0.02	0.10	7.05	74.12	57.12	65.88
8	Saiha	2.35	1.61	0.64	0.09	0.02	0.09	18.14	92.64	87.34	90.01

Source: Statistical Abstract of Mizoram (2015)

P_p = No of Primary School per 1000 Population*
M_p = No of Middle School per 1000 Population*
H_p = No of High School per 1000 Population*
HS_p = No of Higher secondary School per 1000 Population*
C_p= No of Colleges per 1000 Population*
L_p = No of Libraries per 1000 Population*
G_num = No of Graduate & Above per 1000 population*
Mlit = Percentage of Males literate*
Flit = Percentage of Females literate*
LitPer = Literacy rate*

Number of graduate and above, number of primary school per thousand population, number of middle school per thousand population, number of high school per thousand population, number of higher secondary school per thousand population, number of colleges per thousand population, number of libraries per thousand

population were calculated by using simple formula i,e., Given Number x 1000/Number of population, and, percentage of male and female literacy rate (Number of Male/Female literatex100/Total population) which were employed as an indicators of educational development.

Table 3.3.6 showed the degree of variation in the levels of education development which were presented as the highest score value attained more than 3.8 in Champhai and Lunglei districts comparing with the lowest score value of Lawngtlai district i,e., -8.39. Serchhip (3.34) and Aizawl (3.06) districts falls under high level of development lying between the values of 2.8 to 3.8 while Mamit (-2.49) and Kolasib (-3.83) were the second lowest districts. Saiha district falls under medium developed region in the educational development level of Mizoram. It clearly reveals that the central part of the state scores a high value whereas the peripheral region scores lower level of development.

Table 3.3.6 Level of Education Development in Mizoram (2014-2015)

Sl No	District	Score	Rank	Level	Score	District
1	Mamit	-2.49	6			
2	Kolasib	-3.83	7	Very high	3.8 Above	Champhai, Lunglei
3	Aizawl	3.06	4	High	2.8 to 3.8	Serchhip, Aizawl
4	Champhai	3.81	1	Medium	-2.8 to 2.8	Saiha
5	Serchhip	3.34	3	Low	-3.8 to -2.8	Mamit, Kolasib
6	Lunglei	3.81	2	Very low	Below -3.5	Lawngtlai
7	Lawngtlai	-8.39	8			
8	Saiha	0.69	5			

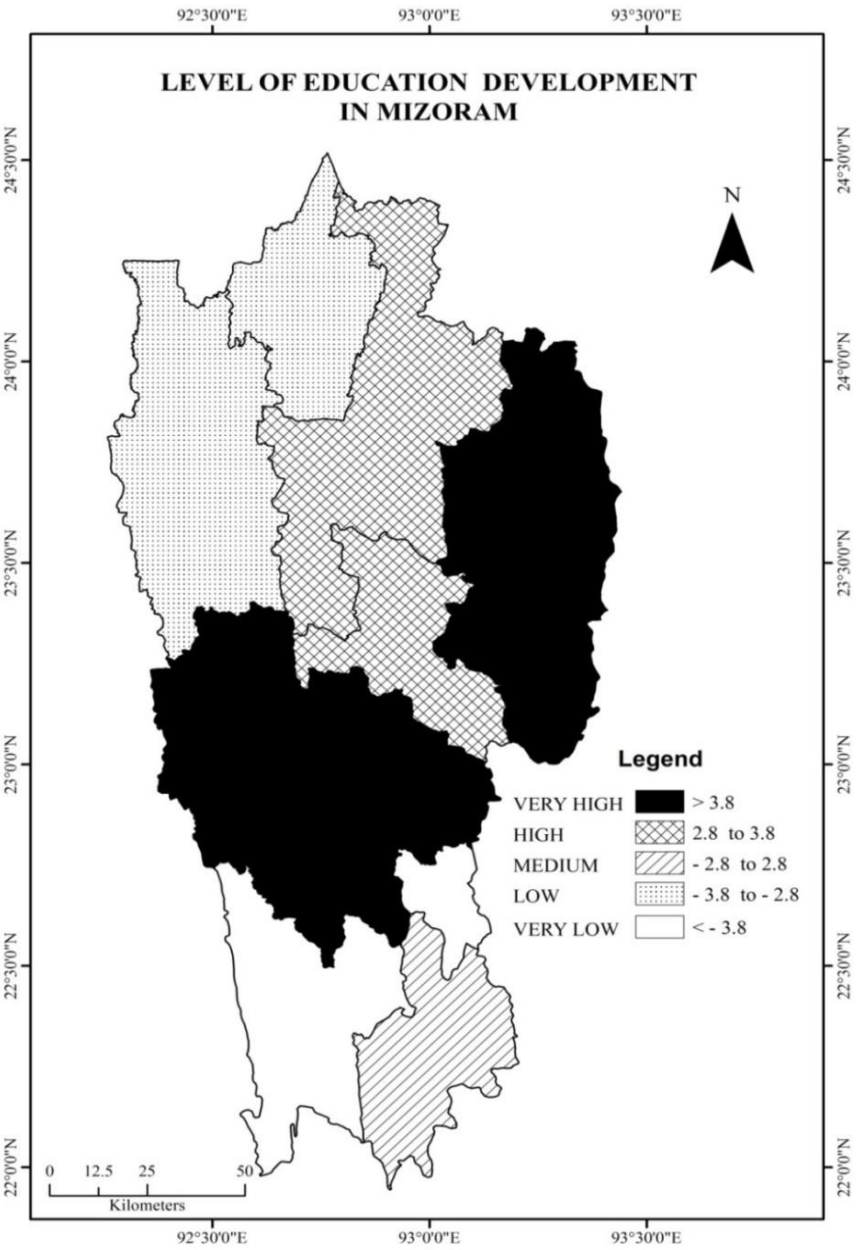

Figure 3.3.2 Level of Education Development in Mizoram

3.3.3 Level of Industrial Development:

Industry is of great importance for socio-economic development of a country. The countries with strong industrial sector have showed more economic growth and improvement of national income promoting living standard of population (Rizwan, 2018). Kuznets (1966) described long term development patterns of countries based on empirical analyses of national accounts and argued that industrialization or increases in the share of manufacturing in GDP is a key feature of modern economic growth, which is markedly different from the much lower growth rates observed in the world before the onset of the industrial revolution (Haraguchi, 2016).

Cottage industry plays a very important role in the economic life of the early Mizo. It includes cotton weaving, basket works, pottery, brass work, iron work, manufacturing of musical instrument, etc. Cotton weaving of every kind was exclusively the work of the women folk. They were expected to make cloths for all the family members by spanning the raw cotton which they grow in their jhums (Mate, 2014). Moreover, the development in the fields of industry is an infantile stage in Mizoram (Pachuau, 2009), lying one of the most industrially backward states of the country and is defined as 'Non Industries District' under category 'A' (Sen, 1989). Therefore, the present analysed conceded the two main industries – number of registered under Directorate of industry and industrial units under KVI in four fortitudes like number of SSI units, number of employees, and amount of investment and value of productions in the state. There are 540 industrial units registered in Mizoram under Directorate of Industry, Government of Mizoram and Khadi and Village Industries (KVI). Under Directorate of Industry, the largest number of SSI units was registered in Champhai District followed by Aizawl. Kolasib and Lawngtlai districts has recorded 16 and 14 units, 9 small scale units were found in Lunglei

district, another 5 units in Mamit and Saiha districts, and, only 3 units were there in Serchhip district. Under KVI, Mamit (78) district was recorded the largest number of units registered followed by Lawngtlai (61) and Aizawl (60) districts. The rest of the districts were registered a number of 47 (Saiha), 45 (Serchhip), 44 (Lunglei), and 42 (Champhai) units. Industry contributes 4,376 employees and also invests more than 2,132 lakhs. The total value of these industries holds more than 2,017 lakhs during 2014-15 as per the report of Statistical Abstract of Mizoram, 2015.

Table 3.3.7 Indicators of Industrial Development in Mizoram (2014-2015)

Sl No	District	Registered under Directorate of Industry			Industrial Units under Khadi and Village Industries (KVI)		
		No of SSI units	No of Persons employed	Amount of Investment (Rs. in lakhs)	No of units registered	Value of Production (Rs. in lakhs)	No of Persons employed
1	Mamit	5	35	22.16	78	269	624
2	Kolasib	16	118	777.36	41	240	328
3	Aizawl	29	511	1193.38	60	332.20	480
4	Champhai	41	206	40.89	42	241	336
5	Serchhip	3	23	36.79	45	178	360
6	Lunglei	9	35	15.06	44	230	352
5	Lawngtlai	14	72	39.96	61	262	488
8	Saiha	5	32	6.6	47	265	376

Source: Statistical Abstract of Mizoram 2015

All districts have been categorized into five level of industrial development. Aizawl district has highest score value of 8.3 among eight districts in Mizoram followed by Mamit district with a score value of 2.49. Champhai (0.06), Lawngtlai (0.64) and Kolasib (-0.91) districts were categorized under medium level of development which is ranging between -2 to 2 scored values. Very low score value was found in Serchhip district (-4.88), Lunglei district (-3.36) and Saiha district (-2.43) which falls under low level of development.

Table 3.3.8 Level of Industrial Development in Mizoram (2014-2015)						
Sl No	District	Score	Rank	Level	Score	District
1	Mamit	2.49	2			
2	Kolasib	-0.91	5	Very high	Above 4	Aizawl
3	Aizawl	8.39	1	High	2 to 4	Mamit
4	Champhai	0.06	3	Medium	-2 to 2	Champhai, Lawngtlai, Kolasib
5	Serchhip	-4.88	8	Low	-2 to -4	Saiha, Lunglei
6	Lunglei	-3.36	7	Very low	Below -4	Serchhip
7	Lawngtlai	0.64	4			
8	Saiha	-2.43	6			

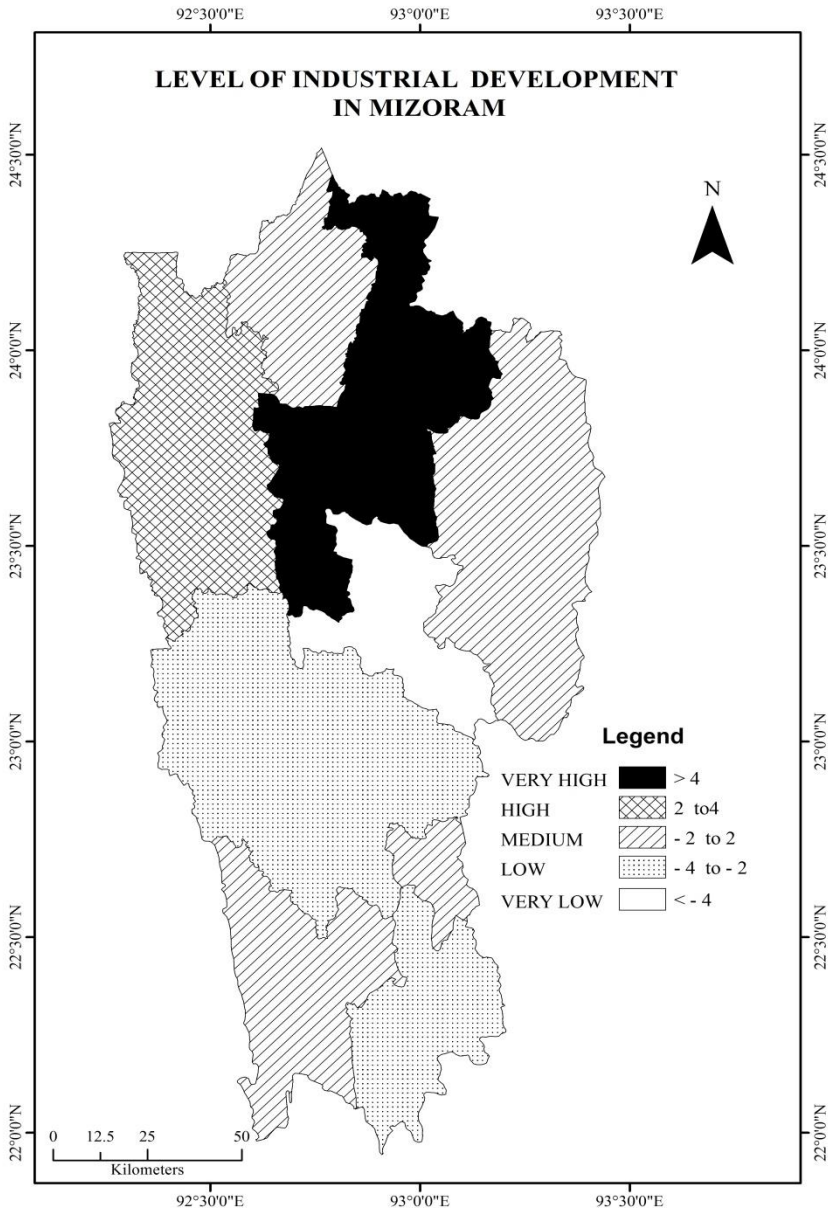

Figure: 3.3.3 Level of Industrial Development in Mizoram

3.3.4 Level of Health Development in Mizoram:

To enjoy good health and sufficient healthcare facilities is fundamental to the human development. Healthy people are more vibrant, energetic, and have more positive outlook. These characteristics not only translate to a positive influence on the social infrastructure, but also economic development aspect. The effect of a nation's health on its social and economic well-being should not be underestimated. It is an important requirement of satisfying life which is used for measurement of quality of human capital. For achieving higher rate of economic and social development, health is the most significant driver.

16 indictors were taken to acquaintance the development of heath. There are 31 private and government hospitals in the state, of which 15 hospitals are found in Aizawl district. Lunglei district possessed 5 hospitals, and, 3 hospitals are there in Champhai district. 2 of each are found in Lawngtlai, Saiha and Kolasib districts with only one hospital in Mamit and Serchhip districts. Aizawl districts possessed 4 Community Health Centers (CHC) followed by Champhai district with 3 centers. The other districts possessed one of each centers except Saiha district. 57 Primary Health Centers (PHC) running the various parts of the state with a large number of 365 sub-centers covering the region. More than 26 per cent of sub-centers were located in Aizawl district, 17.53 and 16.16 per cent were found in Lunglei and Champhai districts. Less than 10 per cent are found in rest of the districts, only 6.5 per cent is regimented by Saiha district. During 2014-2015, the total number of beds in medical institution like Hospital, CHC's, PHC's and Private Nursing Homes were 3,194, of which 1,638 beds were identified in Aizawl district while only 130 beds were attached in the district of Mamit.

Table 3.3.9 Indicators of Health Development in Mizoram																	
Sl No	District	Number of Health Institution, Bed and Workers Per 1000 Population (2014-2015)													Percentage of Birth, Death & IMR (2014)		
		Hp	CHC	PHC	SC	Dr	Nr	Phr	HW	Labt	HpB	CHCb	PHCb	PNh	Brt	Drt	IMR
1	Mamit	0.01	0.01	0.08	0.39	0.21	0.71	0.07	0.81	0.07	0.35	0.35	0.81	0.00	26.19	3.95	17.24
2	Kolasib	0.02	0.01	0.06	0.31	0.26	0.64	0.13	0.62	0.07	0.71	0.36	0.60	0.03	25.51	6.44	43.42
3	Aizawl	0.04	0.01	0.03	0.24	0.51	1.01	0.19	0.87	0.19	1.41	0.30	0.27	0.21	20.42	6.55	43.17
4	Champhai	0.02	0.02	0.09	0.47	0.20	0.71	0.06	0.95	0.06	0.48	0.72	0.87	0.04	24.27	5.80	23.58
5	Serchhip	0.02	0.02	0.08	0.42	0.26	0.86	0.14	1.00	0.11	0.92	0.46	0.77	0.00	20.12	5.81	33.66
6	Lunglei	0.03	0.01	0.06	0.40	0.28	0.66	0.06	1.09	0.09	1.05	0.19	0.56	0.11	19.52	5.35	30.77
7	Lawngtlai	0.02	0.01	0.04	0.31	0.12	0.30	0.03	0.62	0.01	0.25	0.25	0.42	0.05	26.32	4.65	36.40
8	Saiha	0.04	0.00	0.07	0.42	0.28	0.80	0.02	1.17	0.11	1.15	0.00	0.71	0.12	23.33	7.33	106.82

Source: Principal Director, Health and Family Welfare Department, Mizoram @Statistical Abstract of Mizoram, 2015

Hp = Hospital *CHC = Community Health Centre* *SC = Sub Centre* *PHC = Primary Health Centre*
Dr = Doctor *Nr = Nurses* *Phr = Pharmacists* *HW = Health Worker* *Labt = Lab Technician*
HpB = Hospital Bed *CHCb = Community Health Centre's Bed* *PHCb = Primary Health Centre's Bed*
PNh = Private/Nursing home *Brt = Birth Rate* *Drt = Reath Rate* *IMR = Infant Mortality Rate*

Doctor and Nurse perform as dynamic and plays crucial role in healthcare development. They are usually the person interacts with patient, responsible for assessing patients' needs and diagnosing illnesses. As such, nurses are an integral part of the comprehensive standards of care and health promotion. Doctors are the drivers of health policy and healthcare development even patients are depends on doctor's observation and treatment. According to the report of Health and Family Welfare Department, the total 365 doctors are services in various medical institutions of the state during 2014-2015, of which 56.75 per cent were actively operated in Aizawl district followed by 12.40 per cent in Lunglei district. Champhai, Kolasib, Mamit, Serchhip, Saiha and Lawngtlai districts shared less than 7 per cent of doctor's under the state government. Likewise, uneven distributions of nurses are commonly found in the state. Out of the total 852 nurses, 47.54 per cent were works within the district of Aizawl. Lunglei and Champhai districts were shared about 12.56 and 10.45 per cent. Only 4.11 per cent service nurses are available in Lawngtlai district renowned as the lowest number of nurses. A number of 986 health workers, 123 pharmacist and 125 laboratory technicians have been working under Health and Family Welfare Department, Government of Mizoram.

The development level of health classified into five based on its score value. The highest score value of 6.58 found in Aizawl district which falls under very high level of development, followed by Champhai and Serchhip districts with a score value of 4.90 and 4.19. The medium development is recorded into Saiha and Lunglei districts with a value of 2.19 and 0.66. Mamit and Kolasib districts scored a value of -2.68 and -2.89 which falls under low level of development. Lawngtlai district scored a value of -12.95 which is considered in the lowest level of development.

Table 3.3.10 Level of Health Development in Mizoram (2014-2015)						
Sl No	District	Score	Rank	Level	Score	District
1	Mamit	-2.686	7			
2	Kolasib	-2.891	5	Very high	Above 6	Aizawl
3	Aizawl	6.584	1	High	3 to 6	Champhai, Serchhip
4	Champhai	4.906	3	Medium	-3 to 3	Saiha, Lunglei
5	Serchhip	4.190	4	Low	-6 to -3	Mamit, Kolasib
6	Lunglei	0.665	6	Very low	Below -6	Lawngtlai
7	Lawngtlai	-12.957	8			
8	Saiha	2.190	2			

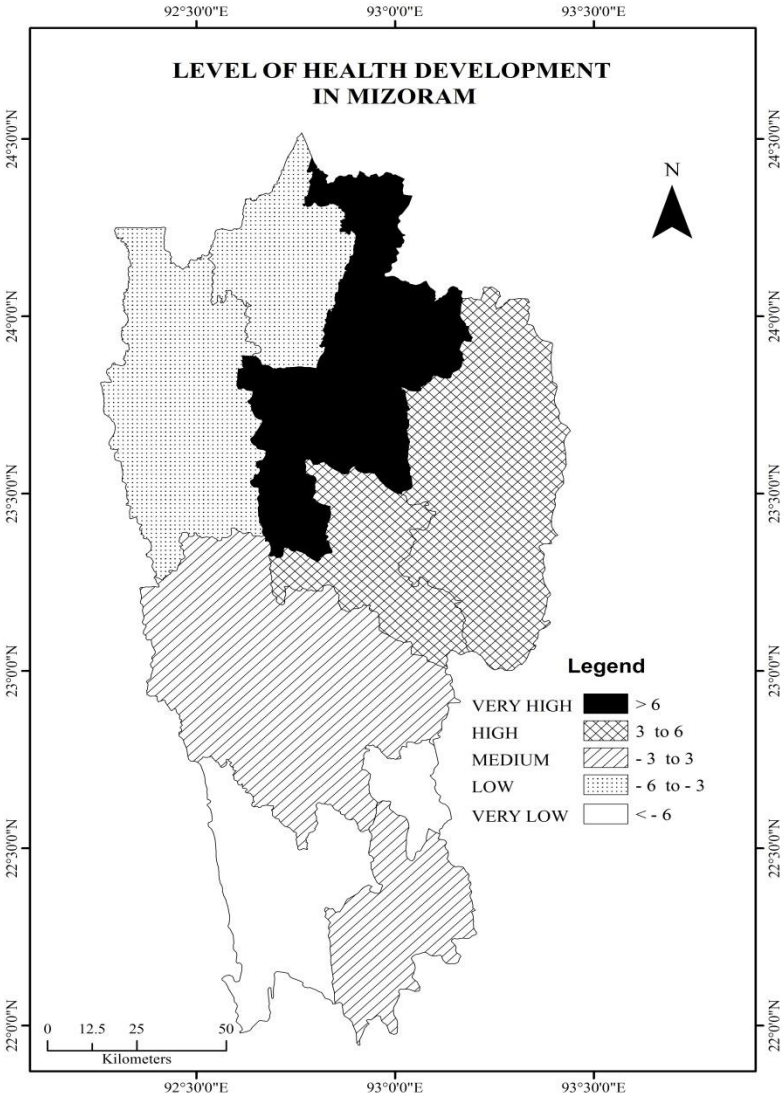

Figure: 3.3.4 Level of Health Development in Mizoram

3.3.5 Level of Sericulture and Pisiculture Development in Mizoram:

The state witnessed earnest growth in sericulture and pisciculture. They have potential for improvement in production of fish and silks with its endowed resources to enrich socio-economic development in rural and urban areas. Sericulture or silk farming is the cultivation of silkworms to produce silk. The production of muga silk is one of the earnings of capital in the state of Mizoram and may become one of the largest revenue after completion of the integrated muga silk development project (IMSDP) under the aegis of the Centre's North East Region Textiles Promotion scheme (NERTPS). Identification of sericulture potential with Remote Sensing and Geographical Information System (GIS) in six of the eight districts has found that 1,439 sq km are suitable for mulberry cultivation (Shillong Times, 2011). If the potential is tapped properly could boost the state's economy to a great extent. The state has made major advances in sericulture during the last decade and now provides subsidiary income to around 5,054 families. Area covered under sericulture plantation is presently estimated to be 3,700 ha and it is recorded that sericulture activities is being pursued in 176 villages.

Mizoram has considerable stretches of plain area with all favorable and conducive conditions for development of fisheries. The state has about 24,000 hectare of potential land which could be developed for fish farming. Due to various constraints in the past so far only 4,790 hectares of ponds and tanks could be developed for fish till end of 2015. Fish has been associated with the life of the people of the region from time immemorial and is also linked with the culture, religion, and traditions of the region (Gurumayum, Devi, and Nandeesha, 2006). Fisheries as a whole provide livelihood supports to about 60 million people (Manasi, Lathe and Raju, 2009) with notable contribution to GDP, foreign

exchange earnings, food and nutritional security of India (Hussan, et al., 2018). In 2015-16, Mizoram was the 5th in fish producing state among the north-eastern states, accounting only about 2 per cent of the north-east India's total fish production. The annual fish production in the state is estimated to be 7,630 mt from both capture and culture fisheries during 2016-17 (Hussan, et al., 2018).

The development of sericulture and fisheries in the state considered from three main sectors like activities of sericulture and fisheries, and production of Cocoons, Raw silk and seeds distribution along with 14 indicators. During 2014-15, the total production of mulberry, Muga, Eri, Oak Tasar and Silk yarn were noted as 351.24 mt, 5.734 lakhs, 7,024.7 mt, 1.04 lakhs and 40 mt respectively. The state government distributed about 800 thousands of seeds for uplift and promote of the farmers' economy. The total inland fish production and number of fish seeds production were estimated to 59,870 quintals and 293 seeds from area under viticulture of 5,240 hectares in the state. 347 lakhs of fish seeds were also distributed for farmers during 2014-2015.

Table 3.3.12 showed that Aizawl and Kolasib districts were having a score value of 12.87 and 10.29 which are categorized them into very high level of development, followed by very rich pisiculture area of Mamit districts which falls under high level of development. Lunglei (-0.32) Champhai (-1.20) and Serchhip (-4.86) districts were in the level of medium development. The very low development was found in the southern part of Mizoram, Saiha district after Lawngtlai district (-9.22).

Table 3.3.12 Level of Sericulture & Pisiculture Development in Mizoram (2014-15)						
Sl No	District	Score	Rank	Level	Score	District
1	Mamit	2.77	5			
2	Kolasib	10.29	1	Very high	Above 10	Aizawl, Kolasib
3	Aizawl	12.87	2	High	5 to 10	Mamit
4	Champhai	-1.20	3	Medium	-5 to 5	Lunglei, Champhai, Serchhip
5	Serchhip	-4.86	6	Low	-5 to -10	Lawngtlai
6	Lunglei	-0.32	4	Very low	Below -10	Saiha
7	Lawngtlai	-9.22	7			
8	Saiha	-10.32	8			

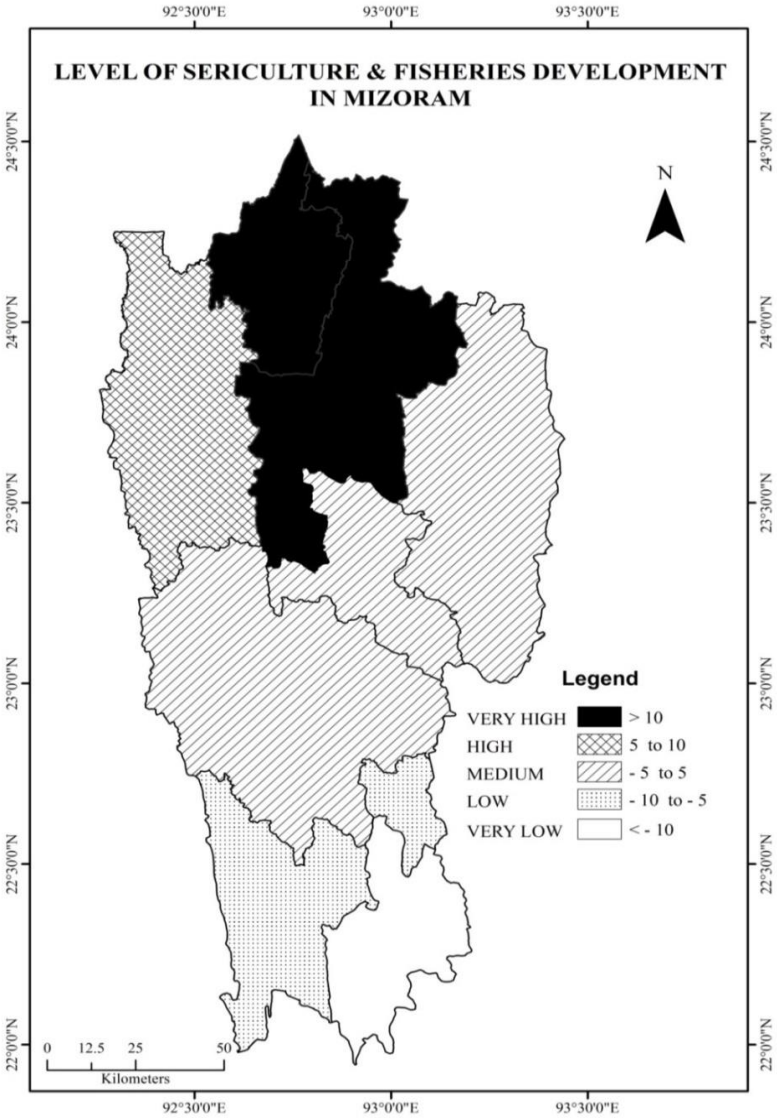

Figure: 3.3.5 Level of Sericulture and Fisheries development in Mizoram

Table 3.3.11 Indicators of Sericulture and Pisiculture development in Mizoram (2014-2015)															
Sericulture Activities in Mizoram						Production of Cocoons, Raw silk and seeds Distribution						Fisheries Activities in Mizoram			
Sl No	District	No of Sericulture Villages	No of Families engaged in Sericulture	Area under Sericulture Plantation (ha)	Number of seri-farms	Mulberry (MT)	Muga (Lakh)	Eri (MT)	Oak Tasar (lakh)	Silk Yarn (MT)	No of seeds distributed to farmers (in '000)	Area under Pisciculture (Ha)	Fish Production inland (Qtns)	Fish seed Production (lakh nos.)	Fish seed Distribution (lakh nos)
1	Mamit	10	286	220	2	44	1.2	0	0	0	100	1032	16600	90	59
2	Kolasib	15	663	150	4	30.8	3	7020	0	0	70	1058	16950	150	67
3	Aizawl	86	1898	2300	5	118.8	1.534	0	0	40	270	365	3440	6	45
4	Champhai	15	598	197	2	36.5	0	0	1.04	0	83	830	4440	2	35
5	Serchhip	10	375	192	2	53.61	0	1	0	0	122	334	3700	38	35
6	Lunglei	35	1013	570	2	66.81	0	3.7	0	0	152	559	4660	3	51
7	Lawngtlai	3	87	60	0	0.36	0	0	0	0	1.5	672	6220	2	30
8	Saiha	2	134	11	1	0.36	0	0	0	0	1.5	390	3860	2	25

Source: Statistical Abstract of Mizoram 2015

3.3.6 Level of Electricity Development in Mizoram:

Power sector is the most critical component of state's growth driving mechanism and thus has a direct influence on state's economic well-being. An efficient, resilient and financially sustainable power sector is essential to stimulate growth and prosperity of the state. The availability of consistent, quality and affordable power can ensure growth of all sectors of economy including agriculture, industry and others sectors.

Electricity is the basic infrastructure for economic development of a country. The degree of economic growth is highly correlated with generation and consumption of electricity. The category wise consumption pattern during 2012-13 reveals that highest consumption of electricity was in case of domestic accounted for 69 per cent, and, lowest consumption of electricity was agriculture sector which consumes only 0.56 MkWh which is less than 1 per cent of the total consumptions. The per capita consumption of electricity of the state was increasing from 151.64 kWh to 280 kWh during the period of in 2005-06 to 2013-14 which is lower than the national average of 1,010 kWh in 2015 and 1,149 kWh in March 2018.

Table 3.3.13 Consumption of Electricity in Mizoram

Sl No	Year	Consumption of electricity by users	Per capita consumption
1	2005-06	134.74	151.64
2	2006-07	150.89	169.71
3	2007-08	268.23	173.26
4	2008-09	165.48	186.23
5	2009-10	190.70	173.04
6	2010-11	208.14	190.77
7	2011-12	252.05	231.02
8	2012-13	286.52	263.00
9	2013-14	302.78	271.00
10	2014-15	327.21	280.00

In Mizoram, the Power & Electricity Department was created in the year 1975, functioning as an integrated utility and responsible for generation, transmission, distribution and dispatching of electric power supply within the state. It is also responsible for the promotion, development and maintenance of power distribution network including provision of adequate and reliable power supply in the state. Availability of economic power at consumers' doorstep will certainly bring about economic boost to the state. Mizoram is covered with dense forests as the distribution system has to run through them creating innumerable breakdown to the feeble and old distribution system. Apart from the transmission schemes, strengthening of weak distribution system should be one important step to provide uninterrupted power to the villages. Provision of power to the population residing in river valleys for agricultural purposes is also necessary for success of power for the people.

According to Economic Survey (2013-14), in spite of abundant hydro-electric power potential i.e. 4500.00 MW approx available in the state, only 0.66 per cent of its potential has so far been harnessed, through small & mini hydel projects. The state's power demand is presently worked out to be 201 MW as per 18th Power Survey of India. The bulk of the state's power requirement is met from central sector generating stations in which the share of Mizoram is 103.09 MW. But, as these generating stations are mostly hydel stations which depend on rainfall, power availability from these stations are, therefore, seasonal.

India's Ministry of power launched Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) as one of its flagship programme in July 2015 with the objective of providing round the clock power to the rural areas. It focuses on reforms in rural power sector by

separation of feeder lines (rural households & agricultural) and strengthening of transmission and distribution infrastructure. The earlier scheme for rural electrification viz. Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) has been subsumed in the new scheme as its rural electrification component. Under this scheme, the state government had taken a big step for rural electrification within the state to promote the socio-economic development of the rural areas; the percentage of electrified villages of Mizoram was increased from 81 to 95.90 per cent in the year 2005-2015 (Table-3.3.14)

Table 3.3.14 Number of electrified villages (2005-2015)

Sl No	Year	No of inhabited villages	No of villages electrified	Percentage of electrified villages
1	2005-06	707	570	81
2	2006-07	707	570	81
3	2007-08	707	570	81
4	2008-09	707	570	81
5	2009-10	707	570	81
6	2010-11	707	609	86.14
7	2011-12	704	661	93.90
8	2012-13	704	664	94.30
9	2013-14	704	670	95.17
10	2014-15	704	675	95.90

Source: Engineer-in-Chief, Power & Electricity Deptt., Mizoram @ Statistical Abstract of Mizoram, 2015

Table 3.3.15 District-wise number of village electrified in Mizoram (2014-15)

Sl No	District	No of inhabited villages	No of villages electrified	Percentage of electrified villages
1	Mamit	86	77	85.5
2	Kolasib	34	33	97.1
3	Aizawl	94	93	98.9
4	Champhai	83	83	100
5	Serchhip	35	34	97.1
6	Lunglei	161	155	96.3
7	Lawngtlai	159	153	96.2
8	Saiha	52	47	90.4

Source: Statistical Abstract of Mizoram, 2015

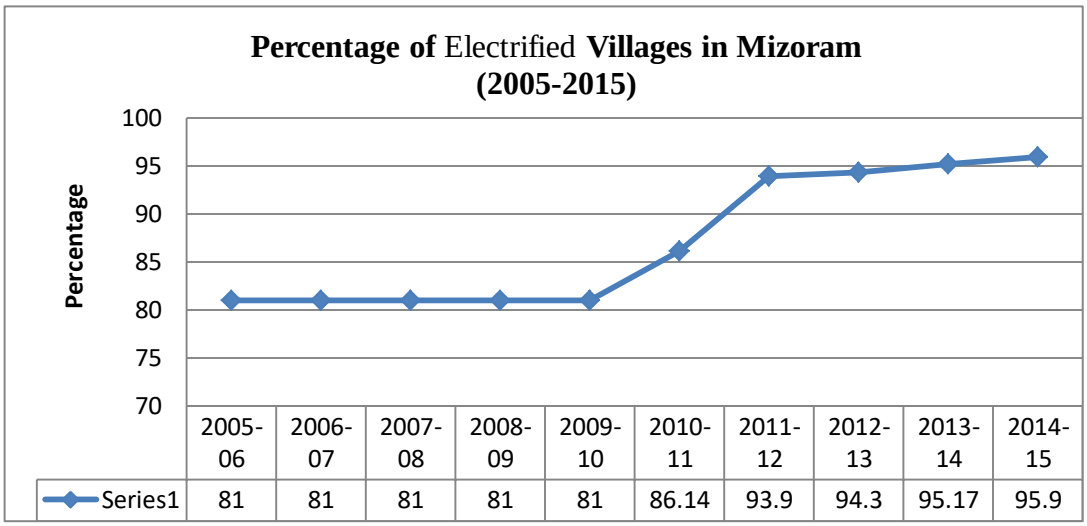

Figure: 3.3.6 Percentage of Electrified Villages in Mizoram

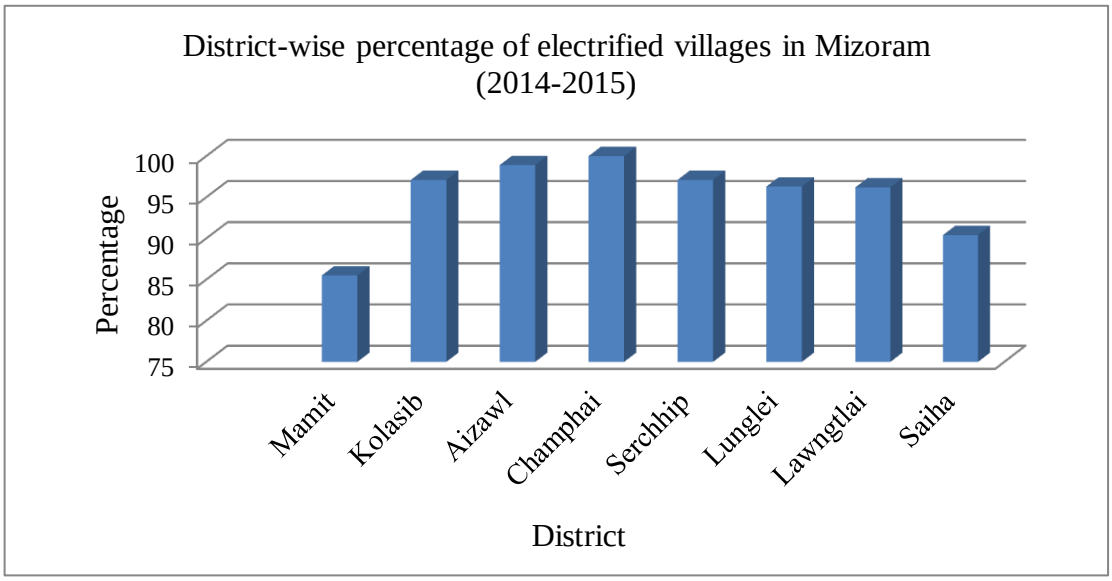

Figure: 3.3.7 District-wise percentage of electrified villages in Mizoram

The figure 3.3.6 clearly showed the development of electricity in Mizoram. 100 per cent electrified villages witnessed only in Champhai district which covered 83 villages. There are 94 inhabited villages in Aizawl district, of which 93 villages (98.9 per cent) were electrified, followed by two districts of Kolasib and Serchhip – one of each village are still remained unelectrified. The two largest numbers of inhabited villages

amongst the districts of Mizoram were Lunglei (161) and Lawngtlai (159). These two districts falls under low development with 96.3 percent electrified village in Lunglei district and 96.2 per cent in Lawngtlai district mainly due to dense forest, lack of communication facilities and rugged topography especially in the peripheral region. Out of 52 villages, 47 villages were electrified with a per cent of 90.4 at Saiha district. The lowest percentage (85.5 per cent) of electrified village was found in Mamit district which is located in the western part of the state with different ethnic groups, may hinder the developmental activities.

3.3.7 Level of Livestock and Veterinary Development in Mizoram:

Domesticated animal rose in an agricultural setting to produce labor and commodities such as meat, egg, milk fur, leather and wool may term as livestock. The term is sometimes used to refer solely to those that are bred for consumption, while other times it refers only to farmed ruminants such as cattle and goats. Animal rearing originated during the cultural transition to settled farming communities from hunter-gatherer lifestyles. Animals are domesticated when their breeding and living conditions are controlled by humans. Traditionally, animal husbandry was part of the subsistence farmers' way of life, producing not only the food needed by the family but also the fuel, fertilizer, clothing, transport and draught power. Killing the animal for food was a secondary consideration, and wherever possible its products, such as wool, eggs, milk and blood were harvested while the animal was still alive (Webster, 2013). In the traditional system of trancehuman people and livestock moved seasonally between fixed summer and winter pastures; in montane regions the summer pasture was up in the mountains, the winter pasture in the valleys (Roger, 2001).

Although agriculture is the prime source of livelihood for rural population in the state of Mizoram, livestock are an important component of mixed farming system and acts as an alternative source of income. In the economic life of the primitive Mizo, domestic animals like mithun, pig, dog, chicken and goat played a very vital role. Apart from being important sources of food they are used for sacrifices and ceremonies (Mate, 2014). They are also used for exchanging the captives and other valuable properties. The development of livestock is; therefore, of vital importance for economic development of the region especially in the rural areas (Pachuau, 2009) but the middle class in the urban areas require for their nourishment and daily needs as it increasing demand tremendously. Livestock and animal husbandry has been given prime importance by the state government as an alternate to Jhuming (Pachuau, 2009). Animal husbandry and veterinary sector also plays an important role to increase production of animal origin food like milk, eggs and meat as well as socio-economic improvement of the state, and, to contribute substantially to the State Gross Domestic Product (SGDP). For development of this sector, various schemes under state plan and centrally funded schemes are taken up for further promotion of livestock development, induction of improve germplasm for up-gradation of local stock, provision of technology to improve animal husbandry and provide requirements of animal health care.

By considering the economy of the state, the widening gap between the demand and supply of livestock products can be bridged by introducing changes in production structure or opening up the international trade, either of which can correct the imbalances in the long-run (Kumar, et al., 2007). In the present study, analysis of livestock and veterinary status was conducted by using 22 indicators from 4 sectors. Out of the total

cattle population, 21.42 per cent was found in Champhai district. Aizawl district possessed 18 per cent mainly concentrated in the outskirt of the city. Kolasib, where there is a strong preference for milk, possessed 16.14 per cent of cattle in the state. Lunglei and Lawngtlai district sharing about 11.96 and 10.45 per cent of the total cattle population rearing in Mizoram. The western and southern part of the state like Saiha and Mamit shares a number of 3,182 and 2,063 cattle populations i.e., 8.32 and 7.08 per cent in quinquennial livestock census, 2012.

The largest plain area of Mizoram, Champhai valley (more than 3,900 hectares) was used as paddy cultivation which requires animal for ploughing agricultural fields, possesed a number of 7,097 buffalo population. The second largest numbers of buffaloes were concentrated in the district of Saiha which holds about 18.44 per cent, Serchhip district shares 12.11 per cent of buffaloes among the eight districts. Lawngtlai and Aizawl districts sharing a low percentage of 7.72 and 6.21 buffaloes population while less number of buffalo population was recorded in the districts of Kolasib, Mamit and Lunglei, ranging below 2 per cent. Lunglei district became the lowest number of buffaloes but highest number of goats rearing followed by Saiha. Serchhip and Champhai districts were sharing less than 4 per cent of goat's population in the state.

Most of horse and ponies population of the state were concentrated in Mamit district sharing a high percentage of 99.53. The other districts were having less than one per cent of horse in the state. Dogs is a common domestic animal of Mizoram, there are 18,507 domestic dogs in Aizawl district followed by Lunglei district with only about 15.78 per cent. More than half of the Mithun population concentrated in Champhai district. 37.13 per cent also found in Saiha district.

Table 3.3.16 Indicators of Livestock and Veterinary Development in Mizoram													
Sl No	District	Number of Livestock and Poultry Population (in percentage) (Quinquennial Livestock Census, 2012)									Estimated Production in Mizoram (2014-15)		
		Catlle	Buffaloes	Goat	Pigs	Horses & Ponies	Dogs	Mithun	Sheep	Poultry with Ducks	Milk (in tones)	Egg (no in lakhs)	Meat (in tones)
1	Mamit	7.08	1.49	16.62	9.85	99.53	0.00	0.00	26.25	6.93	316.846	37	757.35
2	Kolasib	16.41	2.03	10.80	8.80	0.00	6.17	0.00	13.13	8.57	2828.057	25	885.21
3	Aizawl	18.06	6.21	7.23	32.43	0.09	42.41	4.11	6.25	28.01	11696.82	74	5342.75
4	Champhai	21.52	51.21	3.72	14.17	0.22	9.87	56.59	34.38	14.69	1605.749	54	1136.33
5	Serchhip	6.20	12.11	2.12	4.52	0.05	4.99	2.16	0.00	7.68	947.972	29	767.92
6	Lunglei	11.96	0.80	25.55	11.83	0.00	15.78	0.00	1.56	18.02	2038.933	56	1983.32
7	Lawngtlai	10.45	7.72	16.95	10.89	0.05	13.69	0.00	10.63	8.39	560.003	75	846.26
8	Saiha	8.32	18.44	17.01	7.50	0.06	7.11	37.13	7.81	7.72	501.32	27	806.07

Source: Statistical Abstract of Mizoram, 2015

Table 3.3.17 Indicators of Livestock and Veterinary Development in Mizoram											
Sl No	District	Number of Veterinary Institutions and Veterinary Personnels (2014-15)							Veterinary Health Care (2014-15)		
		Hospitals	Dispensary	Rural Animal Health Centres	No of Artificial Inseminati on	Doctors	VFA/SVFA/ Jon/JEO etc	No of cases treated (OPD)	No of castration performed	No of Artificial insemination s done	No of Vaccinations done
1	Mamit	0	3	12	0	4	15	65460	734	76	822
2	Kolasib	1	4	6	8	12	17	72924	1126	670	6460
3	Aizawl	1	6	30	16	54	62	412860	3994	2611	12883
4	Champhai	1	7	13	10	12	25	96406	1367	530	8399
5	Serchhip	0	4	7	6	8	23	109360	683	420	5613
6	Lunglei	1	6	26	13	17	48	137170	2011	445	3818
7	Lawngtlai	0	2	2	3	4	2	33500	141	130	1701
8	Saiha	1	3	7	2	6	7	56290	263	48	1813

Source: Statistical Abstract of Mizoram , 2015

Serchhip and Aizawl districts were sharing less than 5 per cent of Mithun population. Champhai and Mamit are of two important districts which possessed 34.38 and 26.25 per cent of sheep populations while poultry with ducks population mainly concentrated in Aizawl district.

As per reports of Director, Animal Husbandry and Veterinary Department of Mizoram estimated total milk production during 2014–2015 was 20495.697 tonnes. As high demand of milk among the people of Mizoram, Aizawl district is the highest producer of milk with 11,696.82 tonnes during 2014-15 sharing 57.07 per cent of the total production, followed by Kolasib district which shares only 13.80 per cent. Below 10 per cent of milk was produced by the rest of the districts.

The estimated total egg production during 2014-2015 was 377 lakhs, of which 261 lakhs was Desi and 116 lakhs was improved variety. The total production of meat from Cattle, Buffaloes, Mithun, Goats, Pigs and Poultry during 2014-2015 was estimated at 12525.21 tones, of which pork and beef counts for 7,038.04 and 3,587 tons respectively. Meat production from chicken broiler during 2014-2015 was estimated at 1668.69 tones. Out of the total meat production (including broiler meat), pork accounted for the highest quantity of 56.19 percent followed by beef with sharing 28.64 percent, and, broiler meat accounts for 13.32 percent. Aizawl is the largest producer of meat with 42.66 per cent (5342.75 tones) whereas 6.04 per cent (757.35 tones) produced by Mamit district recorded the lowest production of meat in the state.

Prevention and combating of economically important and dreaded zoonotic diseases is the purview of A.H. & Veterinary Department for which the Department exercised activities like immunization, treatment of ailing animals etc., (Economic

Survey of Mizoram, 2013). To provide animal health care, there exists a wide network of veterinary hospital and dispensaries under the state Government.

At present there are 5 numbers of veterinary hospitals, 35 veterinary dispensaries and 103 rural animal health centers at Aizawl, Lunglei, Champhai, Kolasib and Saiha districts. Besides these institutions, the state government have also been maintaining 58 Mobile Artificial Insemination Centers. There are 117 veterinary doctors a long with 199 VFA/SVFA/Jon/JEO etc., treated more than 9, 83,970 cases during 2014-15. 4,937 artificial inseminations were done and 41,509 vaccines were given to various animals in different parts of the state.

In livestock and veterinary, variations of development based on scale value amongst the districts is high as a score value of 29.47 in Aizawl districts comparing with a score value of -11.75 and -10.71 by Serchhip and Lawngtlai districts, falls under the category of very low level of development. Champhai district is the second highest score value of 9.50 followed by Lunglei district (5.90) falls under medium level of development. Kolsib, Mamit and Saiha districts categorize under low level of development.

Table 3.3.18 Level of Livestock & Veterinary Development in Mizoram

Sl No	District	Score	Rank	Level	Score	District
1	Mamit	-8.81	5			
2	Kolasib	-4.65	4	Very high	Above 10	Aizawl
3	Aizawl	29.47	1	High	6 to 10	Champhai
4	Champhai	9.50	2	Medium	-6 to 6	Lunglei
5	Serchhip	-11.75	8	Low	-6 to -10	Kolasib, Mamit, Saiha
6	Lunglei	5.90	3	Very low	Below -10	Lawngtlai, Serchhip
7	Lawngtlai	-10.71	7			
8	Saiha	-8.95	6			

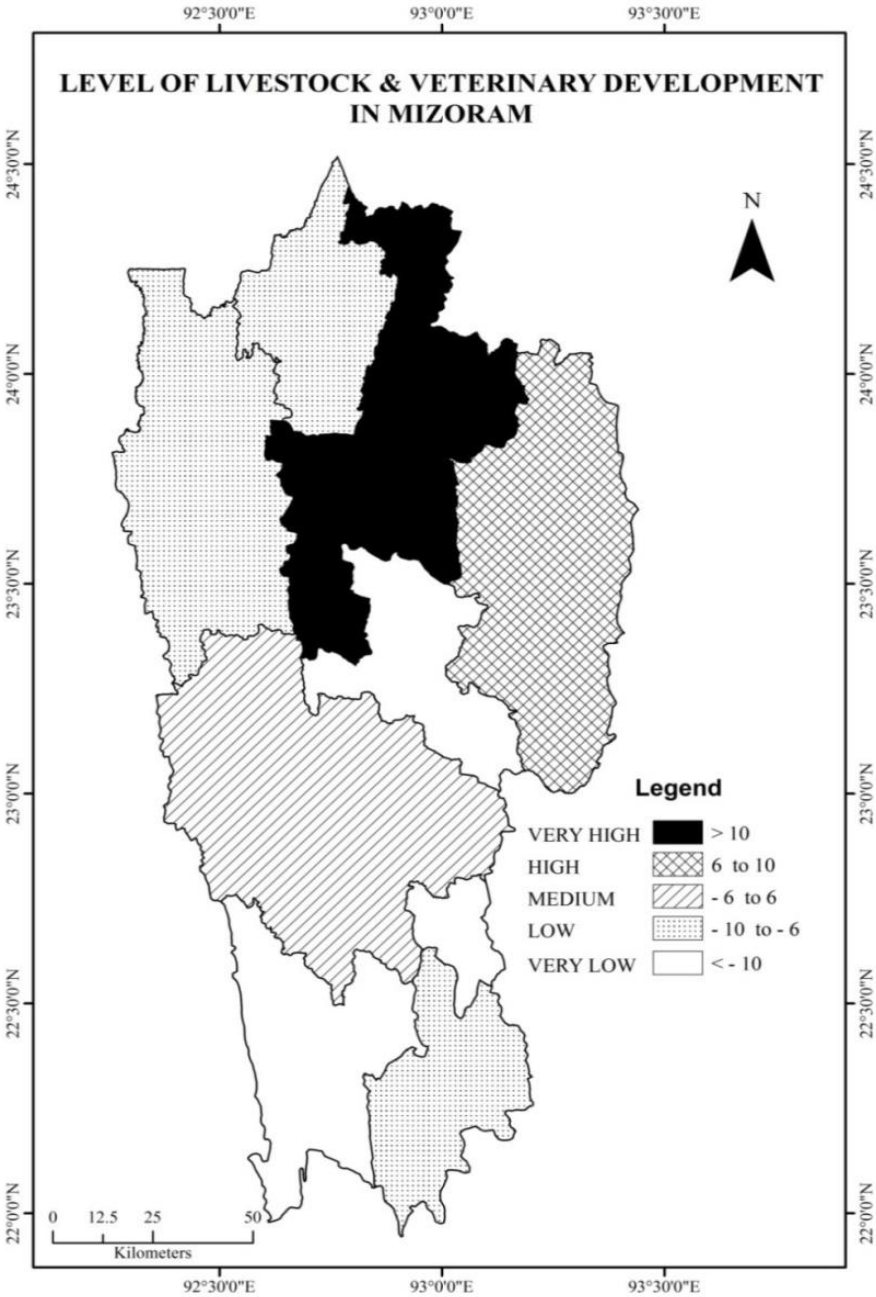

Figure: 3.3.8 Level of Livestock and Veterinary Development in Mizoram

3.3.8 Level of Transportation Development in Mizoram:

Transportation is the means to carry passenger and goods from one place to another. It has become very significant in each stage of human civilization which contributed the development of economic, social, political and cultural fields which serve as the lifeline of the state's economy. It is an important element of both direct and indirect intervention for socio-economic and regional development (Kumar and Sen, 2014). A good road network constitutes the basic infrastructure that propels the development process through connectivity, and, opening up trade and investment to backward regions. Better transport facilities in a region, higher in the standard of living. Deficiencies of transport facilities are invariably accompanied by poverty and under development (Kumar and Sen, 2014). Rodrigue and Notteboom (2017) strongly believe that because of the intensive use of infrastructure, the transport sector is an important component of economy and a common tool used for development. High density transport infrastructure and highly connected networks are commonly associated with high level of development.

Economic Survey of Mizoram (2013-2014), clearly mentioned that 'Mizoram PWD is responsible for construction and maintenance of roads, bridges and building in the state. Since road transport is the only mode of transport within the state, improvement of road network is the major key to achieve the development. Better connectivity enhances the environment for development and growth by reducing freight and passenger transport costs, and by providing quicker and safer access to all parts of the state. Improvement of roads communication network results in economic and social development, better access to health and education services for a large number of

population especially for weaker section in the remote areas provided through lower transport cost and beeter facilities.

As per the Mizoram State Road Statistics, the total length of all types of roads in Mizoram as on 2014 is 7,548.03 km and road density is 35.80 km/100 sq km approximately while the Average National Level Road Density is 129.00 km/100 sq km. National Highway passed through all the district capital except Mamit district. State Highway also concentrated only in the core areas of the state like Kolasib, Aizawl, Champhai and Lunglei districts. The southern tip of Saiha district does not possess state and district roads even it is function as a district headquarters exposes that the conditions of roads in the fringe areas are not much improved. Village roads connected all the district capital, highest density of roads in the state counted in the administrative centers of Aizawl district with density of 9.72 followed by Serchhip district. The three districts like Saiha, Kolasib, and were recorded as 3.83, 3.2 and 3.03 density. Lunglei (2.91) and Lawngtlai (2.4) district have a low density of road; Champhai district (1.42) was accounted lowest density.

As per the record of Statistical Abstract of Mizoram, 2015, the total vehicles of 1, 51,486 were registered in Mizoram, of which 1, 46,708 registered as private vehicles. From these vehicles, more than 70 per cent were registered within the jurisdiction of District Transport Office, Aizawl. Only 8.98 per cent of the total vehicles were registered under Lunglei Transport office. 5.68 and 5.07 per cent of the registered vehicles were owned by the people who resides within the jurisdiction of Kolasib and Champhai districts. Serchhip and Saiha districts shares only about 3.31 and 2.59 per cent. Less than 2 per cent were registered in the districts of Lawngtlai and Mamit.

Table 3.3.19 Indicators of Transportation Development in Mizoram (2014-15)										
Sl No	District	National Highway	State Highway	District Road	Village Road	Total	Number of vehicle registered		Revenue collected	
		Density	Density	Density	Density	Density	Private	Govt.	Road Tax	Fess & Fines
1	Mamit	0	0	12.08	2.46	3.2	2392	24	26.67	4.42
2	Kolasib	4.13	0.45	9.98	4.81	3.03	8565	43	101.43	5.76
3	Aizawl	14.7	2.64	8.7	13.77	9.72	103006	4452	742.52	138.1
4	Champhai	9.1	0.93	12.62	13.37	1.42	7672	13	67.93	23.31
5	Serchhip	3.3	1.13	7.27	10.78	5.26	4971	43	33.83	15.4
6	Lunglei	4.86	1.49	8.72	5.21	2.91	13493	118	123.01	6.6
7	Lawngtlai	5.5	0	7.46	3.8	2.4	2748	19	21.96	26.41
8	Saiha	5.6	0	0	13.16	3.83	3861	66	65.73	0.47
Source : Engineering-in-Chief, Public Works Department, Government of Mizoram										

Table 3.3.20 Level of Transportation Development in Mizoram (2014-15)						
Sl No	District	Score	Rank	Level	Score	District
1	Mamit	-11.06	6			
2	Kolasib	-7.34	4	Very high	Above 10	Aizawl
3	Aizawl	46.43	1	High	5 to 10	Lunglei
4	Champhai	-1.48	3	Medium	-5 to 5	Champhai
5	Serchhip	-7.39	5	Low	-5 to -10	Kolasib, Serchhip
6	Lunglei	4.47	2	Very low	Below -10	Mamit, Saiha, Lawngtlai
7	Lawngtlai	-12.51	8			
8	Saiha	-11.13	7			

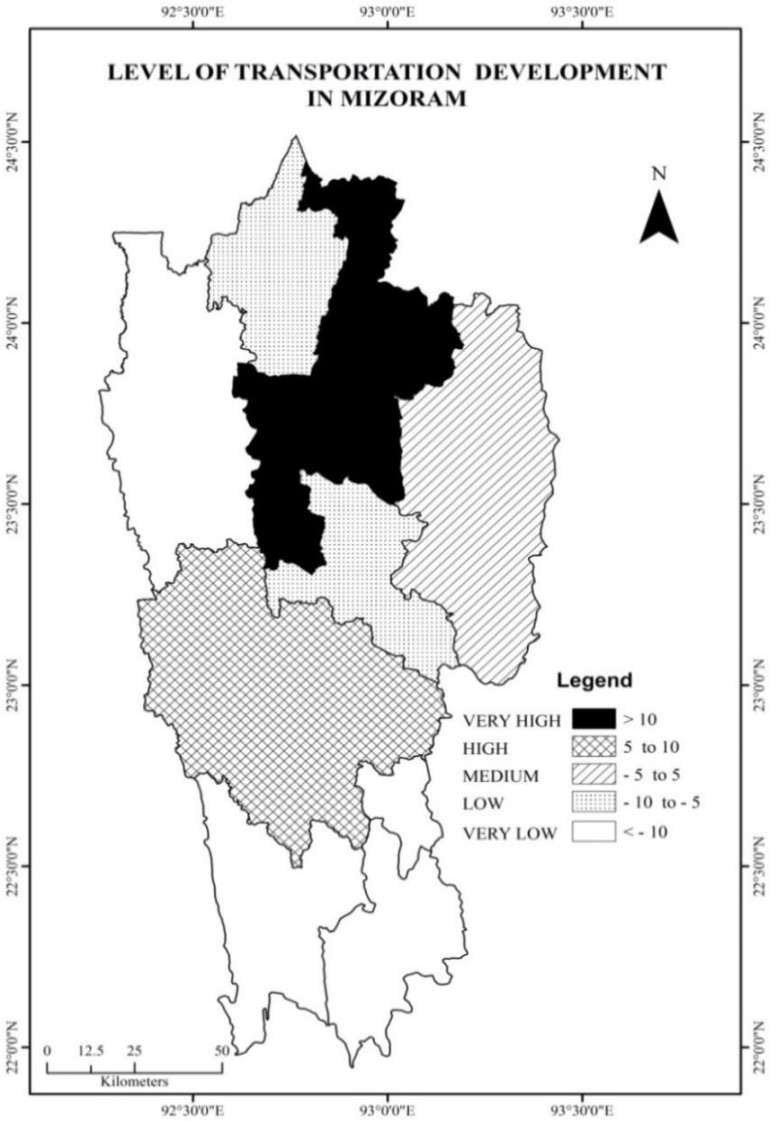

Figure: 3.3.9 Level of Transportation Development in Mizoram

Table 3.3.20 showed that the highest score value of 46.43, the first rank with set of very high development is Aizawl district while three districts falls under very low development such as Mamit, Saiha and Lawngtlai which scored a value of -11.06, -11.13 and -12.51 depicts the disparity of transportation development prevail in this region. Lunglei district (4.47) falls under high level of development followed by Champhai district (-1.48). The low developed districts were Kolasib (-7.34) and Serchhip (-7.39).

3.3.9 Level of Mass Communication Development in Mizoram:

Communication is used for more than just passing on information from one person to another. It is often used as a tool to facilitate the participation of people in developmental activities which plays an imperative role in communication development through transmission of knowledge, providing forum for discussion of issues, teach ideas, skills for a better life and create a base of consensus for stability of the state (Choudhury, 2011). In 1947, the American Commission on Freedom of the Press, the "Hutchins Commission", described agencies of mass communications as the "most powerful" educational instruments, which must assume the responsibility for "stating and clarifying the ideals towards which the community should strive" (Ogan, 1982). It also plays a notable role in economic, political and social development of a country. The power of the press arises from its ability of appearing to the minds of the people and being capable of moving their hearts (Sharma and Deepak, 2016).

Communication plays a central role in existence, development and maintenance of society (Sannoh, 2003). Modern society has become far more complex to function only through interpersonal or group communication. There are many important messages of common concern which have to reach effectively to masses at a time. Thus, media attract and direct attention encourages in matter of opinion and belief influences behavior confers status, status legitimacy and structures perception of reality. Both, electronic as well as printed media are direct or indirectly influence government or business houses for shaping the country's development with top-down structures which could reflects the socio-economic development of a society.

Number of post offices and its services tremendously increase for the development of society because of an important dissemination of information from core to periphery and its adjacent villages. During 2014-15, there are 486 postal services like Head Post office, Sub-Post office, Branch post office, Letter Boxes and Village Postman in the state. Out of the total postal offices, 30.45 per cent were located within the district of Aizawl followed by Lunglei district with a high percentage of 18.11. 15.02 per cent were also concentrated in Champhai district while other four districts like Lawngtlai, Saiha, Mamit and Serchhip were shared below 10 per cent.

Khalid and Ahmed (2014) noted that 'a mass society is characterized by greater reliance on the mass media for information and news about the environment in which the people live. The news media are the main sources of local, national and international news. They set their agenda for public debate and create issues. In short, mass media help in the emergence of public opinion and in building up of images through news reporting, expressing views, informing the public and thereby facilitating public discussion on issues of wider concern. As a matter of fact, the mass media play significant role in the socialization of its members – their attitudes, preferences and mannerisms'. It is a multiplier in the communication process, spreading widely and rapidly information which will aid national development (Sommerland, 1981). In the telecommunications aspects, there are 11,56, 241 landline and mobile phone subscribers in different parts of Mizoram of which 53.40 per cent subscribers were in Aizawl district followed by 13.62 per cent in Lunglei district. The other district of Mizoram shares only less than 10 per cent of each subscriber in respect to landline and mobile phones. Newspaper is an instrument of education, contributing to the development of human resources and capital in promoting

economic growth. There are 128 newspapers and 192 journalists in the state. Out of this, Aizawl district contributed highest number of 48 newspapers and 81 journalists.

Based on 14 indicators of mass communication, level of development is measured by Z-score a technique which represents a clear picture of the state. Very high level of development found in Aizawl district with a score value of 13.14. A score value of 0.29 in Lunglei district falls under high level of development. Medium level of development found in the district of Kolasib with a score value of -0.98. Low level of mass communication development found in four districts of Saiha (-1.68), Mamit (-2.34), Champhai (-2.48), Serchhip (-1.75) and Lawngtlai district with a score value of -4.47 categorized under the low level of development.

Table 3.3.21 Level of Mass Communication Development in Mizoram (2014-2015)

Sl No	District	Score	Rank	Level	Score	District
1	Mamit	-2.340	5			
2	Kolasib	-0.981	3	Very high	Above 3	Aizawl
3	Aizawl	13.420	1	High	0.1 to 3	Lunglei
4	Champhai	-2.488	6	Medium	-0.1 to 0.1	Kolasib
5	Serchhip	-1.754	7	Low	- 0.1 to -3	Saiha, Mamit, Champhai, Serchhip
6	Lunglei	0.297	2	Very low	Below -3	Lawngtlai
7	Lawngtlai	-4.475	8			
8	Saiha	-1.680	4			

Table-3.3.22 Indicators of Mass Communication Development in Mizoram (2014-2015)															
Sl No	District	Number of Postal and Tele communications									Number of Newspaper and Journalist				
		Head Post Offices	Sub Post Offices	Branch Post Offices	Letter Boxes	Village Postmen	Telephone Exchanges	Landline telephone	PCOs	Mobile Connections	Dailies	Weekly	Monthly	Electronic Media	Accreditted Journalist
1	Mamit	0	5	33	8	31	4	199	5	50979	7	0	0	2	7
2	Kolasib	0	5	15	15	22	9	970	5	91680	10	0	0	2	16
3	Aizawl	1	13	104	30	72	20	13412	94	603984	32	2	10	4	81
4	Champhai	0	4	58	11	81	7	473	7	105789	6	0	0	2	17
5	Serchhip	0	3	23	4	29	7	1031	8	60796	9	0	0	2	16
6	Lunglei	0	5	71	12	70	12	1509	22	155984	14	2	0	5	29
7	Lawngtlai	0	1	17	14	17	2	401	5	29287	5	0	0	2	10
8	Saiha	0	2	29	3	28	4	784	5	38963	10	0	0	2	16
Source : Director, Information and Public Relations, Government of Mizoram@Statistical Abstract of Mizoram, 2015															

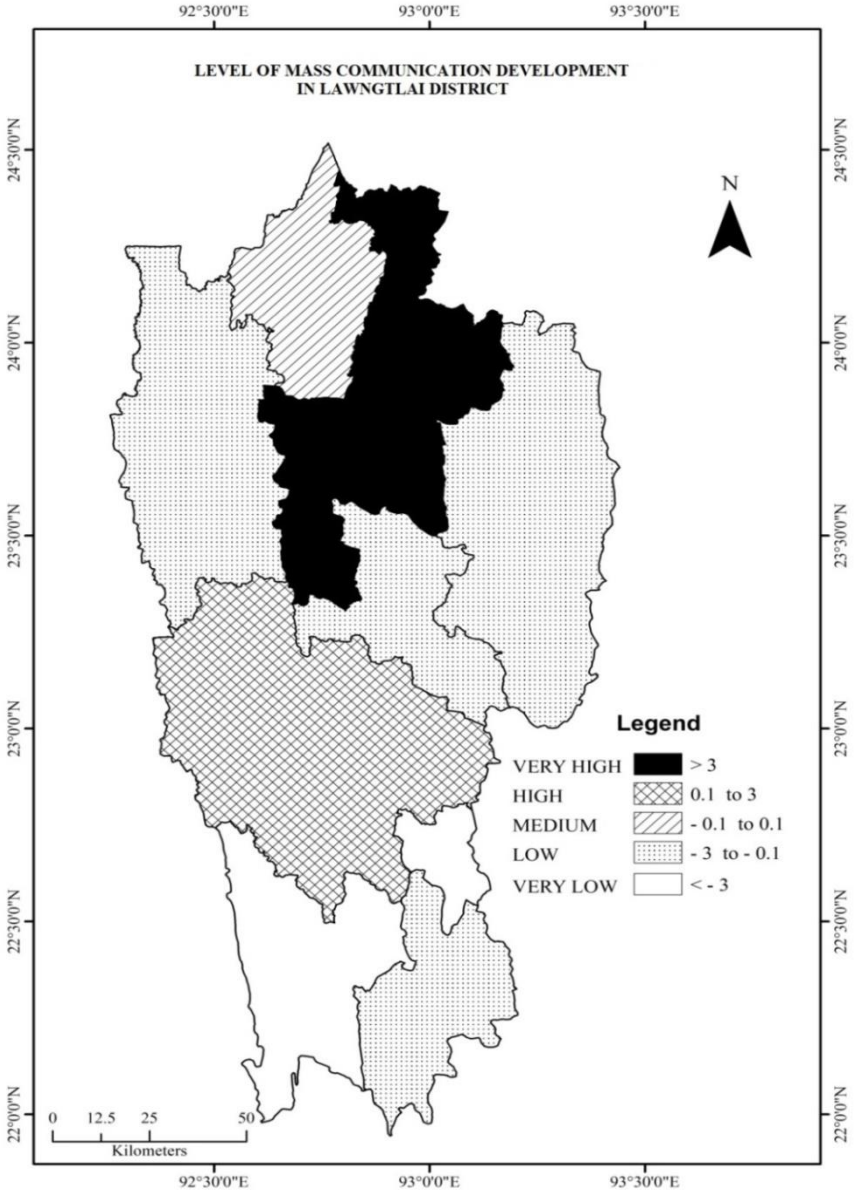

Figure: 3.3.10 Level of Mass Communication Development in Mizoram

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3.3.10 Level of Banking Development in Mizoram:

Banks have always played an important part in the country's economy. They play a decisive role in the development of the industry and trade even in agricultural development which reflects the socio-economic conditions of the backward people especially in the rural areas. They are acting not only as the custodian of the wealth of the country but also as resources of the country, which are necessary for the economic development of a nation (Kalpana and Taidala, 2017). Developed financial system drives real growth, while the growing economy's demand leads to advancing the financial sector (Kumar and Srijit, 2011). Rapid, transformative growth will also require, from the developing world, a more autonomous development strategy, in light of the fragile world economic recovery and the uncertainty about developed country demand and capital as drivers of developing country growth (UNCTAD, 2016). A key objective in development economics is to work out ways to lift people out of poverty (Kalpana, and Taidala, 2017). Access to finance has been seen as a critical factor in enabling people to transform their production and employment activities and to exit poverty (Aghion and Bolton 1997, Yunus, 1999). The financial sector provides positive avenues in several fields which indirectly increase people's standards of living and reduce the poverty level (Ragonmal, 2015). The World Bank (2008) considers financial inclusion as access to financial services. It 'implies an absence of obstacles to the use of these services, whether the obstacles are price or non-price barriers to finance'. Therefore, banking system or institutions has a vital role in facilitating the development of financial system of any region.

According to the State level Banker's Committee Meeting for Mizoram, 29th June 2017, there were 201 branches of different banks in various part of the state which could provide loans and other benefits to the indigenous people. Out of the total branches, 99 branches are located in Aizawl district while only 7 branches are there in Saiha district. The banking activities and their performance are augmenting the financial conditions of the masses. The average CD ratio of the state (March, 2017) was 40.14 per cent. The highest CD ratio was recorded in the district of Saiha with 115.25 per cent followed by 110.08 per cent of Lawngtlai district. The lowest CD ratio was 32.65 per cent in Mamit district.

Table 3.3.23 Indicators of Banking Development in Mizoram

Sl No	District	No of Branch	Deposit (in lakhs)	Advance (in lakhs)	CD Ratio of March 2017
1	Mamit	10	15622.67	6934.9	44.39
2	Kolasib	16	26251.64	11298.21	43.04
3	Aizawl	99	609156.15	198875.48	32.65
4	Champhai	21	28680.67	17881.27	62.35
5	Serchhip	15	19116.68	9710.76	50.8
6	Lunglei	21	56501.42	31208.35	55.23
7	Lawngtlai	12	20033.09	22053.1	110.08
8	Saiha	7	14881.6	17150.54	115.25

Source: State level Banker's Committee meeting for Mizoram, (Agenda notes for the quarter ended March 2017)

Based on the indictors of district-wise banking performances (Table 3.3.24), Aizawl district score a high value of 6.36 categorized under very high development, high development falls into Lawngtlai district having a score value of 0.39, followed by Saiha (0.29), Champhai (-0.87) and Lunglei districts (-0.76) as under medium development. Serchhip (-1.61) and Kolasib (-1.76) categorized into low development. Very low level of development found in Mamit district with a score value of -2.04.

Table-3.3.24 Level of Banking Development in Mizoram (March, 2017)						
Sl No	District	Score	Rank	Level	Score	District
1	Mamit	-2.04	8			
2	Kolasib	-1.76	5	Very high	Above 2	Aizawl
3	Aizawl	6.36	1	High	0.3 to 2	Lawngtlai
4	Champhai	-0.87	4	Medium	-0.3 to 0.3	Saiha, Champhai, Lunglei
5	Serchhip	-1.61	7	Low	- 0.3 to -2	Serchhip, Kolasib
6	Lunglei	-0.76	6	Very low	Below -2	Mamit
7	Lawngtlai	0.39	2			
8	Saiha	0.29	3			

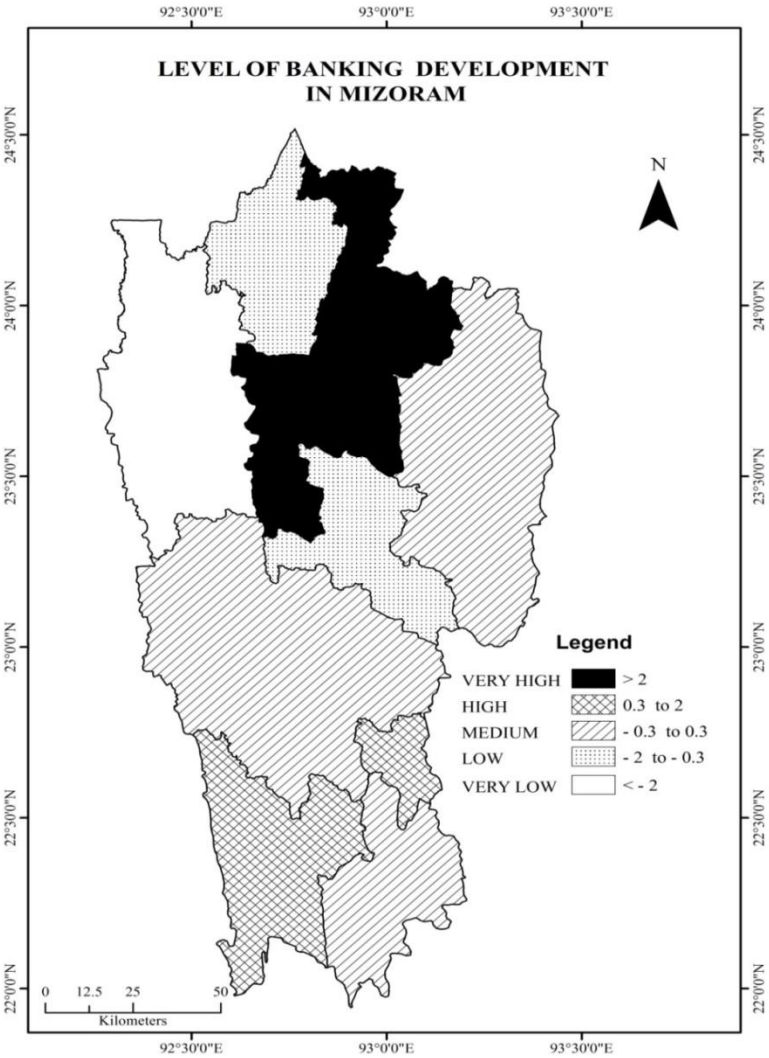

Figure: 3.3.11 Level of Banking Development in Mizoram

3.3.11 Level of Social Welfare Development in Mizoram:

Social services and social welfare activities of the magnitude and extent demanded in the conditions obtaining in the country are recently new trends of developmental aspects. Social welfare sector is responsible for the welfare, rehabilitation and development of the persons with disabilities, the social deviants, and other disadvantaged who require special attention of the state.

In case of Mizoram, the department of social welfare has been instrumental bringing about major improvements, social justice to the weaker and vulnerable sections of the society. The district-wise activities and performances of the state government in various fields such as numbers of Integrated Child Development Services (ICDS) projects, numbers of Anganwadi centers, numbers of day care centers, numbers of disabled persons assisted, numbers of handicapped women assisted and numbers of old aged pension beneficiaries were taken as indicators for social welfare development.

All the districts of Mizoram have ICDS projects, out of the total projects (27), Aizawl districts has been taking 6 projects followed by Champhai, Lawngtlai and Lunglei districts with 4 projects in each district dominions. Mamit districts taking 3 projects while the three districts of Serchhip, Saiha and Kolasib undertaken 2 of each project. The number of anganwadi centers of the state increases from 1,361 to 2,244 during a period of 2005-2015. There are 29 day care centers which were concentrated only in the districts of Aizawl (18), Lunglei (9) and Serchhip (2). Under the department of social welfare, numbers of 736 disabled persons, 372 handicapped women and 25,466 old age pensioner were assisted during 2012-15.

Table 3.3.25 Indicators of Social Welfare Development in Mizoram (2014-2015)							
Sl No	District	Number of ICDS projects	No of Anganwadi centers	No of day care centers	Number of disabled persons assisted	No of handicapped women assisted	No of old aged pension beneficiaries
1	Mamit	3	282	0	78	32	2058
2	Kolasib	2	137	0	49	22	1320
3	Aizawl	6	544	18	240	107	9213
4	Champhai	4	275	0	74	46	2754
5	Serchhip	2	160	2	47	58	1562
6	Lunglei	4	418	9	143	68	5265
7	Lawngtlai	4	302	0	60	19	2057
8	Saiha	2	126	0	45	20	1237
Source: Statistical Abstract of Mizoram, 2015							

Table 3.3.26 Level of Social Welfare Development in Mizoram (2014-2015)						
Sl No	District	Score	Rank	Level	Score	District
1	Mamit	-1.90	5			
2	Kolasib	-4.63	7	Very high	Above 4.5	Aizawl
3	Aizawl	12.21	1	High	2.5 to 4.5	Lunglei
4	Champhai	-0.58	3	Medium	-2.5 to 2.5	Champhai, Lawngtlai, Mamit
5	Serchhip	-2.93	6	Low	-2.5 to -4.5	Serchhip
6	Lunglei	4.42	2	Very low	Below -4.5	Kolasib, Saiha
7	Lawngtlai	-1.74	4			
8	Saiha	-4.86	8			

The score value of Aizawl district is 12.21 with first rank among the districts which is categorized under very high level of development, and then followed by Lunglei district with a score value of 4.42. Medium level of development includes - Champhai, Lawngtlai and Mamit districts with a score value of -0.58, -1.74 and – 1.90 respectively. Low level of development district found in Serchhip district (-2.93). Very low level of development found in Kolasib and Saiha districts with a score value of -4.63 and -4.86.

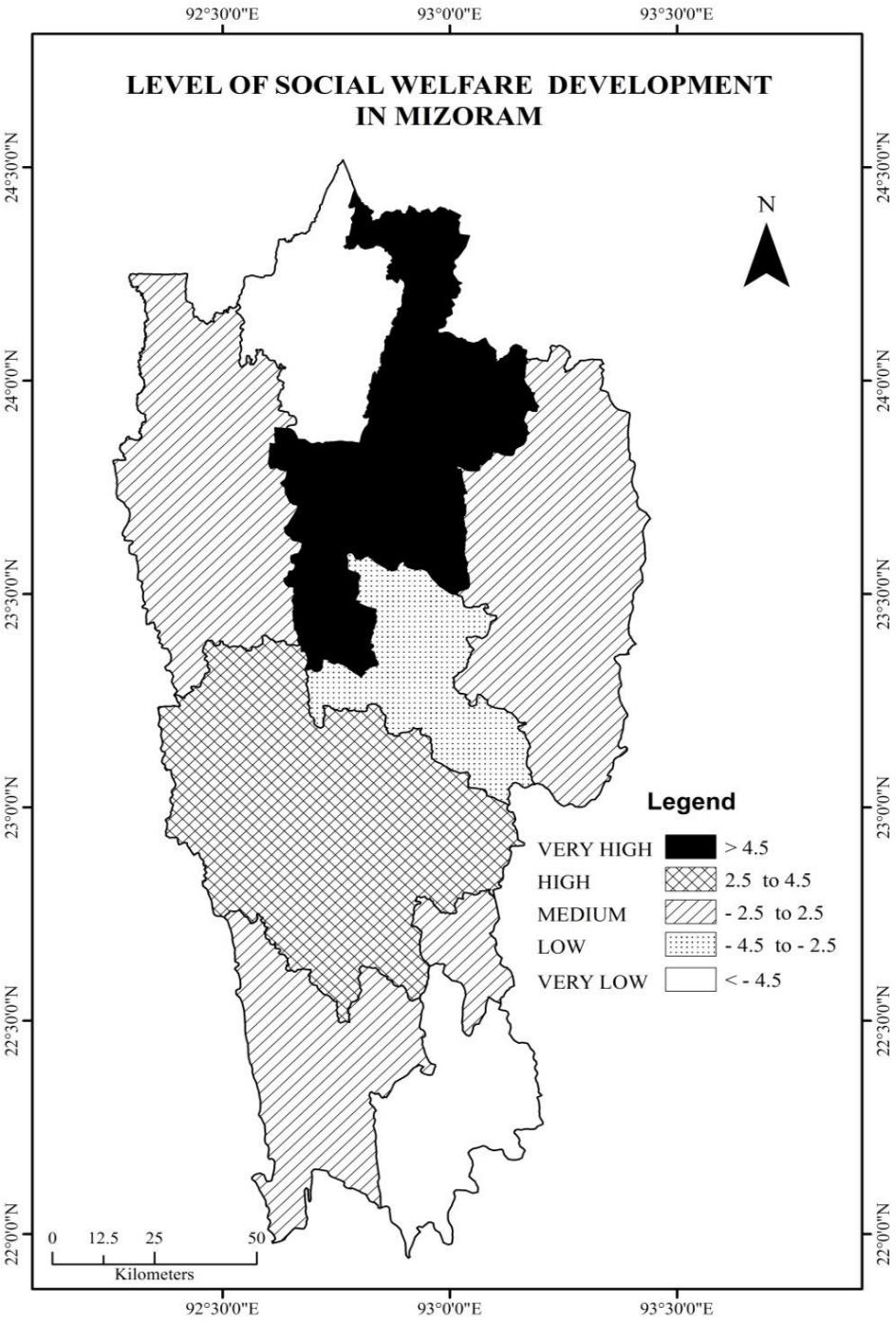

Figure: 3.3.12 Level of Social Welfare Development in Mizoram

3.3.12 Consumer Affairs Development level in Mizoram:

Consumer protection or privilege of consumer is important for protecting and instilling confidence of consumers in different institutions within the country. The laws are able to guarantee safety and quality of the products and services consumers use. Consumer affairs, in this research, mainly concerned about the basic needs of the masses which were handling by the government or private company/firms for daily consume. The basic requirements of the people were, sometime, provided by state government through Public Distribution System (PDS) to uplift the backward economy of the country. The poor people in the state needs PDS as they are relied on this system. Therefore, the indicators of consumer affairs development are number of fair price shops, number of Gas agency and subscribers, and, numbers of petrol pumps in the different districts of Mizoram. Fair price shops is the shop which general people can access to purchase rice and others in a cheaper rate as the government subsidized in some items. The distribution and numbers of these shops were highly contributes better standard of life in the rural areas. During 2014-15, 1,220 fair price shops are there in different districts, of which 298 (24.42 per cent) were concentrated in Aizawl district. The second largest numbers of these shops were found in Lunglei districts (233) followed by Champhai (187). Only 65 shops are there in Kolasib district. Like other districts, Lawngtlai, Saiha and Mamit districts possesses 114, 117 and 106 shops under Food, Civil Supply and Consumer Affairs Department, Government of Mizoram.

The number of Gas Agency and number of Liquefied Petroleum Gas (LPG) domestic subscribers directly depends on the economic conditions of the people but availability, regularity and accessibility depends on agency and state government in some

respect. There are 50 Gas agencies in the state with total subscribers of 2,55,996 during 2014-2015. Out of the total subscribers, 54.21 per cent were booked within the district of Aizawl. Lunglei has second largest number of subscribers of 39,479 sharing 15.42 per cent among. 8.73 per cent of the subscribers are found in Champhai district. Only 5.13, 4.9, 4.1 and 2.45 per cent possessed LPG subscribers in the districts of Kolasib, Lawngtlai, Saiha and Mamit. There are only 26 petrol pumps, of which14 are running within the district of Aizawl. 3 petrol pumps are there in Kolasib district. Champhai, Serchhip and Lunglei districts having 2 petrol pumps each. Only 1 petrol pump is functioning in each district of Mamit, Saiha and Lawngtlai.

Table No 3.3.28 Indicators of Consumer affairs in Mizoram (2014-15)

Sl No	District	Number of Fair Price Shops	No of Gas Agency	No of LPG Domestic Subscribers	No of Petrol Pumps
1	Mamit	106	4	6294	1
2	Kolasib	65	3	13152	3
3	Aizawl	298	18	138799	14
4	Champhai	187	7	22361	2
5	Serchhip	100	4	12591	2
6	Lunglei	233	9	39479	2
7	Lawngtlai	114	3	12583	1
8	Saiha	117	2	10737	1

Source: Statistical Abstract of Mizoram, 2015

Table 3.3.27 Level of Consumer Affairs Development in Mizoram (2014-15)

Sl No	District	Score	Rank	Level	Score	District
1	Mamit	-2.10	6			
2	Kolasib	-2.20	7	Very high	Above 2.1	Aizawl
3	Aizawl	8.91	1	High	1 to 2.1	Lunglei
4	Champhai	0.07	3	Medium	-1 to 1	Champhai, Serchhip
5	Serchhip	-1.81	4	Low	- 1 to -2.1	Lawngtlai
6	Lunglei	1.42	2	Very low	Below -2.1	Mamit, Kolasib, Saiha
7	Lawngtlai	-2.05	5			
8	Saiha	-2.24	8			

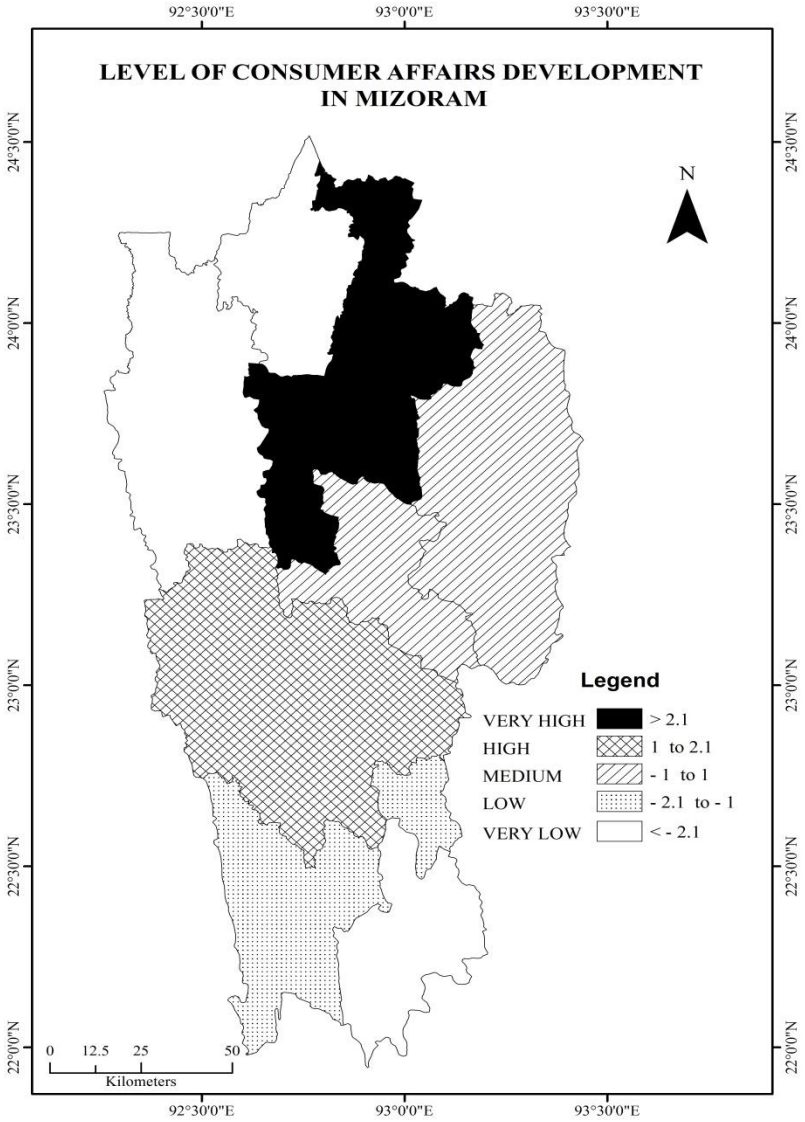

Figure: 3.3.13 Level of Consumer affairs development in Mizoram

The above figure 3.3.13 shows that the highest development is Aizawl district with a score value of 8.91 followed by a score value of 1.42 in Lunglei district falls under the category of very high and high level of development. Champhai and Serchhip districts falls under medium development with a score value of 0.07 and -1.81. Mamit, Kolasib and Saiha districts score a value of below -2 which beads under very low level of development.

3.3.13 Development Level of Working Status in Mizoram:

Occupational structure is undoubtedly implicated in a variety of socio-economic phenomena relating to economic development and social inequalities (Blau and Duncun, 1967). It plays an important role in a diversity of studies, including those related to the level of economic development and social inequalities (Maia and Sakamoto, 2012). Since occupation reflects the individual's position in the technical division of labor, occupational structure is often construed to represent the pattern of socio-economic opportunity in modern societies (Rose, Pevalin and David, 2001). Changes in the occupational structure are also related to changes in the demand for different occupational services, as a result of socioeconomic improvements and technological advances (Blau and Duncan, 1967).

Table 3.3.29 Indicators of working status in Mizoram (2011)

Sl No	District	Numbers of workers (% to total population)			Percentage of total main workers			
		Total Worker	Marginal Worker	Main Worker	Cultivators	Agricultural Laborers	Household Industry Workers	Other workers
1	Mamit	3.59	0.29	3.3	6.91	0.62	0.06	1.89
2	Kolasib	3.34	0.64	2.71	4.34	1.43	0.14	2.93
3	Aizawl	15.92	2.12	13	9.46	2.75	0.81	29.05
4	Champhai	5.5	0.66	4.84	9.24	1.4	0.24	3.66
5	Serchhip	2.95	0.23	2.72	5.25	0.31	0.21	2.02
6	Lunglei	7.14	1.48	5.65	10.95	2.57	0.2	5.15
7	Lawngtlai	4.15	0.68	3.47	7.03	0.76	0.15	3.04
8	Saiha	1.77	0.43	1.34	2.15	0.23	0.08	2.24

Source: Directorate of Census Operation @ Statistical Abstract of Mizoram 2015

Numbers of main and marginal workers, percentage of main workers like cultivators, agricultural laborers, household industry workers and others worker were an indicator for development of working status. Aizawl district is the highest density of

population (112 per sq km) with a total population of 4, 00,309 in 2011 census which also having highest percentage of total worker (15.92). Champhai district was the second position in terms of total numbers of workers. Saiha district was the lowest percentage with 1.77 total workers. According to Census of India, 2011, Main workers are those workers who had worked for major part of the reference period (i.e. 6 months or more). And, those workers who had not worked for the major part of the reference period (i.e. less than 6 months) are termed as Marginal Workers. Highest percentage of main workers from total population was in Aizawl district i.e., 13 per cent followed by Lunglei district). Only 1.34 per cent is lived in Saiha district.

Level of development in working status of Mizoram categorized into five levels such as i) Very high development: only Aizawl district falls under this category with a score value of 13.85. ii) High development: a value of 4.10 scored by Lunglei district categorized under this development. iii) Medium development: Champhai and Lawngtlai districts with a score value of 0.48 and -2.01 iv) Low level of development possessed by Kolasib, Mamit and Serchhip districts with less value of -2.7, -3.4 and -4.1 followed by very low development level of Saiha district with a scored value of -6.1.

Table 3.3.30 Development Level of Working Status in Mizoram (2011)

Sl No	District	Score	Rank	Level	Score	District
1	Mamit	-3.47	6			
2	Kolasib	-2.75	5	Very high	Above 5	Aizawl
3	Aizawl	13.86	1	High	2.5 to 5	Lunglei
4	Champhai	0.48	3	Medium	-2.5 to 2.5	Champhai, Lawngtlai
5	Serchhip	-4.11	7	Low	-2.5 to -5	Kolasib, Mamit, Serchhip
6	Lunglei	4.11	2	Very low	Below -5	Saiha
7	Lawngtlai	-2.02	4			
8	Saiha	-6.1				

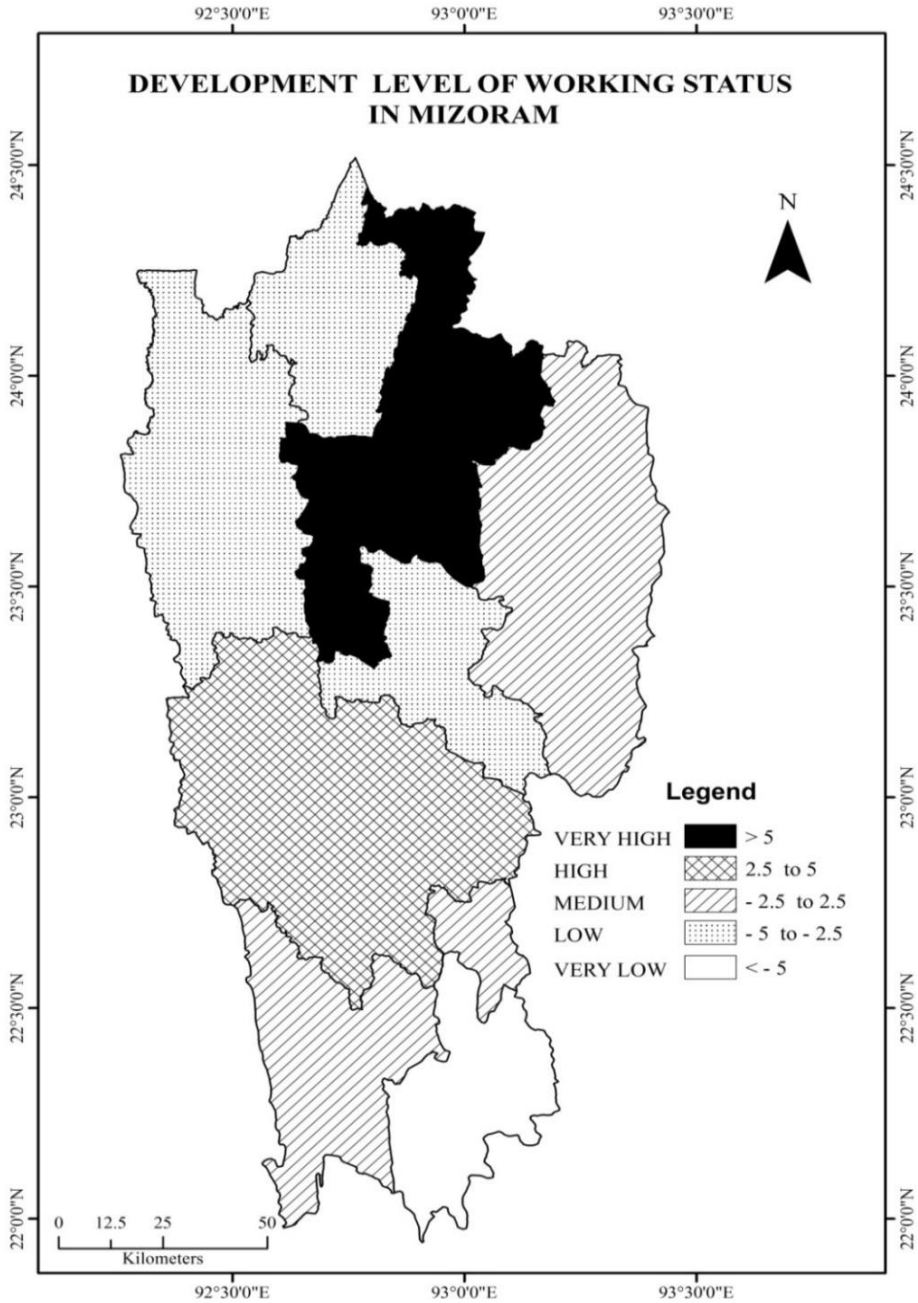

Figure: 3.3.14 Development level of Working Status in Mizoram

3.3.14 Level of Social Security Development in Mizoram:

Policies towards security may become one part of development policy because so far as they enhance security, they will contribute to development; and policies towards development may become part of security policies because enhanced development increases security (Stewart, Frances, 2004). According to Sen (1999), 'Human security is concerned with reducing and – when possible – removing the insecurities that plague human lives'. The definition expanded by the Commission on Human Security in the year 2003 stated that 'Human security in its broadest sense embraces far more than the absence of violent conflict. It encompasses human rights, good governance, access to education and health care, and ensuring that each individual has opportunities and choices to fulfill his or her own potential….freedom from want, freedom from fear and the freedom of the future generations to inherit a healthy natural environment – these are the interrelated building blocks of human and therefore national security'. According to Omoyibo and Akpomera (2013) security is a concept that is prior to the state, and the state exists in order to provide that concept. It is the prime responsibility of the state (Hobbes, 1996). In this light, security embodies the mechanism put in place to avoid, prevent, reduce, or resolve violent conflicts, and threats that originate from other states, non-state actors, or structural socio-political and economic conditions (Stan, 2004).

By considering social security from crime in the study area, four indicators were taken for development analysis such as numbers of police stations – there are 40 police stations in the state of Mizoram during 2014-15, of which 11 stations functioning within the jurisdiction of Aizawl district. 6 police stations were located in Lunglei district followed by 5 stations in Mamit and Lawngtlai district. Kolasib district having 4 police

stations and other 3 stations were found in Saiha, Champhai and Serchhip districts. All the districts are having outposts in their jurisdiction except Serchhip district, the southern part of Mizoram - Saiha having 3 outposts. 2 outposts of each are there in Aizawl, Lunglei and Lawngtlai districts. Only three districts possessed check-posts mainly in the border areas of west and east in the state like Kolasib, Mamit and Champhai districts. Aizawl has the highest number of wireless stations with total number of 33 stations while Serchhip district has only 4 stations.

Table -3.3.31 Indicators of Social Security Development in Mizoram (2014-15)

Sl No	District	No of Police Stations	No of Outposts	No of Check-posts	No of Wireless Station
1	Mamit	5	1	1	23
2	Kolasib	4	1	3	13
3	Aizawl	11	2	0	33
4	Champhai	3	1	2	7
5	Serchhip	3	0	0	4
6	Lunglei	6	2	0	8
7	Lawngtlai	5	2	0	7
8	Saiha	3	3	0	5

Source: Statistical Abstract of Mizoram, 2015

Table 3.3.32 Level of Social Security Development in Mizoram

Sl No	District	Score	Rank	Level	Score	District
1	Mamit	0.70	6			
2	Kolasib	1.07	2	Very high	Above 1.5	Aizawl
3	Aizawl	4.14	1	High	0.5 to 1.5	Kolasib, Mamit
4	Champhai	-0.75	7	Medium	-0.5 to 0.5	Lunglei
5	Serchhip	-3.84	8	Low	-0.5 to -1.5	Saiha, Lawngtlai, Champhai
6	Lunglei	-0.17	3	Very low	Below -1.5	Serchhip
7	Lawngtlai	-0.64	5			
8	Saiha	-0.50	4			

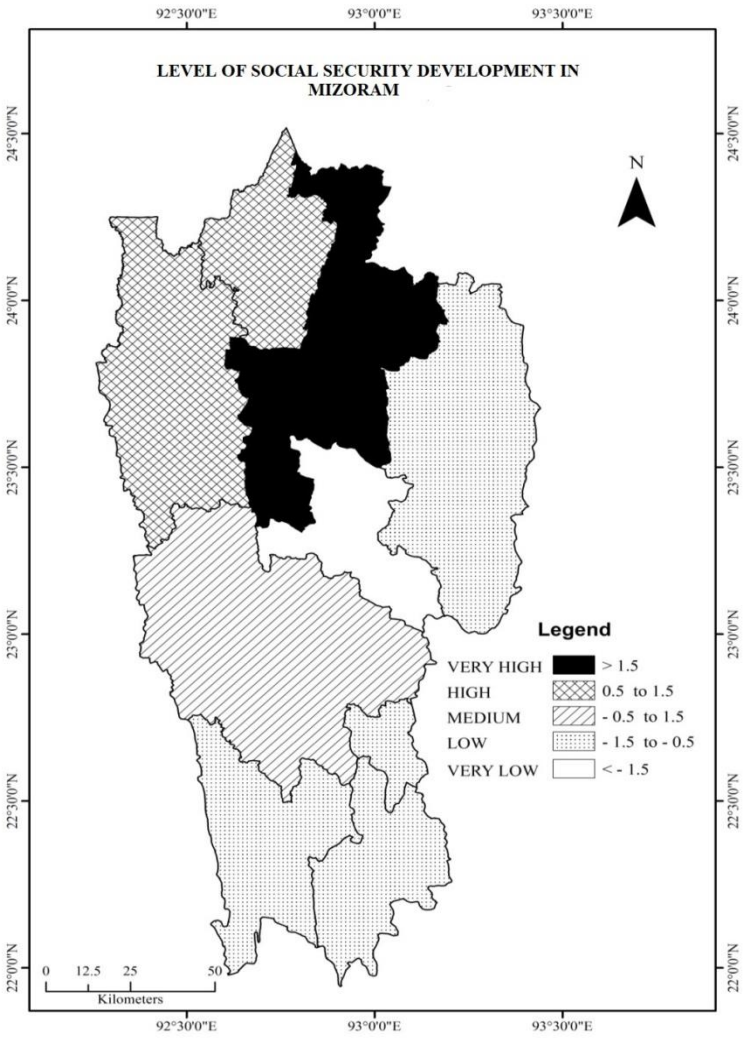

Figure: 3.3.15 Level of Social Security Development in Mizoram

The highest value scored by Aizawl district (4.14), categorized as very high level of development. The second highest developed districts found into Kolasib and Mamit with a score value of 0.70 and 1.07 falls under high level of development. Medium level of development recorded by Lunglei district (-0.17), and followed by Saiha (-0.50), Lawngtlai (-0.64) and Champhai (-0.75) districts which ensue under low level of development. The lowest level of development in terms of social security found in Serchhip district (-3.84).

3.3.15 Level of over-all Socio-Economic Development in Mizoram:

The level of development cannot be evaluated fully by any single indicator variable. There are 14 dimensions with a total 71 indicator variables. All the final score of each dimension were used as final indictor's variables, and, then standardized of each indicator variables to obtain normalize value using Z-score techniques from SPSS. After obtaining standardized value, composite or summation of all scored to get the final product of the state. Following the level of socio-economic development in the districts of Mizoram, and broadly be classified into five levels:-

i) Very High Development: The score value showed that Aizawl district (22.43) is comparatively the most developed district in the state. Higher level of development is attributed to the presence of Aizawl city and other notified towns with a large number of populations. Historical, geographical and political factor also influences the socio-economic development directly or indirectly in this region. A capital city plays a vital role in various indicators of development as it acts as a growth centers in the state. It is administrative, trade, marketing, banking and education centres, and also advance in transport and communication which promote high standard of population.

ii) High Development: Lunglei (4.26) and Champhai (3.25) districts falls under high level of development with second and third rank amongst the districts. Lunglei district is the largest area, endowed with vast cultivable land and second most populous district ensures a high degree to develop economic status of the people. Geographical location of Champhai district has had opportunity to improve trade and commerce connecting with international border trade centres. Largest wet rice cultivaable area of Champhai valley promotes sustainable development of inhabitants and its hinterland. Other important notified towns like Khawzawl, Biate and Khawhai

contributes a lot of development as function as unban structure. Suitable climatic condition of eastern region attains enormous earnings through viticulture.

iii) Medium Development: Kolasib district (-2.50) was fouth rank in level of development which has geographical advantage to connect with neighboring state by means of commendable communication routes. This laudable transport routes extends a cheap supply of goods and material, quick-witted marketing for agricultural products and allied activities in the region, upkeep small entrepreneurs in the district. The western region has been achieving agriculture and fisheries with cottage industry begun to endorse agro-based industry and plantation cultivation for regional development under the aegis of government and non-governmental institution.

iv) Low Development: Serchhip district score a value of -5.39 which falls under fifth rank with low level of development. The highest literacy rate in the districts of India (2011 Census) was score a high value in term of educational development, but, other sectors also contributed the final output. This district is highly potential in river based farming which brings a prosperous outlook by using riverine projects. The core region of the district has high development while the periphery areas of the district still lying infantile stage of development.

v) Very Low Development: The three districts – Mamit (-6.83), Saiha (-7.20) and Lawngtlai (-8.03) falls under very low level of development. They were mostly found in the periphery and border area which has insufficient transportation facilities, low level of literacy, and scrawny mass-media exposure with high concentration of different migrant small ethnic groups in the state. Among these three districts, two of them (Lawngtlai and Saiha) were recorded the lowest and second lowest districts with having unique administration - Autonomous District Council under 6th Scheduled of the Indian Constitution.

Table 3.3.33 Level of over-all socio-economic development in Mizoram (2014-2015)						
Sl No	District	Score	Rank	Level	Score	District
1	Mamit	-6.83	6			
2	Kolasib	-2.50	4	Very high	Above 5.5	Aizawl
3	Aizawl	22.43	1	High	2.4 to 5.4	Lunglei, Champhai
4	Champhai	3.25	3	Medium	-2.4 to 2.4	Kolasib
5	Serchhip	-5.39	5	Low	-5.4 to -2.4	Serchhip
6	Lunglei	4.26	2	Very low	Below -5.5	Mamit, Saiha, Lawngtlai
7	Lawngtlai	-8.03	8			
8	Saiha	-7.20	7			

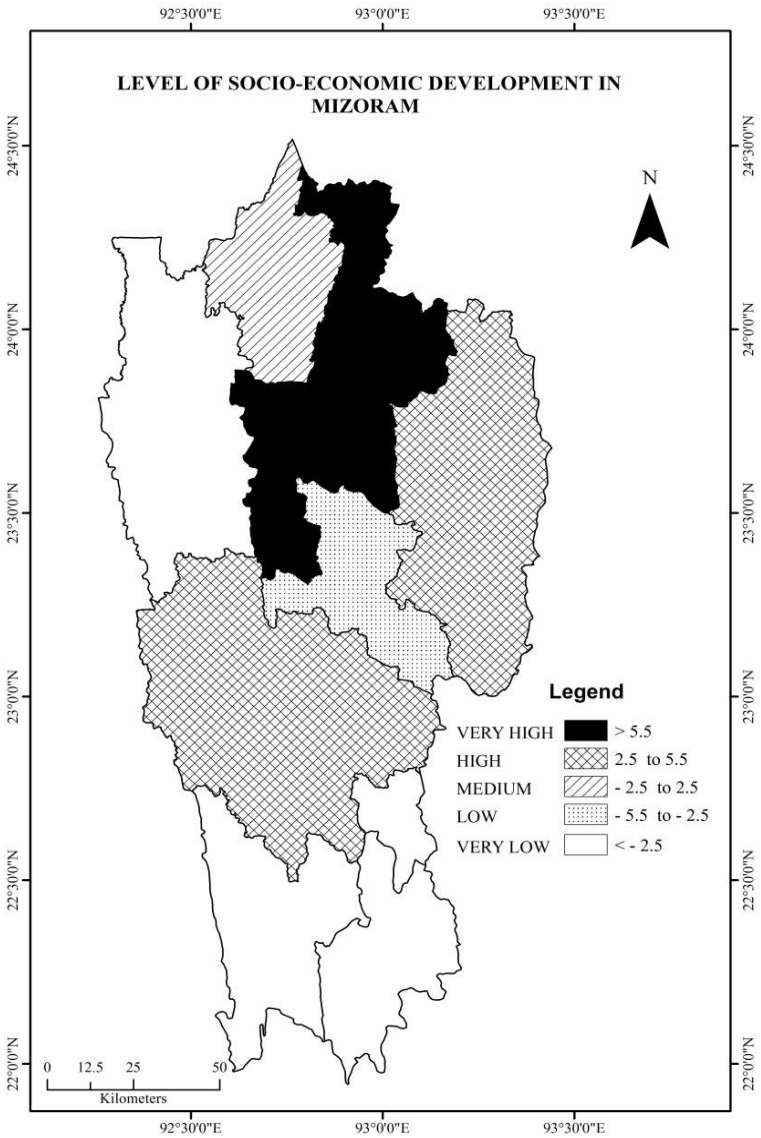

Figure: 3.3.16 Level of over-all Socio-Economic evelopment in Mizoram

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CHAPTER – IV
DISPARITY IN SOCIO-ECONOMIC DEVELOPMENT OF LAWNGTLAI DISTRICT

4.1 Introduction:

Lawngtlai village was established by Haihmunga Hlawncheu, a Lai Chief in 1880. It has been named 'Lawngtlai' as one day the Chief Haihmunga, Hlawncheu seized a boat that was drifting down Kaladan river hence the name Lawng and tlai, which means *Lawng* (boat), and *tlai* (seized) (Chhuanawma, 2006). When the five more districts were carved out from the already existing three districts which were created in 1972, the name of this village was taken as one of the name of districts i.e., Lawngtlai district in 11th November 1998.

Prior to the arrival of the British in the late 19th century, the area which became Lawngtlai district was ruled by local chieftains, whose zones of control were often a single village or small group of villages. The Lushai Hills formed a part of undivided Assam since the pre-independence era and there was no regular administration set up in the Lushai Hills. In 1981, the territory was divided into two administrative sub divisions like North Lushai Hills under the controlled of Government of Assam and the southern part, namely as South Lushai Hills under the administered of Government of Bengal. In 1898 the chief of the Fungkah village attacked a British surveying team and killed four men including Lt. Stewart. The following year the British sent in a punitive expedition to pacify the area. Lawngtlai district came under the direct control of the British after the expedition of 1889 by the British. Lawngtlai District was incorporated into the South Lushai Hills and administered by the Lieutenant Governor of Bengal. As a result of the Chin-Lushai Conference held at Calcutta in 1898, the two Lushai hills were merged into the Lushai Hills District and were administered as part of Assam with effect from 1st April, 1898. In 1919, the Lushai Hills along with some of the other hill districts were declared as

‘backward tracts’ under the Government of India Act,1919, and in 1935 this denomination was changed to ‘Excluded Area’ or Partially Excluded area. The Cabinet Mission suggested that there should be an Advisory Committee on the rights of the citizens, minorities and tribal and excluded area, and, this committee appointed a sub-committee known as the North East Frontier (Assam) Tribal and Excluded Areas Committee under the chairmanship of Gopinath Bordoloi. After a long and heated debate in the Constituent Assembly regarding the Bordoloi Committee Report, the Sixth Schedule was emerged in the Constitution.

The Government of India initiated to set up an interim advisory council in the hills district of Assam, elected their representatives and, changed into Advisory Committee in 1949 which functioned till 1951. In 1952, the creation of the Lushai Hills District Council removed the last power of the local chieftains. The Lushai Hills District Council came to be known as Mizo District as per the Lushai Hills District Act, 1954. At the meantime, Regional Council called Pawi Lakher Regional Council (PLRC) was inaugurated on 23rd April 1953 and continued function till it was further trifurcated into three regional councils like Pawi Regional Council (PRC), Lakher Regional Council (LRC) and the Chakma Regional Council (CRC) on 2nd April 1972. The PLRC was the root from which the present three Autonomous District Councils of Mizoram evolved. With the attainment of the Union Territory status by the Mizo District ‘Mizoram’, the three regional councils were also upgraded as a full-fledged Autonomous District Council such as Lai Autonomous District Council (LADC), Chakma Autonomous District Council (CADC) and Mara Autonomous District Council (MADC) with effect from 29th April 1972 and remained a part of it when the state of Mizoram was created in 1987 by the Constitution (53th Amendment) Act of 1986.

Lawngtlai district has uniqueness and peculiarity as there are two Autonomous District Councils - the Lai Autonomous District Council (LADC) and the Chakma Autonomous District Council (CADC) with their headquarters at Lawngtlai and Chawngte (Kamalanagar) respectively. Having separate autonomous legislative, executive and judicial functions, the Lais and the Chakmas administer their respective autonomous regions in accordance with the provisions of the Sixth Schedule to the Constitution of India. Originally, part of Chhimtuipui District, the area that became Lawngtlai District was divided into two rural development blocks: the Lawngtlai Rural Development Block with headquarters at Lawngtlai and the Chawngte Rural Development Block with headquarters at Chawngte and then became a separate district on 11 November 1998 under government of Mizoram divided into four Rural Development Blocks like Lawngtlai Rural Development Block, Bungtlang 'South' Rural Development Block, Chawngte Rural Development Block and Sangau Rural Development Block. The town of Lawngtlai is the headquarters of the district.

The inhabitants of the district are mainly the small ethnic groups like Lai, Chakma, Bawm, Pang and Bru who are among the minority communities have different folk dances and folk tales of their own. The western parts of Chakma and Bru dominated area have had various backward classes with Buddhism followers whereas the southern side i.e. Chamdur area mostly occupied by Pang, Bawm and Tlanglau community and eastern side where Lai occupied region prevailing Christianity as their major religion. The main occupation is cultivation and the rural population largely depends on agriculture for their subsistence. The physical feature is mainly hilly except with long narrow strip of low lying area along the western side of Chamdur Valley.

The Lais are cognate ethnic unit, stemming from the Kuki-Chin group of Assam Burma, a branch of the Tibeto – Burman family are one of the largest among the Zo ethnic group of tribes. The origin of Lai chieftainship was traced back to Simpi in Chin Hills and scattered in different directions according to their own way. They were established many villages in various places ruled by chiefs and thirst for territorial expansion. According to Doungel (2015), the Lai chief dominated the political scene of Chin Hills and the whole Chin Hills was under their overwhelming political and diplomatic influence. The Lai chief were quite ambitious in extending their chiefdom even beyond Chin Hills which they accordingly pursued by expanding their political dominance. They extended their chiefdom in Lushai Hills and Bangladesh. The first group of migration of Lais was led by Vanhnuaithlira Hlawncheu followed the course of Chhimtuipui river and established villages at Sangau and Pangkhua in 1773 (Lianzuala, 1999). The second group of migration was led in different sub-groups by Phunhnawma Tlangchhan, the native of Chawngthia village of Chin Hills crossed Kolodyne River and established village in South Vanlaiphai, Sangau and Vawmbuk (Chinzah, 2003). The third group of migration of Lais to the Lushai hills comprised of Chinzah and Khenglawt from Lungzarh; and Hnialum, Fanchun, Mualchin and Zinhlawng from Khuafo (Doungel, 2015). The fourth and latest group of migration of Lais to the present areas was led by Hlawngchhing chief, from Thantlang and they settled down in Chhuarlung Hills, Serkawr and Saiha area (Hengmang, 1988).

The name Chakma derives from the Sanskrit word Sakthiman, which means beholder of power (Pamela, 1976). This name was given to Chakmas by one of the Burmese kings during the Bagan era. Burmese kings hired Chakmas as translators of Buddhist Pali texts (Pali or Magadhan is a Middle Indo-Aryan language native to the

Indian subcontinent. It is widely studied because it is the language of the Pāli Canon or Tipiṭaka, and is the sacred language of some religious texts of Hinduism and all texts of Theravāda Buddhism). As employees of the king, the Chakmas wielded power in Burmese court disproportionate to their number. The Burmese people still refer to Chakmas as Sak or Thit, which are shortened and corrupted forms of Sakthiman. At one stage, the accepted name of the tribe was Sakma. Later, it was further altered to 'Chakma' (Francis, 1992).

Chakmas are Tibeto-Burman tribes which are closely related to some tribes in the foothills of the Himalayas. They are believed to be originally from greater Arakan Yoma North, presently Chin State, who later on immigrated to Bangladesh in the fifteenth century (Talukdar, 2010), and, most of the present settler in north east India are migrated from Bangladesh in 1960's. A large number of Chakma people who live in Lawngtlai district are mainly migrated from Chittagong Hill Tracts area in the Chattogram Division of southeastern Bangladesh during 1970's when Indo-Pak war and the period of insurgency.

The Pang, Bawm and Bru are the major other tribes in Lawngtlai district. They are found largely in the Chamdur valley of Bungtlang S rural development block and some villages in Chawngte and Lawngtlai rural development block. They have no separate regional self-government or autonomous body of their own. Together with the Bawm and Tlanglau, they have been struggling to be recognized as a separate tribe of Mizo who were migrated before the Lushai people in Mizoram, migration from south Asian region. They have their own culture under the chief in their own respective villages. Small group of Reang or Bru are migrated from Bangladesh and mostly settled in western belt of Mizoram.

4.2 Physical and Environmental setting of Lawngtlai District

The physical and environmental setting includes the natural conditions of the earth surface like location, demography, slope, relief feature, drainage, land use/land cover, climate and vegetation in the present study.

4.2.1 Location:

Lawngtlai district is one of the districts of Mizoram, situated in the south western part having international boundaries with Bangladesh to the west and Myanmar to the south and bounded by Lunglei and Saiha districts to the north and east. It lies between 92.30˚ - 93˚ E longitude and 21.58˚ – 22.60˚ N latitude. The District headquarters – Lawngtlai is connected by National Highway No.54 and it is about 296 kms from Aizawl. The total geographical area is 2557.1 sq km and accounts for 12.13 per cent of the total geographical area of the state of Mizoram.

4.2.2 Demography:

According to 2011 census, it has a population of 1, 17,894 of which the density of population is 46 per sq. km. Its population growth rate over the decade of 2001-2011 was 34.08 per cent with a sex ratio of 945 females per 1000 males, and a literacy rate of 65.9 per cent which is the lowest percentage amongst the district of Mizoram.

Chakma Autonomous District Coumcil area, the western margin of the district engulf by the main religion of Buddhism whereas eastern side of the district i.e. occupied by Lai community prevailing christianity as major religion. The common languages speaks in the district are Lusei, Lai, Chakma and other dialects of small tribes i.e. Pang, Mara, Bru, Bawm etc. These communities have different folk dances, habits and customs of their own.

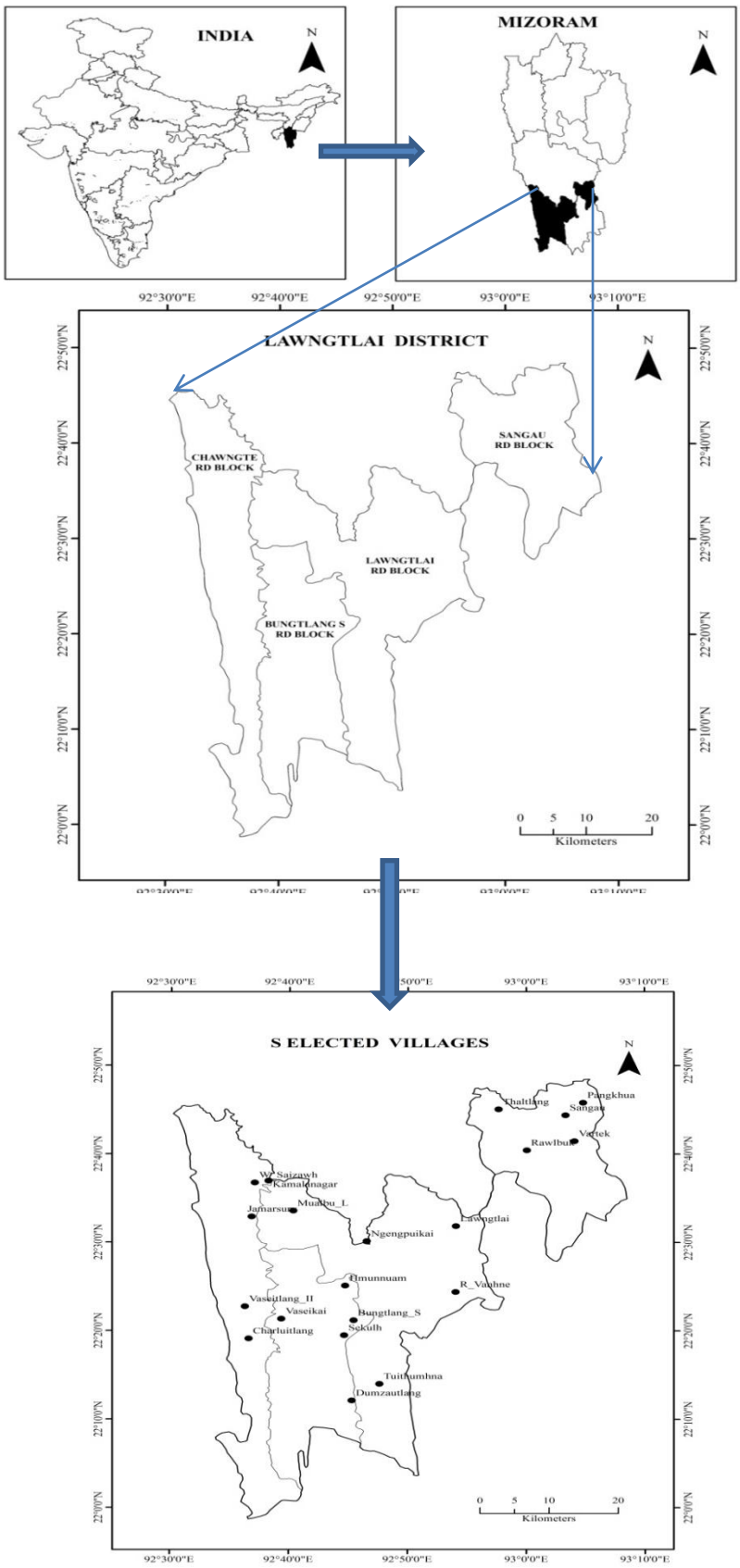

Figure: 4.2.1 Location map of selected villages

4.2.3 Slope:

The slope or gradient of a line is a number that describes both the direction and the steepness of the line (Claphamn and Nicholson, 2009). It is a measure of change in elevation. The concept of slope applies directly to grades or gradients in geography. Slope is the measure of steepness or the degree of inclination of a feature relative to the horizontal plane. It is typically expressed as a percentage, an angle, or a ratio. Through trigonometry, the slope m of a line is related to its angle of incline θ by the tangent function. Thus, a 45° rising line has a slope of +1 and a 45° falling line has a slope of −1. The grade (also called slope, incline, gradient, mainfall, pitch or rise) of a physical feature, landform or constructed line refers to the tangent of the angle of that surface to the horizontal. It is a special case of the slope, where zero indicates horizontality. A larger number indicates higher or steeper degree of 'tilt'.

As per slope formula in ArcGIS, the slope percentage can be calculated as-

Slope percent = (rise/run)*100

The software classify the degree of slope into four dimensions with representing percentage and area in sq. km. Table 4.2.1 shows that the degree of slopes in Lawngtlai district. The physical feature of this district represents the dynamic characteristics of diverse degrees of slope, very steep to low degrees from eastern to western portion of the region. Based on data given by table 4.2.1, the slope of the region can broadly be classified as under:-

i) Above 45 degrees: The eastern steep slopes of Phawngpui mountain range, also known as Blue Mountain is the highest mountain peak in Mizoram with an elevation of 2,157 m. Phawngpui mountain and its adjoining ranges which slope degree is more than 45, covering an area of only 32 sq. km i.e., 1.25 per cent in the total area located in the central part of Sangau rural development block.

Table 4.2.1 Slope in Degrees of Lawngtlai District, Mizoram		
Degree	Percentage	Area in Sq Km
Below 15	65.62	1678.1
15-30	8.56	219.01
30-40	24.56	628.04
Above 45	1.25	32
	100.00	2557.15

ii) Below 15 degrees: Out of the total geographical area of 2557.1 sq km, 1678.10 sq km is covered by fertile and alluvial soil in the low lying region of the riverine area such as Tuichawng, Sekulh and Chhimtuipui rivers drained in the west and southern part which lies in the jurisdiction of Bungtlang S' and Chawngte rural development block. These riverine area play an important role in the economy of the people but some patch of land are uncultivated due to extreme climatic conditions and sparsely population especially in the south western part of Bungtlang South development block. Below 15 slopes degree is the largest area (65.62 per cent), mostly found in central and western part of the district. A little patch of low land also finds in the northern part of Lawngtlai rural development block.

iii) 15–30 and 30-45 slope degrees: Only 33.12 per cent of the total geographical area covering an area of 847.05 sq. kms (219.01 sq kms of 15-30 and 628.04 sq kms under 30-45 slope degrees) are mostly found in the hinterlands of the low lying region of the district except the riverine areas in the west.

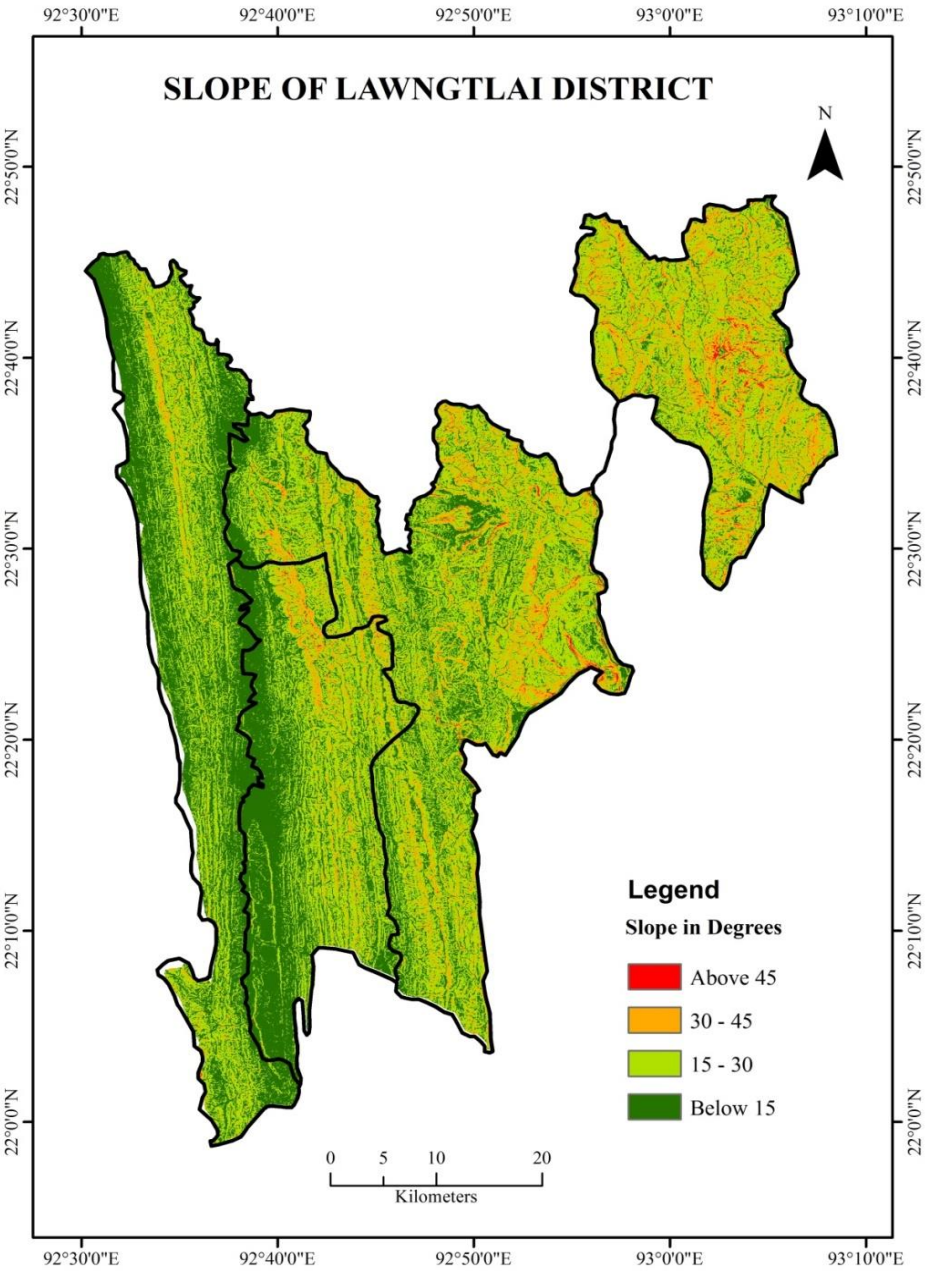

Figure: 4.2.2 Slope map of Lawngtlai District

4.2.4 Relief:

An understanding of relief is central to the study of landscapes and landforms. It is the term geographers use to describe the shape of the land**,** including the height and steepness. It refers specifically to the quantitative measurement of vertical elevation change in a landscape. It is the difference between the highest and lowest elevations in an area. It is also the difference between maximum and minimum elevations within a given area, usually of limited extent (Summerfield, 1991). In physical geography, relief involves the vertical and horizontal dimensions of land surface. It is the lay of the land usually expressed in terms of the elevation, slope, and orientation of terrain features.

The region is characterized by the hilly rugged terrain, the ridges show serrated tops which are highly dissected and separated by intervening v-shaped narrow valleys. The hill ranges aligned north-south direction and the slope aspects are mostly eastern and western with a few exceptions in some parts of the area (ICAR, 2015). The altitude of the area is generally increased towards the east. The hill side slopes of district are steep to very steep and escarpment are common. The western side consists of numerous dissected low hills with strongly sloping to steep slopes. Chamdur valley is the biggest valley.

Table 4.2.2 Relief of Lawngtlai District, Mizoram

Meters	Percentage	Area in sq km
Above 1200	21.83	558.13
900-1200	20.70	529.21
600-900	15.57	398.15
300-600	13.51	345.42
Below 300	28.40	726.24
Total	100	2557.15

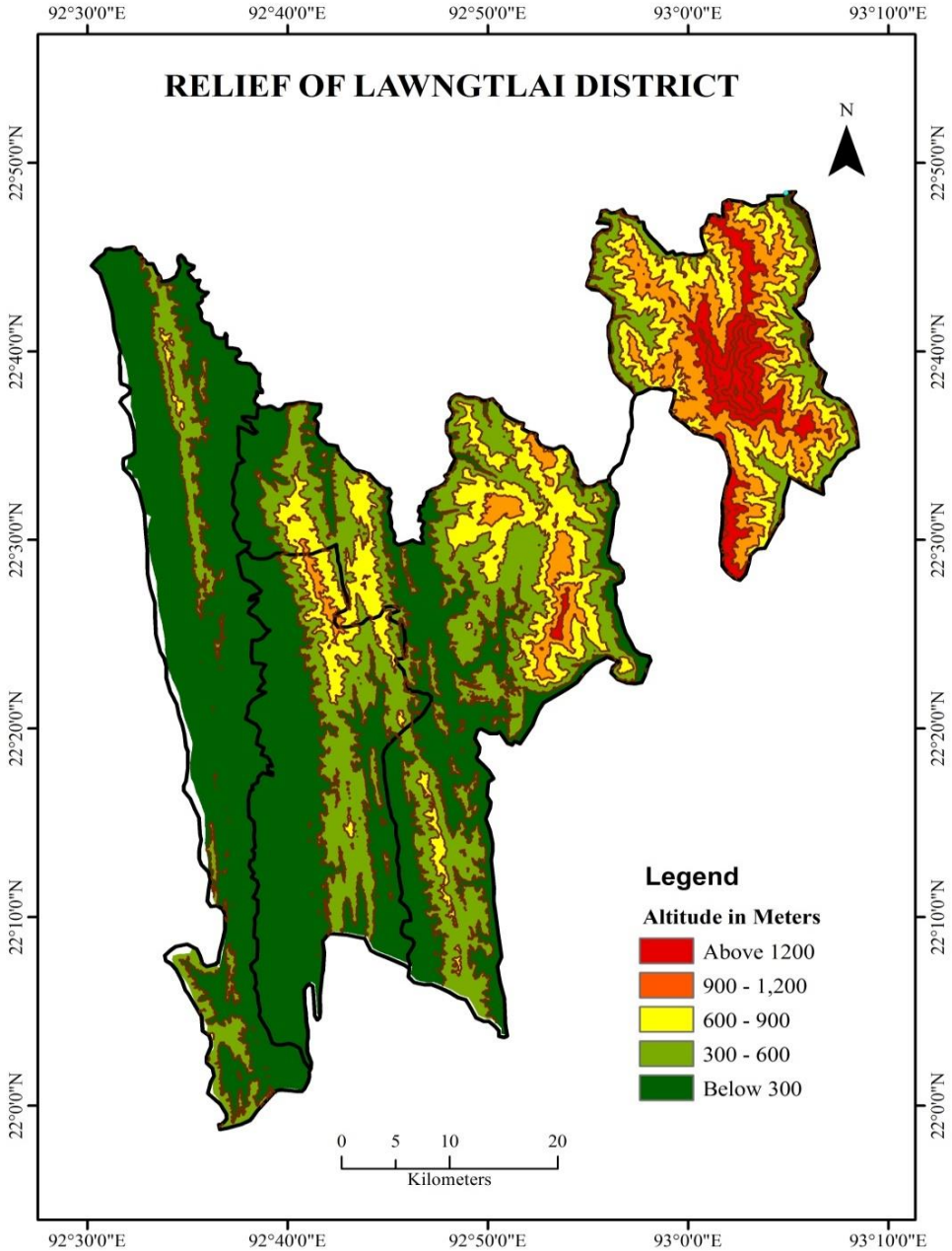

Figure: 4.2.3 Relief Map of Lawngtlai District

The above table 4.2.2 and figure 4.2.3 showed that the proportion of relief or altitude in the district. The topography of Lawngtlai district can be classified into three provinces based upon relief:-

i) Eastern Province: This province includes Phawngpui ranges in the central part of Sangau Rural Development Block and small patch of land in the eastern part of Lawngtlai Rural development block. The total geographical area is 1087.34 sq km (42.52 per cent), of which 20.70 per cent ranging between 900-1200 meters heights, 21.82 per cent of the area lying above 1200 meters. This province includes the altitudes of 900 meters and above.

ii) Central Province: The geographical area of this province is 741.02 sq km including the north eastern and western part of Lawngtlai rural development block, and northern part of Bungtlang S' and also peripheral areas of Sangau rural development blocks. This province includes 29.08 per cent (743.57 sq km) which is ranging between a combination of 600-900 meters (398.15 sq km) and 300-600 meters (345.42 sq km) above mean sea level.

iii) Western Province: This provinces covers a large area of 726.24 sq km (28.4 sq km) includes almost the area of Chawngte rural development block except a small patches in the north which is located lying between River Kawrpui and River Tuichawng. This provinces also includes the alttitudes below 300 meters in the west and eastern part of Bungtlang S' RD block along with west and southern part of Lawngtlai rural development block which drained by river Tuichawng, Sekulhlui, Ngengpui and Chhimtuipui river. It covered 28.4 per cent of the geographical area in Lawngtlai district.

4.2.5 Vegetation:

Lawngtlai district is situated within the tropical belt. The tropical wet-evergreen, mixed deciduous forest and wild banana forests are found. The western part of the region is covered by a thick virgin forest mainly composed of several kinds of bamboo. Host of skima wallichi, Banyan tree, Gulmohar tree, Gamari, Jarus, Champa climbers of different kinds and many types of wild fruits are found in this area. Several kinds of plants and herbs which are good for making herbal medicines are also found in the forest.

Wild animals like wild-boars, bears, monkeys and different kinds of reptiles like python, lizard, tortoise and frogs are found in Ngengpui Wildlife Sanctuary. The population of these animals is gradually decreasing year by year because of illegal hunting, poaching, encroachment and practice of shifting cultivation in the nearby community land. The district is endowed with natural beauty like Phawngpui National park. Abounding with diverse flora and fauna, Phawngpui was declared a National Park covering an area of about 50 sq km. It is famous for its exotic species of flora and fauna especially the orchids and rhododendrons spread within the valleys surrounding an all sides. It is the natural home of a wonderful range of bird life including the rare Blyth's tragopan, falcan, sunbirds, dark-rumped swift and Hume's pheasant, which is Mizoram state bird. The Government allows eco-friendly visit to the national park only during the dry season i.e., permit is open for 6 months from November to the end of April. The rest of the season is left for natural development and rejuvenation.

4.2.6 Drainage:

The Kawrpui River forms the boundary with Bangladesh and Mizoram on the west which flowing northwards and originates from Myanmar (Burma) is one of the tributaries of Khawthlangtuipui. This river plays a very vital role for foreign trade between Mizoram and Bangladesh. Chhimtuipui River also known as Kaladan River flows in southerly direction through Myanmar. It is the biggest river in Mizoram by volume and originates in western part of Myanmar from the village of Vanum at an elevation of 2,325 meters. It enters Mizoram near Sabawngte village from where it flows northward for 138 kilometers till it meets Tiau River. From this point it flows northwest and then flows southwards where Mat and Mengpui River meet (Pachuau 2009). This river is also part of the Kaladan Multi-Modal Transit Transport Project.

Sekulh River drains as a boundary line between Bungtlang S' and Lawngtlai rural development block, flowing southward directions and confluence with Chhimtuipui River in the southern tip. Chawngte River and Ngengpui River are also the two important tributaries which are conducive for cultivation in the northern part of the district.

Tuichawng River is also another important river in Lawnglai district flowing toward south and makes a boundary line of Chawngte and Bungtlang S' rural development block. The river is about 107.87 kilometers. The alluvial deposits on either bank play a crucial part for the growth of primary activities. Many of the farmers in Chawngte rural development block are used it for cultivation of commercial crops, fishing and open-cast mining in and around the river.

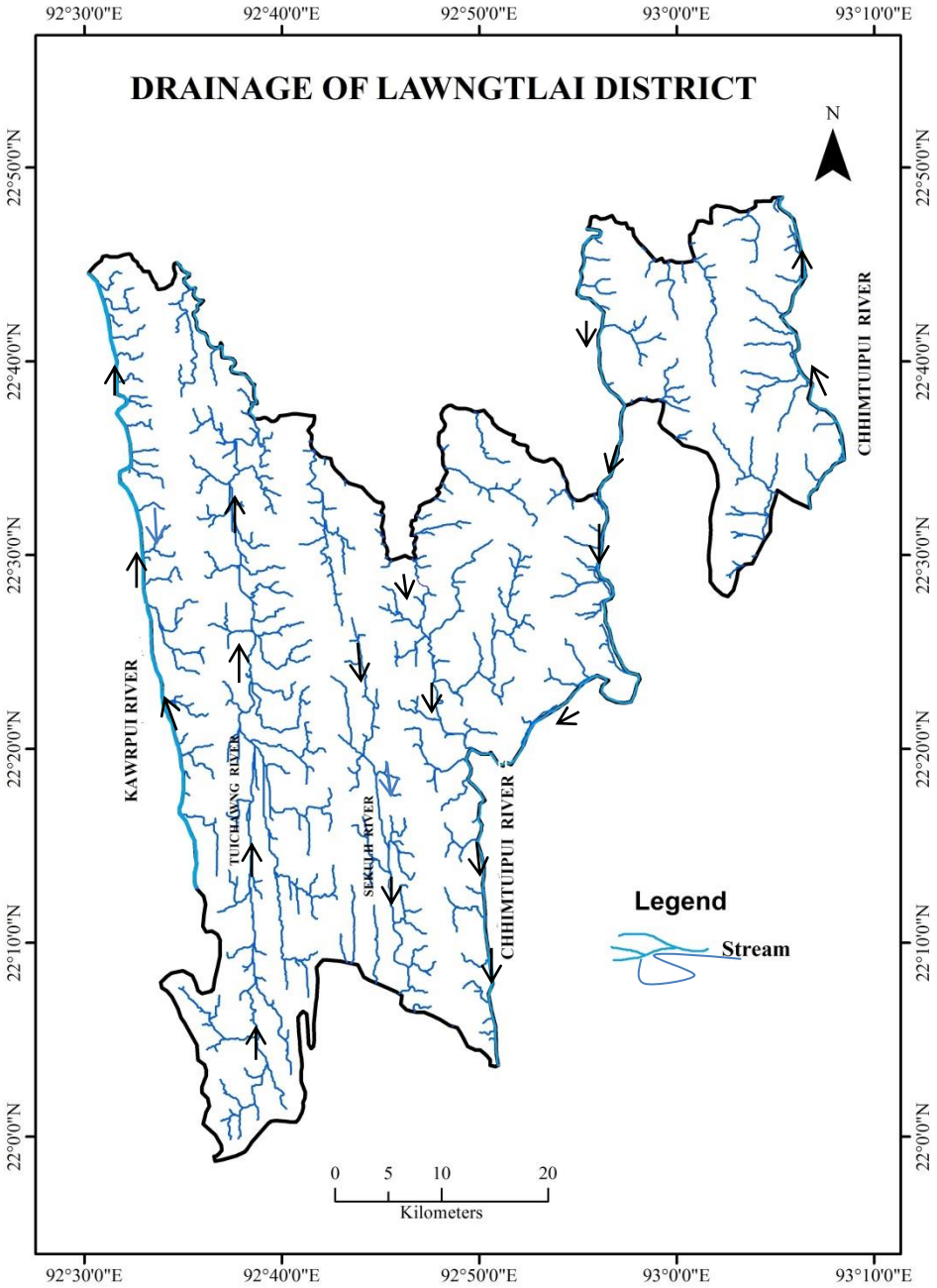

Figure: 4.2.4 Drainage Map of Lawngtlai District

4.2.7 Climate:

Lawngtlai district has a moderate climatic condition. In general, it is neither too hot in summer nor too cold in winter. In winter, the temperature varies from 8°C to 24°C and, summer temperature varies between 18°C and 35°C. The western part of the district has low elevation comparing to the eastern part and hence it experiences a little warmer climate than the eastern part. The hottest period is from March to August.

The district is under the direct influence of south-west monsoon and heavy precipitation is usually received from around first month of May to second week of September. Relative humidity is highest when more than 85 per cent of the south-west monsoon reaches in the region. The average annual rainfall is about 2,558 mm. During the rainy season, it remains heavily clouded which is increases from March onwards. A clear and cool weather starts appearing from September and remains till January next year.

4.2.8 Land use/Land covers (LULC):

Land use/cover studies are multidisciplinary in nature, and thus the accomplices involved in such work are numerous and varied. Although the terms land use and land covers are often used interchangeably, their actual meanings are quite distinct. Land cover is ‘the observed physical and biological cover of the earth's land, as vegetation or man-made features’. In contrast, land use is ‘the total of arrangements, activities, and inputs that people undertake in a certain land cover type’ (FAO, 1997a; FAO/UNEP, 1999). It is the function that humans apply to the land available to them. However, the present study used it terms as an interchangeably due to availability in the same area at a given point of time. When used together with the phrase Land Use / Land Cover (LULC) generally refers to the categorization or

Table 4.2.3 Land use/Land cover in Lawngtlai District, Mizoram		
Land use/Land cover	Percentage	Sq.km
Built-up land	1.88	48.17
Dense Forest	9.64	246.45
Moderate Forest	20.24	517.44
Open Forest	53.27	1362.3
Cropland	7.39	188.98
Fallow Land	6.81	174.1
Wasteland	0.51	12.93
Water body	0.27	6.78
Total	100	2557.15

classification of human activities and natural elements on the landscape within a specific time frame based on established scientific and statistical methods of analysis of appropriate source materials (www.satpalda.com).

The growth and development of society depends on its social and economic status. This type of information provides better understanding the aspects of land utilization, formation of policies and programme required for development planning. Classifications of land use/land cover in the study area are different kinds as under:-

i) Forest: These are the areas bearing an association predominantly of trees and other vegetation types. It contributed the predominant land cover category in the study area and it covers an area of about 2126.19 sq. km (83.14 per cent). The forest area can be divided into three sub-groups:-

a) Dense Forest: This type of forest is mainly found in the eastern highland region of Phawngpui ranges and the south western part of Chamdur valley along with the central part of Sekulh and Ngengpui riverine area. It covers an area of 246.45 sq. km (11.59 per cent).

b) Moderate Forest: Moderate forest covers around 24.33 per cent (517.44 sq km) of the total forest area. This type of forest is mainly found in the central and south western part of the district.

c) Open Forest: This type of forest is the largest forest covers found in the district with 64.07 per cent of the total forest cover (2126.19 sq km). It is mainly found in Kawrpui and Tuichawng riverine areas in the western region and small patches of land covering in the north of Sangau RD block, and also found in central part of Lawngtlai RD block. It covers an area of about 1,362.30 sq km.

ii) Built-up Land: Built-up Land is characterized by intensive land use where the landscape has been altered or used by human activities. It is described as an area of human habitation developed by virtue of non-agricultural use. It consists of buildings, transport, and communication, utilities in association with water, vegetation and vacant lands (Thomas and Ralph, 2000). Only 1.88 per cent (48.17 sq km) is use for settlement area.

iii) Crop Land: In the present study, the crop land occupies an extent of about 188.98 sq. kms (7.39 per cent). As shifting cultivation is practice in various part of the district, crop land was also found in various parts in a scattered form. Meantime, a few pockets of Ngengpui and Tuichawng rivers provide permanent cultivation, practicing commercial crops as the native people used for it their subsistence.

iv) Fallow Land: A piece of land that is already used for farming but that is left with no crops on it for a season in order to let it recover its fertility, covers about 174.10 sq. km (6.81 per cent) in the district.

v) Wasteland: It may be described as degraded land underutilized lands most of which could be brought into productive use with proper soil and water management practices (Ghosh, et al., 1996) or the land which is not available for cultivation due to

natural causes. This type of land covers only 0.51 per cent (12.93 sq km) in high altitude region of the district.

vi) Water Body: It covers only a small portion of the land, only 0.27 percent (6.78 sq. km) covers for perennial and fresh water from rivers.

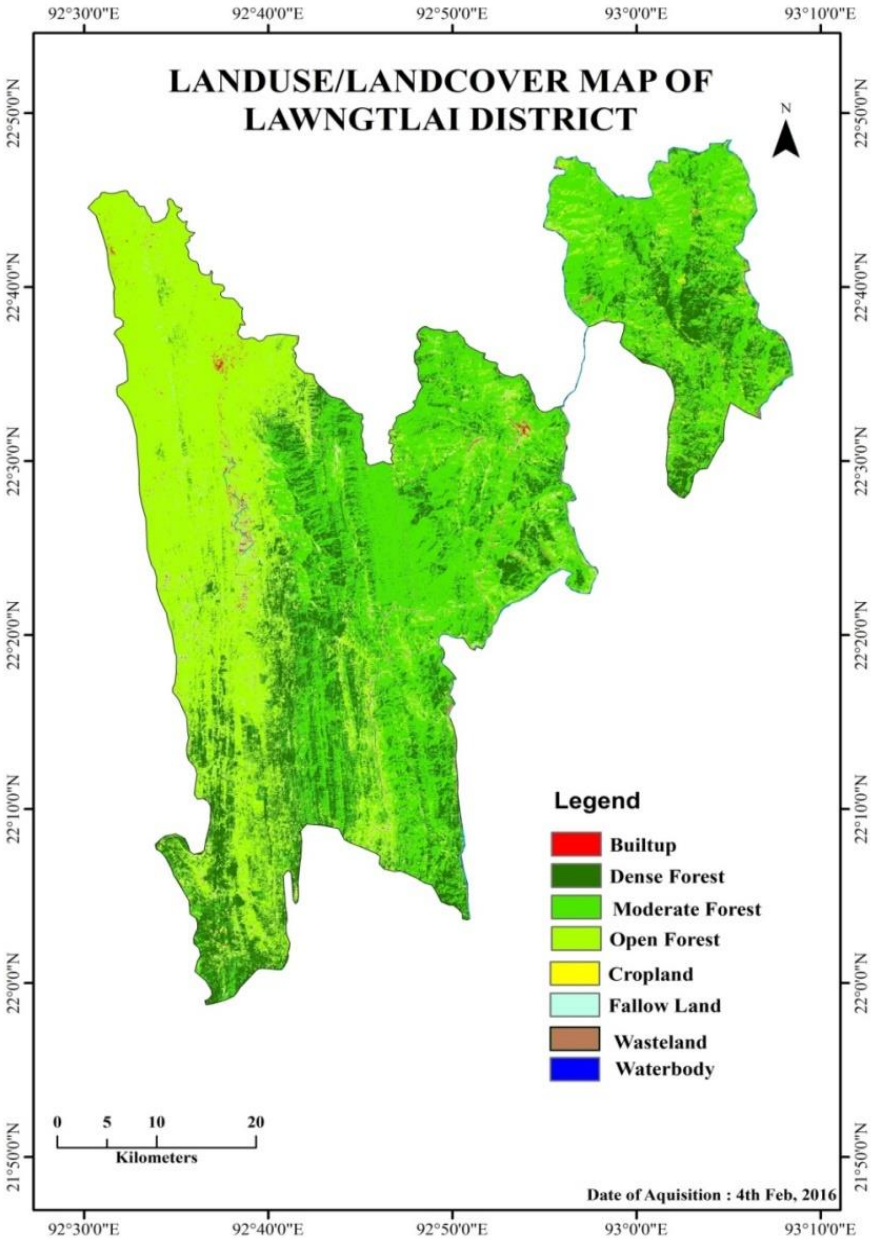

Figure: 4.2.5 Land Use/Land Cover Map of Lawngtlai District

4.3 Disparity in Socio-Economic Development of Lawngtlai District:

Development is a multi-dimensional process that involves reorganization and reorientation of the entire economic and social system (Sultan and Aktar, 2016). Although resource transfers and development programme are being executed in the backward regions of the state through various measures since the statehood, it has been observed that the spatial disparity in terms of development is increasing over time, and, requires a balanced resource development in a planned way with main objective of enhancing the quality of life of people by providing the basic necessities as well as improving their social and economic well-being. Socio-economic development is a process of betterment for a large human group or society including both economic and social transformation.

It is sometime frequently concentrated in small geographic areas whereas others are excluded or benefit much less. Advanced areas are often those which are better endowed to start with, and, associated with the concentration of economic activity or with being in more favorable location – like proximity to transportation, nearness to manufacture, better ecological environment or simply a politically favored area. The high disparity with low social and economic development of the state was found at Lawngtlai district which gives stride challenges of an attentive investigation of it. The study of inequality from the economic perspective cannot be analyzed as a single topic or even as a phenomenon to be approached from a generalized theoretical view when trying to understand the correct way to be interpreted, measured or even defined **(**Charles-Coll, 2019)**.** With an intensive complimentary, intra and inter-block disparity were calculated using Z-score and over-all socio-economic development in the selected villages was analyzed by using Principal Component Analysis (PCA) and Factor Analysis (FA) from 171 selected indicators from sixteen dimensions.

To calculate PCA and FA, the raw data are transformed into percentage variables and then the variables are converting into normalized or standadized values. After normalized values are obtained for all the indicators, factor loadings and weights are assigned to these normalized values to identify initial Eigen values which are more than one. The Eigen values are used to obtain weights of the variables. Weights are assigned to each indicator to determine the index. After obtaining an index for all components, computed set of indicators to get the output in the form of Eigen values and extracted component matrix, and then used to compute final index for level of development. On the basis of final index, the ranks of all villages and town were classified developmental level into various category.

Before Factor Analysis was done, test of statistics like Kaiser-Meyer-Olkin (KMO) and Barlett's test sphericity were computed to assess the appropriateness using Factor Analysis. The KMO measure of sampling inadequacy is a scale of 0-1 and while the level of significance for Barlett's test of Sphericity should be less than 0.1 (Norusis, 2012).

4.3.1 Disparity of Health Development in Lawngtlai District:

Better health is central to human happiness and well-being. It also makes an important contribution to economic progress, as healthy populations live longer, are more productive and save more. The utilization of healthcare facilities by respondents depend on knowledge and awareness about the existence of these facilities, for which field workers needs to be trained to motivate and make the rural poor awareness. Many factors influence health status and a country's ability to provide quality health services for its people. The impact of better health on development, and, poverty reduction is a vital scenario for sustainable development. In this context, health and

developmental work supports policies that respond to the needs of the meager groups. Marmot found that in England, people living in the poorest neighborhood will, on average, die seven years earlier than people living in the richest neighborhoods (Marmot, 2010). Works with donors to ensure that aid for health is adequate, effective and targeted at priority health problems.

To study the development level of health in the district, two dimensions such as number of health institutions and another nine subjective questions relating to health care facilities and services were used as indicators. Three Hospitals and one Community Health Centre were found in the capital of Lawngtlai town and CADC centers of Kamalanagar village. 2 Primary Health Center were also located in the block centers of Sangau and Bungtlang S' villages. The total medicine shops found in the district were 47. Out of the total number of shops, 21 (44.68 per cent) were possessed by Lawngtlai town, and, 25.53 per cent (12) shops were placed in Kamalanagar village. Only 4 shops are there in Bungtlang S' and 2 are open in Sangau village. Eight villages like Ngengpuikai, R.Vanhne, Tuithumhnar, Vaseitlang-II, Hmunnuam, Pangkhua and Rawlbuk in various part of the district having 1 of each medicine shops in their respective villages. Jamersury, Charluitlang, W.Saizawh, Dumzautlang, Vaseikai, Sekulh, Vartek and Thaltlang villages were not opened medical shop. Dispensaries in the district are found in 6 villages such as Mualbu L, Tuithumhnar, Kamalanagar, Bungtlang S', Sangau and Rawlbuk. There are 15 sub centers while eight villages like R.Vanhne, Kamalanagar, Charluitlang, Dumzautlang, Vaseikai, Sekulhkai, Vartek and Thaltlang are absence in health sub-centers.

Table 4.3.1 Indicators of Health Development in Lawngtlai District (2014-15)							
Sl No	Selected Area	No Health Institutions					
		HosP	CHC	PHC	DisP	MD Shop	SubC
1	Lawngtlai	3.00	0.00	0.00	0.00	21.00	2.00
2	Mualbu L	0.00	0.00	0.00	1.00	1.00	1.00
3	Ngengpuikai	0.00	0.00	0.00	0.00	1.00	1.00
4	R. Vanhne	0.00	0.00	0.00	0.00	1.00	0.00
5	Tuithumhnar	0.00	0.00	0.00	1.00	1.00	1.00
6	Kamalanagar	0.00	1.00	0.00	1.00	12.00	0.00
7	Vaseitlang -II	0.00	0.00	0.00	0.00	1.00	1.00
8	Jamersury	0.00	0.00	0.00	0.00	0.00	1.00
9	Charluitlang	0.00	0.00	0.00	0.00	0.00	0.00
10	W Saizawh	0.00	0.00	0.00	0.00	0.00	1.00
11	Bungtlang S'	0.00	0.00	1.00	1.00	4.00	2.00
12	Hmunnuam	0.00	0.00	0.00	0.00	1.00	1.00
13	Dumzautlang	0.00	0.00	0.00	0.00	0.00	0.00
14	Vaseikai	0.00	0.00	0.00	0.00	0.00	0.00
15	Sekulhkai	0.00	0.00	0.00	0.00	0.00	0.00
16	Sangau	0.00	0.00	1.00	1.00	2.00	1.00
17	Vartek	0.00	0.00	0.00	0.00	0.00	0.00
18	Thaltlang	0.00	0.00	0.00	0.00	0.00	0.00
19	Pangkhua	0.00	0.00	0.00	0.00	1.00	2.00
20	Rawlbuk	0.00	0.00	0.00	1.00	1.00	1.00
Source : Field survey							

HosP = Hospital *DisP = Dispensary*
CHC = Community Health Centre *MD shop = Medicine Shop*
PHC = Primary Health Centre *SubC = Sub Centre*

Table 4.3.2 shows that nine subjective questions relating to family background in health conditions, availability of treatment and adoption of health services and respondents satisfactory level in the selected areas.

4.3.1.1 Intra RD Block disparities in health development:

i) Lawngtlai RD Block: Lawngtlai RD Block is located in the district headquarters and its adjoining region. Even though immensely benefit of administrative and urban function prevails in the region, inequality in term of health is still rampant. Lawngtlai town scored high value of 15.53 while the lowest value of

Table 4.3.2 Indicators of Health Development in Lawngtlai District, 2014-15 (in percentage)

Sl No	Selected Area	1*		2*		3*		4*		5*		6*		7*		8*		9*	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	Lawngtlai	11.01	88.99	8.04	91.96	3.67	96.33	3.50	96.50	4.37	95.63	11.54	88.46	78.67	21.33	18.36	81.64	71.85	28.15
2	Mualbu L	63.16	36.84	0.00	100.00	0.00	100.00	57.89	42.11	5.26	94.74	63.16	36.84	100.00	0.00	57.89	42.11	94.74	5.26
3	Ngengpuikai	47.06	52.94	2.94	97.06	5.88	94.12	5.88	94.12	11.76	88.24	11.76	88.24	61.76	38.24	32.35	67.65	38.24	61.76
4	R. Vanhne	75.00	25.00	6.25	93.75	6.25	93.75	12.50	87.50	31.25	68.75	25.00	75.00	50.00	50.00	50.00	50.00	18.75	81.25
5	Tuithumhnar	40.00	60.00	10.00	90.00	5.00	95.00	15.00	85.00	10.00	90.00	30.00	70.00	55.00	45.00	30.00	70.00	20.00	80.00
6	Kamalanagar	38.30	61.70	43.96	56.04	36.50	63.50	30.85	69.15	24.68	75.32	35.99	64.01	53.73	46.27	64.78	35.22	42.67	57.33
7	Vaseitlang -II	50.00	50.00	2.38	97.62	16.67	83.33	9.52	90.48	4.76	95.24	26.19	73.81	28.57	71.43	33.33	66.67	33.33	66.67
8	Jamersury	57.89	42.11	13.16	86.84	47.37	52.63	63.16	36.84	47.37	52.63	52.63	47.37	39.47	60.53	57.89	42.11	7.89	92.11
9	Charluitlang	25.00	75.00	80.00	20.00	75.00	25.00	10.00	90.00	70.00	30.00	100.00	0.00	30.00	70.00	35.00	65.00	0.00	100.00
10	W Saizawh	72.22	27.78	16.67	83.33	94.44	5.56	16.67	83.33	55.56	44.44	5.56	94.44	5.56	94.44	33.33	66.67	11.11	88.89
11	Bungtlang S'	13.39	86.61	4.46	95.54	5.36	94.64	8.04	91.96	8.04	91.96	25.00	75.00	85.71	14.29	61.61	38.39	64.29	35.71
12	Hmunnuam	40.91	59.09	40.91	59.09	4.55	95.45	9.09	90.91	18.18	81.82	27.27	72.73	63.64	36.36	31.82	68.18	18.18	81.82
13	Dumzautlang	41.67	58.33	4.17	95.83	8.33	91.67	0.00	100.00	20.83	79.17	4.17	95.83	0.00	100.00	16.67	83.33	12.50	87.50
14	Vaseikai	8.70	91.30	2.17	97.83	0.00	100.00	2.17	97.83	6.52	93.48	17.39	82.61	50.00	50.00	19.57	80.43	2.17	97.83
15	Sekulhkai	0.00	100.00	0.00	100.00	0.00	100.00	0.00	100.00	0.00	100.00	33.33	66.67	44.44	55.56	33.33	66.67	0.00	100.00
16	Sangau	27.62	72.38	1.10	98.34	3.31	96.69	3.31	96.69	6.63	94.48	4.97	95.03	66.30	33.70	11.05	88.95	60.77	38.67
17	Vartek	40.00	60.00	0.00	100.00	10.00	90.00	0.00	100.00	30.00	90.00	20.00	80.00	70.00	30.00	50.00	50.00	70.00	30.00
18	Thaltlang	22.22	55.56	16.67	83.33	0.00	66.67	0.00	72.22	11.11	72.22	5.56	77.78	55.56	44.44	38.89	61.11	61.11	55.56
19	Pangkhua	23.73	76.27	1.69	98.31	8.47	96.61	13.56	93.22	11.86	94.92	13.56	94.92	30.51	69.49	18.64	81.36	69.49	30.51
20	Rawlbuk	51.72	48.28	0.00	100.00	3.45	96.55	3.45	106.90	3.45	110.34	3.45	96.55	31.03	68.97	31.03	68.97	62.07	37.93

Source : Field survey

1 = is there any chronic diseases in the family*
2 = is there maternal in the family*
3 = is there prenatal in the family*
4 = is there perinatal in the family*
5 = is there neonatal in the family*
6 = is there infancy death in the family*
7 = did you have medical check-up regularly*
8 = have you any problems while visit medical institution/hospital*
9 = are you satisfied in medical treatment available in your village/town*

– 15.10 scored by R.Vanhne village. The other three villages of Mualbu L, Ngengpuikai and Tuithumhnar falls into medium level of development with a score value of 2.68, 0.48 and -3.61.

Table 4.3.3 Health Development in Lawngtlai RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	Villages/Town
1	Lawngtlai	15.53	1			
2	Mualbu L	2.69	2	High	Above 5	Lawngtlai
3	Ngengpuikai	0.48	3	Medium	-5 to 5	Mualbu L, Ngengpuikai, Tuithumhnar
4	R. Vanhne	-15.10	5	Low	Below - 5	R.Vanhne
5	Tuithumhnar	-3.61	4			

ii) Sangau RD Block: Disparity of development in terms of health is a serious threat in Sangau Rural Development Block. The level of development categorized into three levels such as High, Medium and Low development. Sangau village possessed highest score value of 13.49, and, followed by Pangkhua and Rawlbuk villages. Thaltlang and Vartek villages scored a very low value of -5.29 and -12.16 which falls under low level of development.

Table 4.3.4 Health Development in Sangau RD Block					
Sl No	Selected Area	Score	Level	Score	Villages/Town
1	Sangau	13.49			
2	Vartek	-5.29	High	Above 5	Sangau
3	Thaltlang	-12.16	Medium	-5 to 5	Pangkhua, Rawlbuk
4	Pangkhua	2.83	Low	Below -5	Thaltlang, Vartek
5	Rawlbuk	1.12			

iii) Bungtlang S' RD Block: Bungtlang S' village scored highest value of 7.99 which falls under high development. Vaseikai (4.78) and Sekulhkai (3.53) villages categorized under medium development which is ranging between -5 to 5 score values, and, then the score value of -5.51 and -10.79 in Dumzautlang and Hmunnuam villages are considered under low level of development.

Table 4.3.5 Health Development in Bungtlang S' RD Block					
Sl No	Selected Area	Score	Level	Score	Villages/Town
1	Bungtlang S'	7.99			
2	Hmunnuam	-10.79	High	Above 5	Bungtlang S'
3	Dumzautlang	-5.51	Medium	-5 to 5	Vaseikai, Sekulhkai
4	Vaseikai	4.78	Low	Below -5	Dumzautlang, Hmunnuam
5	Sekulhkai	3.53			

iv) Chawngte RD Block: Vaseitlang–II village scored highest value of 11.65, followed by Kamalanagar village with a score value of 9.50, falls under high level of development. The score value of -6.43 and -9.31by Jamersury and Charluitlang villages categorized under low development. A score value of -5.41 of W. Saizawh ranging between -5.5 to 5.5, orderly arrange as medium level of development.

Table 4.3.6 Health Development in Chawngte RD Block					
Sl No	Selected Area	Score	Level	Score	Villages/Town
1	Kamalanagar	9.50			
2	Vaseitlang -II	11.65	High	Above 5.5	Vaseitlang-II, Kamalanagar
3	Jamersury	-6.43	Medium	-5.5 to 5.5	W Saizawh
4	Charluitlang	-9.31	Low	Below -5.5	Jamersury, Charluitlang,
5	W. Saizawh	-5.41			

4.3.1.2 Inter RD Block disparity in Health Development:

The inter RD block of health development is measured using Z-score techniques that the highest value of 8.59 scored by Sangau RD block. The second rank with a value of 4.16 scored by Lawngtlai RD Block and a score value of 0.87 by Bungtlang S' which falls under medium level of development. Chawngte RD Block scored low level of development with a score value of –13.63.

Table 4.3.7 Inter-Block Health Development in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	4.16	2	High	Above 5	Sangau
2	Chawngte	-13.63	4	Medium	-5 to 5	Lawngtlai, Bungtlang S’
3	Bungtlang S’	0.87	3	Low	Below -5	Chawngte
4	Sangau	8.59	1			

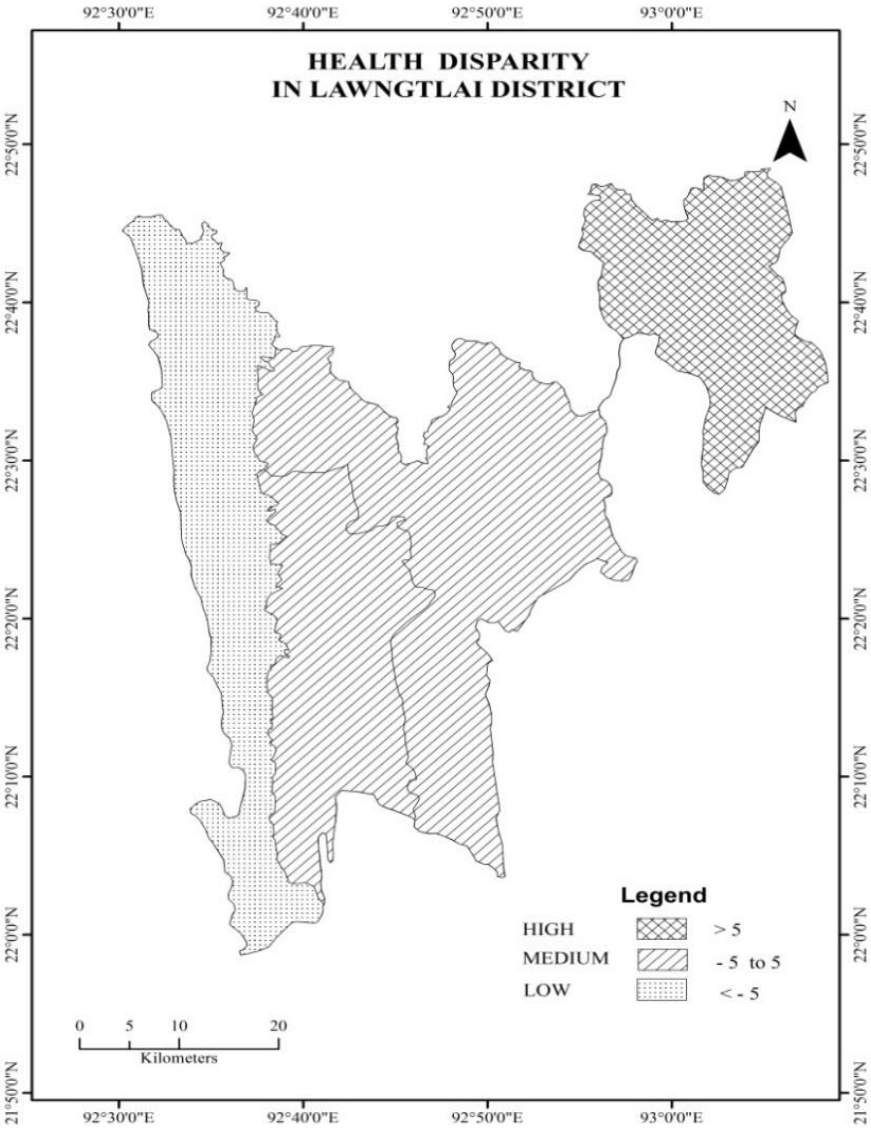

Figure: 4.3.1 Health Disparity in Lawngtlai District

4.3.1.3 Spatial disparity in Health development:

To study the development of selected villages and town of Lawngtlai district, PCA and FA were run to obtain appropriate score and the KMO showed a value of 0.348 which indicate adequacy for conducing factor analysis. The Bartlett's test of sphericity was significant at 0.000 level of significant that indicating the null hypothesis could be rejected since the probability is less than 0.05.

Table 4.3.8 Level of Health development in Lawngtlai District (2014-15)

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	34.393	1			
2	Mualbu L	21.934	13			
3	Ngengpuikai	24.250	9			
4	R. Vanhne	18.419	15			
5	Tuithumhnar	24.766	7			
6	Kamalanagar	18.221	16			
7	Vaseitlang -II	22.647	10	Very High	Above 25.5	Lawngtlai, Sangau, Bungtlang S, Pangkhua, Rawlbuk
8	Jamersury	12.552	18	High	20.5 to 25.5	Vaseikai, Tuithumhnar, Sekulhkai, Ngengpuikai, Vaseitlang-II, Vartek, Dumzautlang, Mualbu L
9	Charluitlang	5.287	20	Medium	15.5 to 20.5	Hmunnuam, R.Vanhne, Kamalanagar, Thaltlang
10	W Saizawh	13.203	19	Low	10.5 to 15.5	Jamersury, W Saizawh
11	Bungtlang 'S'	29.548	3	Very Low	Below 10.5	Charluitlang
12	Hmunnuam	20.340	14			
13	Dumzautlang	21.948	12			
14	Vaseikai	25.085	6			
15	Sekulhkai	24.760	8			
16	Sangau	30.710	2			
17	Vartek	22.576	11			
18	Thaltlang	17.550	17			
19	Pangkhua	27.159	5			
20	Rawlbuk	27.160	4			

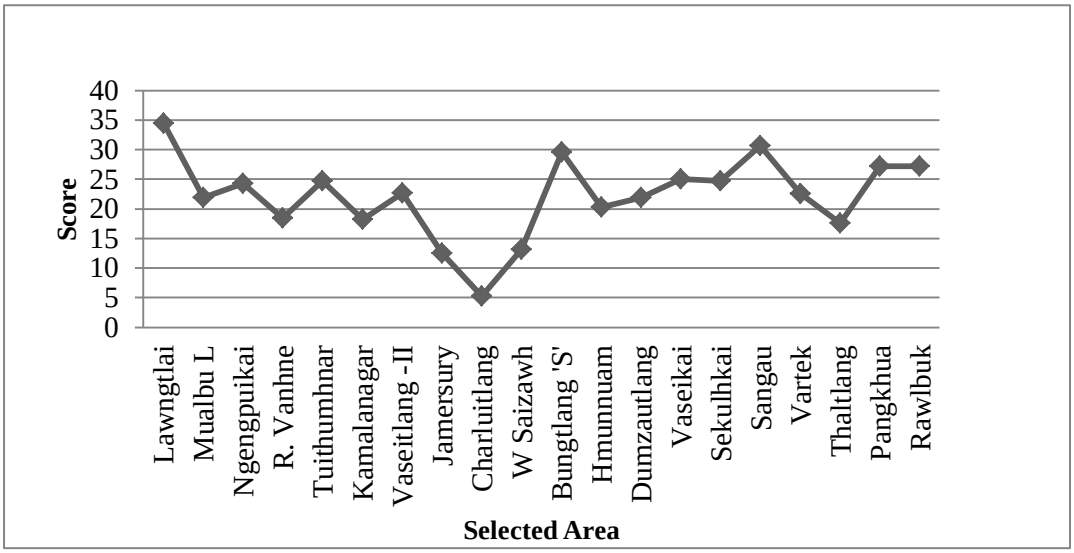

Figure: 4.3.2 Level of health development

Health development was categorized into five levels such as:-

i) Very High Development: this level includes three RD Block centers like Lawngtlai, Sangau and Bungtlang S' with two villages of Pangkhua and Rawlbuk in RD Block with a score value of more than 25.5.

ii) High Development: three villages of each block in Bungtlang S' and Lawngtlai such as Vaseikai, Sekulhkai, Dumzautlang, Tuithumhnar, Ngengpuikai, Mualbu L and one of each villages in Sangau and Chawngte blocks like Vartek and Vaseitlang-II falls in this category.

iii) Medium Development: Hmunnuam, R.Vanhne, Kamalanagar and Thaltlang villages with a score value of 15.5 to 20.5 included in this level of development.

iv) Low Development: two villages of Jamersury and W Saizawh in Chawngte RD Block falls under this level.

v) Very Low Development: A score value of 5.287 (Charluitlang village) is categorized under very low level of development.

4.3.2 Development Level of Income:

Distribution of income is extremely important for development, since it influences the cohesion of society, determines the extent of poverty for any given average per capita income and the poverty reducing effects of growth, and even affects people's health (Stewart, 2000). There exist positive and negative relationship between equality and economic growth. Income inequality causes health and social problems. It is also very harmful as it places people in a hierarchy that increases status competition and causes stress, which leads measly health and other negative outcomes.

Suman (2019) stated that 'the main reason for low level of income of the majority of Indian people is unemployment and underemployment and the consequent low productivity of labour. One of the most important long established causes of income inequality is land concentration **(**Charles-Coll, 2019). Therefore, income inequality would have a negative impact on economic growth through having an adverse effect on public health and development. But, equitable distribution of wealth may enhance the economy of the country. So, the present status of income in Lawngtlai district was calculated by taking 10 indicators of average annual income.

Three villages of the district, located in the western fringe like Vaseitlang-II, Charluitlang and Vaseikai annual income was ranging less than Rs 5000. 11 villages from four rural development blocks generate an average annual income of Rs 5000-10000. The average annual income of 3 block centers such as Bungtlang S', Sangau and Kamalanagar with 2 nearby two villages of Pangkhua and Tuithumhnar were ranging between Rs 10000-50000. Lawngtlai town has more than earned 1 lakh annual income.

4.3.2.1 Intra RD Block disparity in Income:

i) Lawngtlai RD Block: The block center of Lawngtlai town scored the highest value of 9.70 which falls under high development. The village nearby Lawngtlai town of R.Vanhne and Tuithumhnar scored a value of -1.60 and -1.72, categorized as medium level of development. The two villages of Ngengpuikai and Mualbu L in the northern part of Lawngtlai RD block scores the value of -3.17 and -3.19 and falls under low level of development.

Table 4.3.9 Income disparity in Lawngtlai RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	9.70	1			
2	Mualbu L	-3.19	5	High	Above 5	Lawngtlai
3	Ngengpuikai	-3.17	4	Medium	-5 to 5	R.Vanhne, Tuithumhnar
4	R. Vanhne	-1.60	2	Low	Below -5	Ngengpuikai, Mualbu L
5	Tuithumhnar	-1.72	3			

ii) Bungtlang S' RD Block: The score value of this block was extremely low except Bungtlang S' village with a score value of 9.01. The other villages like Vaseikai (0.004), Hmunnuam (-2.51), Sekulhkai (-2.89) and Dumzautlang (-3.60) scored less than 1 value which is categorized under medium and low level of development.

Table 4.3.10 Income disparity in Bungtlang S' RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Bungtlang S'	9.01	1			
2	Hmunnuam	-2.51	3	High	Above 2	Bungtlang S'
3	Dumzautlang	-3.60	5	Medium	-2 to 2	Vaseikai
4	Vaseikai	0.004	2	Low	Below -2	Hmunnuam, Sekulhkai, Dumzautlang
5	Sekulhkai	-2.89	4			

Table 4.3.11 Indicators of Income in Lawngtlai District (2014-2015)									
Sl No	Selected Area	Average Annual Income (in Rs)							
		Daily	Cultivator	Trade & Business	Govt Servant	Industrial Worker	Private Company	Private Services	Total
1	Lawngtlai	13952	7657	213077	433394	2593	4000	44487	102737
2	Mualbu L	2654	16842	5632	22368	0	0	0	6785
3	Ngengpuikai	3529	14618	3500	20735	0	0	0	6055
4	R. Vanhne	1875	50275	13125	2500	0	0	2000	9685
5	Tuithumhnar	1790	43000	0	41750	0	0	4000	12934
6	Kamalanagar	3596	28445	15013	45516	1388	0	1517	13496
7	Vaseitlang -II	1714	21881	0	5557	0	0	0	3307
8	Jamersury	1316	1842	1237	53789	0	0	0	8026
9	Charluitlang	2315	4663	4350	12400	0	0	0	3390
10	W Saizawh	3272	1833	6111	32500	0	0	0	6102
11	Bungtlang 'S'	17094	44888	30634	91259	1357	2143	1973	26907
12	Hmunnuam	2636	40409	7727	2273	0	0	0	7578
13	Dumzautlang	1250	24792	5400	7500	0	0	0	5563
14	Vaseikai	1800	5137	7870	11130	0	3685	2826	4635
15	Sekulhkai	1622	52000	0	0	0	0	0	7517
16	Sangau	6906	6796	24862	36178	1094	2486	1073	11213
17	Vartek	5000	9000	13000	23331	0	0	0	7190
18	Thaltlang	1833	5281	7473	52534	0	0	2778	9843
19	Pangkhua	1576	3729	11085	68847	0	3949	2459	12664
20	Rawlbuk	2759	9074	25862	11036	0	0	1379	7159
Source : Field survey									

iii) Sangau RD Block: The level of disparity in term of income is not too high amongst the villages in this block. Sangau village scored the highest value of 4.82. The medium development level considered into three villages of Rawlbuk (-0.40), Pangkhua (-0.69) and Vartek (-1.62). Thaltlang village, situated in the foot of the Phawngpui ranges scored a value of -2.09 which falls into low level of development

Table 4.3.12 Income disparity in Sangau RD Block					
Sl No	Selected Area	Score	Level	Score	RD Block
1	Sangau	4.82			
2	Vartek	-1.62	High	Above 2	Sangau
3	Thaltlang	-2.09	Medium	-2 to 2	Rawlbuk, Pangkhua, Vartek
4	Pangkhua	-0.69	Low	Below -2	Thaltlang
5	Rawlbuk	-0.40			

iv) Chawngte RD Block: This block is located in CADC area which has unique identity and traditions. Kamalanagar, an administrative center of CADC scored a value of 8.35, falls under high level of development. The nearest village from Chawngte is W. Saizawh, scored a value of -0.55 categorized as medium level of development. Three villages of Jamersury, Charluitlang and Vaseitlang-II, situated in the southern part of Chawngte Block with inadequate transportation facilities falls under low development with a score value of 2.22, -2.14 and -0.55.

Table 4.3.13 Income disparity in Chawngte RD Block					
Sl No	Selected Area	Score	Level	Score	RD Block
1	Kamalanagar	8.35			
2	Vaseitlang -II	-3.43	High	Above 2	Kamalanagar
3	Jamersury	-2.14	Medium	-2 to 2	W Saizawh
4	Charluitlang	-2.22	Low	Below -2	Charluitlang, Jamersury, Vaseitlang-II
5	W Saizawh	-0.55			

4.3.2.2 Inter RD Block disparity in Income:

The highest value of 6.91 scored by Lawngtlai RD block falls under high level of development due to concentration of services who are contributed a large amount of earnings for estimation of income, followed by Bungtlang S' and Sangau RD blocks with a score value of 0.65 and -2.52. Chawngte RD block scores only -5.03 as categorized under low level of development.

Table 4.3.14 Disparity of Income in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	6.91	1	High	Above 2	Lawngtlai
2	Chawngte	-5.03	4	Medium	-2 to 2	Bungtlang S', Sangau
3	Bungtlang S'	0.65	2	Low	Below -2	Chawngte
4	Sangau	-2.52	3			

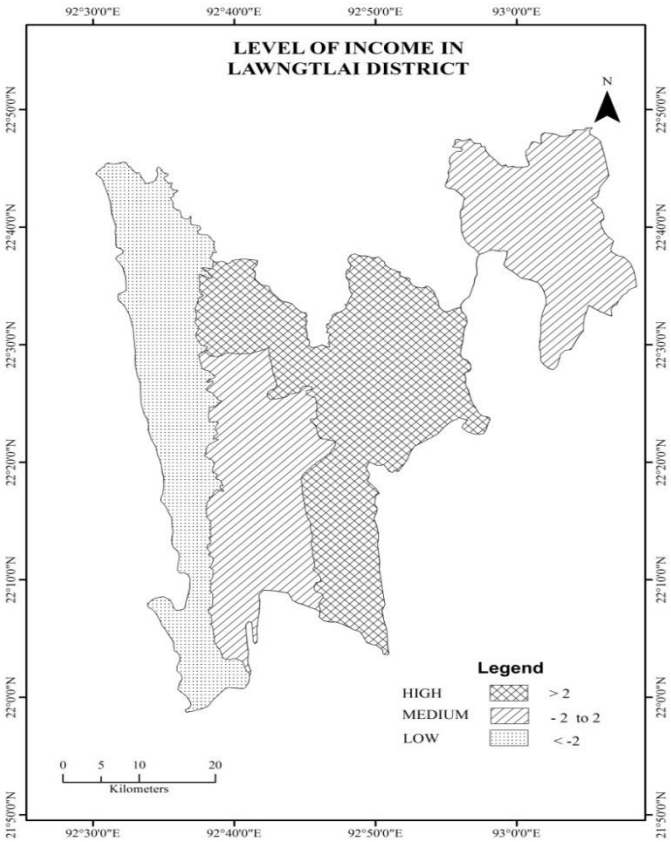

Figure: 4.3.3 Level of Income in Lawngtlai District

4.3.2.3 Spatial disparity in income development:

To study the development of income level by PCA and FA, the KMO and Bartlett's test of sphericity was significant. KMO showed a value of 0.575 and Bartlett's test of sphericity at 0.000 significant level indicating adequacies for conducing factor analysis and the null hypothesis could be rejected.

Table: 4.3.15 Level of Income in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	26.08	1			
2	Mualbu L	1.17	14			
3	Ngengpuikai	1.36	10			
4	R. Vanhne	1.29	11			
5	Tuithumhnar	1.71	8			
6	Kamalanagar	2.89	5			
7	Vaseitlang - II	0.28	19	Very high	Above 9.5	Lawngtlai, Bungtlang S'
8	Jamersury	0.78	17	High	6.5 to 9.5	Sangau
9	Charluitlang	0.79	16	Medium	3.5 to 6.4	Vaseikai
10	W Saizawh	1.29	12	Low	1.5 to 3.4	Kamalanagar, Pangkhua, Vartek, Tuithumhnar, Rawlbuk
11	Bungtlang S'	10.02	2	Very low	Below 1.5	Ngengpuikai, R.Vanhne, W Saizawh, Hmunnuam, Mualbu L, Thaltlang, Charluitlang, Jamersury, Sekulhkai, Vaseitlang-II, Dumzautlang
12	Hmunnuam	1.29	13			
13	Dumzautlang	0.67	20			
14	Vaseikai	4.32	4			
15	Sekulhkai	0.61	18			
16	Sangau	7.14	3			
17	Vartek	1.98	7			
18	Thaltlang	1.11	15			
19	Pangkhua	2.40	6			
20	Rawlbuk	1.57	9			

The above table 4.3.15 showed that the level of development in terms of income for selected areas of Lawngtlai district. The score value of Lawngtlai (26.08)

and Bungtlang S' (10.02) categorized as very high level of development even though their score marks are slightly difference. Sangau and Vaseikai villages falls under high and medium level of development with a score value of 7.14 and 4.32. Five (5) villages of Kamalanagar, Pangkhua, Vartek, Tuithumhnar and Rawlbuk were categorized into low level of income development with a score value of 1.5 to 3.4. Out of 20 selected villages, 11 villages like Ngengpuikai, R.Vanhne, W Saizawh, Hmunnuam, Mualbu L, Thaltlang, Charluitlang, Jamersury, Sekulhkai, Vaseitlang-II and Dumzautlang falls under very low level of development as they score below 1.5 value which clearly indicates imbalance and unequal distribution of wealth in the district.

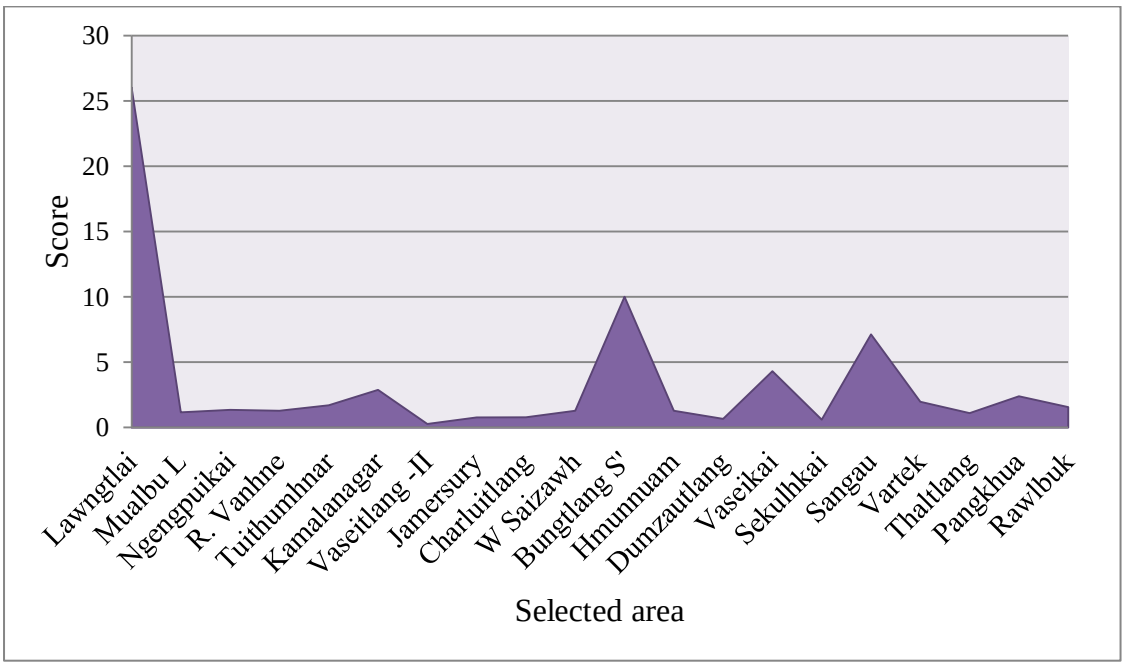

Figure: 4.3.4 Development Level of Income in Lawngtlai District

4.3.3 Development Level of Education in Lawngtlai District:

Education in every sense is one of the fundamental factors of development as well as 'fundamental to the broader notion of expanded human capabilities that lie at the heart of the meaning of development' (Todaro and Smith, 2011). No country has achieved constant economic development without considerable investment in human capital. In addition, it plays a very crucial role in securing economic and social progress and improving income distribution (Ozturk, 2001). Unequal educational institution and accessing subservience of learning tends to have a negative impact while controlling for human capital distribution and use of appropriate functional influences the progress of the country.

The educational development in Lawngtlai district was measured in different sectors such as number of institutions per 500 population, literacy rate and educational attainment level. In these sectors, the variables like number of school per 500 population, number of students per 500 populations, number of teacher per 500 populations, and attainment level of pre-primary, primary, middle, high school, higher secondary, graduate & above as well as literacy percentage were used as development indicators.

4.3.3.1 Intra RD Block disparities in education:

i) Lawngtlai RD Block: Lawngtlai (5.69) town scored the highest value with level of high development, and, Tuithumhnar (0.44), R. Vanhne (0.51) and Mualbu L (-1.59) villages were categorized under medium level of development. Ngengpuikai village scored the lowest value (-5.05) as classified under low level of development.

Table 4.3.16 Educational Development in Lawngtlai RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	5.69	1			
2	Mualbu L	-1.59	4	High	Above 5	Lawngtlai
3	Ngengpuikai	-5.05	5	Medium	-5 to 5	Tuithumhnar, R.Vanhne, Mualbu L
4	R. Vanhne	0.51	2	Low	Below -5	Ngengpuikai
5	Tuithumhnar	0.44	3			

ii) Sangau RD Block: Rawlbuk village of 4.85 scored value holds first rank with highest level of development. Sangau village of 3.98 score value holds second position with medium level of development. Vartek and Thaltlang villages were categorized into low level of development with score value of -1.76 and -2.61.

Table 4.3.17 Educational Development in Sangau RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Sangau	3.98	2			
2	Vartek	-2.61	4	High	Above 2	Rawlbuk, Sangau
3	Thaltlang	-4.45	5	Medium	-2 to 2	Pangkhua
4	Pangkhua	-1.76	3	Low	Below -2	Vartek, Thaltlang
5	Rawlbuk	4.85	1			

iii) Bungtlang S' RD Block: Bungtlang S' village falls under high level of development with having a score value of 9.81. Under medium level of development, two villages of Hmunnuam and Vaseikai were ordered with score value of 1.50 and 0.73. The low level of development falls to Sekulhkai and Dumzautlang villages with a score value of -4.56 and -7.48.

Table 4.3.18 Educational Development in Bungtlang S' RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Bungtlang S'	9.81	1			
2	Hmunnuam	1.50	2	High	Above 3	Bungtlang S
3	Dumzautlang	-7.48	5	Medium	-3 to 3	Hmunnuam, Vaseikai,
4	Vaseikai	0.73	3	Low	Below -3	Sekulhkai, Dumzautlang
5	Sekulhkai	-4.56	4			

Table 4.3.19 Indicators of Educational Development in Lawngtlai District (2014-2015)											
Sl No	Selected Area	No of Institutions per 500 population			Educational attainment (percentage)						Literacy rate (2014-2015)
		School per 500 P	Students per 500 Pop	Teachers per 500 pop	Pre Primary School	Primary School	Middle School	High School	HSS	Graduate & Above	
1	Lawngtlai	11.44	211.16	215.33	13.58	14.44	15.19	17.22	17.04	14.37	95.66
2	Mualbu L	0.53	4.02	4.69	5.76	15.93	21.02	22.03	18.64	3.39	80.99
3	Ngengpuikai	0.80	3.71	9.91	0.00	30.16	28.04	12.70	8.47	1.59	61.40
4	R.Vanhne	0.53	3.89	10.43	0.00	21.74	25.00	16.30	3.26	2.17	99.62
5	Tuithumhnar	1.06	7.55	10.43	0.00	18.58	23.01	17.70	12.39	1.77	93.98
6	Kamalanagar	7.71	107.52	103.75	5.13	13.48	13.21	12.89	12.36	9.20	69.07
7	Vaseitlang -II	0.80	6.56	4.17	3.70	24.07	20.37	10.65	5.56	1.39	53.04
8	Jamersury	0.53	5.43	4.69	0.00	23.45	17.52	9.16	7.82	0.81	26.65
9	Charluitlang	0.53	1.63	3.13	0.00	26.92	17.69	14.62	3.85	1.54	77.27
10	W. Saizawh	0.80	5.92	9.91	2.21	19.49	19.12	19.12	15.44	12.87	79.61
11	Bungtlang S'	1.86	25.82	22.42	3.70	17.96	26.94	16.37	10.56	7.75	88.26
12	Hmunnuam	0.53	5.83	4.69	0.00	25.61	35.98	15.24	3.66	0.61	84.54
13	Dumzautlang	0.53	3.62	1.04	0.00	17.83	4.65	7.75	0.00	0.00	25.63
14	Vaseikai	0.53	2.22	3.13	0.00	11.16	27.47	21.03	14.59	0.86	21.46
15	Sekulhkai	0.27	1.04	1.56	0.00	13.33	11.11	17.78	4.44	0.00	18.70
16	Sangau	3.46	64.12	47.97	5.90	26.29	31.12	10.52	9.33	8.69	87.13
17	Vartek	0.53	3.98	5.74	0.00	19.51	29.27	19.51	4.88	0.00	89.33
18	Thaltlang	0.80	8.77	10.43	3.81	38.10	24.76	13.33	8.57	1.90	86.06
19	Pangkhua	1.60	20.62	18.25	3.27	34.06	25.07	15.80	5.99	5.18	86.68
20	Rawlbuk	0.80	6.60	8.34	0.00	28.38	24.32	16.22	8.78	11.49	95.10
Source: Field survey											

iv) Chawngte RD Block: Kamalanagar and its neighboring village of W Saizawh categorized under high level of development with a score value of 4.67 and 4.43. Charluitlang (1.30) and Vaseitlang-II (-3.57) falls under medium level of development while Jamersury village score a value of -6.84 which comes under low level of development.

Table 4.3.20 Educational Development in Chawngte RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamalanagar	4.67	1			
2	Vaseitlang -II	-3.57	4	High	Above 4	Kamalanagar, W Saizawh
3	Jamersury	-6.84	5	Medium	-4 to 4	Charluitlang, Vaseitlang-II
4	Charluitlang	1.31	3	Low	Below - 4	Jamersury
5	W Saizawh	4.43	2			

4.3.3.2 Inter RD Block Disparity:

Lawngtlai RD Block scored the highest value of 9.61 followed by Sangau (1.56) and Chawngte (-3.99) RD Blocks which were classified as medium level of development. Bungtlang S' RD Block scored a value of -7.18 which was falls under low level of development.

Table 4.3.21 Educational Development in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	9.61	1	High	Above 5	Lawngtlai
2	Chawngte	-3.99	3	Medium	-5 to 5	Sagau, Chawngte
3	Bungtlang S'	-7.18	4	Low	Below -5	Bungtlang S'
4	Sangau	1.56	2			

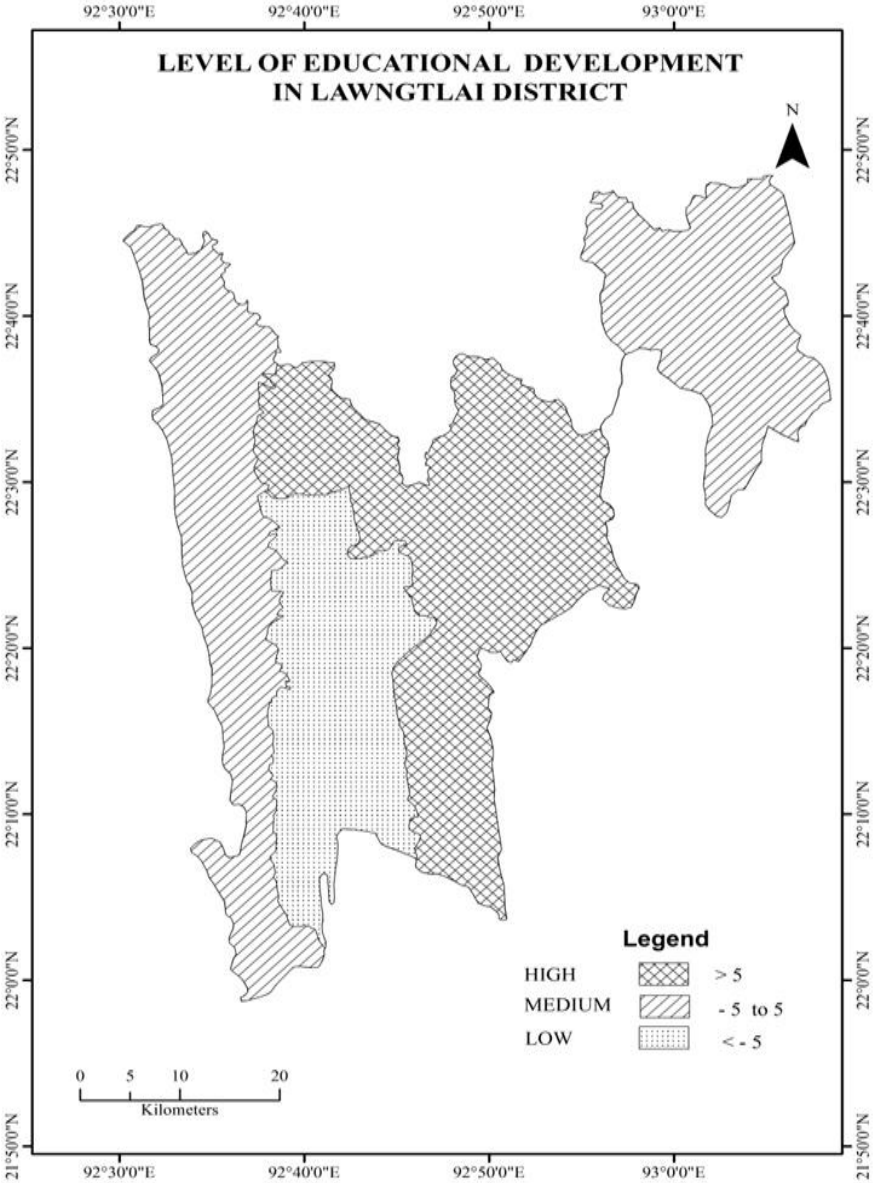

Figure: 4.3.5 Level of Educational development in Lawngtlai district

4.3.3.3 Spatial disparity in Education development:

To conduct factor analysis and rejected the null hypothesis, the indicators were tested whether it should appropriate or not to run software. The KMO showed a value of 0.457 and Bartlett's test of sphericity was 0.000 significant levels showing the suitability of data.

Table 4.3.22 Level of Educational Development in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	39.55	1			
2	Mualbu L	15.46	7			
3	Ngengpuikai	6.15	15			
4	R. Vanhne	12.02	10			
5	Tuithumhnar	13.25	9			
6	Kamalanagar	20.13	2			
7	Vaseitlang - II	4.51	16	Very high	Above 20	Lawngtlai, Kamalanagar
8	Jamersury	-0.94	18	High	15 to 20	Sangau, Bungtlang S', Rawlbuk, Mualbu L, W Saizawh
9	Charluitlang	7.45	14	Medium	10 to 14	Pangkhua, Tuithumhnar, R.Vanhne, Thaltlang, Vartek
10	W Saizawh	16.45	5	Low	5 to 9	Hmunnuam, Charluitlang, Ngengpuikai
11	Bungtlang S'	16.78	4	Very low	Below 5	Vaseitlang–II, Vaseikai, Jamersury, Sekulhkai, Dumzautlang
12	Hmunnuam	9.06	13			
13	Dumzautlang	-3.64	20			
14	Vaseikai	1.51	17			
15	Sekulhkai	-2.55	19			
16	Sangau	19.17	3			
17	Vartek	10.29	12			
18	Thaltlang	11.85	11			
19	Pangkhua	13.70	8			
20	Rawlbuk	15.81	6			

From the above table 4.3.22, the educational development was categorized into five levels:- i) Very high development: The two headquarters of LADC and CADC of Lawngtlai (39.55) and Kamalanagar (20.13) scored a very high value as they are having better higher educational institutions like colleges in their respective area which promote educational development. ii) High development: The other villages like Sangau, Bungtlang S, Rawlbuk, Mualbu L and W. Saizawh falls under high level of development scoring between the value of 15 to 20. iii) Medium development: Pangkhua, Tuithumhnar, R.Vanhne, Thaltlang and Vartek villages scored a value of 10 to 14 and then categorized under medium level of development. iv) Low development: Three villages of Hmunnuam, Charluitlang and Ngengpuikai included in this level. v) Very Low development: Five villages of Vaseitlang–II, Vaseikai, Jamersury, Sekulhkai and Dumzautlang included in this level.

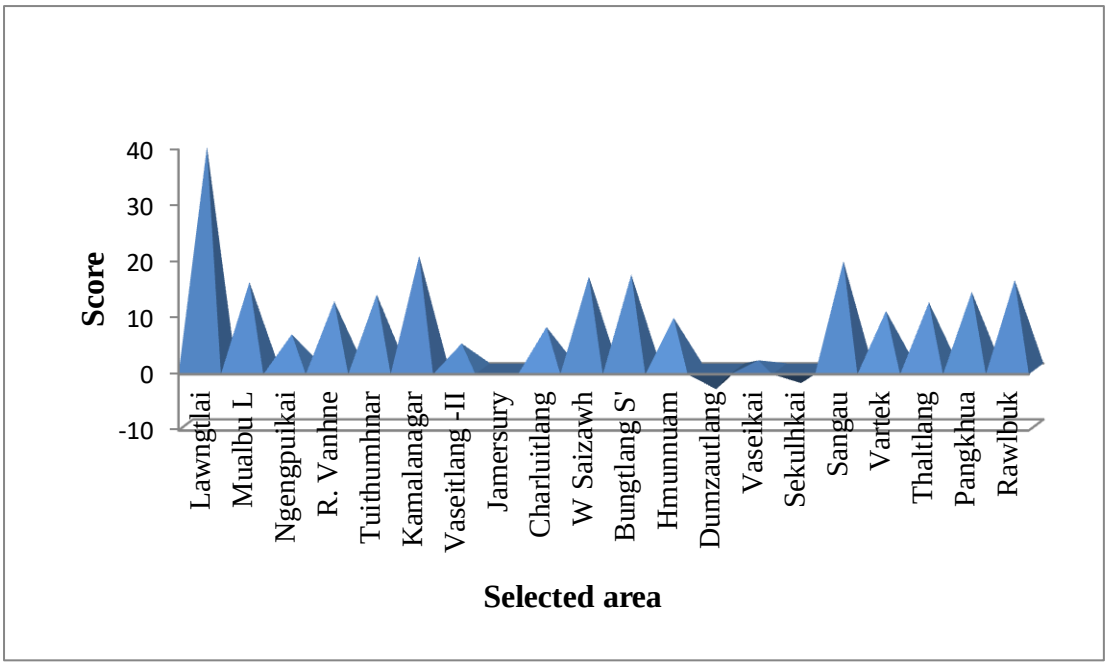

Figure: 4.3.6 Level of Education Development

4.3.4 Level of Mass-Media Exposure in Lawngtlai District:

Mass media has a prominent role to play in modern society. It can bring about radical changes and improve social situation as it influences our social, civil, cultural, political, economic and aesthetic outlook. It is a means to deliver information from a source of information (communicator) to the recipient information (communicants). The entry of information by the mass media impact social change in society. Information thus has the power both to build and destroy.

Table 4.3.23 showed that the percentage of mass-media exposure in the study area. The respondents in the villages of Pangkhua (8.47 %), Rawlbuk (3.45%), Lawngtlai (2.96 %), Kamalanagar (2.31 %) and Tuithumhnar (0.5 %) villages were subscribed national newspaper through online or other source. Local newspaper including weekly or monthly bulletin/newspaper published by NGO's or churches in the village plays a very significant role. Vaseikai (39.13), Lawngtlai (29.55), Mualbu L (26.32), Rawlbuk (17.24), Pangkhua (16.95), Sangau (15.47), Bungtlang S' (11.61), Thaltlang (11.11), Ngengpuikai (5.88) and Kamalanagar (0.77) were subscribed local newspaper. Lawngtlai town only subscribed national magazine with a percentage of 2.62 while Mualbu L, Vaseitlang-II, Charluitlang, W.Saizawh, Dumzautlang, Sekulhkai, Thaltlang and Rawlbuk does not subscribed any magazine.

Vaseitlang-II, Jamersury and Sekulhkai villages which could not access te-commmunication mainly due to irregularity of power supply. Among the selected area, five (5) villages of Lawngtlai (14.86), Rawlbuk (6.90), Pangkhua (3.39), Sangau (1.2) and Kamalanagar (1.03) access internet facilities. The entire villages used it Radio for interception of information except Hmunnuam and Dumzautlang. Dumzautlang village was the village which could not get any information through

mass-media, and Charluitlang, Jamersury, W. Saizawh, Hmunnuam and Vartek villages were access only two means of communication amongst variable indicators.

Table 4.3.23 Indicators of Mass-Media Exposure in Lawngtlai District (in %)

Sl No	Selected Area	News paper Subscriber		No of Magazine Subscribe		No of TV Viewers	No of Internet Subscriber	No of Radio Listener
		National	Local	National	Local			
1	Lawngtlai	2.97	29.55	2.62	3.67	90.21	14.86	8.74
2	Mualbu L	0.00	26.32	0.00	0.00	42.11	0.00	15.79
3	Ngengpuikai	0.00	5.88	0.00	14.71	79.41	0.00	2.94
4	R. Vanhne	0.00	0.00	0.00	12.50	75.00	0.00	12.50
5	Tuithumhnar	0.50	0.00	0.00	5.00	10.00	0.00	30.00
6	Kamalanagar	2.31	0.77	0.00	4.37	20.57	1.03	3.60
7	Vaseitlang -II	0.00	0.00	0.00	0.00	0.00	0.00	21.43
8	Jamersury	0.00	0.00	0.00	1.05	0.00	0.00	13.16
9	Charluitlang	0.00	0.00	0.00	0.00	00.00	0.00	50.00
10	W Saizawh	0.00	0.00	0.00	0.00	66.67	0.00	44.44
11	Bungtlang S'	0.00	11.61	0.00	40.18	68.75	0.00	25.00
12	Hmunnuam	0.00	0.00	0.00	4.55	50.00	0.00	0.00
13	Dumzautlang	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	Vaseikai	0.00	39.13	0.00	10.87	13.04	0.00	41.30
15	Sekulhkai	0.00	0.00	0.00	0.00	0.00	0.00	11.11
16	Sangau	0.00	15.47	0.00	20.99	17.18	1.20	3.31
17	Vartek	0.00	0.00	0.00	20.00	30.00	0.00	10.00
18	Thaltlang	0.00	11.11	0.00	0.00	38.89	0.00	27.78
19	Pangkhua	8.47	16.95	0.00	25.42	50.85	3.39	10.17
20	Rawlbuk	3.45	17.24	0.00	0.00	37.93	6.90	17.24

Source: Field survey

4.3.4.1 Intra RD Block disparity:

i) Lawngtlai RD Block: The level of disparity in Mass-Media exposure has stretching between the score value of 5.21 (Lawngtlai) and -2.12 (Mualbu L) which falls high and low level of development. The medium development found in the villages of Tuithumhnar (-0.53), R.Vanhne (-1.25) and Ngengpuikai (-1.29).

Table 4.3.24 Mass-Media Exposure in Lawngtlai RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	5.21	1			
2	Mualbu L	-2.12	5	High	Above 2	Lawngtlai
3	Ngengpuikai	-1.29	4	Mediu m	-2 to 2	Tuithumhnar, R.Vanhne, Ngengpuikai
4	R. Vanhne	-1.25	3	Low	Below - 2	Mualbu L
5	Tuithumhnar	-0.53	2			

ii) Sangau RD Block: The highest value scored by Pangkhua village (3.27) which falls under high level of development. The low level of development found in the village of Vartek with a score value of -3.58. Three villages of Thaltlang, Sangau and Rawlbuk were under medium level of development with a score value of -1.46, 0.39 and 1.38.

Table 4.3.25 Mass-Media Exposure in Sangau RD Block

Sl No	Selected Area	Score	Rank	Level	Score	Sangau RD Block
1	Sangau	0.39	3			
2	Vartek	-3.58	5	High	Above 3	Pangkhua
3	Thaltlang	-1.46	4	Medium	-3 to 3	Thaltlang, Sangau, Rawlbuk
4	Pangkhua	3.27	1	Low	Below -3	Vartek
5	Rawlbuk	1.38	2			

iii) Bungtlang S' RD Block: Bungtlang S' and Vaseikai villages were categorized into high level of development with a score value of 3.70 and 2.72. A value of -1.10 was scored by Hmunnuam village, and then followed by Dumzautlang

(-2.34) and Sekulhkai (-2.97). Newspaper, magazine, television and internet facilities is absent in Dumzautlang village.

Table 4.3.26 Mass-Media Exposure in Bungtlang S' RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Bungtlang S'	3.70	1			
2	Hmunnuam	-1.10	3	High	Above 2	Bungtlang S', Vaseikai
3	Dumzautlang	-2.97	5	Medium	-2 to 2	Hmunnuam
4	Vaseikai	2.72	2	Low	Below -2	Sekulhkai, Dumzautlang
5	Sekulhkai	-2.34	4			

iv) Chawngte RD Block: Newspaper, Magazine, Television and internet facilities are absent in Vaseitlang-II, Jamersury and Charluitlang. Few families access Radio for receiving information and news etc., Kamalanagar village scored a value of 3.97 whereas the other villages scored less than 1.

Table 4.3.27 Mass-Media Exposure in Chawngte RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamanagar	3.97	1			
2	Vaseitlang -II	-3.04	4	High	Above 2	Kamalanagar
3	Jamersury	-1.15	2	Medium	-2 to 2	W Saizawh Charluitlang Jamersury
4	Charluitlang	-0.21	3	Low	Below -2	Vaseitlang –II
5	W Saizawh	0.44				

4.3.4.2 Inter RD Block disparity in level of Mass-Media exposure:

Lawngtlai and Sangau blocks were scored a value of 2.97 and 2.01. These blocks were categorized into high and medium level of development whereas a score value of -2.02 and -2.96 in Chawngte and Kamalanagar blocks falls under low level of development. In other words, Lawngtlai district can be divided into two parts such as developed (eastern) including Lawngtlai and Sangau blocks and under developed

(western) region of Bungtlang S' and Chawngte blocks in terms of Mass-media exposure.

Table 4.3.28 Development level of Mass-Media Exposure in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	2.97	1	High	Above 2.5	Lawngtlai
2	Chawngte	-2.02	3	Medium	-2.5 to 2.5	Sangau, Chawngte
3	Bungtlang S'	-2.96	4	Low	Below -2.5	Bungtlang S'
4	Sangau	2.01	2			

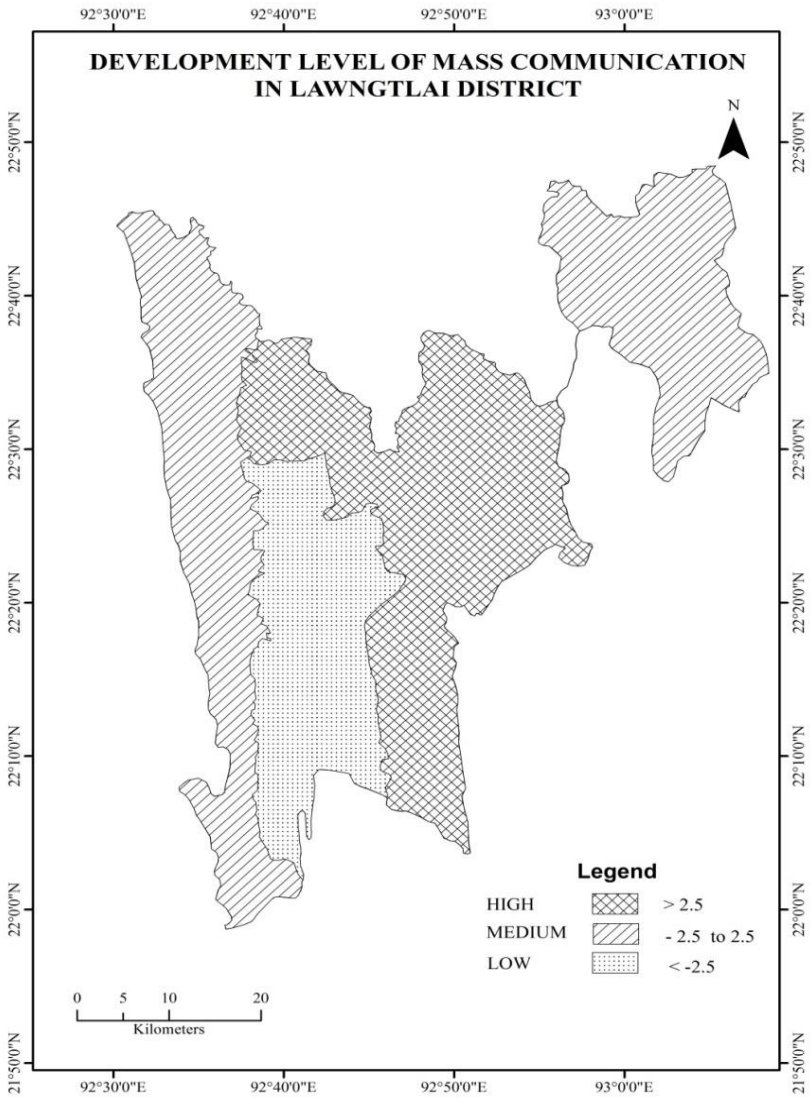

Figure: 4.3.7 Level of Mass-Media Exposure in Lawngtlai District

4.3.4.3 Spatial disparity in Mass-Media Exposure:

The KMO showed a value of 0.567 and Bartlett's test of sphericity was 0.008 significant levels showing the suitability of data.

Table 4.3.29 Level of Mass-Media Exposure in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	7.637	1			
2	Mualbu L	1.317	8			
3	Ngengpuikai	1.899	5			
4	R. Vanhne	1.256	9			
5	Tuithumhnar	-0.407	18			
6	Kamalanagar	1.379	7			
7	Vaseitlang -II	-0.641	19	Very high	Above 3.5	Lawngtlai
8	Jamersury	0.062	14	High	2.5 - 3.5	Sangau, Pangkhua
9	Charluitlang	-0.770	20	Medium	1.5 - 2.5	Rawlbuk, Ngengpuikai, Bungtlang S'
10	W Saizawh	-0.121	17	Low	-0.5 - 1.5	Kamalanagar, Mualbu L, R.Vanhne, Hmunnuam, Vaseikai, Vartek, Thaltlang, Jamersury, Dumzautlang
11	Bungtlang S'	1.821	6	Very low	Below -0.5	Sekulhkai, W Saizawh, Tuithumhnar, Vaseitlang-II, Charluitlang
12	Hmunnuam	1.004	10			
13	Dumzautlang	0.001	15			
14	Vaseikai	0.762	11			
15	Sekulhkai	-0.332	16			
16	Sangau	2.901	2			
17	Vartek	0.677	12			
18	Thaltlang	0.307	13			
19	Pangkhua	2.742	3			
20	Rawlbuk	2.147	4			

From the above table 4.3.29, the district headquarters of Lawngtlai town scored the highest value of 7.637 which falls under very high level of development. Two villages in Sangau block like Sangau and Pangkhua were categorized into high level of exposure with a score value of 2.901 and 2.742. A score value of 2.141, 1.889 and 1.821 in the village of Rawlbuk, Ngengpuikai and Bungtlang S' categorized into

medium level of exposure. Nine villages of Kamalanagar (1.379), Mualbu L (1.317), R.Vanhne (1.256), Hmunnuam (1.004), Vaseikai (0.762), Vartek (0.677), Thaltlang (0.307), Jamersury (0.062), and Dumzautlang (0.001) fall to low level of exposure. Very low level of mass-media exposure in Lawngtlai districts with a score value of below -0.5 found in Sekulhkai, W.Saizawh, Tuithumhnar, Vaseitlang-II and Charluitlang villages.

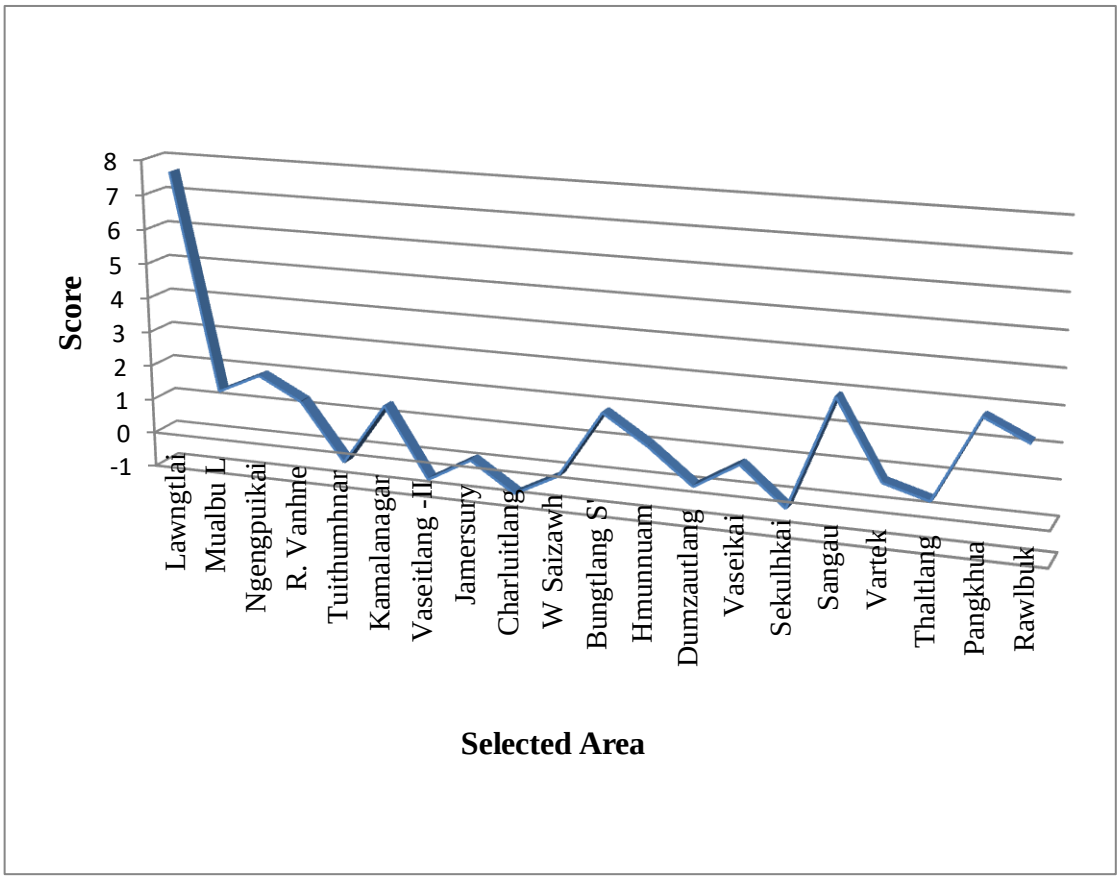

Figure: 4.3.8 Mass-Media Exposure in Lawngtlai District

4.3.5 Development of House-type in Lawngtlai District:

The patterns of settlement or types of houses are different on the basis of ethnic status, socio-economic conditions and geographical location. The structure of building and material use for construction impacts estimation of budgets available for housing expenditure. Good infrastructure with high cost of construction unswervingly demonstrated the income level of the country. Generally, adequate infrastructural facilities found in developed country but developing and under-developed countries access insufficient facilities due to socio-economic backwardness.

Table 4.3.30 showed that the total 8 villages and 1 town like Lawngtlai (31.99), Bungtlang S' (11.61), Sagau (10.50), Ngengpuikai (2.94), W Saizawh (5.56), Kamalanagar (5.40), Hmunnuam (4.55), Pangkhua (1.69) and Rawlbuk (3.45) were lived in the type of Reinforce Cement Concrete (RCC) while other 11 villages do not have RCC building. 4.27 per cent was used thatch type of house in Lawngtlai town whereas all buildings of Sekulhkai villages were thatch type of house. Thaltlang village was highest percentage of Assam-type building i.e., 94.44 per cent, and, 18.53 per cent of Lawngtlai town having Semi-Rcc structure of house.

All respondents in the villages of Mualbu L, Tuithumhnar, Jamersury, Charluitlang, Sekulhkai, Thaltlang, and Vartek were lived in their own building while Bungtlang S' (25), Lawngtlai (23.25), Sangau (12.15), (Ngengpuikai (8.82), (Vaseitlang-II (7.14), Rawlbuk (6.90), R.Vanhne (6.25), Kamalanagar (6.17), Hmunnuam (4.55), Vaseikai (4.35) and Pangkhua (1.69) were in rented house. Few numbers of people in Lawngtlai (1.75), Kamalanagar (0.51), Bungtlang S' (1.79), Vaseikai (2.17) and Sangau (3.31) were stayed in quarters provided by government or churches for their servant and workers.

Table 4.3.30 Indicators of House-type in Lawngtlai District										
Sl N0	Selected Area	Type of House (Percentage)					Age of Building	Ownership (Percentage)		
		RCC	Semi-RCC	Assam Type	Thatch	Average no. of floor	Average age	Owner	Renter	Quarter
1	Lawngtlai	31.99	18.53	45.28	4.27	3.20	25.00	65.03	23.25	1.75
2	Mualbu L	0.00	15.79	47.37	36.84	2.00	13.00	100.00	0.00	0.00
3	Ngengpuikai	2.94	0.00	52.94	44.12	2.00	11.74	91.18	8.82	0.00
4	R. Vanhne	0.00	0.00	87.50	12.50	2.00	13.56	93.75	6.25	0.00
5	Tuithumhnar	0.00	0.00	50.00	50.00	2.00	10.47	100.00	0.00	0.00
6	Kamalanagar	5.40	16.71	42.67	35.22	3.10	14.00	91.77	6.17	0.51
7	Vaseitlang-II	0.00	0.00	28.57	71.43	2.00	12.00	92.86	7.14	0.00
8	Jamersury	0.00	0.00	13.16	86.84	1.00	12.00	100.00	0.00	0.00
9	Charluitlang	0.00	0.00	20.00	80.00	2.00	14.00	100.00	0.00	0.00
10	W Saizawh	5.56	11.11	72.22	11.11	2.00	23.00	100.00	0.00	0.00
11	Bungtlang S'	11.61	4.46	66.96	16.96	3.50	10.18	69.64	25.00	1.79
12	Hmunnuam	4.55	0.00	77.27	18.18	2.00	5.32	95.45	4.55	0.00
13	Dumzautlang	0.00	0.00	12.50	87.50	2.00	6.79	91.67	0.00	0.00
14	Vaseikai	0.00	2.17	32.61	65.22	2.00	8.80	86.96	4.35	2.17
15	Sekulhkai	0.00	0.00	0.00	100.00	2.00	3.78	100.00	0.00	0.00
16	Sangau	10.50	7.18	79.01	2.76	2.50	13.77	83.43	12.15	3.31
17	Vartek	0.00	0.00	60.00	40.00	2.00	8.50	100.00	0.00	0.00
18	Thaltlang	0.00	0.00	94.44	5.56	2.00	8.11	100.00	0.00	0.00
19	Pangkhua	1.69	0.00	81.36	16.95	2.00	11.77	98.31	1.69	0.00
20	Rawlbuk	3.45	3.45	86.21	6.90	2.50	12.03	93.10	6.90	0.00
Source: Field survey										

4.3.5.1 Intra RD Block disparity in type of house:

i) Lawngtlai RD Block: The highest value of 6.93 scored by Lawngtlai town followed by Mualbu L and Tuithumhnar villages with a score value of 0.89 and -1.98. The low level of development found in the villages of R.Vanhne and Ngengpuikai with having a score value of -2.88 and -2.96.

Table 4.3.31 Development level of House-type in Lawngtlai RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	6.93	1			
2	Mualbu L	0.89	2	High	Above 2	Lawngtlai
3	Ngengpuikai	-2.96	5	Medium	-2 to 2	Mualbu L, Tuithumhnar
4	R. Vanhne	-2.88	4	Low	Below -2	R.Vanhne, Ngengpuikai
5	Tuithumhnar	-1.98	3			

ii) Bungtlang S' RD Block: The high level of development found in Bungtlang S' with a score value of 3.96 followed by the three villages of Vaseikai, Hmunnuam and Dumzautlang with a score value of 1.36, -1.58, and -1.66 which falls in the category of medium development. The low level of development found in the villages of Sekulhkai with a score value of -2.07.

Table 4.3.32 Development level of House-type in Bungtlang S' RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Bungtlang S'	3.96	1			
2	Hmunnuam	-1.58	3	High	Above 2	Bungtlang S'
3	Dumzautlang	-1.66	4	Medium	-2 to 2	Vaseikai, Hmunnuam, Dumzautlang
4	Vaseikai	1.36	2	Low	Below -2	Sekulhkai
5	Sekulhkai	-2.07	5			

iii) Sangau RD Block: Sangau and Rawlbuk were the two villages with a score value of 2.92 and 2.70 categorized under high level of development. Pangkhua village falls under medium level of development. Thaltlang and Vartek vilages were scored a value of -2.62 and -2.88, falls under low level of development.

Table 4.3.33 Development level of House-type in Sangau RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Sangau	2.92	1			
2	Vartek	-2.88	4	High	Above2	Sangau, Rawlbuk
3	Thaltlang	-2.62	3	Medium	-2 to 2	Pangkhua
4	Pangkhua	-0.12	2	Low	Below -2	Thaltlang, Vartek
5	Rawlbuk	2.70	2			

Table 4.3.34 Development level of House-type in Chawngte RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamalanagar	3.68	2			
2	Vaseitlang -II	-4.90	5	High	Above3	W Saizawh, Kamanalagar
3	Jamersury	-2.42	4	Medium	-3 to 3	Charluitlang, Jamersury
4	Charluitlang	-0.73	3	Low	Below -3	Vaseitlang-II
5	W Saizawh	4.38	1			

iv) Chawngte RD Block: Table 4.3.34 showed the level of development in types of house of Chawngte RD Block. W. Saizawh village (4.38) scored the highest value and followed by Kamanalagar village (3.68) falls under high level of development. The medium level of development falls to Charluitlang (-0.73) and Jamersury (-2.42) and low level of development found in Vaseitlang-II (-4.90).

4.3.5.2 Inter RD Block disparity in House-type:

The rural development blocks in Lawngtlai districts categorized into three level of development such as High, Medium and Low. The high level of development, with a score value of 2.73 recorded by Lawngtlai, followed by Sangau RD block with a scored value of -0.39. The low level of development scored by two blocks like Chawngte and Bungtlang S' with a value of -0.79 and -0.39.

Table 4.3.35 Development level of House-type in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	2.73	1	High	Above 1	Lawngtlai
2	Chawngte	-0.79	3	Medium	-1 to 1	Sangau
3	Bungtlang S'	-0.39	2	Low	Below -1	Chawngte, Bungtlang S'
4	Sangau	-1.54	4			

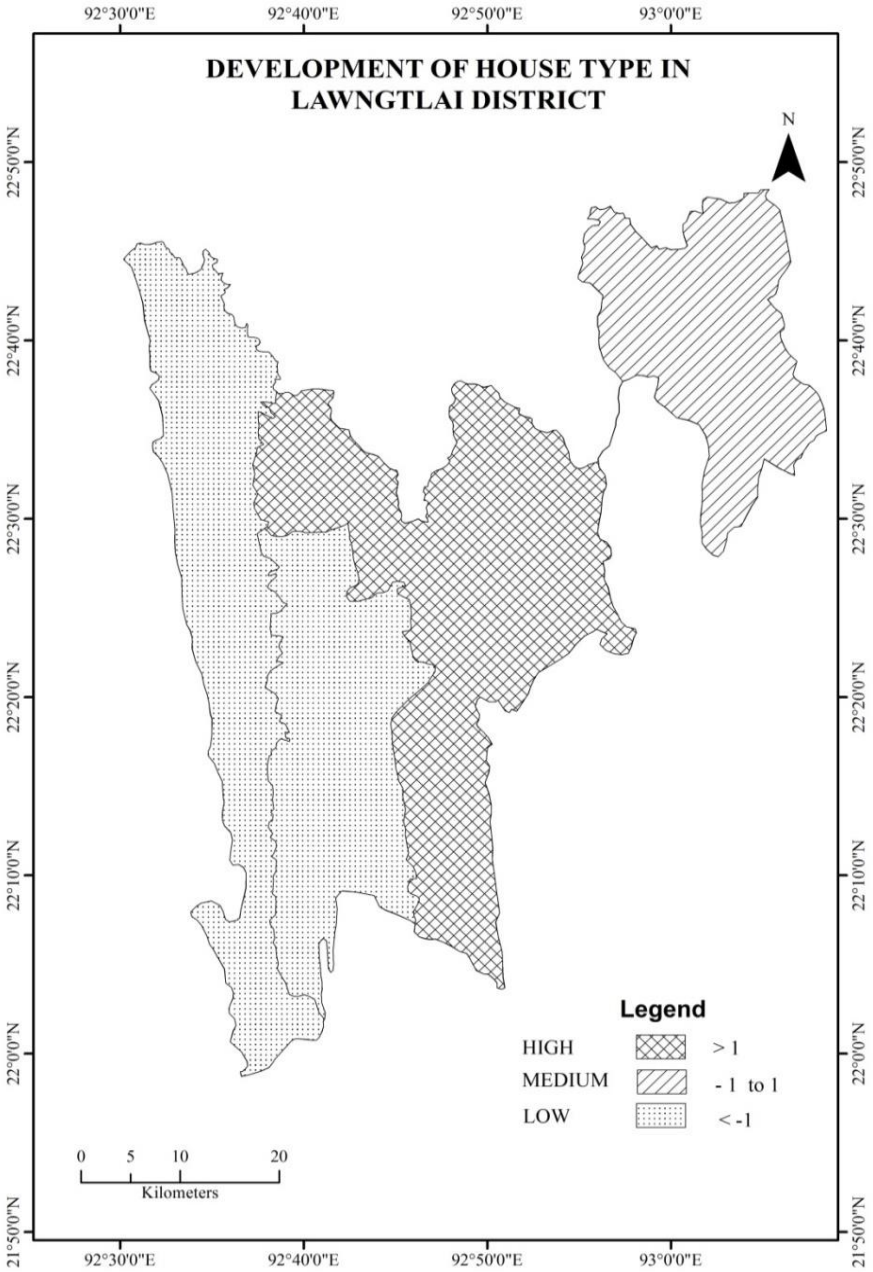

Figure: 4.3.9 Development of House-type in Lawngtlai District

4.3.5.3 Spatial disparity in House-type development in Lawngtlai District:

The KMO showed a value of 0.555 and Bartlett's test of sphericity was 0.000 significant levels showing appropriateness of data and then got development level of house-type in selected area.

Table 4.3.36 Development level of House-type in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	16.52	1			
2	Mualbu L	-5.28	10			
3	Ngengpuikai	-4.48	9			
4	R. Vanhne	-4.18	8			
5	Tuithumhnar	-8.38	16			
6	Kamalanagar	0.90	4			
7	Vaseitlang -II	-6.64	13	Very High	Above 10	Lawngtlai
8	Jamersury	-11.68	20	High	5 to 10	Bungtlang S', Sangau
9	Charluitlang	-9.31	18	Medium	-5 to 5	Kamalanagar, Rawlbuk, W Saizawh, Vaseikai, Vaseitlang - II, R.Vanhne, Ngengpuikai,
10	W Saizawh	-2.96	6	Low	-5 to -10	Mualbu L, Hmunnuam, Pangkhua, Thaltlang, Tuithumhnar, Vartek, Dumzautlang
11	Bungtlang 'S'	9.84	2	Very Low	Below -10	Jamersury
12	Hmunnuam	-5.34	11			
13	Dumzautlang	-9.21	17			
14	Vaseikai	-3.37	7			
15	Sekulhkai	-11.33	19			
16	Sangau	6.50	3			
17	Vartek	-8.15	15			
18	Thaltlang	-6.68	14			
19	Pangkhua	-5.95	12			
20	Rawlbuk	-2.00	5			

From the above table 4.3.36, the district headquarters of Lawngtlai scored the highest value of 16.52 under very high level of development. Two villages of Bungtlang S' and Sangau were categorized into high level of development with a score value of 9.84 and 6.50. A score value of 0.90, -2.00, -2.96, -3.37, -4.18, -4.48 and -6.64 in the villages of Kamalanagar, Rawlbuk, W.Saizawh, Vaseikai, Vaseitlang-

II, Ngengpuikai and R.Vanhne were falls under medium level of development. 7 villages of Mualbu L (-5.28), Hmunnuam (-5.34), Pangkhua (-5.95), Thaltlang (-6.68), Tuithumhnar (-8.38), Vartek (-8.15) and Dumzautlang (-9.21) were falls to low level of development. Very low level of development in house-type with a score value of -11.33 and -11.68 found in Jamersury and Sekulhkai villages.

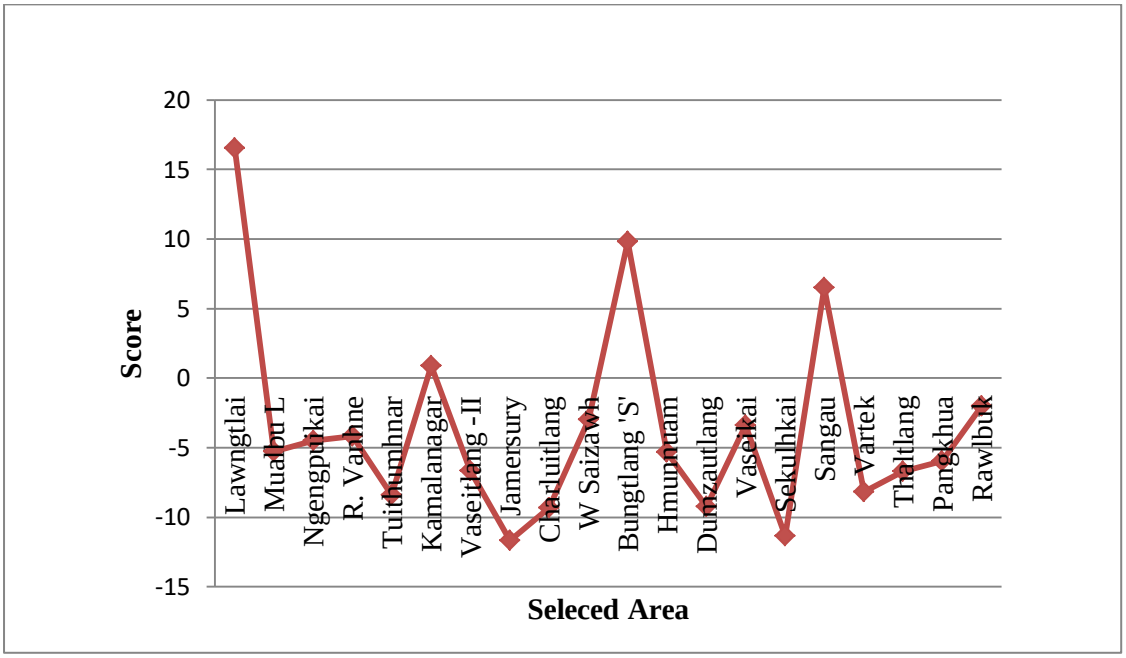

Figure: 4.3.10 Level of House-type in Lawngtlai District

4.3.6 Level of Household Amenities in Lawngtlai District:

The housing situation of a population is often direct reflection of their living conditions and development. Information on household amenities is important to understand the socio-economic conditions which reflect the quality of life. Household possessions replicate accumulation over many years, so they may be essential indicator of a household's long term economic standing than annual measures of growth and development. The household amenities and assets like number of Mobile

phone, Landline connection, Internet facilities, Computer, Television, Refrigerator, Washing Machine, Room, Bathroom within premises, Two wheeler, Four wheeler, Water connection, Pit-Latrine, Septic tank and Toilet within premises were used for calculation of developmental level.

Out of the total family, 50.38 per cent possessed mobile phone in Lawngtlai town while only 0.78 per cent possessed mobile phone in Dumzautlang village. Lawngtlai (37.94), Kamalanagar (21.34), Sangau (19.34), Bungtlang S' (22.32), Mualbu L (10.50), Pangkhua (10.17), Rawlbuk (6.90), Hmunnuam (4.55), Vaseikai (4.35) and Ngengpuikai (2.94) villages were possessed computer whereas other remainning 10 selected villages does not possessed. Only 6 villages were access internet facilities during 2014-2015. Television, Refrigerator and Washing machine are not significant amenities in the village of Dumzautlang, Jamersury, Charluitlang, Sekulhkai and Vartek because of absent in power supply. 46.72 per cent of household possessed Pit latrine while only 23.90 per cent possessed Septic tank. 14.48 per cent access water connection and 17.88 per cent of the total household possessed toilet within their premises. 28.88 families were also used bathroom within their premises.

4.3.6.1 Intra RD Block Disparity in Household Amenities:

i) Lawngtlai RD Block: The disparity in terms of household amenities varied from highest score value of 22.63 (Lawngtlai) and lowest value of -10.87 (Tuithumhnar) which falls under high and low level of development. Mualbu L and Ngengpuikai villages were score a value of -2.63 and -3.24 falls in medium level of development. R. Vanhne village falls under low level of development.

Table 4.3.37 Number of Household Amenities in Lawngtlai District

Sl No	Selected Area	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}
1	Lawngtlai	50.38	1.06	37.94	8.74	96.33	87.76	65.73	3.00	97.38	32.17	29.20	38.64	4.37	94.58	84.09
2	Mualbu L	38.64	0.00	10.53	0.00	52.63	15.79	10.53	2.95	31.00	10.53	0.00	0.00	78.00	12.00	0.00
3	Ngengpuikai	14.21	0.00	2.94	0.00	61.76	47.06	11.76	0.76	73.53	2.94	2.94	29.41	50.00	41.18	73.53
4	R. Vanhne	17.39	0.00	0.00	0.00	75.00	18.75	12.50	1.50	37.50	12.50	6.25	0.00	56.25	31.25	12.50
5	Tuithumhnar	13.27	0.00	0.00	0.00	15.00	0.00	0.00	2.00	30.00	5.00	5.00	0.00	80.00	15.00	5.00
6	Kamalanagar	25.84	3.42	21.34	11.31	57.58	32.13	14.14	2.11	48.33	18.77	14.40	21.08	12.85	13.11	82.01
7	Vaseitlang -II	4.63	0.00	0.00	0.00	26.19	7.14	0.00	2.02	59.52	0.00	0.00	26.19	57.14	0.00	0.00
8	Jamersury	10.78	0.00	0.00	0.00	21.05	13.16	0.00	1.82	2.00	0.00	0.00	0.00	10.00	0.00	0.00
9	Charluitlang	2.31	0.00	0.00	0.00	0.00	10.00	0.00	2.25	3.00	0.00	0.00	0.00	56.00	0.00	0.00
10	W Saizawh	3.31	0.00	0.00	0.00	44.44	11.11	0.00	2.56	2.50	22.22	11.11	0.00	72.22	27.78	0.00
11	Bungtlang 'S'	17.61	0.18	22.32	3.57	63.39	40.18	25.00	0.68	66.96	25.00	20.54	41.07	52.68	43.75	41.07
12	Hmunnuam	11.59	0.00	4.55	0.00	59.09	36.36	4.55	0.41	59.09	0.00	0.00	40.91	72.73	27.27	18.18
13	Dumzautlang	0.78	0.78	0.00	0.00	0.00	0.00	0.00	1.50	14.00	4.17	0.00	0.00	50.00	12.50	0.00
14	Vaseikai	6.44	1.72	4.35	0.00	36.96	17.39	21.74	0.39	21.74	2.17	10.87	0.00	19.57	19.57	15.22
15	Sekulhkai	2.22	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	55.56	0.00	0.00
16	Sangau	15.00	0.00	19.34	0.00	83.98	55.25	44.20	3.00	0.00	13.26	14.36	0.55	44.75	60.22	0.00
17	Vartek	17.39	0.00	0.00	0.00	40.00	20.00	0.00	2.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
18	Thaltlang	13.08	0.00	0.00	11.11	44.44	11.11	5.56	2.00	5.56	5.56	0.00	16.67	33.33	61.11	5.56
19	Pangkhua	11.44	0.82	10.17	5.08	61.02	23.73	18.64	2.00	15.25	8.47	5.08	40.68	37.29	5.08	5.60
20	Rawlbuk	17.57	0.68	6.90	13.79	68.97	41.38	24.14	2.00	10.34	20.69	0.00	34.48	51.72	13.79	15.00

Source: Field survey

X_1 – Mobile X_2 – Landline X_3 – Computer X_4 – Internet X_5 –Television X_6 – Fridge X_7 – Washing Machine
X_8 – Room X_9 – Bath Room within premises X_{10} - Two Wheeler X_{11} – Four Wheeler X_{12} – Water Connection
X_{13} – Pit-Latrine X_{14} –Septic Tank X_{15}-Toilet within premise

Table 4.3.38 Development Level of Household Amenities in Lawngtlai RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	22.63	1			
2	Mualbu L	-2.65	2	High	Above 5	Lawngtlai
3	Ngengpuikai	-3.24	3	Medium	-5 to 5	Mualbu L, Ngengpuikai
4	R. Vanhne	-5.86	4	Low	Below -5	R.Vanhne, Tuithumhnar
5	Tuithumhnar	-10.87	5			

ii) Sangau RD Block: Sangau and Rawlbuk villages scored a value of 6.82 and 3.95 which is categorized into high level of development, followed by Pangkhua village with a score value of 1.22. The low level of development scored less than -3 in the villages of Thaltlang and Vartek with having a score value of -3.74 and -8.26.

Table 4.3.39 Development Level of Household Amenities in Sangau RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Sangau	6.82	1			
2	Vartek	-8.26	5	High	Above 3	Sangau, Rawlbuk
3	Thaltlang	-3.74	4	Medium	-3 to 3	Pangkhua
4	Pangkhua	1.22	3	Low	Below -3	Thaltlang ,Vartek
5	Rawlbuk	3.95	2			

iii) Bungtlang S' RD Block: Bungtlang S scored a value of 16.66 and followed by Vaseikai (0.60). These villages were categorized under high and medium level of development. Three villages of Hmunnuam (-0.57), Dumzautlang (-6.26) and Sekulhkai (-10.42) were categorized into low level of development.

Table 4.3.40 Development Level of Household Amenities in Bungtlang S' RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Bungtlang S'	16.66	1			
2	Hmunnuam	-0.57	3	High	Above 5	Bungtlang S'
3	Dumzautlang	-6.26	4	Medium	-5 to 5	Vaseikai
4	Vaseikai	0.60	2	Low	Below -2	Hmunnuam Dumzautlang Sekulhkai
5	Sekulhkai	-10.42	5			

iv) Chawngte RD Block: Kamalanagar village scored the highest value of 18.64 which is categorized under high level of development. W. Saizawh village falls under medium level of development with a score value of 0.75. A score value of -4.95, -6.12 and -8.31 in the three villages of Jamersury, Vaseitlang - II and Charluitlang were classified into low level of development.

Table 4.3.41 Development Level of Household Amenities in Chawngte RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamalanagar	18.64	1			
2	Vaseitlang -II	-6.12	4	High	Above 4	Kamalanagar
3	Jamersury	-4.95	3	Medium	-4 to 4	W. Saizawh
4	Charluitlang	-8.31	5	Low	Below-4	Jamersury Vaseitlang-II Charluitlang
5	W Saizawh	0.75	2			

4.3.6.2 Inter RD Block Disparity in Household Amenities:

Lawngtlai block scored highest value of 16.57 while the lowest value was scored by Bungtlang S' with a score value of -9.80. Sangau RD Block falls under medium level of development, followed by Chawngte RD Block with a score value of -5.20.

Table 4.3.42 Develoment level of Household Amenities in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	16.57	1	High	Above 5	Lawngtlai
2	Chawngte	-5.20	3	Medium	-5 to 5	Sangau
3	Bungtlang S'	-9.80	4	Low	Below -5	Chawngte Bungtlang S'
4	Sangau	-1.56	2			

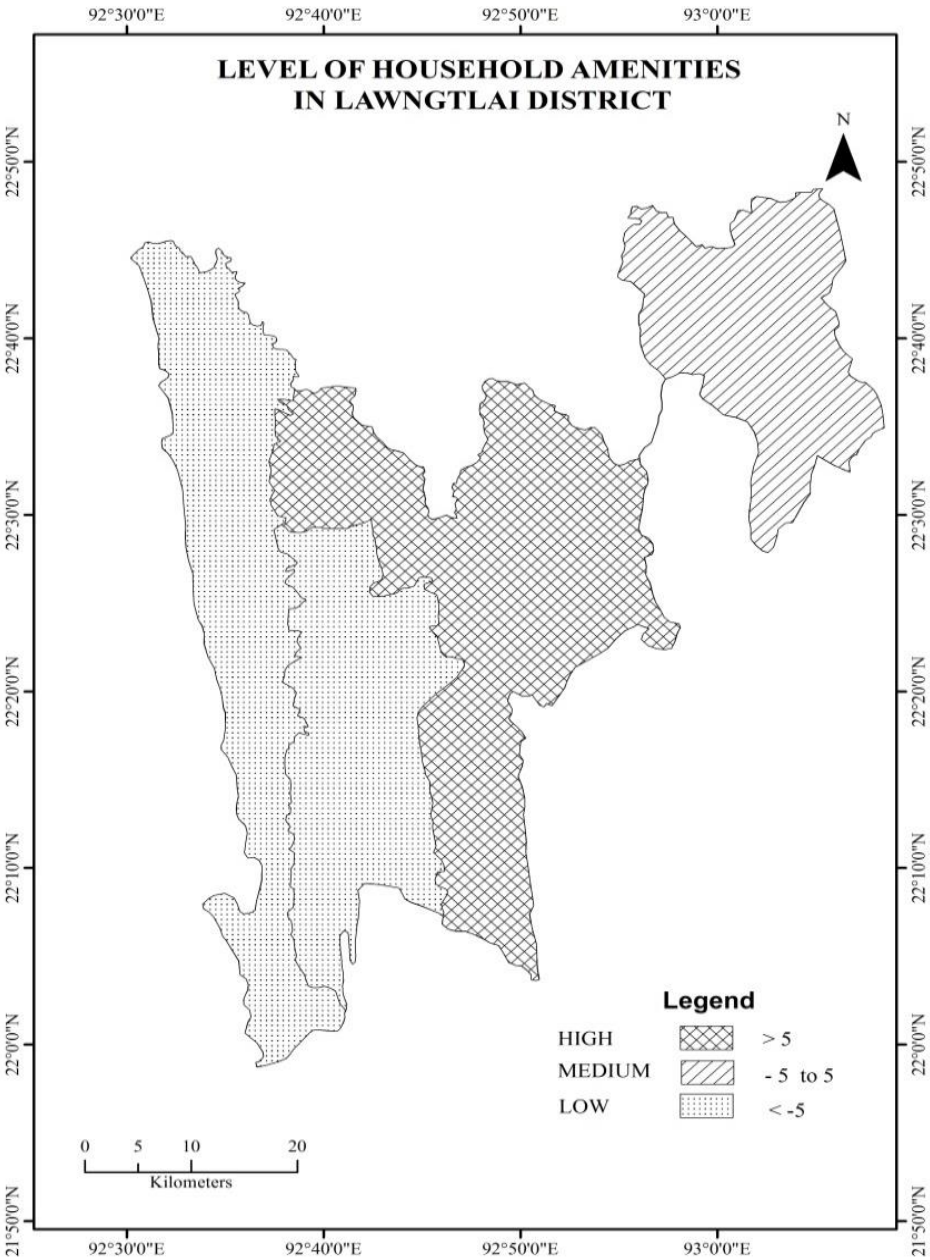

Figure: 4.3.11 Level of Household Amenities in Lawngtlai District

4.3.6.3 Spatial disparity in development of household amenities:

To conduct FA and rejected the null hypothesis, the variable indicators of household amenities were checked whether it should appropriate or not to run software. The KMO showed a value of 0.676 and Bartlett's test of sphericity was 0.000 significant levels showing the suitability of data.

Table 4.3.43 Level of Household Amenities in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	86.71	1			
2	Mualbu L	23.79	7			
3	Ngengpuikai	34.57	5			
4	R. Vanhne	24.51	10			
5	Tuithumhnar	12.04	16			
6	Kamalanagar	47.74	3			
7	Vaseitlang - II	15.73	14	Very high	Above 40	Lawngtlai, Bungtlang S', Kamalanagar
8	Jamersury	9.07	17	High	30 to 40	Sangau, Ngengpuikai, Rawlbuk
9	Charluitlang	5.10	19	Medium	20 to 30	Mualbu L, Pangkhua, Hmunnuam, R.Vanhne, Thaltlang
10	W Saizawh	17.56	13	Low	10 to 20	Vaseikai, W Saizawh, Vaseitlang-II, Vartek, Tuithumhnar
11	Bungtlang S'	47.84	2	Very low	Below 10	Jamersury, Dumzautlang, Charluitlang, Sekulhkai
12	Hmunnuam	24.72	9			
13	Dumzautlang	6.63	18			
14	Vaseikai	19.62	12			
15	Sekulhkai	3.55	20			
16	Sangau	37.35	4			
17	Vartek	13.06	15			
18	Thaltlang	21.51	11			
19	Pangkhua	27.67	8			
20	Rawlbuk	33.28	6			

From the above table 4.3.43, the development levels of household amenities in Lawngtlai district were classified into five:-

i) Very High Development: The three study area of Lawngtlai town, Bungtlang S', and Kamalanagar village scored the highest value as they are having better higher educational institution.

iii) High Development: Sangau, Ngengpuikai and Rawlbuk villages falls under high level of development which is scoring between the values of 30-40.

iv) Medium Development: Mualbu L, Pangkhua, Hmunnuam, R.Vanhne and Thaltlang villages scored a value of 20-30 and then categorized under medium development.

iv) Low Development: Vaseikai, W Saizawh, Vaseitlang-II, Vartek, Tuithumhnar villages of Hmunnuam, Charluitlang and Ngengpuikai which is encompassed in natural information.

v) Very Low Development: Jamersury, Dumzautlang, Charluitlang and Sekulhkai villages scored a value of 9.07, 6.63, 5.10 and 3.55.

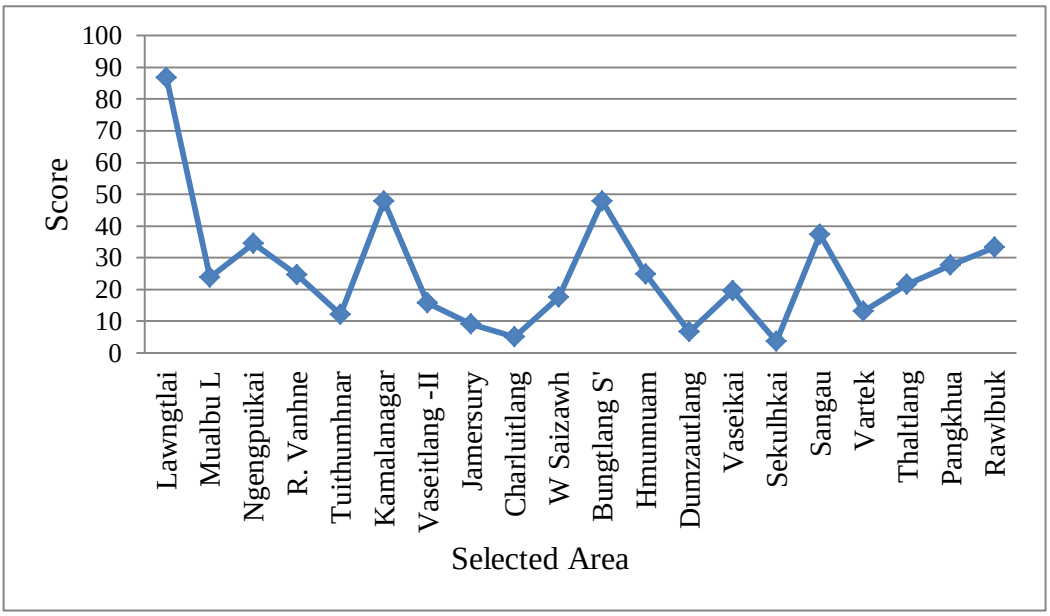

Figure: 4.3.12 Level of Household Amenities in Lawngtlai District

4.3.7 Level of Banking Development in Lawngtlai District:

The functioning of an economy depends on the financial system of a country. The financial system includes banks as a central entity along with other financial services providers which is deeply ingrained in the society and provides employment and economic suitability to a large population. Three indicators such as numbers of banks, number of account holder and insurance policy subscribed are used for determination of development level in banking in the study area, due to the shortage of information; a large number of indicators could not be used for it.

Table 4.3.44 Number of Bank, Number of Account Holders and Insurance Subscribed in Lawngtlai District

Sl No	Selected Area	No of Banks (%)	No of Bank Account holders (%)	No of Insurance subscribed (%)
1	Lawngtlai	66.67	62.77	48.11
2	Mualbu L	0.00	1.72	0.00
3	Ngengpuikai	0.00	1.07	0.31
4	R. Vanhne	0.00	0.66	0.63
5	Tuithumhnar	0.00	0.57	0.63
6	Kamalanagar	11.11	12.55	15.09
7	Vaseitlang -II	0.00	1.31	0.31
8	Jamersury	0.00	0.82	0.00
9	Charluitlang	0.00	0.74	0.00
10	W Saizawh	0.00	0.74	0.31
11	Bungtlang 'S'	11.11	4.10	7.55
12	Hmunnuam	0.00	0.82	0.31
13	Dumzautlang	0.00	0.53	0.63
14	Vaseikai	0.00	1.48	0.00
15	Sekulhkai	0.00	0.37	0.00
16	Sangau	11.11	7.22	9.12
17	Vartek	0.00	0.12	1.57
18	Thaltlang	0.00	0.53	1.57
19	Pangkhua	0.00	1.27	10.06
20	Rawlbuk	0.00	0.62	3.77

Source: Field survey

4.3.7.1 Intra RD Block disparity in banking development:

i) Lawngtlai RD Block: Lawngtlai town scored high value of 5.366 comparing with other study area like Tuithumhnar (-1.346), Ngengpuikai (-1.343), R.Vanhne (-1.343) and Mualbu L (-1.334).

Table 4.3.45 Development Level of Banking in Lawngtlai RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	5.366	1			
2	Mualbu L	-1.334	3	High	Above 1.343	Lawngtlai
3	Ngengpuikai	-1.343	5	Medium	-1.343 to 1.343	Tuithumhnar, Ngengpuikai, R.Vanhne
4	R. Vanhne	-1.343	4	Low	Below -1.343	Mualbu L
5	Tuithumhnar	-1.346	2			

ii) Sangau RD block: The highest value scored by Sangau village with a score value of 4.51 and followed by Pangkhua village (0.50) which is categorized into high and medium level of development. The low level of banking development categorized to Rawlbuk (-1.24), Thaltlang (-1.81) and Vartek (-1.95) villages.

Table 4.3.46 Development Level of Banking in Sangau RD Block

Sl No	Selected Area	Score	Level	Score	RD Block
1	Sangau	4.51			
2	Vartek	-1.95	High	Above 1	Sangau
3	Thaltlang	-1.81	Medium	-1 to 1	Pangkhua
4	Pangkhua	0.50	Low	Below -1	Rawlbuk, Thaltlang, Vartek
5	Rawlbuk	-1.24			

iii) Bungtlang S' RD Block: Bungtlang S' village scored a value of 5.34 which is the highest score value in this block. The other areas like Hmunnuam (-1.11), Dumzautlang (-1.19), Vaseikai (-1.55) and Sekulhkai (-1.48) scored less than -1.

Table 4.3.47 Development Level of Banking in Bungtlang S' RD Block					
Sl No	Selected Area	Score	Level	Score	RD Block
1	Bungtlang S'	5.34			
2	Hmunnuam	-1.11	High	Above 1.2	Bungtlang S'
3	Dumzautlang	-1.19	Medium	-1.2 to 1.2	Hmunnuam, Dumzautlang
4	Vaseikai	-1.55	Low	Below -1.2	Vaseikai, Sekulhkai
5	Sekulhkai	-1.48			

iv) Chawngte RD Block: Kamalanagar village scored a value of 5.36 which falls under high level of development. The medium level of development, ranging between a value of -1.25 to 1.25 recorded by Vaseitlang-II (-1.25). Three villages of Jamersury (-1.32), W. Saizawh (-1.36) and Charluitlang (-1.41) were falls under low level of development.

Table 4.3.48 Development Level of Banking in Chawngte RD Block					
Sl No	Selected Area	Score	Level	Score	RD Block
1	Kamalanagar	5.36			
2	Vaseitlang -II	-1.25	High	Above1.25	Kamalanagar
3	Jamersury	-1.32	Medium	-1.25 to 1.25	Vaseitlang-II
4	Charluitlang	-1.41	Low	Below -1.25	Jamersury, W Saizawh, Charluitlang
5	W Saizawh	-1.36			

4.3.7.2 Inter RD Block disparity in banking development:

The highest value was recorded by Sangau block with a score value of 2.22 which falls under high level of development. Medium level of development found in awngtlai town with a score value of 1.41 and followed by Bungtlang S' (-1.68) and Chawngte Block (-1.95) which falls under low development.

Table 4.3.49 Level of Banking Development in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	1.41	2	High	Above 1	Sangau
2	Chawngte	-1.95	4	Medium	-1 to 1	Lawngtlai
3	Bungtlang S’	-1.68	3	Low	Below -1	Bungtlang S’, Chawngte
4	Sangau	2.22	1			

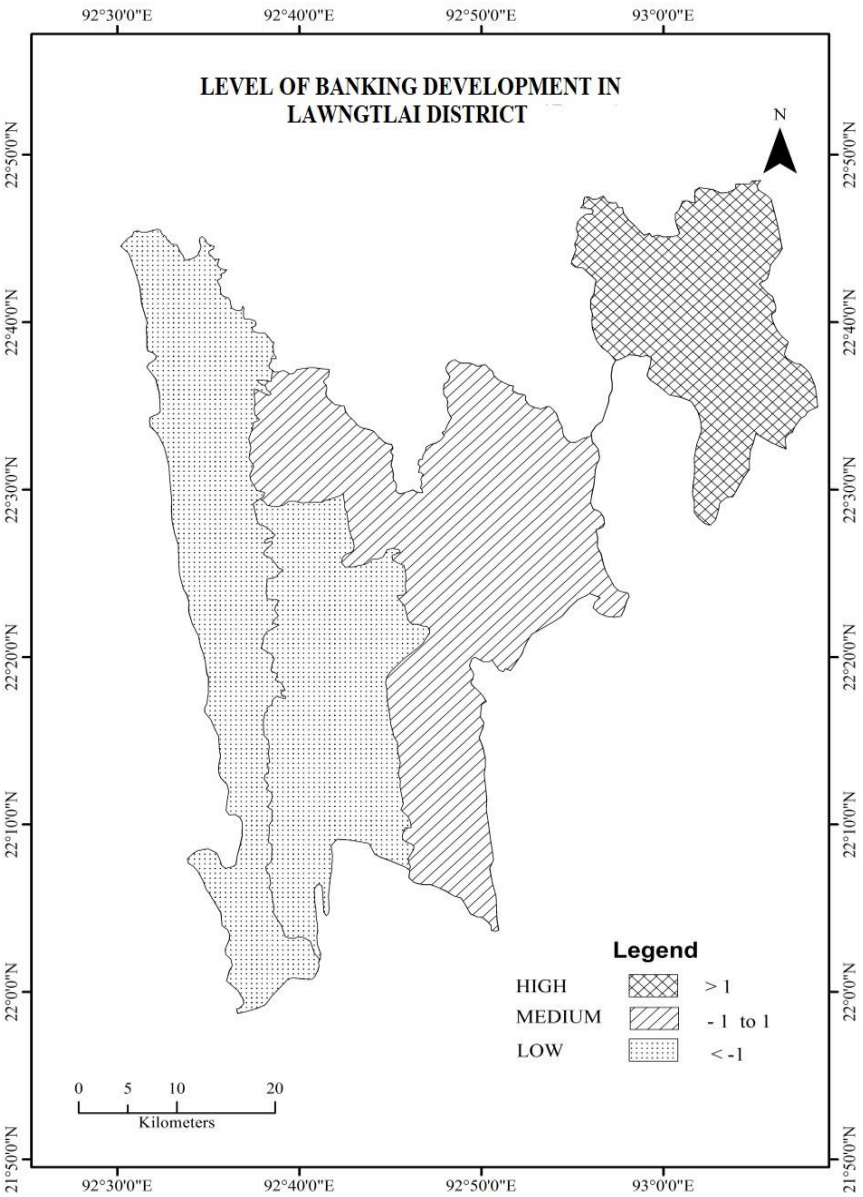

Figure: 4.3.13 49 Level of Banking Development in Lawngtlai District

4.3.7.3 Spatial disparity in Banking Development:

The KMO showed a value of 0.768 and Bartlett's test of sphericity was 0.000 significant levels showing the suitability of data and then acquired level of banking development.

Table 4.3.50 Level of Banking Development in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	8.79	1			
2	Mualbu L	0.07	10			
3	Ngengpuikai	0.06	12			
4	R. Vanhne	0.06	13			
5	Tuithumhnar	0.05	14			
6	Kamalanagar	1.98	2			
7	Vaseitlang -II	0.07	9	Very high	Above 1.5	Lawngtlai, Kamalanagar
8	Jamersury	0.03	18	High	1.0 to 1.5	Sangau, Bungtlang S'
9	Charluitlang	0.02	19	Medium	0.5 to 1.0	Pangkhua
10	W Saizawh	0.04	17	Low	0.05 to 0.5	Rawlbuk, Thaltlang Vartek, Vaseitlang-II Mualbu L, Vaseikai Ngengpuikai, R.Vanhne Tuithumhnar Dumzautlang Hmunnuam
11	Bungtlang S'	1.13	4	Very low	Below 0.05	W.Saizawh, Jamersury Charluitlang, Sekulhkai
12	Hmunnuam	0.05	16			
13	Dumzautlang	0.05	15			
14	Vaseikai	0.06	11			
15	Sekulhkai	0.01	20			
16	Sangau	1.37	3			
17	Vartek	0.09	8			
18	Thaltlang	0.11	7			
19	Pangkhua	0.66	5			
20	Rawlbuk	0.25	6			

From the above table 4.3.50, the autonomous district council headquarters of Lawngtlai and Kamalanagar scored a value of 8.79 and 1.98 which falls under very high level of development. Two rural development block centers of Sangau and

Bungtlang S' were categorized into high level of development with a score value of 1.37 and 1.13. A score value of 0.66 in the villages of Pangkhua holds medium level of development. Rawlbuk (0.25), Thaltlang (0.11), Vartek (0.09), Vaseitlang-II (0.07), Mualbu L (0.07), Vaseikai (0.06), Ngengpuikai (0.06), R.Vanhne (0.06), Tuithumhnar (0.05) and Hmunnuam (0.05) villages were falls under low level of development. Four villages of W.Saizawh (0.04), Jamersury (0.03), Charluitlang (0.02), Sekulhkai (0.01) were classified as very low level of development.

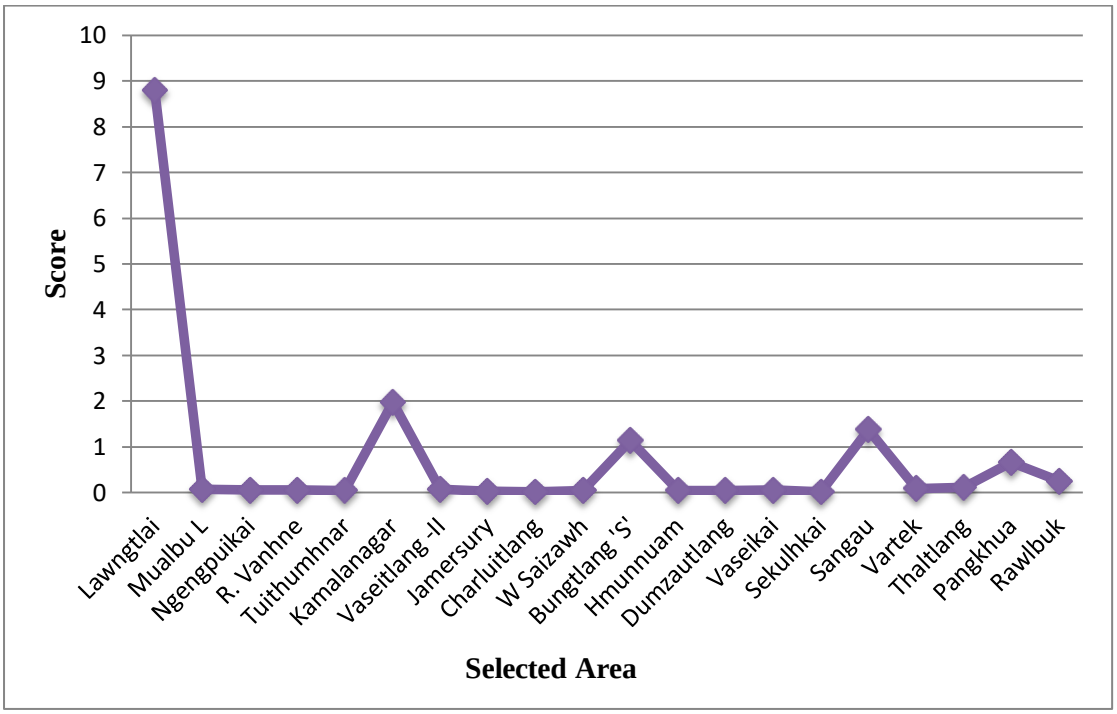

Figure: 4.3.14 Level of Banking Development in Lawngtlai District

4.3.8 Level of Transportation development in Lawngtlai District:

The transport sector is an important component of the economy and it is a common tool for development. The principal role of transport is to provide or improve access to different locations for businesses and individuals, for both freight and personal movements. A relation between the quantity and quality of transport infrastructure and the level of economic development is apparent. High density transport infrastructure and highly connected networks are commonly associated with high levels of development (Rodrigue and Notteboom, 2019). Efficient transport systems provide economic and social opportunities, and, benefits that result in positive multipliers effects such as better accessibility to markets, generating employment and additional investments.

Road transport sector has significant role to associate harmony and financial strength of the region as it is the arteries through which the economy pulses. The transportation development also measures with the help of indicators from road transport system such as number of vehicles, regularity of services, major problems faced by the local people and conditions of roads like metalled and unmetalled. 59.22 per cent of the total population was used Sumo for means of transportation and 29.4 per cent were travel/move from village to other places by foot only. 50 per cent (10 villages) were unmetalled. 24.27 per cent of the family could not access vehicle for travelling due to financial crisis. Public transport services are not available for 40.62 per cent who are in the remotes areas and 35.09 per cent of the respondents could not afford medical facilties when needed due to poor conditions of road. More than 60 per cent of the respondents were moveable from their villages to other places only after 1 month due to inaccessibility and backwardness of economy.

Table 4.3.51 Transportation Development in Lawngtlai District

Sl No	Selected Area	Mode of transportation (No of vehicles in %)							Regularity of services (%)					Major Problems (%)			Road Conditions	
		X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}	X_{17}
1	Lawngtlai	1.75	76.40	0.52	1.57	14.16	5.59	0.00	1.22	3.85	4.72	6.29	83.92	40.56	18.53	40.91	1.00	0.00
2	Mualbu L	0.00	52.63	0.00	0.00	0.00	21.05	26.32	0.00	0.00	0.00	5.26	94.74	26.32	31.57	42.11	1.00	0.00
3	Ngengpuikai	2.94	94.12	0.00	0.00	2.94	0.00	0.00	0.00	2.94	5.88	38.24	52.94	44.12	14.7	41.18	1.00	0.00
4	R. Vanhne	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	87.50	50	12.5	37.5	1.00	0.00
5	Tuithumhnar	0.00	90.00	0.00	0.00	5.00	0.00	5.00	0.00	0.00	0.00	5.00	95.00	30	50	20	0.00	1.00
6	Kamalanagar	1.03	29.82	4.88	3.34	2.31	4.63	53.98	4.63	8.23	3.08	11.31	72.75	21.08	37.79	41.13	1.00	0.00
7	Vaseitlang -II	0.00	45.24	0.00	0.00	0.00	2.38	52.38	0.00	0.00	16.67	7.14	76.19	35.71	30.96	33.33	0.00	1.00
8	Jamersury	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	100.00	34.21	42.11	23.68	0.00	1.00
9	Charluitlang	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	100.00	50	50	0	0.00	1.00
10	W Saizawh	0.00	0.00	0.00	0.00	5.56	5.56	88.89	0.00	0.00	0.00	0.00	100.00	33.33	44.45	22.22	0.00	1.00
11	Bungtlang 'S'	4.46	85.71	0.89	1.79	7.14	0.00	0.00	0.00	0.89	0.00	12.50	86.61	34.82	23.22	41.96	1.00	0.00
12	Hmunnuam	0.00	86.36	0.00	0.00	0.00	13.64	0.00	0.00	9.09	13.64	9.09	68.18	45.45	4.55	50	1.00	0.00
13	Dumzautlang	8.33	66.67	0.00	0.00	0.00	4.17	20.83	0.00	0.00	12.50	8.33	79.17	50	50	0	0.00	1.00
14	Vaseikai	2.17	80.43	0.00	0.00	2.17	0.00	15.22	36.96	0.00	0.00	41.30	21.74	26.09	36.95	36.96	0.00	1.00
15	Sekulhkai	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	11.11	11.11	66.67	11.11	100	0	0	1.00	0.00
16	Sangau	0.00	89.50	0.00	4.42	3.87	1.66	0.55	7.18	9.94	2.76	7.73	72.38	32.6	26.52	40.88	1.00	0.00
17	Vartek	0.00	40.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00	10.00	10.00	80.00	80	20	0	0.00	1.00
18	Thaltlang	5.56	33.33	0.00	0.00	5.56	5.56	50.00	5.56	16.67	0.00	33.33	44.44	11.11	22.22	66.67	0.00	1.00
19	Pangkhua	35.59	33.90	0.00	0.00	5.08	8.47	15.25	11.86	52.54	8.47	10.17	16.95	35.58	6.09	58.33	1.00	0.00
20	Rawlbuk	6.90	79.31	0.00	0.00	10.34	3.45	0.00	3.45	34.48	24.14	17.24	20.69	7	17.12	75.88	0.00	1.00

Source : Field survey

X_1 – Bus *X_2 – Sumo* *X_3 – Taxi* *X_4 – Auto* *X_5 - 2 wheeler* *X_6 – 4 wheeler* *X_7 – By foot*
X_8 – Daily *X_9- 3 in a week* *X_{10} – 2 in a week* *X_{11} – 1 in a week* *X_{12} – After 1 month* *X_{13} – No vehicle services*
X_{14} – Poor Road *X_{15} - Capital Constraint* *X_{16} – Metalled* *X_{17} – Non Metalled*

4.3.8.1 Intra RD Block disparity in transportation development:

i) Lawngtlai RD Block: Lawngtlai town scored the highest value of 4.70 and followed by Tuithumhnar (0.46) and Ngengpuikai (0.03) villages. The two villages of R.Vanhne and Mualbu L with a score value of -2.16 and -3.03 falls under low level of development.

Table 4.3.52 Level of Tranportation Development in Lawngtlai RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	4.70	1			
2	Mualbu L	-3.03	5	High	Above 2	Lawngtlai
3	Ngengpuikai	0.03	3	Medium	-2 to 2	Tuithumhnar, Ngengpuikai
4	R. Vanhne	-2.16	4	Low	Below - 2	R.Vanhne, Mualbu L
5	Tuithumhnar	0.46	2			

ii) Sangau RD Block: Pangkhua village of having 4.75 score value holds first rank with highest level of development. Sangau, Rawlbuk and Thaltlang villages with a score value of 1.90, 0.52, -0.56 holds second position with medium level of development. Vartek village categorize into low level of development with a score value of -6.60.

Table 4.3.53 Development Level of Transportation in Sangau RD Block

Sl No	Selected Area	Score	Level	Score	RD Block
1	Sangau	1.90			
2	Vartek	-6.60	High	Above 4	Pangkhua
3	Thaltlang	-0.56	Medium	-4 to 4	Sangau, Rawlbuk, Thaltlang
4	Pangkhua	4.75	Low	Below -4	Vartek
5	Rawlbuk	0.52			

iii) Bungtlang S' RD Block: High level of development found in Bungtlang S' village with a score value of 4.08 followed by the two villages of Hmunnuam and Sekulhkai with 0.72 and -0.02 score value which falls in the category of medium level

of development. The low level of development found in the village of Vaseikai and Dumzautlang with a score value of 0.02 and -2.55.

Table 4.3.54 Level of Transport Development in Bungtlang S' RD Block					
Sl No	Selected Area	Score	Level	Score	RD Block
1	Bungtlang S'	4.08			
2	Hmunnuam	0.72	High	Above 2	Bungtlang S'
3	Dumzautlang	-2.55	Medium	-2 to 2	Hmunnuam, Sekulhkai
4	Vaseikai	-2.23	Low	Below -2	Vaseikai, Dumzautlang
5	Sekulhkai	-0.02			

iv) Chawngte RD Block: Kamalanagar village scored 7.41 values with level of high development. Vaseitlang – II and W.Saizawh also categorized under medium level of development with a score value of -4.21 and 0.55. The low level development found in Jamersury (-4.21) and Charluitlang (-5.26) villages.

Table 4.3.55 Level of Transport Development in Chawngte RD Block					
Sl No	Selected Area	Score	Level	Score	RD Block
1	Kamanagar	7.41			
2	Vaseitlang -II	1.51	High	Above 3	Kamalanagar
3	Jamersury	-4.21	Medium	-3 to 3	Vaseitlang-II, W Saizawh
4	Charluitlang	-5.26	Low	Below -3	Jamersury, Charluitlang
5	W Saizawh	0.55			

4.3.8.2 Inter RD Block disparity in transportation development:

The highest level of development found in Sangau block with a score value of 1.28, falls under high level of development. Lawngtlai and Bungtlang S' blocks scored a value of 1.18 and -1.12 which is under medium level of development. The low level of development found in Chawngte RD block with a score value of -1.35.

Table 4.3.56 Level of Transportation development in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	1.18	2	High	Above 1.2	Sangau
2	Chawngte	-1.35	4	Medium	-1.2 to 1.2	Lawngtlai, Bungtlang S’
3	Bungtlang S’	-1.12	3	Low	Below -1.2	Chawngte
4	Sangau	1.28	1			

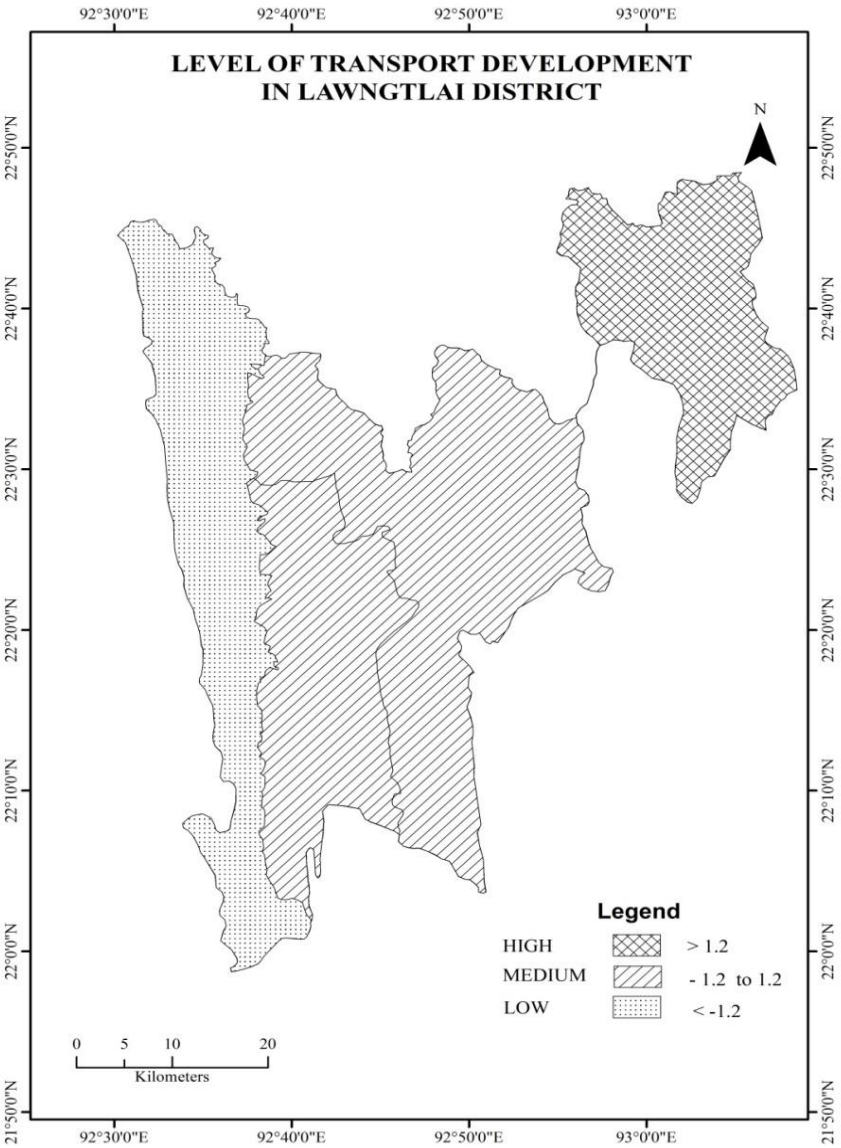

Figure: 4.3.15 Level of Transportation Development in Lawngtlai District

4.3.8.3 Spatial disparity in transportation development:

The KMO showed a value of 0.258 and Bartlett's test of sphericity was 0.000 significant levels showing the suitability of data.

Table 4.3.57 Level of Transportation Development in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	19.18	1			
2	Mualbu L	8.55	11			
3	Ngengpuikai	13.80	3			
4	R. Vanhne	12.34	7			
5	Tuithumhnar	-1.14	14			
6	Kamalanagar	8.68	10			
7	Vaseitlang-II	-3.48	16	Very high	Above 15	Lawngtlai, Sangau
8	Jamersury	-8.83	19	High	10 to 15	Ngengpuikai, Bungtlang S', Pangkhua, Hmunnuam, R.Vanhne
9	Charluitlang	-10.78	20	Medium	5 to 10	Rawlbuk, Sekulhkai, Kamalanagar, Mualbu L
10	W.Saizawh	-6.78	18	Low	-5 to 5	Thaltlang, Vaseikai, Vaseitlang-II, Dumzautlang
11	Bungtlang S'	13.07	4	Very low	Below -5	W.Saizawh, Jamersury, Charluitlang
12	Hmunnuam	12.57	6			
13	Dumzautlang	-4.10	17			
14	Vaseikai	0.23	13			
15	Sekulhkai	9.03	9			
16	Sangau	15.50	2			
17	Vartek	-1.57	15			
18	Thaltlang	0.56	12			
19	Pangkhua	12.60	5			
20	Rawlbuk	9.37	8			

Table 4.3.57 showed the level of tranportation development in Lawngtlai district. The district headquarters of Lawngtlai town and Sangau village in the district categorized as very high level of development with a score value of 19.18 and 15.50. Five villages of Ngengpuikai (13.80), Bungtlang S' (13.07), Pangkhua (9.37), Hmunnuam (12.57) and R.Vanhne (12.34) were classified into high level of

transportation development. A score value of 9.37, 9.03, 8.68 and 8.55 in the villages of Rawlbuk, Sekulhkai, Kamalanagar and Mualbu L were falls under medium level of development. Four villages of Thaltlang, Vaseikai, Vaseitlang-II and Dumzautlang villages falls under low level of development with a score value of 0.56, 0.23, -3.48, - 4.10. W Saizawh (-6.78), Jamersury (-8.83) and Charluitlang (-10.78) also categorized as very low level of development.

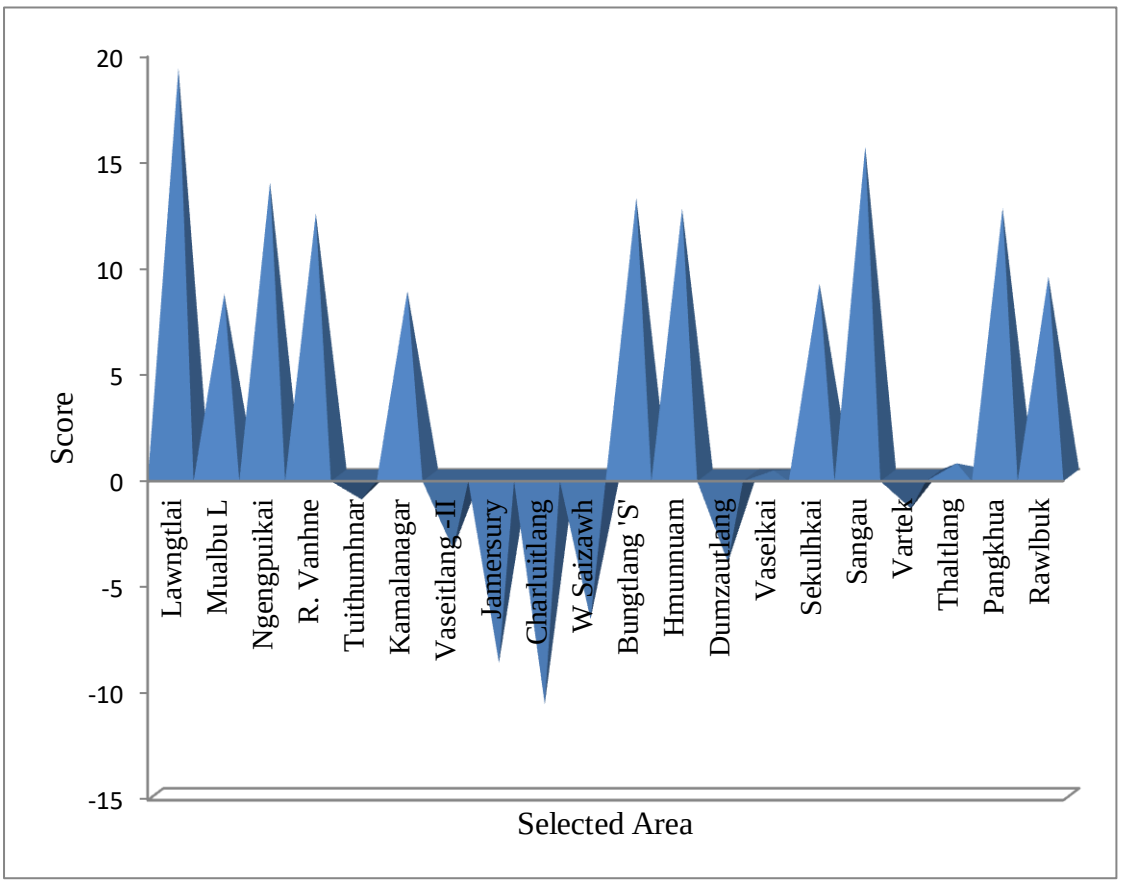

Figure: 4.3.15 Level of Transportation Development in Lawngtlai District

4.3.9 Level of Development in Distance (location) of Lawngtlai District:

Geographical location plays a vital part in access to market, services and other requirements of the region. Accessibility, generally describes the degree to which a product, device, service, or environment is accessible by as many people as possible (Reggiani, 2015). Ability to reach desired goods, services, activities and destinations may enhance the quality of life and better access to the locations of input materials, and lead to markets that are more productive and competitive (Vickerman, Spiekermann and Wegener, 2015). The consequence of unequal access to services and opportunities due to centrality and remoteness reflected the availability of resources, income distribution and employment opportunity which influences the socio-economic conditions of people.

The location or distance of villages from rural development blocks and villages to district capital were taken as an indicators, as the district capital provides services to rural areas. And, the administriative block plays a vigorous role for stability of socio-economic especially in the retrograde rural areas of the state. The distance level of School, Colleges, Hospital or sub-centers, Market place, Post office, Bank and Water supply from residence in the study areas were also imperative indicators for development.

4.3.9.1 Intra RD Block disparity in distance (location)

i) Lawngtlai RD Block: Table 4.3.58 showed that the highest development found in Lawngtlai town with a score value of 7.01. Two villages of Tuithumhnar and Mualbu L scored value of 0.22 and -0.28 which falls under high level of development. R. Vanhne (-2.14) and Ngengpuikai (-4.81) villages scored a low value which falls under low level of development.

Table 4.3.58 Development in Distance level of Lawngtlai RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	7.01	1			
2	Mualbu L	-0.28	3	High	Above 2	Lawngtlai
3	Ngengpuikai	-4.81	5	Medium	-2 to 2	Tuithumhnar, Mualbu L
4	R. Vanhne	-2.14	4	Low	Below - 2	R.Vanhne, Ngengpuikai
5	Tuithumhnar	0.22	2			

ii) Lawngtlai RD Block: Sangau village scored a value of 2.82, categorized as high level of development. Three villages of Rawlbuk (-0.10), Vartek (-0.69) and Thaltlang (-0.98) were under medium level of development. The low level of development recorded in Pangkhua village with a score value of -0.10.

Table 4.3.60 Development Level of Distance in Sangau RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Sangau	2.82	1			
2	Vartek	-0.69	3	High	Above 1	Sangau
3	Thaltlang	-0.98	4	Medium	-1 to 1	Rawlbuk, Vartek, Thaltlang
4	Pangkhua	-1.04	5	Low	Below -1	Pangkhua
5	Rawlbuk	-0.10	2			

iii) Bungtlang S’ RD Block: Bungtlang S’ (6.76) village scored the highest value and falls under very high level of development whereas Dumzautlang village scored the lowest value of -7.77. Three villages of Hmunnuam (2.20), Sekulhkai (-0.21) and Vaseikai (-0.98) falls under medium level of development.

Table 4.3.61 Development Level of Distance in Bungtlang S’ RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Bungtlang S'	6.76	1			
2	Hmunnuam	2.20	2	High	Above 5	Bungtlang S’
3	Dumzautlang	-7.77	5	Mediu m	-5 to 5	Hmunnuam, Sekulhkai, Vaseikai
4	Vaseikai	-0.98	3	Low	Below -5	Dumzautlang
5	Sekulhkai	-0.21	4			

iv) Chawngte RD Block: W. Saizawh scored highest value of 2.73, followed by Jamersury (1.91) and Kamanalagar (1.70) which is categorized under high and medium level of development. Vaseitlang-II village (-7.33) scored the lowest value.

Table 4.3.62 Development Level of Distance in Chawngte RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamalanagar	1.70	3			
2	Vaseitlang -II	-7.33	5	High	Above 2	W Saizawh
3	Jamersury	1.91	2	Medium	-2 to 2	Jamersury, Kamanalagar, Charluitlang
4	Charluitlang	0.98	4	Low	Below -2	Vaseitlang-II
5	W Saizawh	2.73	1			

Table 4.3.59 Indicators of Locational (Distance) Development in Lawngtlai District										
Sl No	Selected Area	Distance from Village (Km)		Distance from residence (m)						
		RD Block	District Capital	Schooll	College	Hospital/ Sub Centre	Post Office	Market	Bank	Water Supply
1	Lawngtlai	0	0	300	200	392	370	457	452	124
2	Mualbu L	77	77	79	7700	100	11000	11000	11000	299
3	Ngengpuikai	46	39	389	3900	100	39000	39000	39000	223
4	R. Vanhne	28	28	233	2800	27000	27000	27000	27000	189
5	Tuithumhnar	23	108	286	108000	2300	2300	2300	2300	173
6	Kamalanagar	0	187	267	187000	200	250	100	329	33
7	Vaseitlang -II	52	138	398	138000	7000	7000	7000	52000	443
8	Jamersury	14	101	5	101000	100	14000	14000	14000	22
9	Charluitlang	60	145	15	145000	100	3000	3000	3000	250
10	W Saizawh	4	191	6	191000	500	400	400	400	6
11	Bungtlang S'	0	81	319	8100	920	1236	296	222	119
12	Hmunnuam	10	71	266	7100	10000	10000	10000	10000	31850
13	Dumzautlang	40	125	654	125000	120	40000	40000	40000	202
14	Vaseikai	49	127	252	127000	500	100	1000	35000	15
15	Sekulhkai	24	96	289	24000	24000	24000	2400	24000	51
16	Sangau	0	152	298	152000	200	333	555	699	70
17	Vartek	36	153	102	153000	2000	2000	2000	36000	94
18	Thaltlang	7	167	121	167000	7000	7000	7000	7000	54
19	Pangkhua	7	159	185	159000	248	7800	7800	7800	225
20	Rawlbuk	26	121	180	121000	253	28000	20741	28000	28
Source: Fiel survey										

4.3.9.2 Inter RD Block disparity in distance (location):

The two rural development blocks of Chawngte and Sangau scored a value of 3.73 and 2.69 which is categorized under high level of development. Lawngtlai block scored a value of -1.14 in the locational development. Bungtlang S' block with a score value of -5.28 falls under low level of development.

Table 4.3.63 Development Level of Distance in Lawngtlai District

Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	-1.14	3	High	Above 2	Chawngte, Sangau
2	Chawngte	3.73	1	Medium	-2 to 2	Lawngtlai
3	Bungtlang S'	-5.28	4	Low	Below -2	Bungtlang S'
4	Sangau	2.69	2			

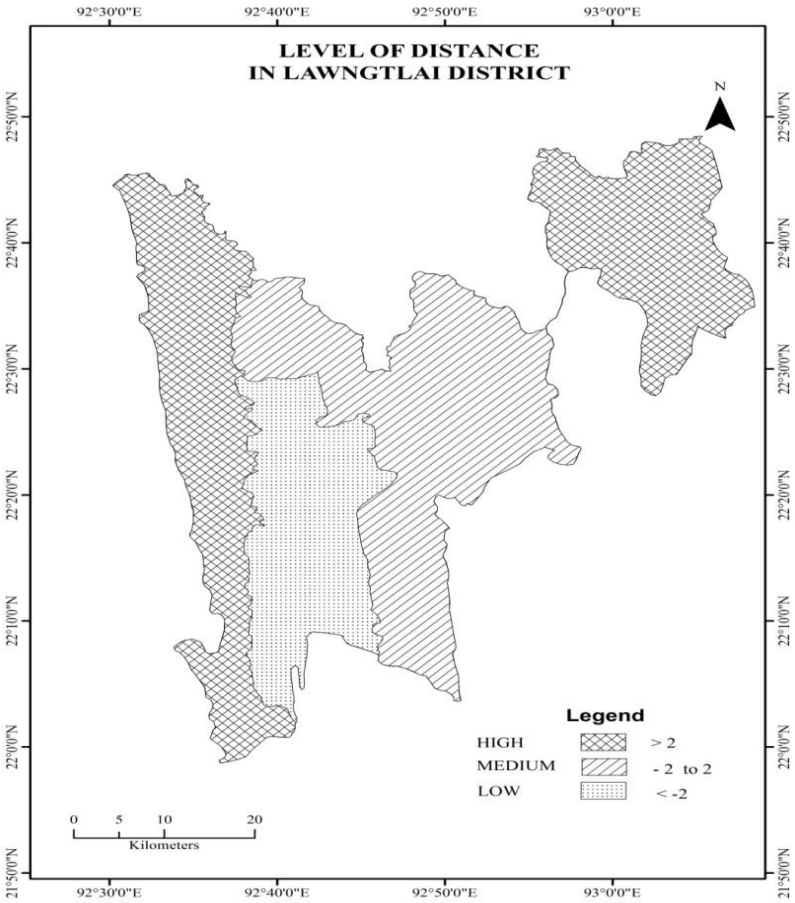

Figure: 4.3.16 Development Level of Distance (location) in Lawngtlai District

4.3.9.3 Spatial disparity in development level of Distance (location):

The KMO showed a value of 0.476 and Bartlett's test of sphericity was 0.000 significant levels showing the appropriateness of data.

Table 4.3.64 Level of Location (Distance) Development in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	11.17	1			
2	Mualbu L	8.31	10			
3	Ngengpuikai	2.55	19			
4	R. Vanhne	6.41	16			
5	Tuithumhnar	9.22	6			
6	Kamalanagar	9.02	7			
7	Vaseitlang -II	4.76	18	Very high	Above 10	Lawngtlai, Bungtlang S', Hmunnuam
8	Jamersury	8.20	11	High	8 to 10	W Saizawh, Sangau, Tuithumhnar, Kamalanagar, Charluitlang, Thaltlang, Mualbu L, Jamersury, Pangkhua
9	Charluitlang	9.00	8	Mediu m	6 to 8	Sekulhkai, Vartek, Vaseikai, R.Vanhne
10	W Saizawh	9.84	4	Low	4 to 6	Rawlbuk, Vaseitlang-II
11	Bungtlang S'	10.59	2	Very low	Below 4	Ngengpuikai, Dumzautlang
12	Hmunnuam	10.35	3			
13	Dumzautlang	0.17	20			
14	Vaseikai	7.10	15			
15	Sekulhkai	7.76	13			
16	Sangau	9.28	5			
17	Vartek	7.33	14			
18	Thaltlang	8.57	9			
19	Pangkhua	8.12	12			
20	Rawlbuk	4.97	17			

Table 4.3.64 showed the level of location (distance) development in Lawngtlai District. Lawngtlai, Bungtlang S' and Hmunnuam scored a value of 11.17, 10.59 and 10.35 which falls under very high level of development. There are nine villages under high level of development such as W.Saizawh (9.84), Sangau (9.28), Tuithumhnar

(9.22), Kamalanagar (9.02), Charluitlang (9.00), Thaltlang (8.57), Mualbu L (8.31), Jamersury (8.20) and Pangkhua (8.12).

Sekulhkai (7.76), Vartek (7.33), Vaseikai (7.10) and R.Vanhne (6.41) villages classified as medium level of development. Two villages of Rawlbuk and Vaseitlang-II also categorize under low level of development. Ngengpuikai and Dumzautlang with having a score value of 2.55 and 0.17 clutch the lowest level of development.

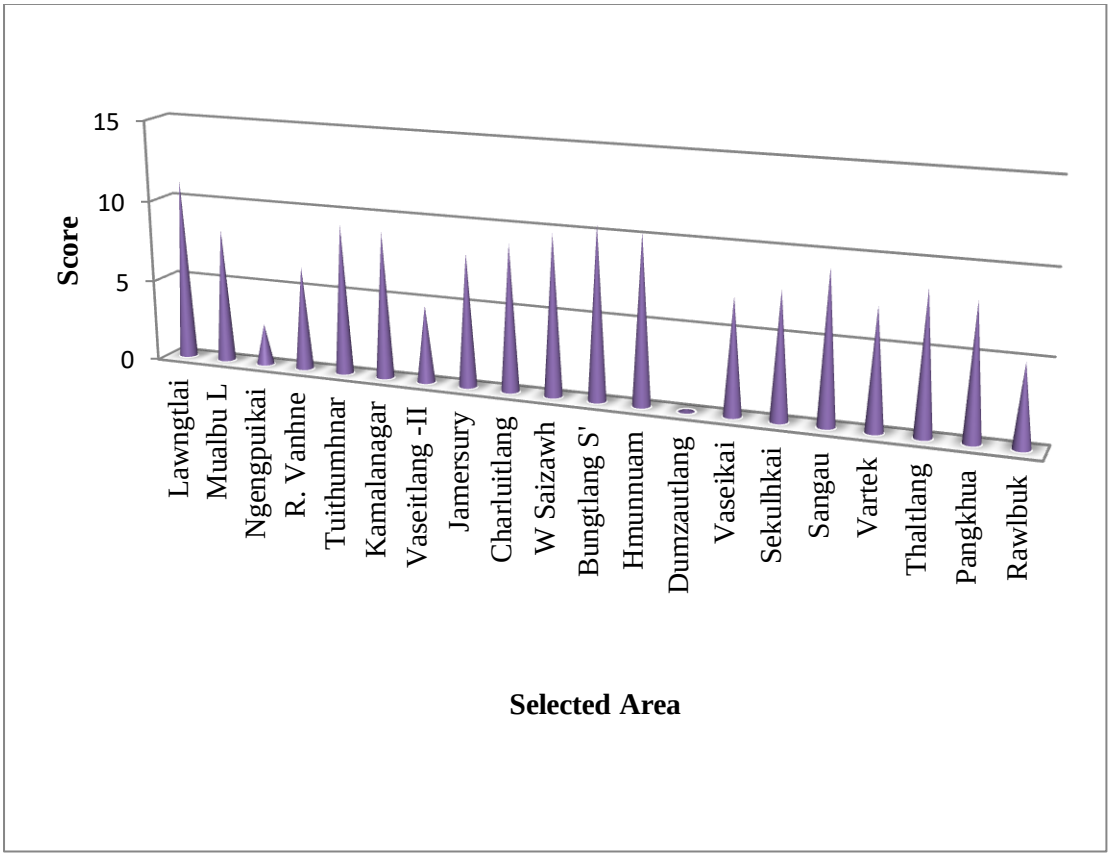

Figure: 4.3.17 Level of Location (Distance) Development in Lawngtlai District

4.3.10 Level of Market Development in Lawngtlai District:

Marketing has an important place for socio-economic development as it necessity for attaining the object of social welfare. The agricultural products of villager can be multiply into assets and money through market could bring economic stability of the rural family. Marketing ascertains needs and wants of society, creates services according to demand of the society. Thus, it improves the standard of living of the society. In rural areas, most of the families are engaged in agriculture. They grow crops to feed themselves and their families. Output is targeted mostly for local requirements with little or no surplus trade. When there is a little surplus product, they used to earn money through roadside market or inside the villages which promote the economy of the society. Sometime, commercial crops are grown and sell district capital market which inturn provides competition for earning more capital.

The availability and frequency of marketing activities in the region also highlight the standard of people. The areas which have adequate marketing services are advanced comparing with the region which is lack in marketing within the village or vicinity to the agricultural products. For having the level of development in the study area, frequency of visiting market, availabilty of meat, green vegatables and fruits in the village's market were analyzed. The data on satisfaction of family in marketing activities are also included. These indicators are complex that the satisfying level is varying according to the attitudes of the people.

Table 4.3.65 Indicators of Market Development in Lawngtlai District														
Sl No	Selected Area	Frequency of visiting market			Availabilty of Meat			Availabilty of green vegetables			Availability of Fruits			Satisfied ?
		Daily	5W	4 W	Daily	5 W	4W	Daily	5 W	4W	Daily	5W	4W	Yes
1	Lawngtlai	14.86	1.22	5.42	87.59	0.17	0.87	78.85	1.05	2.62	74.65	2.27	0.00	63.81
2	Mualbu L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.68
3	Ngengpuikai	58.82	0.00	0.00	67.65	0.00	0.00	97.06	0.00	0.00	61.76	0.00	0.00	61.76
4	R. Vanhne	6.25	0.00	0.00	0.00	0.00	0.00	62.50	0.00	0.00	12.50	0.00	0.00	62.50
5	Tuithumhnar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00
6	Kamalanagar	21.34	0.00	1.03	32.13	3.86	1.54	28.79	0.00	0.00	24.16	0.00	0.26	66.07
7	Vaseitlang -II	0.00	0.00	4.76	78.57	0.00	0.00	78.57	0.00	0.00	76.19	0.00	2.38	95.24
8	Jamersury	0.00	0.00	0.00	7.89	0.00	0.00	84.21	0.00	0.00	0.00	0.00	0.00	65.79
9	Charluitlang	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
10	W Saizawh	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
11	Bungtlang S'	0.00	0.00	0.00	55.36	22.32	0.00	54.46	0.00	0.00	46.43	0.00	0.00	71.43
12	Hmunnuam	0.00	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	77.27
13	Dumzautlang	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.50
14	Vaseikai	17.39	0.00	0.00	65.22	0.00	0.00	76.09	2.17	0.00	73.91	0.00	0.00	73.91
15	Sekulhkai	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.67
16	Sangau	33.15	7.73	2.76	4.97	0.00	0.00	80.11	13.26	2.21	3.87	0.00	0.00	79.56
17	Vartek	60.00	0.00	20.00	0.00	0.00	0.00	20.00	10.00	60.00	30.00	0.00	0.00	10.00
18	Thaltlang	5.56	5.56	55.56	16.67	0.00	0.00	83.33	5.56	5.56	16.67	0.00	0.00	55.56
19	Pangkhua	6.78	8.47	30.51	5.08	27.12	11.86	74.58	8.47	5.08	28.81	0.00	25.42	37.29
20	Rawlbuk	0.00	0.00	3.45	37.93	0.00	0.00	41.38	34.48	0.00	58.62	0.00	0.00	89.66
Source: Field survey														

5w = Five days in a week *4w = Four days in a week*

4.3.10.1 Intra RD Block disparity in market development:

i) Lawngtlai RD Block: Lawngtlai town scored highest value of 15.19 which falls under high level of development. Ngengpuikai (0.75) and Tuithumhnar (-4.70) villages categorized into medium developement level, and, R.Vanhne and Mualbu L villages comes under low level of development with a score value of -5.03 and -6.22.

Table 4.3.66 Level of Market Development in Lawngtlai RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	15.19	1			
2	Mualbu L	-6.22	5	High	Above 5	Lawngtlai
3	Ngengpuikai	0.75	2	Medium	-5 to 5	Ngengpuikai, Tuithumhnar
4	R. Vanhne	-5.03	4	Low	Below - 5	R.Vanhne, Mualbu L
5	Tuithumhnar	-4.70	3			

ii) Sangau RD Block: Pangkhua village scored highest value of 3.65 with holding first rank amongst the villages. Rawlbuk (0.83), Vartek (-0.93) and Thaltlang (-1.41) villages fall under medium level of development. Sangau village is categorize as under low level of development with a score value of -2.14.

Table 4.3.67 Level of Market Development in Sangau RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Sangau	-2.14	5			
2	Vartek	-0.93	3	High	Above 2	Pangkhua
3	Thaltlang	-1.41	4	Medium	-2 to 2	Rawlbuk, Vartek, Thaltlang
4	Pangkhua	3.65	1	Low	Below -2	Sangau
5	Rawlbuk	0.83	2			

iii) Bungtlang S' RD Block: In this block, Vaseikai village scored the highest value of 6.55 as it is located in the boundary area of CADC and LADC in western part of the district. Local market market plays a crucial role in local economy. Bungtlang S', Hmunnuam and Dumzautlang villages recorded a value of 2.31, -1.44 and -2.37

which emanates under medium level of development. A score value of -5.04 found in Sekulhkai village, noted as low level of development.

Table 4.3.68 Level of Market Development in Bungtlang S' RD BLock						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Bungtlang S'	2.31	2			
2	Hmunnuam	-1.44	3	High	Above 5	Vaseikai
3	Dumzautlang	-2.37	4	Medium	-5 to 5	Bungtlang S', Hmunnuam, Dumzautlang
4	Vaseikai	6.55	1	Low	Below -5	Sekulhkai
5	Sekulhkai	-5.04	5			

iv) Chawngte RD Block: Vaseitlang-II scored highest value of 6.08, followed by Kamalanagar with a score value of 2.64; both of them are categorized under high and medium level of development. The three villages of W Saizawh (-2.17), Charluitlang (-2.17) and Jamersury (-4.38) falls low level of market development.

Table 4.6.69 Level of Market Development in Chawngte RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamalanagar	2.64	2			
2	Vaseitlang -II	6.08	1	High	Above 3	Vaseitlang-II
3	Jamersury	-4.38	4	Medium	-3 to 3	Kamanalagar
4	Charluitlang	-2.17	3	Low	Below -3	W Saizawh, Charluitlang, Jamersury
5	W Saizawh	-2.17	3			

4.3.10.2 Inter RD Block disparity in market development:

Lawngtlai block scored a value of 2.99 which is categorized under high level of development. A slightly lower score value of two RD blocks of Sangau and Bungtlang S' is considered into medium level of development with a score value of 1.01 and -0.30. Chawngte RD block scored a value of -3.70 which is categorized into low level of development.

Table 4.3.70 Level of Market Development in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	2.99	1	High	Above 2	Lawngtlai
2	Chawngte	-3.70	4	Medium	-2 to 2	Sangau, Bungtlang S’
3	Bungtlang S’	-0.30	3	Low	Below -2	Chawngte
4	Sangau	1.01	2			

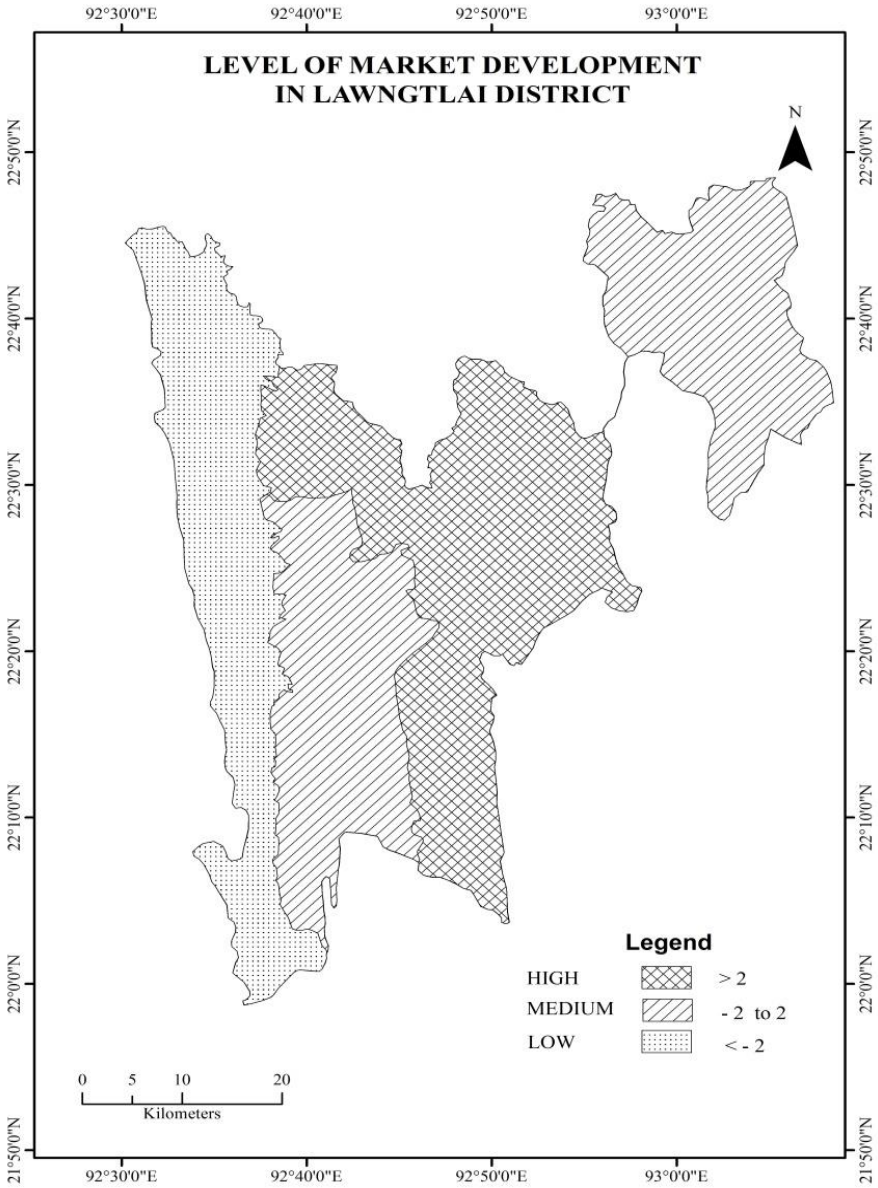

Figure: 4.3.18 Level of Market Development in Lawngtlai District

4.3.10.3 Spatial disparity in market development:

The KMO showed a value of 0.417 and Bartlett's test of sphericity was significant at 0.000 levels which indicate adequacy for conducing factor analysis and null hypothesis could be rejected.

Table 4.3.71 Level of Market Development in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	8.03	1			
2	Mualbu L	-1.24	17			
3	Ngengpuikai	6.52	2			
4	R. Vanhne	0.94	12			
5	Tuithumhnar	-1.97	19			
6	Kamalanagar	2.04	10			
7	Vaseitlang-II	4.42	5	Very high	Above 7.5	Lawngtlai
8	Jamersury	0.92	13	High	5 to 7.5	Ngengpuikai, Pangkhua, Vaseikai
9	Charluitlang	-0.16	14	Medium	2.5 to 5	Vaseitlang-II, Thaltlang, Rawlbuk, Sangau, Bungtlang S'
10	W Saizawh	-0.16	14	Low	-1 to 2.5	Kamalanagar, Vartek, R.Vanhne, Jamersury, Charluitlang, W Saizawh, Hmunnuam
11	Bungtlang S'	3.08	9	Very low	Below 1	Sekulhkai, Mualbu L, Tuithumhnar
12	Hmunnuam	-0.48	15			
13	Dumzautlang	-1.72	18			
14	Vaseikai	5.11	4			
15	Sekulhkai	-1.00	16			
16	Sangau	3.09	8			
17	Vartek	1.30	11			
18	Thaltlang	3.44	6			
19	Pangkhua	6.22	3			
20	Rawlbuk	3.12	7			

Lawngtlai town falls under very high level of development with a score value of 8.0. There are three villages under high level of development such as Ngengpuikai (6.52), Pangkhua (6.22) and Vaseikai (5.11). Five villages of Vaseitlang-II, Thaltlang,

Rawlbuk, Sangau and Bungtlang S' were falls under medium level of development with a score value of 4.42, 3.44, 3.12, 3.09 and 3.08.

Kamalanagar (2.04), Vartek (1.30), R.Vanhne (0.94), Jamersury (0.92), Charluitlang (-0.16), W Saizawh (-0.16) and Hmunnuam (-0.48) were categorized under low level of market development. Three villages of Sekulhkai, Mualbu L, and Tuithumhnar categorize under low level of development with a score value of -1.00, -1.24 and -1.97.

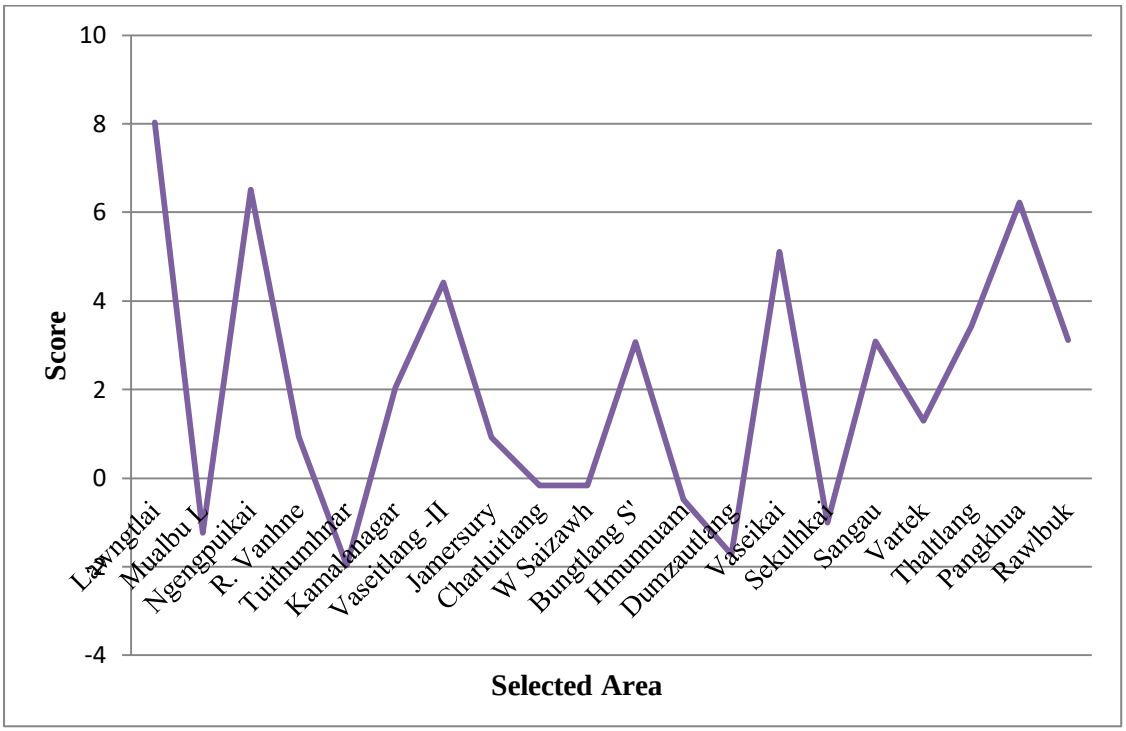

Figure: 4.3.19 Level of Market Development in Lawngtlai District

4.3.11 Development level of Electricity in Lawngtlai District:

Unreliable energy supply has been a major obstacle of development. Connecting all households to the grid is likely to have an important effect on the economy as it provides a source of employment and promote industry. It is important to establish as much as possible about the demand for a reliable service of electricity so that investments can be effectively prioritized (Greenstone, 2014). Rural electrification may affect households' welfare via various channels. In the study area, the variation of electrict distribution and generation of infrastructure across districts which may hinder acceleration of development in an unelectrified village.

The development level of electricity is measured using seven indicators from three sections like percentage of electrified households, regularity of power supply and level of satisfaction. There are three unelectrified villages while 10 vilages are more than 90 percent of electrified household. Irregularlity and fluctuate of power supply is the main probems of the district. Out of the total villages, 37.69 per cent were supplied less than 1 hour power supply in a day; 1 to 4 hours of power supply were secured by 31.52 per cent. 29.16 per cent of selected villages attained 5 to 10 hours of power supply and more than 10 hours of power supply was available only for 1.61 per cent of the respondents.

4.3.11.1 Intra RD Block disparity in development of Electricity:

i) Lawngtlai RD Block: Lawngtlai town scored the highest value of 3.36 which comes under very high level of development. A score value of 3.29, 1.32 and -1.29 found in R.Vanhne, Ngengpuikai and Mualbu L villages. The lowest value of -9.77 was recorded in the village of Tuithumhnar.

Table 4.3.72 Development level of Electricity in Lawngtlai District								
Sl No	Selected Area	No of Electrified Households (%)	Regularity of Supply (%)				Satisfied (%)	
			> 1 hours	1-4 hours	5 - 10 hours	< 10 hours	Yes	No
1	Lawngtlai	98.95	1.05	14.51	80.42	4.02	50.17	49.83
2	Mualbu L	89.47	0.00	0.00	100.00	0.00	26.32	73.68
3	Ngengpuikai	79.41	2.94	41.18	47.06	8.82	47.06	52.94
4	R. Vanhne	100.00	0.00	6.25	93.75	0.00	43.75	56.25
5	Tuithumhnar	0.00	100.00	0.00	0.00	0.00	40.00	60.00
6	Kamalanagar	75.58	1.03	60.93	38.05	0.00	40.10	59.64
7	Vaseitlang -II	71.43	85.71	14.29	0.00	0.00	0.00	100.00
8	Jamersury	13.16	31.58	68.42	0.00	0.00	0.00	100.00
9	Charluitlang	70.00	100.00	0.00	0.00	0.00	0.00	100.00
10	W Saizawh	83.33	100.00	0.00	0.00	0.00	11.11	94.44
11	Bungtlang S'	95.54	0.00	18.75	68.75	12.50	57.14	42.86
12	Hmunnuam	95.45	0.00	27.27	72.73	0.00	18.18	81.82
13	Dumzautlang	0.00	100.00	0.00	0.00	0.00	0.00	100.00
14	Vaseikai	17.39	73.91	0.00	26.09	0.00	8.70	91.30
15	Sekulhkai	0.00	100.00	0.00	0.00	0.00	0.00	100.00
16	Sangau	98.34	0.00	93.37	6.63	0.00	1.66	98.34
17	Vartek	90.00	30.00	60.00	10.00	0.00	20.00	80.00
18	Thaltlang	66.67	27.78	44.44	27.78	0.00	55.56	44.44
19	Pangkhua	93.22	0.00	98.31	1.69	0.00	28.81	71.19
20	Rawlbuk	96.55	0.00	82.76	10.34	6.90	10.34	89.66
Source: Field survey								

Table 4.3.73 Level of Electricity Development in Lawngtlai RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	6.36	1			
2	Mualbu L	-1.21	4	High	Above 5	Lawngtlai
3	Ngengpuikai	1.32	3	Medium	-5 to 5	R.Vanhne, Ngengpuikai, Mualbu L
4	R. Vanhne	3.29	2	Low	Below - 5	Tuithumhnar
5	Tuithumhnar	-9.77	5			

ii) Sangau RD Block: Rawlbuk village scored the highest value of 2.93. Sangau and Pangkhua villages scored a value of 0.53 and -0.34 which falls under medium level of development. The lowest value was scored by Vartek and Thaltlang villages with a score value of -1.49 and -1.68.

Table 4.3.74 Level of Electricity Development in Sangau RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Sangau	0.58	2			
2	Vartek	-1.49	4	High	Above 1	Rawlbuk
3	Thaltlang	-1.68	5	Medium	-1 to 1	Sangau, Pangkhua
4	Pangkhua	-0.34	3	Low	Below -1	Vartek, Thaltlang
5	Rawlbuk	2.93	1			

iii) Bungtlang S' RD Block: Bungtlang S'village scored a value of 10.90 in the development level of electricity. Hmunnuam and Vaseikai village were categorized into medium level of development with a scored value of 4.50 and -2.77. Sekulhkai and Dumzautlang village were also scored a value of -631.

Table 4.3.75 Level of Electricity Development in Bungtlang S' RD Block					
Sl No	Selected Area	Score	Level	Score	RD Block
1	Bungtlang S'	10.90			
2	Hmunnuam	4.50	High	Above 5	Bungtlang S'
3	Dumzautlang	-6.31	Medium	-5 to 5	Hmunnuam, Vaseikai
4	Vaseikai	-2.77	Low	Below -5	Sekulhkai, Dumzautlang
5	Sekulhkai	-6.31			

iv) Chawngte RD Block: Kamalanagar village score the highest value of 7.53. The second highest was scored by W. Saizawh with a score value of 0.63, followed by Vaseitlang-II (-0.07) village which comes under medium level of development. The two villages of Charluitlang and Jamersury categorize into low level of development with a score value of -2.44 and -5.65.

Table 4.3.76 Level of Electricity Development in Chawngte RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamalanagar	7.53	1			
2	Vaseitlang -II	-0.07	3	High	Above 2	Kamalanagar
3	Jamersury	-5.65	5	Medium	-2 to 2	W Saizawh, Vaseitlang–II,
4	Charluitlang	-2.44	4	Low	Below -2	Charluitlang,Jamersury
5	W Saizawh	0.63	2			

4.3.11.2 Inter RD Block disparity in development of electricity:

Lawngtlai block was the first rank with a score value of 8.35 which falls under high level of development. The medium level of development found in Bungtlang S' and Sangau RD blocks with a score value of -1.24 and -2.73. Chawngte RD block falls into low level of development with score a value of -4.37.

Table 4.3.77 Development level of Electricity in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	8.35	1	High	Above 3	Lawngtlai
2	Chawngte	-4.37	4	Medium	-3 to 3	Bungtlang S', Sangau
3	Bungtlang S'	-1.24	2	Low	Below -3	Chawngte
4	Sangau	-2.73	3			

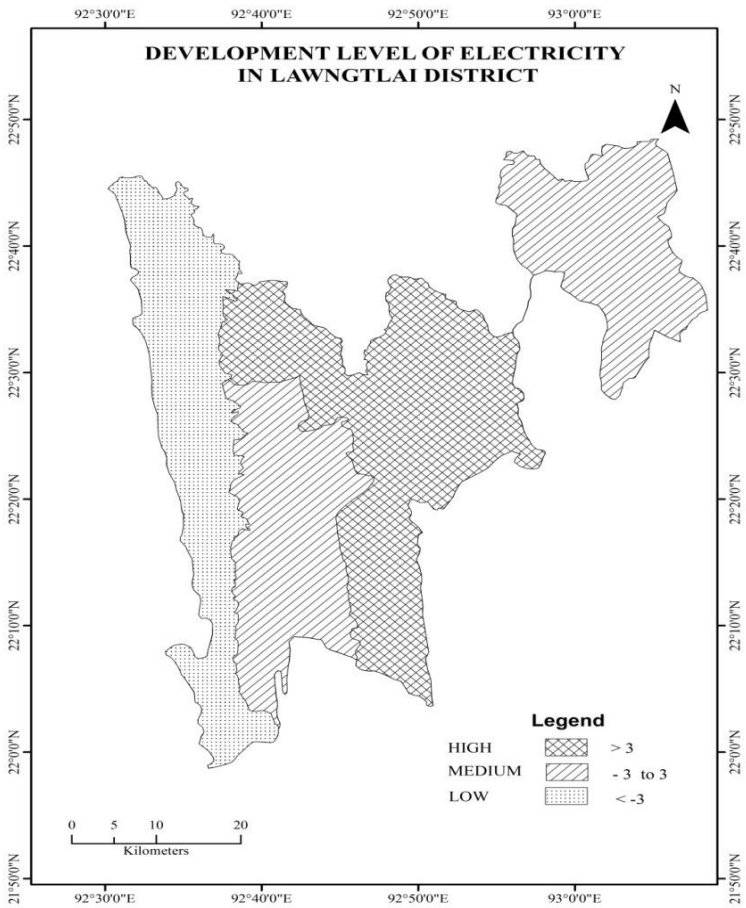

Figure: 4.3.20 Development level of Electricity in Lawngtlai District

4.3.11.3 Spatial disparity in development of electricity:

To conduct FA and rejected null hypothesis, the indicators were tested whether data was appropriate to run software in SPSS. The KMO showed a value of 0.459 and Bartlett's test of sphericity was 0.000 significant levels showing the aptness of data.

Table 4.3.78 Level of Electricity Development in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	19.796	2			
2	Mualbu L	15.681	5			
3	Ngengpuikai	18.004	4			
4	R. Vanhne	18.576	3			
5	Tuithumhnar	5.725	14			
6	Kamalanagar	14.658	7			
7	Vaseitlang -II	4.647	16	Very high	Above 20	Bungtlang S'
8	Jamersury	2.938	18	High	15 to 20	Lawngtlai, R.Vanhne, Ngengpuikai, Mualbu L, Thaltlang
9	Charluitlang	4.111	17	Medium	10 to 15	Kamanalagar, Hmunnuam, Pangkhua, Rawlbuk, Vartek
10	W Saizawh	6.086	13	Low	5 to 10	Sangau, W Saizawh, Tuithumhnar, Vaseikai
11	Bungtlang S'	22.033	1	Very low	Below 5	Vaseitlang –II, Charluitlang, Jamersury, Dumzautlang, Sekulhkai
12	Hmunnuam	13.915	8			
13	Dumzautlang	0.001	19			
14	Vaseikai	5.145	15			
15	Sekulhkai	0.001	20			
16	Sangau	9.408	12			
17	Vartek	10.712	11			
18	Thaltlang	15.123	6			
19	Pangkhua	12.822	9			
20	Rawlbuk	12.153	10			

Table 4.3.78 showed the level of electrict development in Lawngtlai District. The highest value was scored by Bungtlang S' viallage (19.79) which falls under very high level of development. There are four villages under high level of development such as Lawngtlai (19.796), R.Vanhne (18.576), Ngengpuikai (18.004), Mualbu L (15.681), and Thaltlang (15.123). Five villages of Kamalanagar (14.658), Hmunnuam (13.915), Pangkhua (12.822), Rawlbuk (12.153) and Vartek (10.712) were falls under medium level of development. Sangau (9.408), W. Saizawh (6.086), Tuithumhnar (5.725) and Vaseikai (5.145) categorized under low level of development. Another five villages of Vaseitlang–II, Charluitlang, Jamersury, Dumzautlang and Sekulhkai considered as under low level of development with a score value of 4.647, 4.111, 2.938 and 0.001.

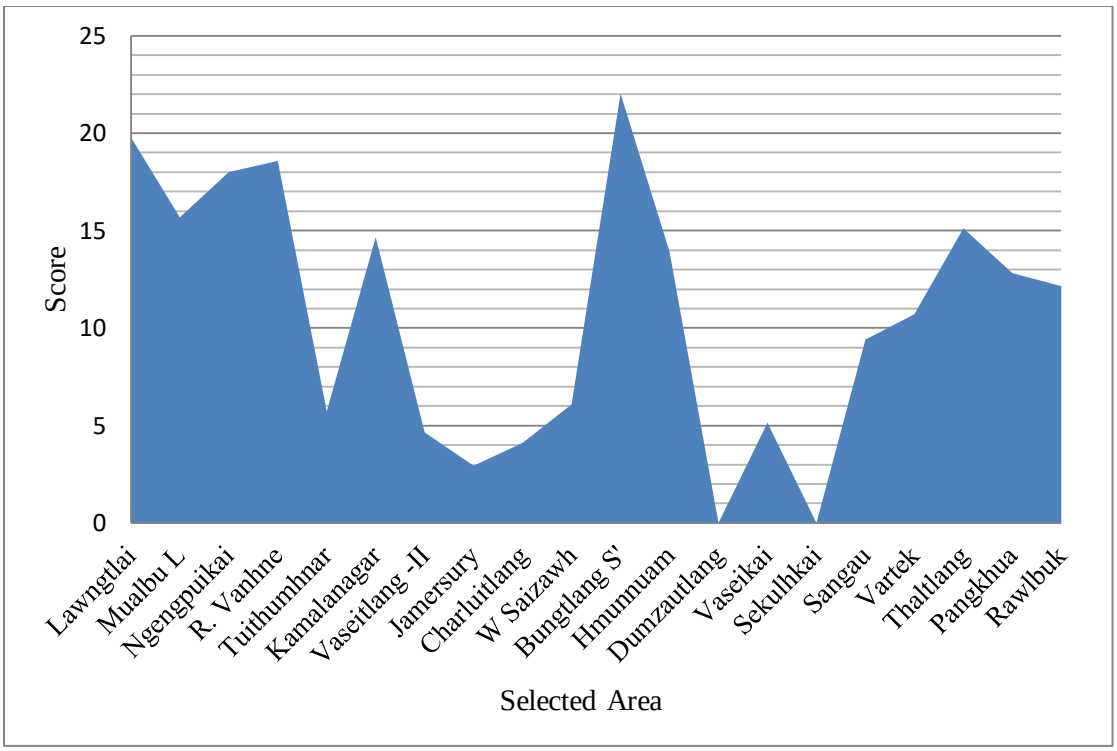

Figure: 4.3.21 Level of Electricity Development in Lawngtlai District

4.3.12 Development of Occupation and Working Status in Lawngtlai District:

Occupational structure is undoubtedly implicated variety of socio-economic phenomena relating to economic development and social inequalities (Sorensen, 1996). The working status in various fields also influences the sustainability of societies. In agricultural field, the size of the cultivated area and rate of working can be considered as one of the major factors of development.

The final product of occupation and working status was carried out from four dimensions with 16 variable indicators. The average size of land holdings in the distrcict was only 1.9 hactares. The average working period was 6.75 hours in a day. Among the working group, 39.84 per cent of wokers were departed to working place every sixth day in a week while 0.01 per cent are works only for a day. 32.61 percent of workers were works for fifth day in a week. 20.97 per cent of the total workers were also works for fourth day in a week. Only 0.40 and 2.01 per cent were enganged in their working places for two and three days in a week. Out of the total workers of 14,115, a number of 83.07 per cent of were main workers while only 16.92 per cent were marginal workers. The distributions of occupation in the study area - Cultivators (65.58 per cent), Government services (13.99 per cent), Bussiness (5.76 per cent), Daily wage (8.07 per cent) and others (6.60 per cent) (including Mistiri, Carpenter, Tailoring, Handicraft, Weaving and Knitting etc).

4.3.12.1 Intra RD Block disparity in development of Occupation and Working Status:

i) Lawngtlai RD Block: Tuithumhnar and R.Vanhne villages scored a value of 3.94 and 3.42, followed by Mualbu L and Lawngtlai with a score value of 1.95 and -1.99. The lowest value of -7.31 was scored by Ngengpuikai village.

Table 4.3.80 Occupation and working status in Lawngtlai RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	-1.99	4			
2	Mualbu L	1.95	3	High	Above 3	Tuithumhnar, R.Vanhne
3	Ngengpuikai	-7.31	5	Medium	-3 to 3	Mualbu L, Lawngtlai
4	R. Vanhne	3.42	2	Low	Below -3	Ngengpuikai
5	Tuithumhnar	3.94	1			

ii) Sangau RD Block: Vartek village scored highest value of 4.06 and followed by Thaltlang, Sangau and Pangkhua villages with a score value of -0.11, -0.14 and -1.67. Rawlbuk village score only -2.13 which fall under low level of development.

Table 4.3.81 Occupation and working status in Sangau RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Sangau	-0.14	3			
2	Vartek	4.06	1	High	Above2	Vartek
3	Thaltlang	-0.11	2	Medium	-2 to 2	Thaltlang, Sangau, Pangkhua
4	Pangkhua	-1.67	4	Low	Below -2	Rawlbuk
5	Rawlbuk	-2.13	5			

iii) Bungtlang S' RD Block: High level of development found in Dumzautlang and Bungtlang S' village with a score value of 4.30 and 2.87. Sekulkai and Vaseikai scored a value of -1.42 and -1.48, falls medium level of development. The low level of development found in the village of Hmunnuam (-4.26).

Table 4.3.82 Occupation and working status in Bungtlang S' RD Block						
Sl No	Name of RD Block	Score		Level	Score	RD Block
1	Bungtlang S'	2.87				
2	Hmunnuam	-4.26		High	Above 3	Dumzautlang, Bungtlang S
3	Dumzautlang	4.30		Medium	-3 to 3	Sekulhkai, Vaseikai
4	Vaseikai	-1.48		Low	Below -3	Hmunnuam
5	Sekulhkai	-1.42				

iv) Chawngte RD Block: The high level of development found in W Saizawh and Kamalanagar villages with a score value of 3.73 and 1.84, followed by Charluitlang village with a score value of 0.63. The low level of development found in the villages of Jamersury and Vaseitlang-II with a score value of -1.98 and -4.21.

Table 4.3.83Ooccupation and working Status in Chawngte RD Block						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Kamalanagar	1.84	2			
2	Vaseitlang -II	-4.21	5	High	Above 1	W Saizawh, Kamalanagar
3	Jamersury	-1.98	4	Medium	-1 to 1	Charluitlang
4	Charluitlang	0.63	3	Low	Below -1	Jamersury, Vaseitlang-II
5	W Saizawh	3.73	1			

4.3.12.2 Inter RD Block disparity in development of occupation and working Status:

The high level of development of 2.88 values scored by Chawngte RD Block and followed by Lawngtlai RD block with a score value of -0.06. The low level of development scored by Bungtlang S' and Sangau with a score value of -1.32 and -1.49.

Table 4.3.84 Level of occupation and working Status in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	-0.06	2	High	Above 1	Chawngte
2	Chawngte	2.88	1	Medium	-1 to 1	Lawngtlai
3	Bungtlang S'	-1.32	3	Low	Below -1	Bungtlang S', Sangau
4	Sangau	-1.49	4			

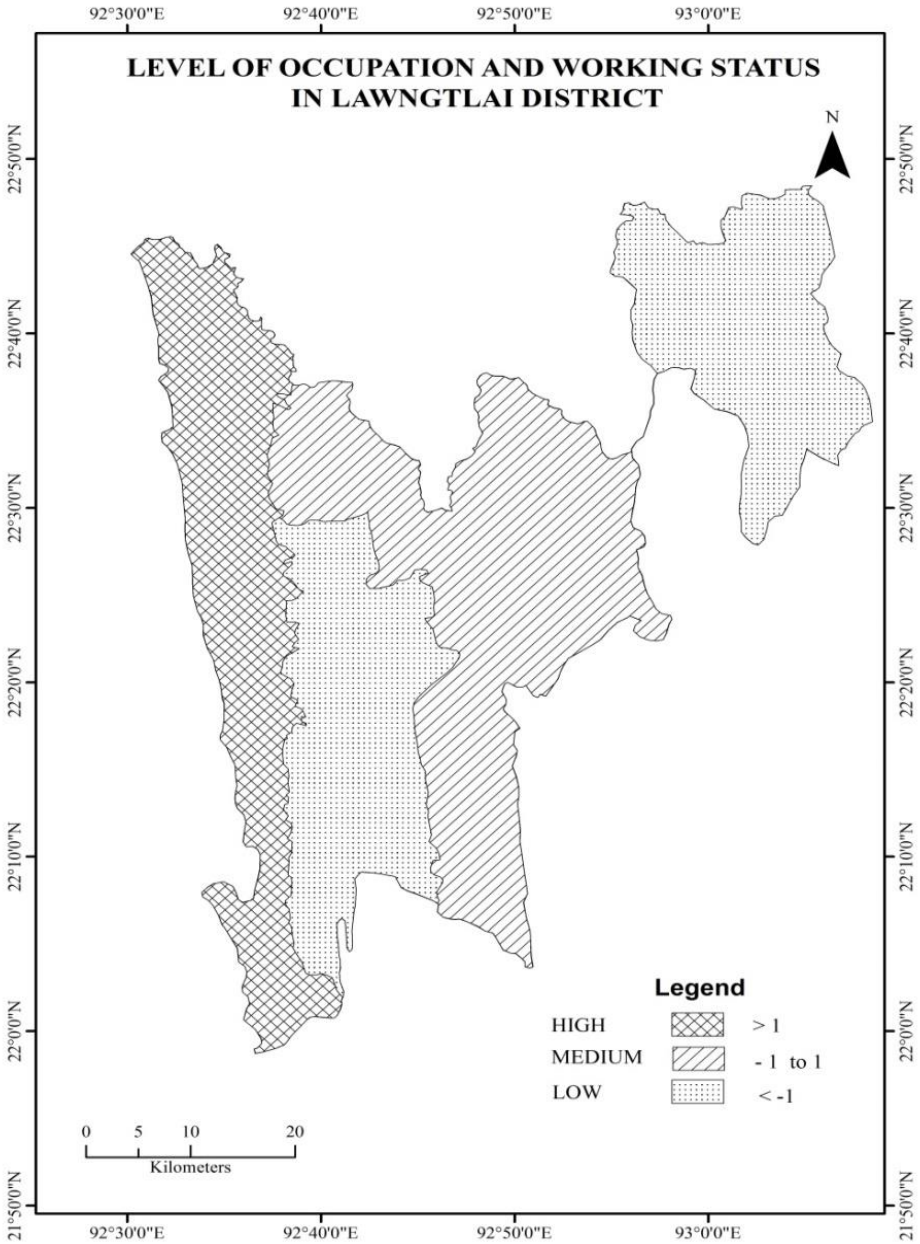

Figure: 4.3.22 Level of Occupation and Working Status in Lawngtlai District

4.3.12.3 Spatial disparity in development of occupation and working Status:

To study the development level of occupation and working status by PCA and FA, the KMO and Bartlett's test of sphericity was significant. KMO showed a value of 0.412 and Bartlett's test of sphericity at 0.000 significant level indicating adequacies for conducing factor analysis and the null hypothesis could be rejected.

Table 4.3.85 Development level of occupation and working status in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	21.55	1			
2	Mualbu L	-5.56	11			
3	Ngengpuikai	-7.28	14			
4	R. Vanhne	-9.78	19			
5	Tuithumhnar	-7.77	15			
6	Kamalanagar	8.74	2			
7	Vaseitlang -II	-3.90	8	Very high	Above 10	Lawngtlai
8	Jamersury	-2.00	6	High	5 to 10	Kamalanagar
9	Charluitlang	-10.36	20	Medium	-5 to 5	Bungtlang S, Sangau, Vaseikai, Jamersury, Vartek, Vaseitlang –II, Rawlbuk,
10	W Saizawh	-5.56	12	Low	-5 to -10	Thaltlang, Mualbu L, W Saizawh, Pangkhua, Ngengpuikai, Tuithumhnar, Sekulhkai, Dumzautlang, Hmunnuam, R.Vanhne,
11	Bungtlang S'	1.56	3	Very low	Below -10	Charluitlang
12	Hmunnuam	-8.92	18			
13	Dumzautlang	-8.55	17			
14	Vaseikai	-1.10	5			
15	Sekulhkai	-8.55	16			
16	Sangau	-0.23	4			
17	Vartek	-3.83	7			
18	Thaltlang	-5.42	10			
19	Pangkhua	-6.77	13			
20	Rawlbuk	-4.13	9			

The above table 4.3.85 showed the occupation and working status in Lawngtlai district which is categorized into five levels of development. The highest value of 21.55 scored by Lawngtlai (21.55) town and followed by Kamalanagar village with a score value of 8.744 which comes under very high and high level of development. The other villages like Bungtlang S', Sangau, Vaseikai, Jamersury, Vartek, Vaseitlang–II and Rawlbuk were falls under medium level of development with a score value between -5 to 5. Ten villages of Thaltlang, Mualbu L, W Saizawh, Pangkhua, Ngengpuikai, Tuithumhnar, Sekulhkai, Dumzautlang, Hmunnuam and R.Vanhne were score a value of -5 to -10 and then categorized under low level of development. Charluitlang village scored the lowest value of -10.36 and categorized under very low level of development.

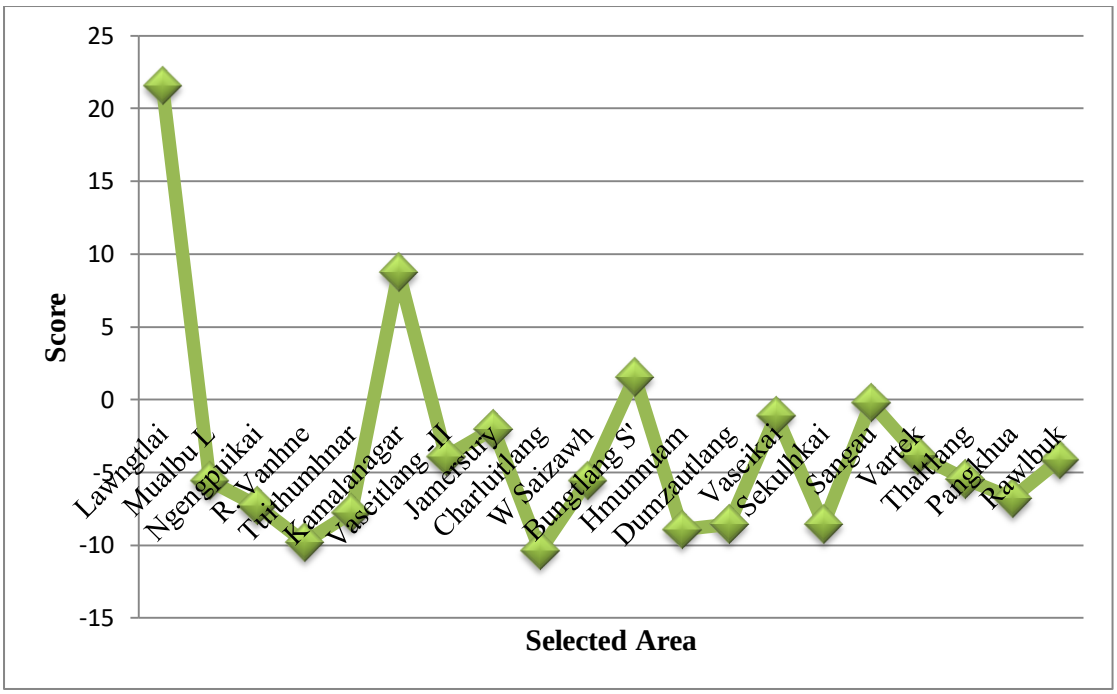

Figure: 4.3.23 Development level of occupation and working status in Lawngtlai District

Table 4.3.86 Indicators of occupation and working status in Lawngtlai District

Sl No	Selected Area	Average Size of Land	Average Working Hours	Working Status/Rate (%)						
				Once in Week	Twice in Week	Thrice in Week	Fourth in Week	Fifth in Week	Sixth in Week	Whole Week
1	Lawngtlai	1.50	5.60	0.17	0.00	4.20	4.02	36.19	30.77	21.50
2	Mualbu L	2.00	5.80	0.00	0.00	0.00	10.53	73.68	15.79	0.00
3	Ngengpuikai	2.50	7.00	0.00	5.88	11.76	0.00	20.59	50.00	0.00
4	R. Vanhne	1.30	7.00	0.00	0.00	0.00	25.00	12.50	87.50	0.00
5	Tuithumhnar	1.97	8.00	0.00	0.00	0.00	0.00	45.00	55.00	0.00
6	Kamalanagar	1.20	7.10	0.00	0.51	0.00	2.31	38.30	19.54	38.56
7	Vaseitlang -II	2.00	6.20	0.00	0.00	2.38	7.14	11.90	9.52	2.38
8	Jamersury	1.30	6.00	0.00	0.00	0.00	0.00	84.21	15.79	0.00
9	Charluitlang	1.30	6.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00
10	W Saizawh	2.20	6.00	0.00	0.00	0.00	0.00	66.67	33.33	0.00
11	Bungtlang 'S'	2.54	7.00	0.00	0.00	0.00	0.00	41.07	39.29	14.29
12	Hmunnuam	1.14	6.00	0.00	0.00	18.18	27.27	45.45	31.82	0.00
13	Dumzautlang	3.20	6.50	0.00	0.00	0.00	4.17	0.00	87.50	12.50
14	Vaseikai	0.61	6.00	0.00	0.00	0.00	0.00	45.65	32.61	6.52
15	Sekulhkai	2.67	6.00	0.00	0.00	0.00	77.78	44.44	44.44	0.00
16	Sangau	2.53	6.50	0.00	1.10	6.63	0.55	40.33	33.70	1.10
17	Vartek	3.00	8.00	0.00	0.00	0.00	310.00	80.00	20.00	0.00
18	Thaltlang	3.28	9.00	0.00	0.00	0.00	0.00	16.67	83.33	0.00
19	Pangkhua	1.07	8.30	0.00	1.69	3.39	0.00	22.03	64.41	0.00
20	Rawlbuk	0.62	7.00	0.00	0.00	0.00	17.24	31.03	68.97	0.00

Source: Field survey

Table 4.3.87 Indicators of Occupation and Working Status in Lawngtlai District								
Sl No	Selected Area	No of Workers		Occupation (%)				
		Main Worker	Marginal Worker	Cultivators	Govt Servant	Bussines	Daily Wages	Others
1	Lawngtlai	5379	1318	26.92	26.22	19.58	15.56	11.71
2	Mualbu L	179	5	78.95	10.53	5.26	0.00	5.26
3	Ngengpuikai	323	0	44.12	8.82	5.88	14.71	26.47
4	R. Vanhne	103	25	87.50	12.50	0.00	0.00	0.00
5	Tuithumhnar	207	17	85.00	10.00	5.00	0.00	0.00
6	Kamalanagar	1714	545	40.62	30.59	8.48	18.51	1.80
7	Vaseitlang -II	172	0	61.90	9.52	4.76	19.05	4.76
8	Jamersury	214	103	60.53	13.16	7.89	13.16	5.26
9	Charluitlang	47	0	90.00	5.00	5.00	0.00	0.00
10	W Saizawh	202	1	77.78	16.67	5.56	0.00	0.00
11	Bungtlang S'	630	284	48.21	15.18	7.14	25.00	4.46
12	Hmunnuam	215	9	81.82	4.55	4.55	0.00	9.09
13	Dumzautlang	177	12	91.67	4.17	4.17	0.00	0.00
14	Vaseikai	426	0	54.35	6.52	8.70	28.26	2.17
15	Sekulhkai	82	0	88.89	0.00	0.00	0.00	11.11
16	Sangau	971	17	33.15	43.09	7.18	5.52	11.05
17	Vartek	67	1	90.00	0.00	0.00	0.00	10.00
18	Thaltlang	139	2	50.00	16.67	5.56	11.11	16.67
19	Pangkhua	245	9	62.71	25.42	3.39	3.39	5.08
20	Rawlbuk	234	41	55.17	20.69	6.90	6.90	6.90
Source: Field survey								

4.3.13 Development level of drinking water supply in Lawngtlai District:

Water is a fundamental human need. WHO (2017) stated that 'access to safe drinking water is important as health and development issue at national, regional and local levels'. United Nations (UN) General Assembly declared in 2010 that safe and clean drinking water and sanitation is a human right, essential to the full enjoyment of life and all other human rights. Improved access to safe drinking water has various impacts on social and economic development of millions of people. Clean and safe drinking water is the best way to prevent the spread of many diseases that can cause havoc in a closely crammed populace of humans.

The present study includes data from source of drinking water and satisfaction level of local people. The main source of water is public water point (owned and managed by community) i.e., 22.95 per cent were taken from community water point. 21 per cent of the populations are used rivers for their source of water. Only 20.46 per cent of the respondents were got water from government supply. 16.28 per cent from spring while rain water harvesting is available for 13.19 per cent of the total population. Private water, hand pump and government water tanky are the main sources of water for less than 6 per cent of the population. More than 70 per cent were not satisfied in water supply available in the village.

4.3.13.1 Intra RD Block disparity of drinking water supply:

i) Lawngtlai RD Block: R. Vanhne village scored a value of 2.90 and followed by Ngengpuikai (2.34) village and Lawngtlai town (0.54) which falls under high and medium level of development. Mualbu L and Tuithumhnar villages falls under low level of development with a score value of -3.14 and -2.64.

Table 4.3.88 Development Level of Drinking Water in Lawngtlai RD Block						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	0.54	3			
2	Mualbu L	-3.14	5	High	Above 2.5	R.Vanhne
3	Ngengpuikai	2.34	2	Medium	-2.5 to 2.5	Ngengpuikai, Lawngtlai
4	R. Vanhne	2.90	1	Low	Below -2.5	Mualbu L, Tuithumhnar
5	Tuithumhnar	-2.64	4			

ii) Sangau RD Block: Sangau village scored the highest value of 3.05 and followed by Pangkhua, Rawlbuk and Thaltlang villages with a score value of 1.54, -0.41, and -0.44. The lowest value was scored by Vartek village (-3.73).

Table 4.3.89 Development Level of Dringking Water in Sangau RD Block						
Sl No	Name of RD Block	Score	Rank	Level	Score	Sangau RD Block
1	Sangau	3.05	1			
2	Vartek	-3.73	5	High	Above 3	Sangau
3	Thaltlang	1.54	2	Medium	-3 to 3	Thaltlang, Pangkhua, Rawlbuk,
4	Pangkhua	-0.41	3	Low	Below -3	Vartek
5	Rawlbuk	-0.44	4			

iii) Bungtlang S' RD Block: In this block, Sekulhkai village scored the highest value of 2.66 which falls under high level of development. Bungtlang S', Dumzautlang and Vaseikai villages recorded a value of 1.22, -0.81 and -1.19 which falls under medium level of development. A score value of -1.88 in Sekulhkai villages recorded under low level of development.

Table 4.3.90 Development Level of drinking water in Bungtlang S' RD Block					
Sl No	Name of RD Block	Score	Level	Score	RD Block
1	Bungtlang S'	1.22			
2	Hmunnuam	-1.88	High	Above 1.5	Sekulhkai
3	Dumzautlang	-0.81	Medium	-1.5 to 1.5	Bungtlang S', Dumzautlang, Vaseikai
4	Vaseikai	-1.19	Low	Below -1.5	Hmunnuam
5	Sekulhkai	2.66			

iv) Chawngte RD Block: Kamalanagar and Jamersury villages scored a value of 4.88 and 3.97 which is categorized under high level of development. W. Saizawh village falls under medium level of development with a score value of -0.24. A score value of -2.67 and -5.94 in the three villages of Vaseitlang - II and Charluitlang were classified into low level of development.

Table 4.3.91 Development Level of Drinking Water in Chawngte RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamalanagar	4.88	1			
2	Vaseitlang -II	-2.67	4	High	Above 2	Kamalanagar, Jamersury
3	Jamersury	3.97	2	Medium	-2 to 2	W Saizawh
4	Charluitlang	-5.94	5	Low	Below -2	Vaseitlang –II, Charluitlang
5	W Saizawh	-0.24	3			

4.3.13.1 Inter RD Block disparity of drinking water supply:

Bungtlang S' block scored a value of 2.94 in the development level of development in safe drinking water supply. Sangau block categorize into medium level of development with a score value of 0.4. Chawngte (-1.66) and Kamalanagar (-1.69) blocks are falls under low level of development.

Table 4.3.92 Level of Drinking Water Supply in Lawngtlai District

Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	-1.69	4	High	Above 1	Bungtlang S'
2	Chawngte	-1.66	3	Medium	-1 to 1	Sangau
3	Bungtlang S'	2.94	1	Low	Below -1	Chawngte, Lawngtlai
4	Sangau	0.41	2			

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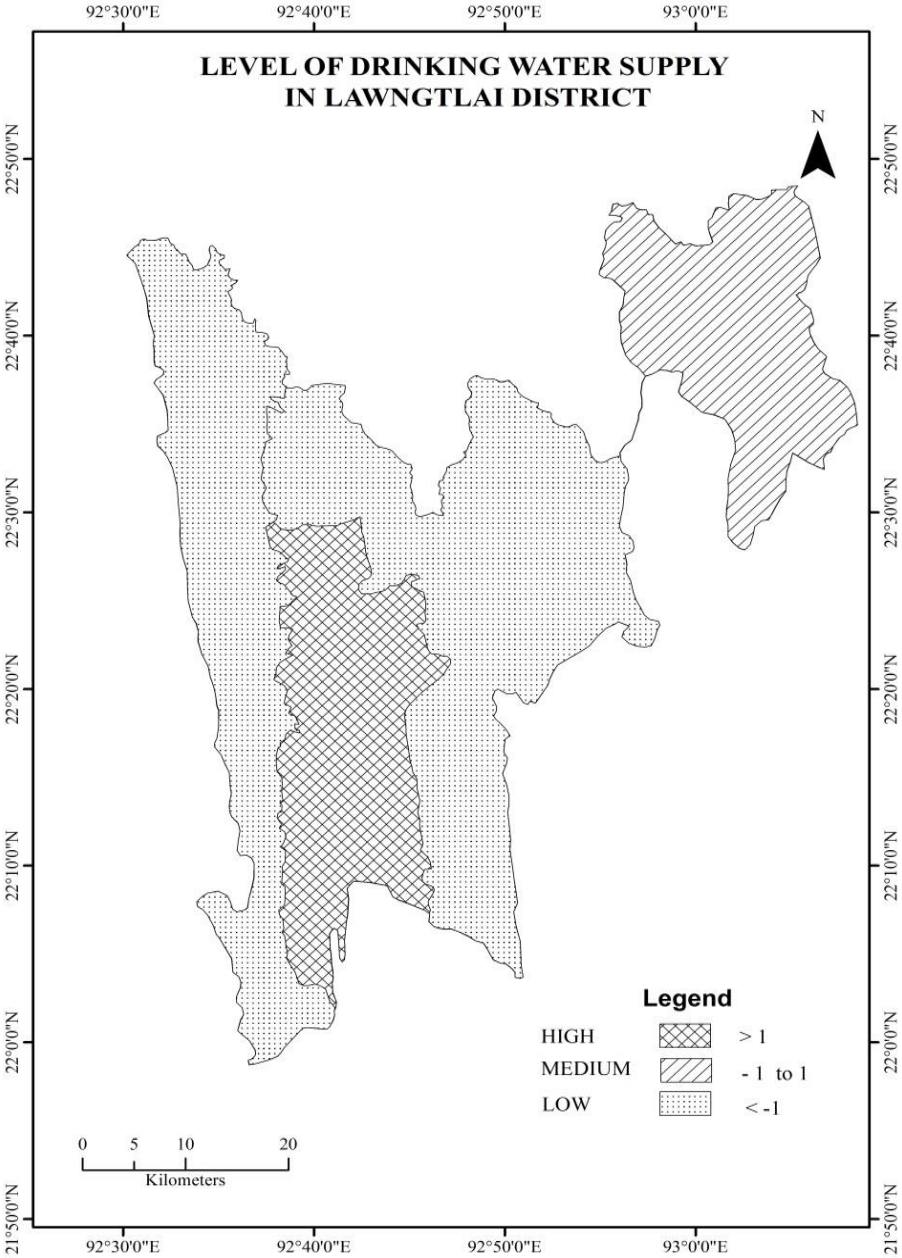

Figure: 4.3.24 Level of Drinking Water Supply in Lawngtlai District

4.3.13.3 Spatial disparity of safe drinking water supply:

The KMO in safe drinking water data showed a value of 0.295 and Bartlett's test of sphericity was 0.000 significant levels showing the suitability of data and then used it for variable indicator of development level of drinking water in Lawngtlai district

Table 4.3.93 Development Level of Drinking Water in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	3.24	16			
2	Mualbu L	2.82	17			
3	Ngengpuikai	8.44	5			
4	R. Vanhne	6.46	8			
5	Tuithumhnar	2.06	18			
6	Kamalanagar	9.13	4			
7	Vaseitlang -II	1.87	19	Very high	Above 9.5	Bungtlang S', Sekulhkai, Sangau
8	Jamersury	5.29	12	High	6.5 to 9.5	Kamalanagar, Ngengpuikai, Thaltlang, Rawlbuk
9	Charluitlang	-1.94	20	Medi um	3.5 to 6.5	R.Vanhne, Vaseikai, Hmunnuam, Dumzautlang, Jamersury, Pangkhua, W Saizawh, Vartek
10	W Saizawh	3.61	14	Low	1.5 to 3.5	Lawngtlai, Mualbu L, Tuithumhnar, Vaseitlang –II
11	Bungtlang S'	12.09	1	Very low	Below 1.5	Charluitlang
12	Hmunnuam	5.66	10			
13	Dumzautlang	5.39	11			
14	Vaseikai	6.09	9			
15	Sekulhkai	10.71	2			
16	Sangau	9.57	3			
17	Vartek	3.72	15			
18	Thaltlang	8.29	6			
19	Pangkhua	4.24	13			
20	Rawlbuk	7.50	7			

The highest scored value of Bungtlang S' (12.09), Sekulhkai (10.71) and Sangau (9.57) villages categorized as very high level of development. Kamalanagar,

Ngengpuikai, Thaltlang and Rawlbuk villages falls under high level of development with a score value of 9.13, 8.44, 8.29 and 7.50. Eight villages of R.Vanhne (6.46), Vaseikai (6.09), Hmunnuam (5.66), Dumzautlang (5.39), Jamersury (5.29), Pangkhua (4.24), W Saizawh (3.61) and Vartek (3.72) also categorized into medium level of development. Lawngtlai, Mualbu L, Tuithumhnar and Vaseitlang –II villages falls under low level of development with scoring 1.5 to 3.5 values. Charluitlang viallage was the lowest score value of -1.94 which comes under very low level of drinking water supply development in Lawngtlai district.

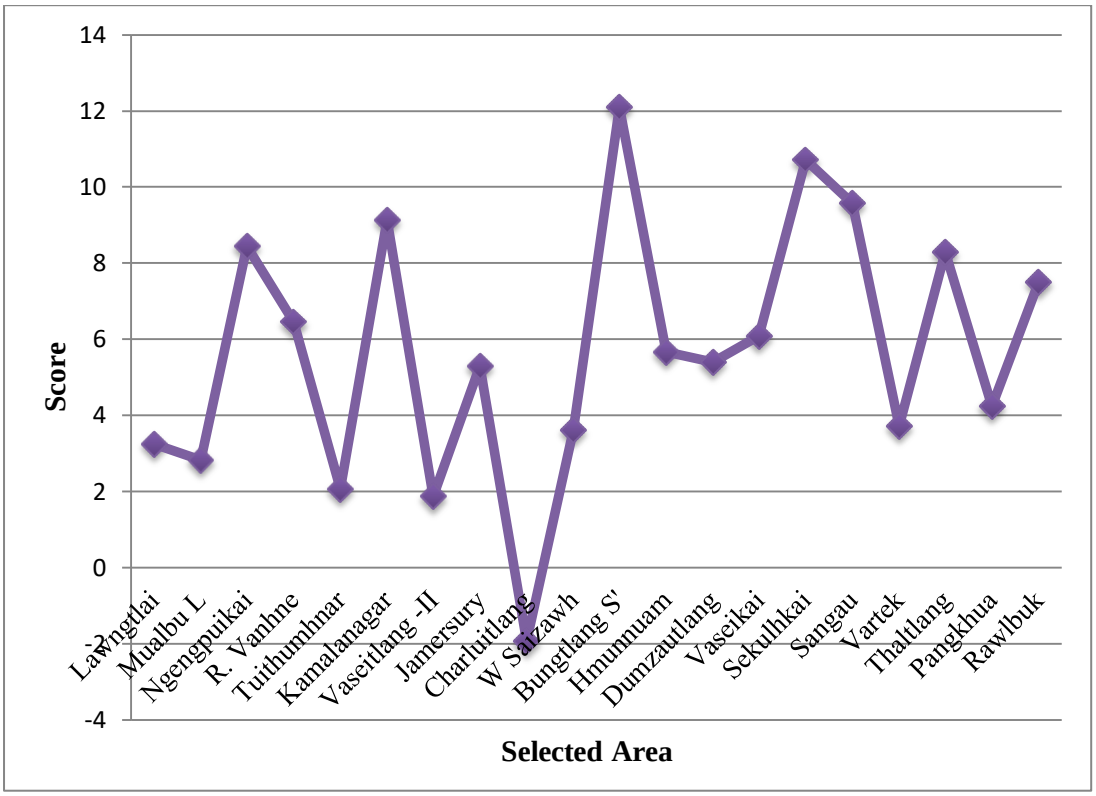

Figure: 4.3.25 Development Level of Drinking Water in Lawngtlai District

Table 4.3.94 Indicators of Water Supply Development in Lawngtlai District											
Sl No	Selected Area	Mode/Source of Drinking Water (in %)								If Govt Supply, Satisfaction (%)	
		Sp	Pc	Pw	G_p	G_t	Hp	Riv	Rw	Yes	No
1	Lawngtlai	33.92	7.17	5.59	31.64	6.29	26.22	1.22	57.17	13.29	86.71
2	Mualbu L	63.16	36.84	0.00	0.00	0.00	0.00	0.00	0.00	26.32	73.68
3	Ngengpuikai	0.00	5.88	17.65	23.53	0.00	0.00	61.76	0.00	29.41	70.59
4	R. Vanhne	31.25	62.50	0.00	37.50	0.00	0.00	0.00	0.00	56.25	43.75
5	Tuithumhnar	35.00	55.00	5.00	0.00	0.00	0.00	0.00	65.00	15.00	85.00
6	Kamalanagar	2.06	2.83	1.80	26.48	0.51	1.80	77.12	20.31	55.78	44.22
7	Vaseitlang -II	47.62	28.57	0.00	0.00	0.00	0.00	21.43	0.00	0.00	100.00
8	Jamersury	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	0.00	78.95
9	Charluitlang	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
10	W Saizawh	0.00	72.22	0.00	27.78	0.00	0.00	0.00	0.00	11.11	88.89
11	Bungtlang S'	1.79	0.89	0.89	100.00	0.00	0.00	0.00	0.00	79.46	20.54
12	Hmunnuam	0.00	36.36	0.00	0.00	63.64	0.00	0.00	0.00	27.27	72.73
13	Dumzautlang	0.00	0.00	0.00	0.00	0.00	0.00	83.33	16.67	4.17	95.83
14	Vaseikai	0.00	0.00	12.00	0.00	0.00	0.00	63.04	56.52	15.22	84.78
15	Sekulhkai	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	66.67	33.33
16	Sangau	2.76	27.07	1.10	65.75	0.00	1.10	0.00	2.21	65.19	34.81
17	Vartek	30.00	30.00	0.00	40.00	0.00	0.00	0.00	0.00	10.00	90.00
18	Thaltlang	16.67	33.33	0.00	50.00	0.00	0.00	0.00	0.00	61.11	38.89
19	Pangkhua	32.20	8.47	1.69	54.24	0.00	0.00	0.00	3.39	6.78	93.22
20	Rawlbuk	0.00	51.72	3.45	41.38	0.00	0.00	3.45	0.00	48.28	51.72
Source: Field survey											

Sp = Spring *Pc = Public Water* *Pw = Private Water* *G_p = Government Supply (pipe)*
G_t = Government Supply (tank) *Riv = River* *Rw = Rainwater* *Hp = Hand Pump*

4.3.14 Development Level of Age and Sex structure in Lawngtlai District:

The distribution of the population by sex and age is one of the important demographic groupings. (Vostrikova, 2014) stated that ‘the population's age and sex structure play an important part in the system of indices of the plan for the development of economic and cultural life of our socialist society.They are used by planning agencies for assessing the attained level of development of the economy and culture of the nation and of its individual regions, for verifying the course of fulfillment of plans, as well as for current and long-term planning’. The age structure may have an effect on upgrading of industry in an economy through its correlation with industry specic human capital, and thus affect average worker productivity (Han and Suen, 2011).

According to Avasarkar (2019) ‘Sex and age are also very important because they are the visible, indisputable and convenient indicators of social statuses. It is the basic characteristics or the biological attributes, of any demographic group and affects not only its demographic but also its social, economic and political structure. Each individual is ascribed a certain status in society on the basis of sex and age. Similarly, his/her expected role in the family and society is associated with sex and age’. For the study of the sex structure of any population, the following two measures are generally adopted: (1) the percentage of males in the population or masculinity proportion, and (2) the sex ratio. Of these two measures, the latter is more frequently used in the study of population (Avasarkar, 2019).

The present study divided the structure of age into four group such as Child (0-6), Juvenile (7-14), Working (15-64) and Senior (above 65). The sex composition also study in terms of male and female along with sex ratio. Accoding to survey

conducted during 2015-2016; there are 50.95 male and 49.05 female populations with a sex ratio of 921 in the selected area of Lawngtlai district. The working age group is 63.12 per cent; Juvenile group (20.16), Child (11.62) and senior (5.08) populations.

Table 4.3.95 Indicators of Age and Sex Composition in Lawngtlai District

Sl No	Selected Area	Sex Composition			Age structure (%)			
		Male (%)	Female (%)	Sex Ratio	Child	Juvenile	Working	Senior
1	Lawngtlai	50.51	49.49	954	9.67	20.61	63.34	6.38
2	Mualbu L	51.53	48.47	694	11.86	28.14	53.90	6.10
3	Ngengpuikai	46.19	53.81	967	9.64	22.34	63.45	4.57
4	R. Vanhne	50.00	50.00	1024	5.43	31.52	61.96	1.09
5	Tuithumhnar	49.56	50.44	634	8.85	10.62	74.34	6.19
6	Kamalanagar	53.39	46.61	922	8.15	17.88	68.97	5.00
7	Vaseitlang -II	47.22	52.78	886	25.93	24.07	43.52	6.48
8	Jamersury	50.94	49.06	933	16.98	19.41	60.92	2.70
9	Charluitlang	57.69	42.31	862	9.23	18.46	70.00	2.31
10	W Saizawh	52.21	47.79	1025	10.29	13.24	73.16	3.31
11	Bungtlang S'	55.11	44.89	938	12.50	19.19	64.08	4.23
12	Hmunnuam	48.17	51.83	1058	14.63	20.73	60.37	4.27
13	Dumzautlang	58.14	41.86	864	19.38	14.73	53.49	12.40
14	Vaseikai	49.79	50.21	960	5.58	27.47	57.51	9.44
15	Sekulhkai	46.67	53.33	851	13.33	33.33	53.33	0.00
16	Sangau	56.21	43.79	1003	13.52	15.73	63.48	7.27
17	Vartek	52.17	47.83	938	10.87	10.87	71.74	6.52
18	Thaltlang	40.19	59.81	972	4.67	24.30	66.36	4.67
19	Pangkhua	50.14	49.86	991	13.90	18.53	61.58	5.99
20	Rawlbuk	53.38	46.62	949	8.11	12.16	77.03	2.70

Source: Field survey

4.3.14.1 Intra RD Block disparity of Age and Sex structure:

i) Lawngtlai RD Block: The disparity in terms of age and sex structure varied from the highest value of 5.12 scored by R.Vanhne village and the lowest value of -3.26 scored by Mualbu L falls under high and low level of development. Ngengpuikai, Lawngtlai and Tuithumhnar villages scored a value of -0.49, -0.62 and -1.72, categorized in the medium level of development.

Table 4.3.96 Age & Sex Composition in Lawngtlai RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	-0.62	3			
2	Mualbu L	-3.26	5	High	Above 2	R.Vanhne
3	Ngengpuikai	0.49	2	Medium	-2 to 2	Ngengpuikai, Lawngtlai, Tuithumhnar
4	R. Vanhne	5.12	1	Low	Below -2	Mualbu L
5	Tuithumhnar	-1.72	4			

ii) Sangau RD Block: The highest value scored by Thaltlang village with a value of 3.12 and followed by Rawlbuk (1.92), Pangkhua (-1.12) and Sangau village (-1.52), categorized into high and medium level of development. Vartek village was categorizing as low level of development with a score value of -2.39.

Table 4.3.97 Age & Sex Composition in Sangau RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Sangau	-1.52	4			
2	Vartek	-2.39	5	High	Above2	Thaltlang
3	Thaltlang	3.12	1	Medium	-2 to 2	Rawlbuk, Pangkhua, Sangau
4	Pangkhua	-1.12	3	Low	Below -2	Vartek
5	Rawlbuk	1.92	2			

iii) Bungtlang S' RD Block: Hmunnuam, Vaseikai and Bungtlang S' villages scored a value of 1.78, 1.67 and 1.38 and falls under high level of development. Sikulkai village categorize as medium level of development with a score value of 0.63. The lowest value of -5.47 scored by Dumzautlang and classified under low level of development.

Table 4.3.98 Age & Sex Composition in Bungtlang S' RD Block						
Sl No	SelectedArea	Score	Rank	Level	Score	RD Block
1	Bungtlang S'	1.38	3			
2	Hmunnuam	1.78	1	High	Above2	Hmunnuam, Vaseikai, Bungtlang S'
3	Dumzautlang	-5.47	5	Medium	-2 to 2	Sekulhkai
4	Vaseikai	1.67	2	Low	Below -2	Dumzautlang
5	Sekulhkai	0.63	4			

iv) Chawngte RD Block: W Saizawh village scored the highest value of 1.91 which is categorized under high level of development. Charluitlang, Jamersury and Kamanalagar villages fall medium level of development with a score value of 1.10, 0.46 and 0.43. A score value of -3.91 in the village of Vaseitlang - II was classified into low level of development.

Table 4.3.99 Age & Sex Composition in Chawngte RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamalanagar	0.43	4			
2	Vaseitlang -II	-3.91	5	High	Above1.5	W Saizawh
3	Jamersury	0.46	3	Medium	-1.5 to 1.5	Charluitlang, Jamersury, Kamanalagar
4	Charluitlang	1.10	2	Low	Below -1.5	Vaseitlang-II
5	W Saizawh	1.91	1			

4.3.14.21 Inter RD Block disparity in development of Age & Sex Composition:

The high level of development recorded in Chawngte RD Block with a score value of 2.30, followed by Lawngtlai RD block (0.16). The low level of development scored by two blocks like Chawngte and Bungtlang S' with a value of -1.12 and -1.35 comes under low level of development.

Table 4.3.100 Level of Age & Sex Composition in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	0.16	2	High	Above 1	Chawngte
2	Chawngte	2.30	1	Medium	-1 to 1	Lawngtlai
3	Bungtlang S’	-1.12	3	Low	Below -1	Bungtlang S’, Sangau
4	Sangau	-1.35	4			

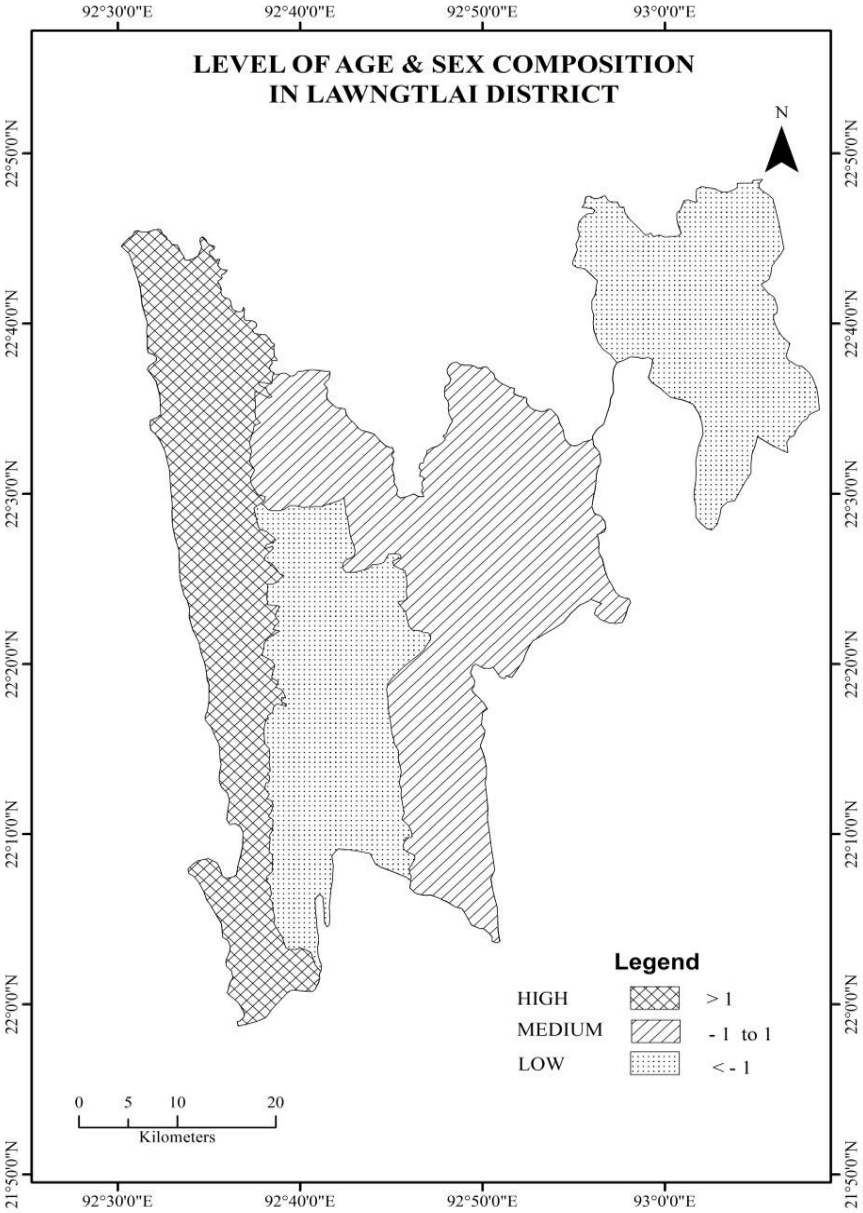

Figure: 4.3.26 Level of Age & Sex Composition in Lawngtlai District

4.3.14.3 Spatial disparity in development of Age and Sex structure:

The KMO showed a value of 0.283 and Bartlett's test of sphericity was 0.000 significant levels which showing the suitability of data.

Table 4.3.101 Development Level of Age and Sex Composition in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	3.86	9			
2	Mualbu L	3.38	11			
3	Ngengpuikai	6.02	4			
4	R. Vanhne	6.22	3			
5	Tuithumhnar	2.96	13			
6	Kamalanagar	2.80	15			
7	Vaseitlang -II	3.94	7	Very high	Above 6.5	Thaltlang, Sekulhkai
8	Jamersury	3.55	8	High	4.5 to 6.5	R.Vanhne, Ngengpuikai, Vaseikai, Hmunnuam
9	Charluitlang	1.37	19	Medium	2.5 to 4.5	Vaseitlang –II, Jamersury, Lawngtlai, Pangkhua, Mualbu L, W Saizawh, Tuithumhnar, Rawlbuk, Kamalanagar,
10	W Saizawh	3.22	12	Low	1.5 to 2.5	Vartek, Bungtlang S',
11	Bungtlang S'	2.02	17	Very low	Below 1.5	Sangau, Charluitlang, Dumzautlang
12	Hmunnuam	4.94	6			
13	Dumzautlang	-1.55	20			
14	Vaseikai	4.52	5			
15	Sekulhkai	6.87	2			
16	Sangau	0.87	18			
17	Vartek	2.32	16			
18	Thaltlang	8.96	1			
19	Pangkhua	3.64	10			
20	Rawlbuk	2.80	14			

From the above table 4.3.101, the two villages of Thaltlang and Sekulhkai scored the highest value of 8.96 and 6.87 which falls under very high level of development. Four villages like R.Vanhne, Ngengpuikai, Hmunnuam and Vaseikai

were categorized into high level of development with a score value of 6.22, 6.02, 4.52 and 4.94. A score value of nine villages such as Vaseitlang–II, Jamersury, Lawngtlai, Pangkhua, Mualbu L, W Saizawh, Tuithumhnar, Rawlbuk and Kamalanagar were falls under medium level of development which is ranging between 2.5 to 4.5 score value. Two villages of Vartek (2.32) and Bungtlang S' (2.02) also falls to low level of development. Very low level of development with a score value of 0.87, 1.37 and -1.55 found in Sangau, Charluitlang and Dumzautlang villages.

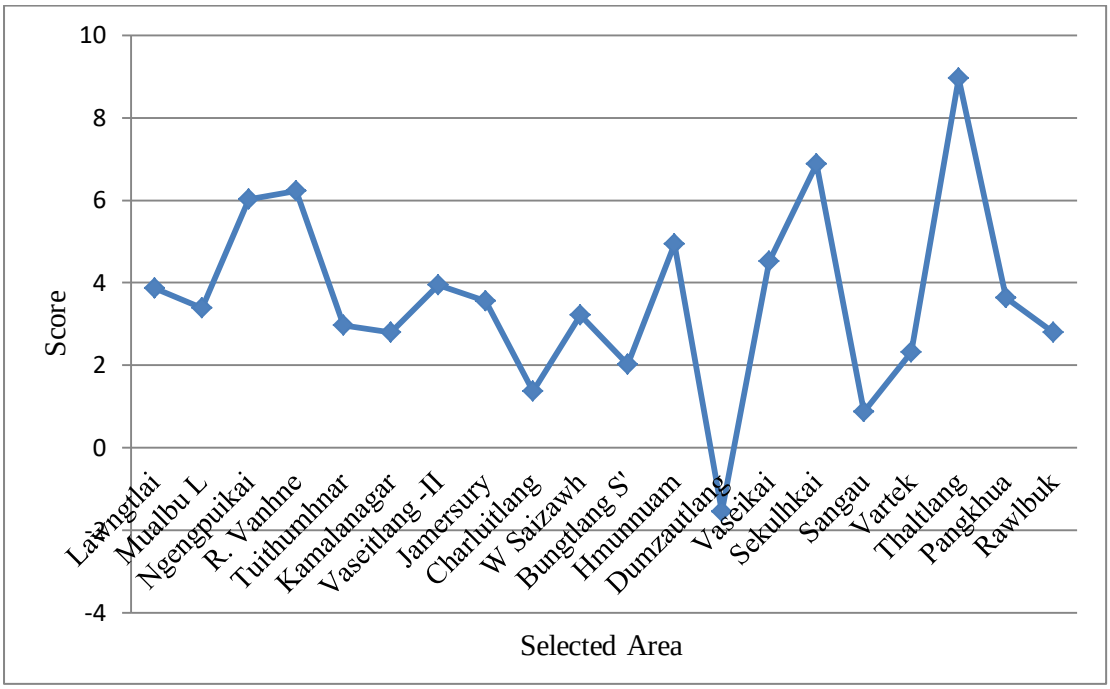

Figure: 4.3.27 Level of development in Age and Sex Composition in Lawngtlai district

4.3.15 Level of fuel use for cooking purposes in Lawngtlai District:

Various types of fuels like coal, wood, kerosene, petroleum, gas and electricity are used for cooking. Mostly fuel Wwood and kerosene are used for cooking in the remote areas while gas; electric, solar and bio-gas are available in urban area. 79.64 per cent of the total households were used gas for cooking purposes whereas fuel woods are used for cooking amongst 12.11 per cent of households. Kerosene is used for 5.60 per cent; electric, solar and bio-gas are also used by less than 2 per cent of the total population. 84.62 per cent of Lawngtlai people are using gas while 100 per cent of Sekulhkai and Vartek villages were not access gas or electric, they used only fuel wood for cooking.

Table 4.3.102 Indicators of fuel used for cooking in Lawngtlai District (in percentage)

Sl No	Selected Area	Fuel wood	Gas	Kero sene	Electric	Solar	Bio-Gas
1	Lawngtlai	6.82	84.62	2.85	4.55	1:00	0.35
2	Mualbu L	52.63	31.58	15.79	0.00	0.00	0.00
3	Ngengpuikai	88.24	8.82	0.00	2.94	0.00	0.00
4	R. Vanhne	81.25	18.75	0.00	0.00	0.00	0.00
5	Tuithumhnar	80.00	20.00	0.00	0.00	0.00	0.00
6	Kamalanagar	38.56	58.61	1.54	0.77	0.26	0.26
7	Vaseitlang -II	95.24	4.76	0.00	0.00	0.00	0.00
8	Jamersury	65.79	20.89	13.32	0.00	0.00	0.00
9	Charluitlang	90.00	5.00	0.00	0.00	5.00	0.00
10	W Saizawh	72.22	27.78	0.00	0.00	0.00	0.00
11	Bungtlang S'	62.50	37.50	0.00	0.00	0.00	0.00
12	Hmunnuam	90.91	9.09	0.00	0.00	0.00	0.00
13	Dumzautlang	87.50	12.50	0.00	0.00	0.00	0.00
14	Vaseikai	73.91	26.09	0.00	0.00	0.00	0.00
15	Sekulhkai	100.00	0.00	0.00	0.00	0.00	0.00
16	Sangau	67.40	32.60	0.00	0.00	0.00	0.00
17	Vartek	100.00	0.00	0.00	0.00	0.00	0.00
18	Thaltlang	88.89	11.11	0.00	0.00	0.00	0.00
19	Pangkhua	60:00	38.98	0.00	0.00	0.00	1.69
20	Rawlbuk	72.41	27.59	0.00	0.00	0.00	0.00

Source: Field survey

4.3.15.1 Intra RD Block disparity in fuel use for cooking purposes:

i) Lawngtlai RD Block: The disparity in terms of fuel use for cooking assorted from the highest score value of 8.23 (Lawngtlai) and lowest value of -3.18 (R.Vanhne) which falls under high and low level of development. Mualbu L and Ngengpuikai villages scored a value of 0.39 and -2.34; they were falls under medium level of development. Tuithumhnar village also classified as under low level of development with a score value of -3.10.

Table 4.3.103 Level of fuel used for cooking in Lawngtlai Rural RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	8.23	1			
2	Mualbu L	0.39	2	High	Above 3	Lawngtlai
3	Ngengpuikai	-2.34	3	Medium	-3 to 3	Mualbu L, Ngengpuikai
4	R. Vanhne	-3.18	5	Low	Below -3	Tuithumhnar, R.Vanhne
5	Tuithumhnar	-3.10	4			

ii) Sangau RD Block: The highest value scored by Pangkhua village with a score value of 3.94. Sangau, Rawlbuk and Thaltlang villages categorize under medium level of development with a score value of 0.82, 0.21 and -1.81. The low level of development considered to Vartek village, scoring a value of -3.17.

Table 4.3.104 Level of fuel used for cooking in Sangau RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Sangau	0.82	2			
2	Vartek	-3.17	5	High	Above2	Pangkhua
3	Thaltlang	-1.81	4	Medium	-2 to 2	Sangau, Rawlbuk, Thaltlang
4	Pangkhua	3.94	1	Low	Below -2	Vartek
5	Rawlbuk	0.21	3			

iii) Bungtlang S' RD Block: Bungtlang S' village scored a value of 2.76 and followed by Vaseikai, Dumzautlang and Hmunnuam villages with having a score

value of 1.22, -0.61 and -1.07 which is considered as under high and medium level of development. Sekulhkai (-2.30) categorized into low level of development.

Table 4.3.105 Level of fuel used for cooking in Bungtlang S' RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Bungtlang S'	2.76	1			
2	Hmunnuam	-1.07	4	High	Above 2	Bungtlang S
3	Dumzautlang	-0.61	3	Medium	-1 to 2	Vaseikai, Dumzautlang, Hmunnuam
4	Vaseikai	1.22	2	Low	Below -2	Sekulhkai
5	Sekulhkai	-2.30	5			

iv) Chawngte RD Block: Kamalanagar village score the highest value of 6.94 which is categorized under high level of development. Jamersury, Charluitlang, and W. Saizawh villages falls medium level of development with a score value of -0.06, -1.29 and -1.77. A score value of -3.80 in the village of Vaseitlang - II was classified under low level of development.

Table 4.3.106 Level of fuel used for Cooking in Chawngte RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamalanagar	6.94	1			
2	Vaseitlang -II	-3.80	5	High	Above 2	Kamalanagar
3	Jamersury	-0.06	2	Medium	-2 to 2	Jamersury, Charluitlang, W Saizawh
4	Charluitlang	-1.29	3	Low	Below -2	Vaseitlang-II
5	W Saizawh	-1.77	4			

4.3.15.2 Inter RD Block disparity in fuel use for cooking purposes:

The rural development blocks in Lawngtlai district categorize into three level of development such as – i) high level of development with a score value of 4.41, recorded by Lawngtlai block ii) Chawngte RD block with a score value of 1.35 falls under medium level of development and iii) low level of development scored by two blocks like Sangau and Bungtlang S' with a score value of -2.61 and -3.14.

Table 4.3.107 Level of Fuel use for cooking in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	4.41	1	High	Above 2	Lawngtlai
2	Chawngte	1.35	2	Medium	-2 to 2	Chawngte
3	Bungtlang S’	-3.14	4	Low	Below -2	Sangau, Bungtlang S’
4	Sangau	-2.61	3			

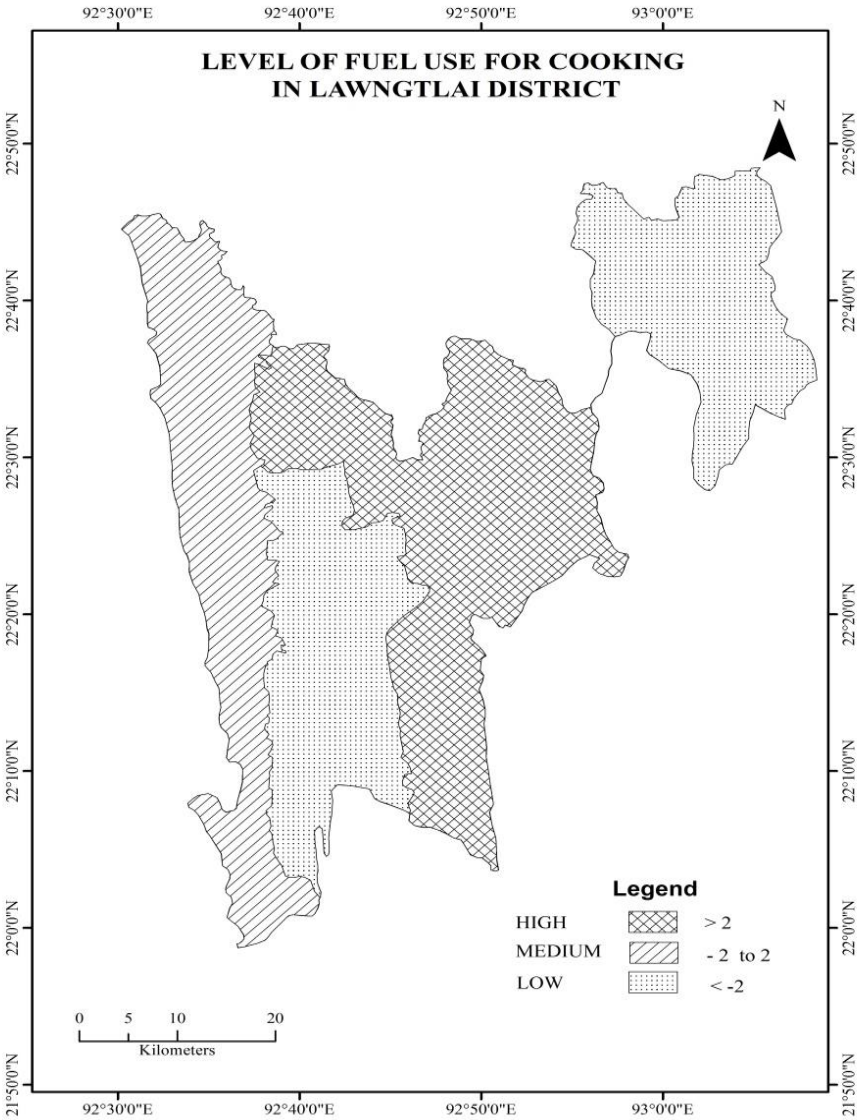

Figure: 4.3.28 Level of Fuel use for cooking in Lawngtlai District

4.3.15.3 Spatial disparity in fuel use for cooking purposes:

KMO showed a value of 0.648 and Bartlett's test of sphericity was significant at 0.000 level of significant which indicate adequacy for factor analysis and rejected null hypothesis.

Table 4.3.108 Development Level of Fuel use for Cooking in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	12.60	1			
2	Mualbu L	2.78	4			
3	Ngengpuikai	2.47	6			
4	R. Vanhne	1.34	13			
5	Tuithumhnar	1.43	12			
6	Kamalanagar	6.59	2			
7	Vaseitlang -II	0.34	18	Very high	Above 6	Lawngtlai, Kamalanagar
8	Jamersury	1.54	11	High	4 to 6	Pangkhua
9	Charluitlang	0.52	17	Medium	2 to 4	Mualbu L, Bungtlang S, Ngengpuikai, Sangau
10	W Saizawh	1.98	8	Low	0 to 2	W Saizawh, Rawlbuk, Vaseikai, Jamersury, Tuithumhnar, R.Vanhne, Dumzautlang, Thaltlang, Hmunnuam, Charluitlang, Vaseitlang –II
11	Bungtlang S'	2.68	5	Very low	Below 0	Sekulhkai, Vartek
12	Hmunnuam	0.65	16			
13	Dumzautlang	0.89	14			
14	Vaseikai	1.86	10			
15	Sekulhkai	0.00	19			
16	Sangau	2.33	7			
17	Vartek	0.00	19			
18	Thaltlang	0.79	15			
19	Pangkhua	4.72	3			
20	Rawlbuk	1.97	9			

Table 4.3.109 showed the level of development in fuel use for cooking purposes in Lawngtlai district. The district headquarters of Lawngtlai and CADC administrative centres of Kamalanagar village categorize as very high level of development with a score value of 12.601 and 6.587. Pangkhua village categorize into high level of development with a score value of 4.724. A score value of 1.782, 2.679, 2.470 and 2.329 in the villages of Mualbu L, Bungtlang S', Ngengpuikai and Sangau falls under medium level of development. Eleven villages such as W Saizawh (1.98), Rawlbuk (1.97), Vaseikai (1.86), Jamersury (1.54), Tuithumhnar (1.43), R.Vanhne (1.34), Dumzautlang (0.89), Thaltlang (0.79), Hmunnuam (0.65), Charluitlang (0.52) and Vaseitlang –II (0.34) falls under low level of development. A score value of -0.002 in Sekulhkai and Vartek villages also drop under very low level of development.

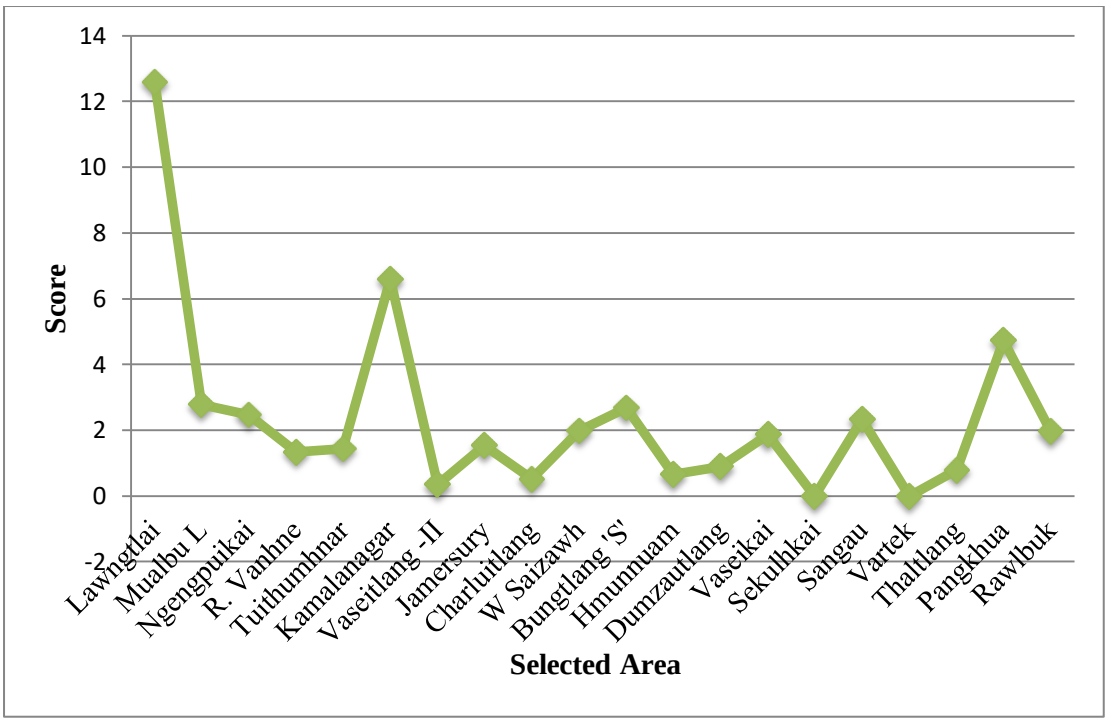

Figure: 4.3.29 28 Level of Fuel use for cooking in Lawngtlai District

4.3.16 Development Level of Social Security in Lawngtlai District:

In the subsistence economy and traditional society, forms of social insecurity frequently exist. If welfare states or social security systems do not satisfy effectiveness or efficiency criteria, reforms will be necessary (Hauff and Sauer, 2001). However, efficient and effective social protection systems drive and support social stability and social justice as well as economic development of the country. Social problems and risks require material and non-material facility from society, intended to mitigate recovery of such problem and situations.

To study the social security or insecurity in Lawngtlai district, seven indicators were selected to identify the security of society such as i) distrimination based on location, 22.64 per cent of the respondents agreed that there can be discrimination amongst the society based on its location/direction (north, nouth etc.,) ii) 74.60 per cent of the respondents belived that the variety of religion and churches impacts the feeling of insecurity to the masses as developmental works were done on the basis of religion attentiveness in some small portion of the district iii) 39.16 per cent thought that the ethnic status plays a vital role amongst the local leaders and administrators of block/district in respect of welfare of the society iv) 30.32 per cent belived that regional inequality promote a sense of separism v) 39.54 per cent agreed that diferrent langauges in a state could bring discrimination vi) 31.68 per cent of the respondents accepted that disparity of socio-economic development is one of the important factors of regionalism vi) 33.19 per cent feels that the disparity of socio-economic development creates separism amongst same dialects community.

Table 4.3.109 Indicators of Social Security development in Lawngtlai district (in percentage)								
Sl No	Selected Area	S1	S 2	S3	S4	S5	S6	S7
		Agree	Agree	Agree	Agree	Agree	Agree	Agree
1	Lawngtlai	37.59	91.44	33.39	33.74	45.81	43.71	32.69
2	Mualbu L	21.05	78.95	21.05	21.05	52.64	42.11	47.37
3	Ngengpuikai	8.82	88.24	41.18	38.24	44.12	26.47	26.47
4	R. Vanhne	37.5	100	31.25	50	37.5	50	56.25
5	Tuithumhnar	20	75	25	20	25	25	25
6	Kamalanagar	26.22	83.54	32.14	20.31	39.08	41.13	42.41
7	Vaseitlang -II	35.71	50	19.05	28.57	28.57	30.95	33.33
8	Jamersury	31.58	100	28.95	28.94	42.11	18.42	42.11
9	Charluitlang	0	100	35	10	60	0	0
10	W Saizawh	0	100	27.78	5.56	0	22.22	16.67
11	Bungtlang 'S'	35.71	83.93	54.46	27.68	54.47	59.82	54.47
12	Hmunnuam	18.18	68.19	13.64	13.64	13.64	27.27	27.27
13	Dumzautlang	8.33	83.33	45.83	4.17	45.83	45.84	41.67
14	Vaseikai	19.57	39.13	32.61	30.43	39.13	32.61	36.96
15	Sekulhkai	11.11	33.33	11.11	44.44	44.44	33.33	44.44
16	Sangau	26.51	92.81	66.3	43.09	43.09	29.28	28.18
17	Vartek	20	70	60	30	50	20	30
18	Thaltlang	16.67	66.67	61.11	38.89	33.34	22.23	33.33
19	Pangkhua	61.02	25.42	77.97	72.88	54.24	28.81	38.98
20	Rawlbuk	17.24	62.06	65.52	44.83	37.93	34.49	20.69
Source: Field survey								

S1 = there is distrimination baesd on location in your locality S2 = there is distrimination baesd on religion in your locality
S3 = there is distrimination baesd on ethnic status in your locality S4 = Dispary of socio-economic development creates Separism
S5 = Language differences creates discrimination S6 = Dispary of socio-economic development creates regionalism
S7 = Dispary of socio-economic development creates separism amongst same dialects community

4.3.16.2 Intra RD Block disparity in Development of Social Security:

i) Lawngtlai RD Block: The level of disparity in social security which has ranging between the score value of 8.74 at Lawngtlai and a score value of -9.74 in Mualbu L, falls in high and low level of development. The medium level of development found in the villages of R Vanhne, Mualbu L and Ngengpuikai with a value of 3.61, 0.56 and -3.18.

Table 4.3.110 Level of Social Security in Lawngtlai Rural RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	8.74	1			
2	Mualbu L	0.56	3	High	Above 5	Lawngtlai
3	Ngengpuikai	-3.18	4	Medium	-5 to 5	R.Vanhne, Mualbu L, Ngengpuikai
4	R. Vanhne	3.61	2	Low	Below - 5	Tuithumhnar
5	Tuithumhnar	-9.74	5			

ii) Sangau RD Block : The highest value scored by Pangkhua village with a value of 9.94 and followed by Sangau, Thaltlang and Rawlbuk villages with a score value of -0.40, -1.41 and -1.76, and, then classified under medium level of development. The low level of social security development found in the village of Vartek with a score value of -6.35.

Table 4.3.111 Development Level of Social Security in Sangau RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Sangau	-0.40	2			
2	Vartek	-6.35	5	High	Above 2	Pangkhua
3	Thaltlang	-1.41	3	Medium	-2 to 2	Sangau, Thaltlang, Rawlbuk
4	Pangkhua	9.94	1	Low	Below -2	Vartek
5	Rawlbuk	-1.76	4			

iv) Bungtlang S RD Block: Bungtlang S' village scored the highest value of 9.26 and falls under very high level of development. Dumzautlang, Sekulhkai and Vaseikai

villages scored the value of 0.85, -0.36 and -1.83. The village of Hmunnuam (-7.91) categorize under medium level of development.

Table 4.3.112 Level of Social Security in Bungtlang S' RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Bungtlang S'	9.26	1			
2	Hmunnuam	-7.91	5	High	Above 5	Bungtlang S'
3	Dumzautlang	0.85	2	Medium	-5 to 5	Dumzautlang, Sekulhkai, Vaseikai
4	Vaseikai	-1.83	4	Low	Below -5	Hmunnuam
5	Sekulhkai	-0.36	3			

iv) Chawngte RD Block: Kamalanagar and Jamersury villages scored a value of 7.03 and 5.26 which falls under high level of development. The village of Vaseitlang-II categorize under medium level of development with a score value of -0.76. The two villages of W Saizawh (-5.42) and Charluitlang (-6.10) falls into low level of development.

Table 4.3.113 Development level of Social Security in Chawngte RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamanagar	7.03	1			
2	Vaseitlang -II	-0.76	3	High	Above 5.5	Kamalanagar, Jamersury
3	Jamersury	5.26	2	Medium	-5.5 to 5.5	Vaseitlang-II,
4	Charluitlang	-5.42	4	Low	Below -5.5	Charluitlang, W Saizawh
5	W Saizawh	-6.10	5			

4.3.16.1 Inter RD Block disparity in Development of Social Security:

The rural development blocks categorize into three level of development such as High, Medium and Low. The high level of development with a score value of 3.05 recorded by Bungtlang S' block. Sangau and Lawngtlai RD blocks with a score value of

1.65 and -0.77 under medium level of development. The low level of development score by Chawngte RD Block with a score value of -3.94.

Table 4.3.114 Development Level of Social Security in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	-0.77	3	High	Above 3	Bungtlang S’
2	Chawngte	-3.94	4	Medium	-3 to 3	Sangau, Lawngtlai
3	Bungtlang S	3.05	1	Low	Below -3	Chawngte
4	Sangau	1.65	2			

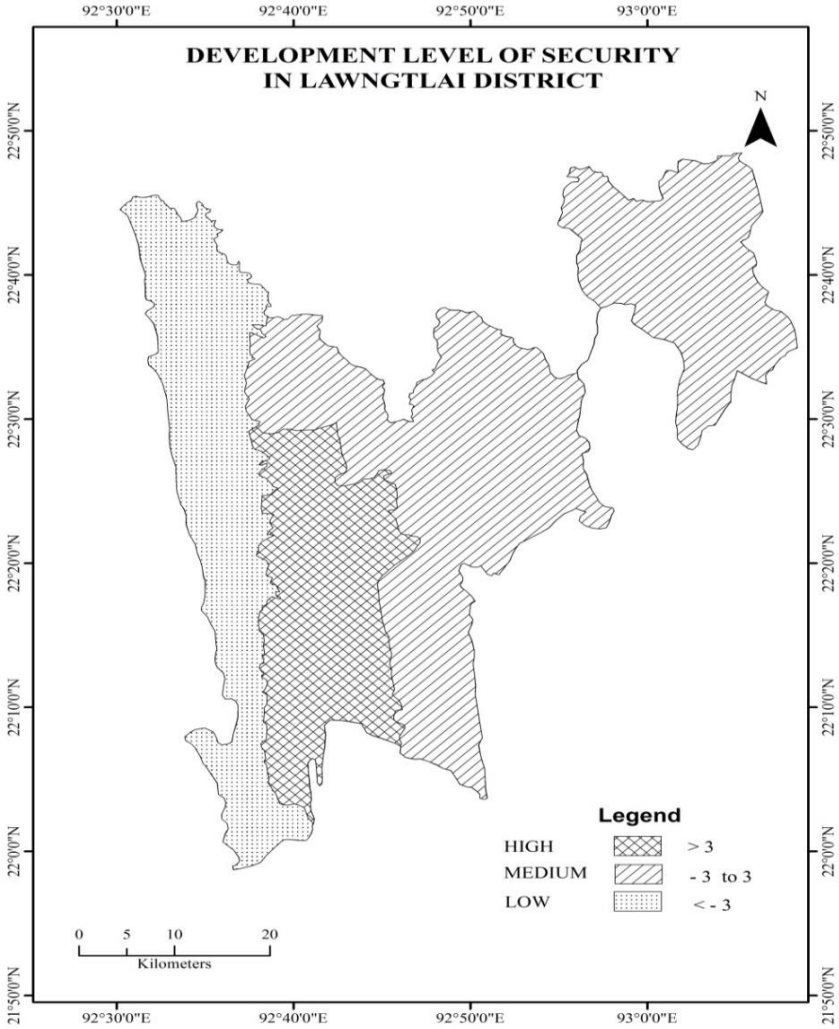

Figure: 4.3.30 Development Level of Social Security in Lawngtlai District

4.3.16.3 Sapatial disparity in Development of Social Security:

The KMO showed a value of 0.300 and Bartlett's test of sphericity was 0.000 significant levels showing the appropriateness of data and then used for calculation of social security development.

Table 4.3.115 Level of Social Security Development in Lawngtlai District

Sl No	Selected Area	Score	Rank	Level	Score	Village/Town
1	Lawngtlai	8.28	7			
2	Mualbu L	9.33	4			
3	Ngengpuikai	4.83	16			
4	R. Vanhne	8.94	5			
5	Tuithumhnar	3.85	17			
6	Kamalanagar	7.77	10			
7	Vaseitlang -II	7.40	11	Very high	Above 13.5	Pangkhua, Sekulhkai
8	Jamersury	7.93	9	High	9.5 to 13.5	Bungtlang S', Mualbu L
9	Charluitlang	0.95	19	Medium	4.5 to 9.5	R.Vanhne, Thaltlang, Lawngtlai, Vaseikai, Jamersury, Kamalanagar, Vaseitlang-II, Rawlbuk, Sangau, Vartek, Dumzautlang, Ngengpuikai
10	W.Saizawh	-1.78	20	Low	-1.5 to 4.5	Tuithumhnar, Hmunnuam,
11	Bungtlang S'	10.39	3	Very low	Below -1.5	Charluitlang, W Saizawh
12	Hmunnuam	3.45	18			
13	Dumzautlang	5.37	15			
14	Vaseikai	8.14	8			
15	Sekulhkai	13.84	2			
16	Sangau	6.91	13			
17	Vartek	6.55	14			
18	Thaltlang	8.74	6			
19	Pangkhua	15.83	1			
20	Rawlbuk	7.00	12			

Table 4.3.115 showed the level of social security development in Lawngtlai District. Pangkhua and Sekulhkai village scored a value of 15.828 and 13.839 which falls under very high level of development. There are twelve villages under high level of

development such as R.Vanhne (8.938), Thaltlang (8.736), Lawngtlai (8.284), Vaseikai (8.139), Jamersury (7.926), Kamalanagar (7.773), Vaseitlang-II (7.397), Rawlbuk (7.002), Sangau (6.905), Vartek (6.554), Dumzautlang (5.371), and Ngengpuikai (4.828) which is ranging as medium level of development. Two villages of Tuithumhnar and Hmunnuam also categorize under low level of development with a score value of 3.850 and 3.447. Charluitlang and W Saizawh villages scored a value of 0.950 and -1.779 under low level of development.

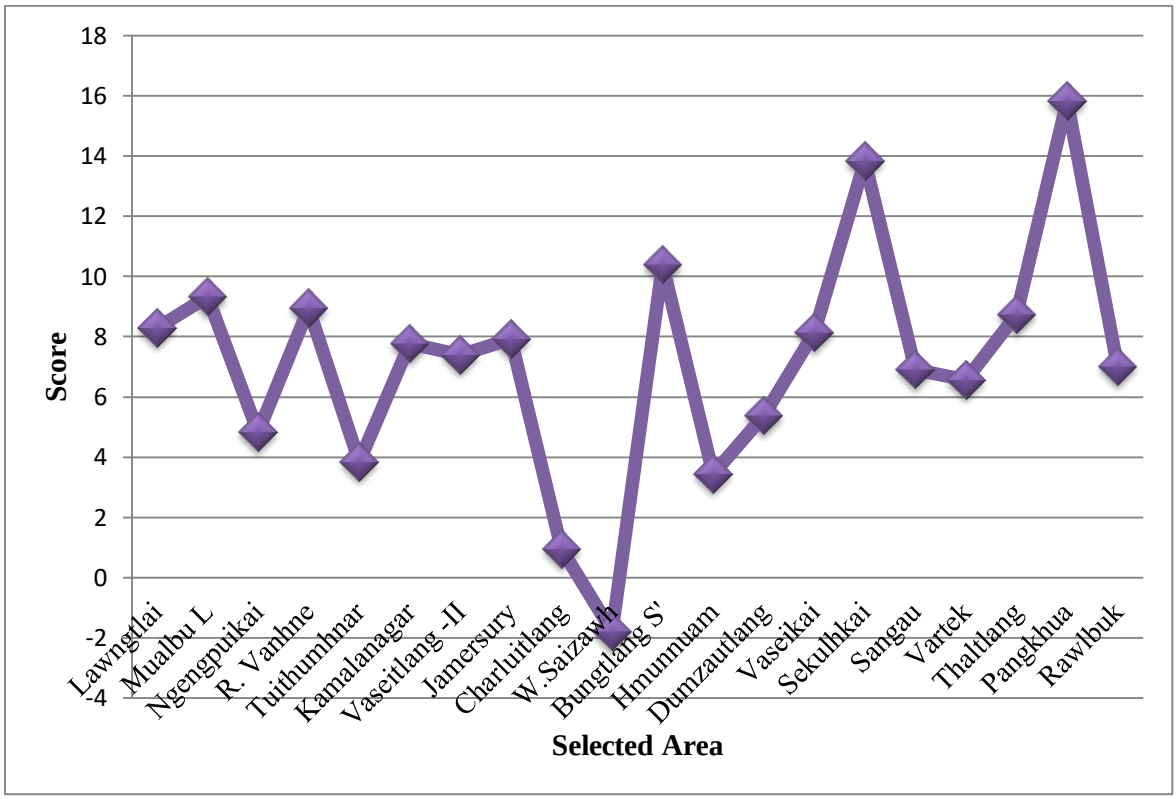

Figure: 4.3.31 Level of Social Security in Lawngtlai District

4.3.17 Over-all Socio-Economic Development in Lawngtlai District:

Level of over-all socio-economic development is derived in three way such as i) Intra Block ii) Inter block and iii) Over-all villages and town in Lawngtlai district. The factor scores of socio-economic development dimensions (16 dimensions) in each component were used as variable indicators for over-all development and then again normalized by Z-score standardized techniques (Appendix C, D, E, F and G) in intra and inter block. The summation of all components of standardized value was the final products of development level. Descriptive statistics were also formulated to explained minimum, maximum, average and Standard deviation of the value and prevents undue influence of variables in this analysis.

The spatial disparity in over-all socio-economic development is simply derived from final score of the components. The selected indicator variables were normalized (Appendix B) using minimum method which put the indicators to have an identical range (0 to 1). The formula of Best-Worst method is -

$$X=1-[(BestXi-observedX_{ij})/(BestXi-WorstXi)]$$

Where, Observed X_{ij} is the value of the indicator variable i^{th} of the village/town

$WorstX_i$ is the minimum value of the indicator variable i^{th} and

$BestX_i$ is the maximum value of the indicator variable i^{th}

After completion of normalization, Principal Component Analysis (PCA) and factor Analysis (FA) were run using SPSS to obtain the final output. It requires computation of correlation analysis and test statistics like Kaiser-Meyer-Olkin (KMO) and Bartlett's test Sphericity to assess the appropriateness of data.

4.3.17.1 Intra RD Block disparity in over-all Socio-Economic Development:

i) Lawngtlai RD Block: The district headquaters and core region of the rural development block, Lawngtlai town scored the highest value of 20.005. It is only the notified town found in the district which has dynamic administration, marketing and urban functioning take part in the developmental score of all dimensions and indicator variables in the district. The periphery and remote areas of R.Vanhne, Mualbu L and Ngengpuikai villages which is located in the south, north and north-west part of Lawngtlai RD block scored a value of -1.532, -5.443 and -5.954. Tuithumhnar village scored the lowest value of -7.075 which is situated in the south western part of Lawngtlai RD block. Geographical factors play a dominant role in this block.

Table 4.3.116 Level of over-all Socio-economic development in Lawngtlai RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Lawngtlai	20.00	1			
2	Mualbu L	-5.44	3	High	Above 5	Lawngtlai
3	Ngengpuikai	-5.95	4	Medium	-5 to 5	R.Vanhne, Mualbu L, Ngengpuikai
4	R. Vanhne	-1.53	2	Low	Below - 5	Tuithumhnar
5	Tuithumhnar	-7.07	5			

ii) Sangau RD Block: The number of population and size of the villages affect the socio-economic status of this block. The block center of Sangau village (60.95 per cent household) scored the highest value of 10.414 and followed by Pangkhua village, second highest number of household (19.86 per cent) with a score value of 4.87. Rawlbuk village (9.76 per cent household) also scored a value of 4.34 which is under medium level of development. The low level of development scored by Thaltlang (-7.15) and Vartek (-12.47) villages with 6.06 and 3.36 per cent of household. Pattern, size and location of settlement play a vital role in this block.

Table 4.3.117 Development level of over-all Socio-economic development in Sangau RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Sangau	10.41	1			
2	Vartek	-12.47	5	High	Above 5	Sangau
3	Thaltlang	-7.15	4	Medium	-5 to 5	Pangkhua, Rawlbuk
4	Pangkhua	4.87	2	Low	Below -5	Thaltlang, Vartek
5	Rawlbuk	4.34	3			

iii) Bungtlang S' RD Block: The highest number of household in this block, Bungtlang S' village scored the highest value of 19.93, categorized under high level of development. The second highest number of household of Vaseikai village falls under medium level of development with a score value of 1.54. It is located in western margin which has little marketing function improve the local economy. Three villages of Hmunnuam (-5.52), Sekulhkai (-5.87) and Dumzautlang (-10.07) categorize under low level of development. These villages are located in the periphery with poor transportation facilty, lack of education and mass-media exposure led to retrograde standard of living. A geographical, social and economic factor plays a major role in the development of this block.

Table 4.3.118 Development level of over-all Socio-economic development in Bungtlang S' RD Block						
Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Bungtlang S'	19.93	1			
2	Hmunnuam	-5.52	3	High	Above 5	Bungtlang S'
3	Dumzautlang	-10.07	5	Medium	-5 to 5	Vaseikai
4	Vaseikai	1.54	2	Low	Below -5	Hmunnuam, Sekulhkai, Dumzautlang
5	Sekulhkai	-5.87	4			

iv) Chawngte RD Block: Core-Periphery linkage take part remarkable effort in this block.Two vilages in the central part of Chawngte RD Block such as Kamalanagar

and W.Saizawh (4 kms from Kamalanagar) score a vaue of 18.34 and 2.01 which falls under high and medium level of development. Jamersury (14 kms from block center), Charluitlang (60 kms from block center) and Vaseitlang-II (52 kms from block center) score a low value of -5.65, -6.31 and -8.39.

Table 4.3.119 Development level of over-all Socio-economic development in Chawngte RD Block

Sl No	Selected Area	Score	Rank	Level	Score	RD Block
1	Kamanagar	18.34	1			
2	Vaseitlang -II	-8.39	5	High	Above 5.5	Kamalanagar
3	Jamersury	-5.65	3	Medium	-5.5 to 5.5	W.Saizawh
4	Charluitlang	-6.31	4	Low	Below -5.5	Jamersury, Charluitlang, Vaseitlang-II
5	W Saizawh	2.01	2			

4.3.17.2 Inter RD Block disparity in over-all Socio-Economic Development:

As it expected, Lawngtlai RD Block obtained first rank of socio-economic development. It was scored the highest value of 12.92 as it relishes the district capital functions within the block which provides small services, marketing facilities, better education, high exposure of mass-media, housing quality and adequate amenities with better supply of water, recreation and better transportation with higher income. The other two blocks of Sangau and Bungtlang S' score a value of -0.03 and -4.85 which falls under medium level of development. Most of the selected villages in these blocks are firmly established from long back as historical factors frolick socio-economic status of the region. The western portion block of Chawngte in Lawngtlai district scored a value of -8.03 which comes under low level of development. Though the block center of Kamalanagar holds a large number of settlements, it is young village with high growth of population due to migration and other factors which may emanates under low level of

development. And, this block being a beginner and infanstile stage of growth but progressive in nature.

Table 4.3.120 Level of over-all Socio-Economic Development in Lawngtlai District						
Sl No	Name of RD Block	Score	Rank	Level	Score	RD Block
1	Lawngtlai	12.92	1	High	Above 5	Lawngtlai
2	Chawngte	-8.03	4	Medium	-5 to 5	Sangau, Bungtlang S’
3	Bungtlang S’	-4.85	3	Low	Below -5	Chawngte
4	Sangau	-0.039	2			

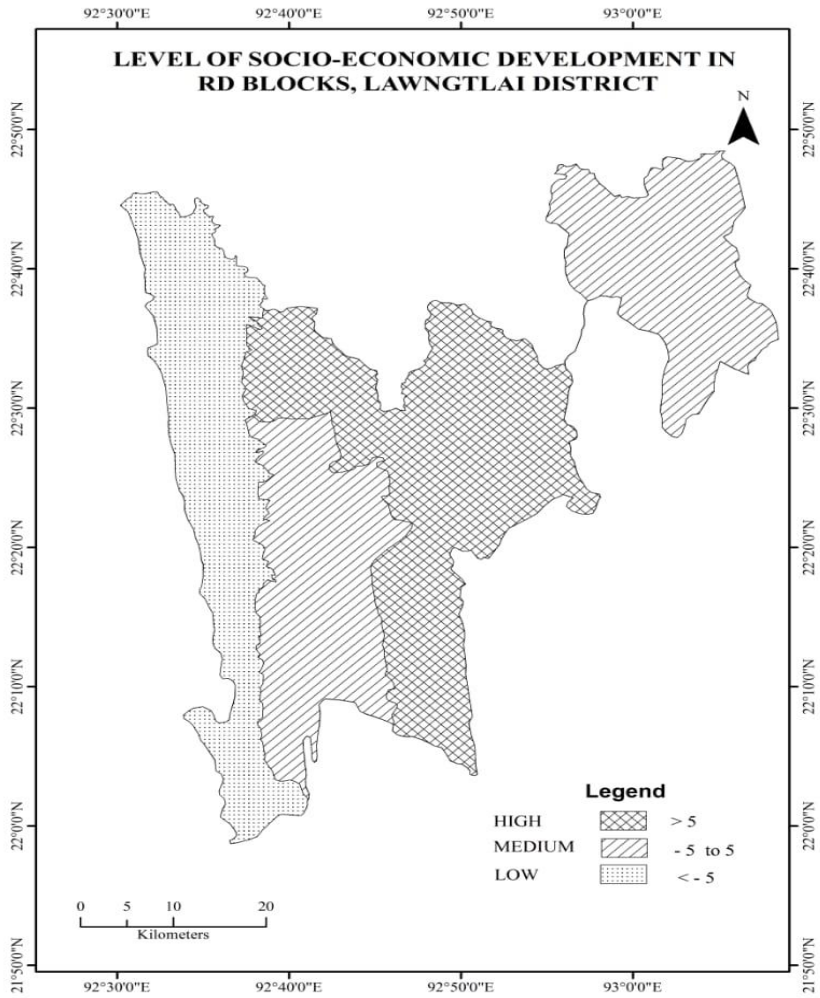

Figure: 4.3.32 Level of Socio-Economic Development in RD Block, Lawngtlai District

4.3.17.3 Spatial Disparity in Socio-Economic Development:

To construct a composite socio-economic development index, the indicator variables (16 dimensions) were again normalized (Table 4.3.122). After completion of normalization, Principal Component Analysis (PCA) and Factor Analysis (FA) were employed to obtain the final product. It requires computation of correlation analysis and test statistics like Kaiser-Meyer-Olkin (KMO) and Bartlett's test Sphericity to assess the appropriateness of data.

The value of KMO for the data is 0.393 which is acceptable to run PCA and FA in Satistical Package for Social Sciences (SPSS). The Barlett's Test of Sphericity showed a significance level of 0.000 and we can reject hypothesis since the probability is less than 0.5. The PCA was run in computer software of SPSS to extract communalities and components. Using Kaiser's criterion of taking Eigen values more than 1, six (6) components were extracted which together explained 79.24 per cent of the total variation in the data set. It is considered as right applicable to process the analysis.

Table 4.3.3.121 KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.393
Bartlett's Test of Sphericity	Approx. Chi-Square	240.31
	df	120
	Sig.	0.000

After component loadings were estimated, the individual indicators with the highest component loadings are grouped into intermediate composite indicators. Since we extracted six components, there are also six intermediate composites as shown in Table 4.3.124. The correlation coefficient matrix showed that most of the variables were inter-correlated and there was no extreme multi-colinearity (Table 4.3.123).

Table 4.3.122 Normalized indicators of Over-all Socio-Economic Development in Lawngtlai district																
Selected Area	M_Med	H_Ame	H_lth	M_kt	B_kng	T_port	H_sing	E_city	In_cme	D_tnce	S_serity	O_wstat	E_dn	AS_ture	D_water	F_ckg
Lawngtlai	1.000	1.000	0.900	0.938	1.000	1.000	1.000	0.480	0.718	0.817	0.527	0.523	0.443	0.643	0.107	0.180
Mualbu	0.381	0.257	0.516	0.062	0.007	0.911	0.469	0.291	0.252	0.411	0.687	0.565	0.537	0.248	0.208	1.000
Ngengpuikai	0.560	0.161	0.473	0.816	0.006	0.662	0.396	0.683	0.224	0.305	0.418	0.472	0.193	0.716	1.000	0.001
R. Vanhne	0.430	0.113	0.218	0.274	0.006	0.578	0.555	0.385	0.760	0.939	0.514	0.167	0.367	0.762	0.302	0.000
Tuithumhnar	0.238	0.051	0.594	0.000	0.005	0.342	0.306	0.069	0.831	0.480	0.391	0.315	0.390	0.750	0.167	0.000
Kamalanagar	0.804	0.661	0.892	0.382	0.225	0.083	0.586	0.777	0.532	0.327	0.515	0.284	0.805	0.764	0.205	0.099
Vaseitlang -II	0.080	0.151	0.393	0.447	0.007	0.275	0.255	0.229	0.306	0.245	0.264	0.497	0.176	0.000	0.207	0.000
Jamersury	0.378	0.076	0.073	0.266	0.002	0.103	0.100	0.644	0.000	0.456	0.608	0.377	0.089	0.542	0.000	0.167
Charluitlang	0.000	0.043	0.000	0.184	0.002	0.000	0.188	0.096	0.059	0.277	0.902	0.193	0.185	0.738	0.120	0.000
W Saizawh	0.085	0.155	0.166	0.184	0.004	0.268	0.658	0.129	0.014	0.356	-0.128	0.588	1.000	0.931	0.239	0.000
Bungtlang S'	0.761	0.274	0.914	0.368	0.128	0.799	0.755	0.568	1.000	0.689	0.364	0.647	0.764	0.606	0.516	0.000
Hmunnuam	0.355	0.008	0.364	0.180	0.005	0.821	0.443	0.501	0.611	1.000	0.383	0.204	0.273	0.627	0.497	0.000
Dumzautlang	0.200	0.005	0.361	0.022	0.005	0.295	0.108	0.000	0.359	0.000	0.000	0.734	0.000	0.113	0.250	0.000
Vaseikai	0.399	0.038	0.474	0.584	0.006	0.386	0.342	0.098	0.307	0.269	0.297	0.144	0.379	0.517	0.558	0.000
Sekulhkai	0.137	0.000	0.431	0.083	0.000	0.316	0.000	0.000	0.768	0.842	0.630	0.750	0.155	0.428	0.395	0.000
Sangau	0.757	0.378	1.000	0.747	0.155	0.852	0.802	1.000	0.272	0.412	0.473	0.657	0.724	0.568	0.418	0.000
Vartek	0.444	0.154	0.406	0.516	0.010	0.134	0.338	0.719	0.155	0.285	0.476	1.000	0.303	0.804	0.271	0.000
Thaltlang	0.200	0.256	0.269	0.589	0.012	0.564	0.506	0.628	0.194	0.447	1.000	0.621	0.143	0.894	0.353	0.000
Pangkhua	0.921	0.313	0.623	1.000	0.075	0.991	0.490	1.079	0.196	0.341	0.926	0.000	0.397	0.587	0.355	0.001
Rawlbuk	0.465	0.379	0.669	0.668	0.028	0.793	0.607	0.966	0.203	0.251	0.668	0.032	0.831	1.000	0.449	0.000

M_Med = MassMedia Exposure *H_Ame = Household Amenities* *H_lth = Health* *M_kt = Market* *B_kng = Banking*
T_port = Transportation *H_sing = Housing* *E_city = Electricity* *In_cme = Income*
D_tnce = Distance (Location) *S_serity = Social Security* *O_wstat = Occupation and Working Status*
E_dn = Education *AS_ture = Age and Sex Strucrure* *D_water = Drinking Water*
F_ckg = Fuel use for Cooking

Table 4.3.123 Inter-correlation of indicators of Socio-Economic Development in Lawngtlai District																
	M_Med	H_Ame	H_lth	M_kt	B_kng	T_port	H_sing	E_city	In_cme	D_tnce	S_serity	O_wstat	E_dn	AS_ture	D_water	F_ckg
M_Med		0.040	0.023	0.176	0.396	0.379	0.010	0.335	0.015	0.128	0.002	0.001	0.008	0.465	0.0325	0.036
H_Ame	0.040		0.025	0.373	0.154	0.084	0.188	0.277	0.048	0.244	0.329	0.498	0.151	0.148	0.403	0.252
H_lth	0.023	0.025		0.369	0.301	0.336	0.022	0.437	0.081	0.474	0.015	0.008	0.266	0.184	0.217	0.048
M_kt	0.176	0.373	0.369		0.447	0.337	0.252	0.358	0.194	0.001	0.074	0.019	0.207	0.302	0.088	0.122
B_kng	0.396	0.154	0.301	0.447		0.336	0.459	0.420	0.219	0.389	0.134	0.400	0.222	0.105	0.396	0.276
T_port	0.379	0.084	0.336	0.337	0.336		0.221	0.145	0.375	0.493	0.112	0.398	0.178	0.221	0.351	0.391
H_sing	0.010	0.188	0.022	0.252	0.459	0.221		0.241	0.018	0.325	0.003	0.001	0.003	0.216	0.325	0.036
E_city	0.335	0.277	0.437	0.358	0.42	0.145	0.241		0.162	0.458	0.125	0.185	0.057	0.352	0.167	0.226
In_cme	0.015	0.048	0.081	0.194	0.219	0.375	0.018	0.162		0.446	0.004	0.020	0.056	0.032	0.253	0.015
D_tnce	0.128	0.244	0.474	0.001	0.389	0.493	0.325	0.458	0.446		0.114	0.361	0.346	0.279	0.101	0.212
S_serity	0.002	0.329	0.015	0.074	0.134	0.112	0.003	0.125	0.004	0.114		0.000	0.018	0.184	0.019	0.002
O_wstat	0.001	0.498	0.008	0.019	0.4	0.398	0.001	0.185	0.020	0.361	0.000		0.022	0.471	0.008	0.002
E_dn	0.008	0.151	0.266	0.207	0.222	0.178	0.003	0.057	0.056	0.346	0.018	0.022		0.090	0.020	0.002
AS_ture	0.465	0.148	0.184	0.302	0.105	0.221	0.216	0.352	0.032	0.279	0.184	0.471	0.090		0.430	0.221
D_water	0.001	0.403	0.217	0.088	0.396	0.351	0.325	0.167	0.253	0.101	0.019	0.008	0.020	0.430		0.002
F_ckg	0.002	0.252	0.048	0.122	0.276	0.391	0.036	0.226	0.000	0.212	0.003	0.002	0.002	0.221	0.002	

Table 4.3.124 Intermediate Composite Indices of over-all Socio-economic development													
Rotated Component Matrixa								Squared Factor loadings (Scaled to unity sum)					
Variables	Component						Commu nality						
	1	2	3	4	5	6		1	2	3	4	5	6
M_Med	**0.896**	0.130	0.137	0.102	0.157	0.049	0.879	**0.136**	0.008	0.011	0.007	0.019	0.002
H_Ame	**0.889**	0.048	0.029	0.205	-0.330	0.056	0.852	**0.134**	0.001	0.001	0.028	0.083	0.003
H_lth	**0.796**	0.211	-0.190	0.221	0.257	0.172	0.946	**0.108**	0.020	0.022	0.033	0.050	0.026
M_kt	**0.790**	-0.282	0.247	-0.100	0.205	-0.319	0.913	**0.106**	0.036	0.037	0.007	0.032	0.089
B_kng	**0.781**	0.275	-0.142	-0.024	-0.458	-0.069	0.519	**0.103**	0.034	0.012	0.000	0.159	0.004
T_port	**0.737**	0.257	0.241	0.271	0.271	0.341	0.875	**0.092**	0.030	0.035	0.049	0.056	0.102
H_sing	**0.733**	0.157	0.016	**0.558**	-0.056	-0.051	0.947	**0.091**	0.011	0.000	0.208	0.002	0.002
E_city	**0.647**	-0.283	0.457	0.140	0.263	-0.105	0.834	**0.071**	0.036	0.125	0.013	0.052	0.010
In_cme	0.163	**0.915**	-0.189	0.012	0.114	0.027	0.807	0.005	**0.377**	0.021	0.000	0.010	0.001
D_tnce	0.075	**0.872**	0.225	0.020	-0.087	-0.069	0.83	0.001	**0.342**	0.030	0.000	0.006	0.004
S_serity	0.195	-0.037	**0.822**	-0.305	-0.145	0.089	0.93	0.006	0.001	**0.406**	0.062	0.016	0.007
O_wstatus	0.038	-0.076	**-0.676**	-0.196	-0.125	0.018	0.858	0.000	0.003	**0.274**	0.026	0.012	0.000
E_dn	0.323	-0.014	-0.050	**0.911**	0.045	0.088	0.918	0.018	0.000	0.002	**0.554**	0.002	0.007
AS_ture	0.085	-0.001	0.455	**0.572**	-0.081	-0.552	0.837	0.001	0.000	0.124	**0.218**	0.005	0.267
D_water	0.112	0.036	0.020	0.008	**0.884**	-0.197	0.921	0.002	0.001	0.000	0.000	**0.592**	0.034
F_cooking	0.062	-0.055	0.083	0.047	-0.220	**0.900**	0.877	0.001	0.001	0.004	0.001	0.037	**0.709**
% of explained variance	36.837	13.888	10.414	9.371	8.248	7.145							
Expl. Var. (Eigenvalue)	5.894	2.222	1.666	1.499	1.32	1.143							
Expl./Total	0.514	0.194	0.145	0.131	0.115	0.100							
Total Var.	11.469												

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 10 iterations.
Note: Expl. Var. is the variance explained by the component, and
Expl./Total is the explained variance divided by the total variance of the five components

The intermediate composites were normalized rotated component (factor) loadings. The squared factor loadings represented the proportion of the total unit variance of the indicator, which was explained by the component. The weights of intermediate composite or normalized squared factor loadings and scaled to unity sum is derived by the squaring of the highest components (0.896) divided by the explained variance (Eigen values) (5.894) which is the portion of the variance of the first factor explained by the variable and then followed the same procedure to other components for intermediate composite index. For e.g. $0.136 = (0.896)^2/5.894$.

The first intermediate composite includes M_Med (weight of 0.136), H_Ame (weight of 0.134), H_lth (weight of 0.108), M_kt (0.106), B_kng (0.103), T_port (0.092), H_sing (0.091) and E_city (0.71). Two normalized squared factor loadings and scaled to unity sum of In_cme (0.377) and D_tnce (0.342) were included in the second intermediate composites. The third intermediate composite was composed of S_serity (0.406) and O_wstatus (0.274). Fourth intermediate composite formed by E_dn (0.554) and AS_ture (0.218). Fifth and sixth intermediate composite were taken from D_water (0.592) and F_cooking (0.709).

Table 4.3.124 showed loading of components, communality and intermediate composite indices. The first component consists of Mass-media Exposure (M_Med), Household Amenities, (H_Ame), Health development (H_lth), Marketing facilities (M_kt), Banking development (B_kng), Transportation facilities (T_port), Housing pattern (H_sing) and availabilty of power supply (E_city). This component is the most important component that determines disparity of socio-economic development as it explains 36.837 per cent of the total variance.

The second component comprises two variables of Income (In_cme) and Distance or location (D_tnce) which explains 13.888 per cent of the total variation. The third component includes variables of Social security (S_serity) and Occucapation and work status (O_wstatus) explains 10.414 per cent of variation. These indicators are closedly link as social security provides the opportunity of employment and rate of participation.

Table 4.3.125 Weights of over-all Socio-economic variables				
Variables	Domain Weight	Weight for respective factor	Weight Score (Wi)	Resulting Weight (∑Wi=1)
M_Med	0.136	0.735	0.100	0.949
H_Ame	0.134	0.735	0.098	0.935
H_lth	0.108	0.735	0.079	0.749
M_kt	0.106	0.735	0.077	0.738
B_kng	0.103	0.735	0.076	0.721
T_port	0.092	0.735	0.067	0.642
H_sing	0.091	0.735	0.067	0.635
E_city	0.071	0.735	0.052	0.495
In_cme	0.377	0.224	0.084	0.800
D_tnce	0.342	0.224	0.076	0.727
S_serity	0.406	-0.175	-0.071	-0.673
O_wstatus	0.274	-0.175	-0.048	-0.455
E_dn	0.554	-0.309	-0.171	-1.623
AS_ture	0.218	-0.309	-0.067	-0.639
D_water	0.592	-0.171	-0.101	-0.960
F_cooking	0.709	-0.304	-0.215	-2.043

The fourth component of educational development (E_dn) and age and sex structure (AS_ture) were explains 9.371 per cent of the variations while other variable of housing pattern (0.554) also have high positive significant loadings. The fifth and sixth components includes highly positive value of 0.884 and 0.900 in availability of safe

drinking water (D_water) and fuel use for cooking purposes (F_cooking) which explains 8.248 and 7.145 per cent of the total variance.

As shown in table 4.3.125, after obtaining intermediate composite indices, they were accumulated by assingning a weight of each equal to the proportion of variance explained by the respective components. Weight score (W_i) is obatained by multiplying the variable weight and weight of respective component. The resulting weight or final weight (∑Wi) is derived from the weight score divided by the sum total of its. The resulting weight provides weight of each variable, and then the final score or final products of all indicators in the selected area has been worked out to determine the disparity of development in Lawngtlai district by the following formula :–

$$I = \frac{\Sigma\, Xi\, (\Sigma\ |\ Lij\ |.\, Ej)}{\Sigma\, (\Sigma\ |\ L\, ij\ |.\, Ej\,)}$$

Where, I is the Index
X_i is the ith indicator;
L_{ij} is the factor loading value of the ith variable on the jth factor;
E_j is the Eigen value of the jth factor

After obtaining the final score of each indicator in all selected area, Jenks natural break method or Jenks optimization method was adopted to classify the level of socio-economic development or to classify disparity of socio-economic development in Lawngtlai district. The method partitions statistical data into classes using an algorithm which calculates groupings of data value based on the data distribution (Jenks 1967). The Jenks method is calculated using Arc GIS 10.1 software that automatically figures the natural breaks.

Table 4.3.126 Level of over-all Socio-Economic Development in Lawngtlai District						
Sl No	Selected Area	Factor Score	Rank	Level	Score	Village/Town
1	Lawngtlai	23.91	1			
2	Mualbu L	-3.54	12			
3	Ngengpuikai	-1.73	9			
4	R Vanhne	3.12	8			
5	Tuithumhnar	-3.75	13			
6	Kamalanagar	10.87	3			
7	Vaseitlang -II	-1.99	10			
8	Jamersury	-6.39	15	Very high	8.410 to 23.910	Lawngtlai, Pangkhua, Kamalanagar, Sangau, Bungtlang S’
9	Charluitlang	-14.09	20	High	-1.735 to 8.409	Rawlbuk, Hmunnuam, R.Vanhne, Ngengpuikai, Vaseitlang-II,
10	W Saizawh	-9.21	19	Medium	-6.198 to -1.734	Vaseikai, Mualbu L, Tuithumhnar
11	Bungtlang S'	8.40	5	Low	-6.198 to -8.505	Thaltlang, Jamersury,
12	Hmunnuam	3.94	7	Very low	-8.506 to 14.098	Dumzautlang, Vartek, Sekulhkai, W. Saizawh, Charluitlang
13	Dumzautlang	-8.50	16			
14	Vaseikai	-2.46	11			
15	Sekulhkai	-9.07	18			
16	Sangau	9.77	4			
17	Vartek	-8.70	17			
18	Thaltlang	-6.19	14			
19	Pangkhua	11.32	2			
20	Rawlbuk	4.33	6			

The above figure 4.3.33 and table 4.3.126 showed the level of socio-economic development in Lawngtlai District. The development categorize into five levels:-

i) Very high development (8.410 to 23.910): In this level, Lawngtlai town (hishest score value of 23.910) and four villages like Pangkhua (11.320), Kamalanagar (10.874), Sangau (9.775) and Bungtlang S’ (8.409) categorize under very high level of

development. These areas are charming administrative function as they were block and district capital except Pangkhua village. Pangkhua village is also one of the big villages in terms of number of household. The accumulation of government office, larger number of population, accessibility, nearest from block and district capital, historical and religious place provide very high level of development.

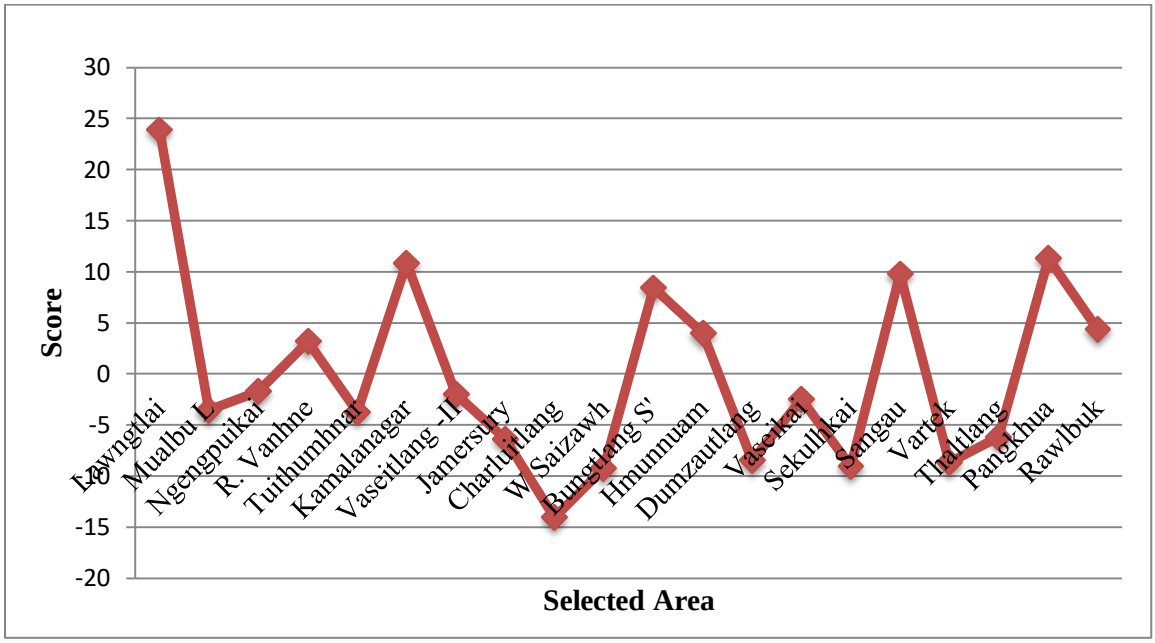

Figure: 4.3.33 Level of Socio-Economic Development in Lawngtlai District

ii) High development (-1.735 to 8.409): Under this category, there are five villages such as Rawlbuk (4.337), Hmunnuam (3.941), R.Vanhne (3.129), Vaseitlang-II (-1.994) and Ngengpuikai (-1.735). These villages are connected with district metalled road and situated nearest to the block centers and district capital. The locational advantage, firm and strong settlement from pre-colonial period form a momentous score which turn into high level of development.

iii) Medium development (-6.198 to -1.734): Three villages of Vaseikai (-2.464), Mualbu L (-3.549) and Tuithumhnar (-3.750) falls under this level. Vaseikai village

located in the boundary of Bungtlang S' and Chawngte RD blocks in the south western margin of Lawngtlai district. The location of this village is very useful for commercial activities, and, its fertility of soil provides a good scope to score value under medium level of development. Mualbu L village is well-connected by district road but difficult to acces higher education due to its geographical factors. Tuithumhnar village is also located at 14 kilometers away from district capital. It is still unelectrified, unmetalled, remote and difficult access which hampers the developmental activities.

iv) Low development (-6.198 to -8.505): Thaltlang and Jamersury villages falls under this level of development with a score value of -6.199 and -6.395. The main occupation of these villages was subsistence farming, production for their family. The highest educational institutions available in these areas are up to middle standard. Lack of adequate transportation facilities, absence of communication, low income and lack of banking facilities are the major problems of this level.

v) Very low development (-8.506 to -14.098): Under this level, there are five villages of Dumzautlang, Vartek, Sekulhkai, W. Saizawh and Charluitlang with a score value of -8.506, -8.07, -9.76, -9219, and -14.098. Dumzautlang, Vartek, Sekulhkai and Charluitlang villages located in the remote areas without power supply, absence of communication, medical store and health sub-center, low income, high cost of transportation, unmetalled road and unavailability of banking services, availability of educational institution is only upto primary standard, more than 80 per cent of houses were thatch roof. Because of these permutations factors, these villages score a low value, and categorize under very low level of development.

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CHAPTER – V
FACTOR AFFECTING DISPARITY IN SOCIO-ECONOMIC DEVELOPMENT

5.1 Introduction:

Socio-economic development disparity is a complex concept with many overlapping economic perspectives and social dimensions. APEC (2006) stated that the 'widening disparity is not so problematic if vivid social mobility is guaranteed. Problems and tension in widening socio-economic disparity arise when some people are systematically excluded from a virtuous economic cycle. If a disadvantaged group is isolated for a long time, resulting in structural isolation, then economic growth may be hindered and the society may lose its potential to prosper. Hence, it is vital to maintain movement within the socio-economic strata'. The reasons for disparity in social and economic development have combined various factors. The main factors of disparity in development of Lawngtlai district are historical, cultural, social, economic, geographical and political factors which are closely linked with each other in certain degrees.

Growth and development has its root through historic events. Most of the civilization originated in the geographically prospective entity of the river banks which have potentiality of agriculture and settlement development. However, harnessing of this potential needs influential, noble and biddings leaders to administer extraordinary region. Historically, it has often been understood as a larger and more advanced culture, in contrast to smaller, supposedly primitive societies (Adam, 1966) and described civilization as being necessarily multicultural (Wei, 2011). The influx of different factors attributes progress of society as it routes differ from one to another.

Geographically, the region endowed with rich resources offers momentous of development while incompatible geographical spaces require political will, consciousness and bustle to enrich viable growth and development.

5.2 Historical and Cultural factors:

The existing disparities in under developed and developing countries can largely be due to the historical factors and may be attributed to either the initial advantages enjoyed by some regions or to the ill-conceived colonial rule. The regions which attracted the attention of various rulers and administrators grew at a faster rate, thus becoming developed regions. The development of rural development block center like Lawngtlai, Sangau, Bungtlang S' and Kamalanagar mainly be attributed to the historical and cultural factors. The largest ethnic group of Lai and all its kindred tribes traced their origin to south china under the chieftainship in their respective villages before the advent of British. Those group of people established settlement in various parts which assigned the decisiveness of socio-economic status as strong and big size of villages were growing faster than small one, and, then become present status of town or block centers.

In the present study, very high level of socio-economic development in Lawngtlai district was scored by four selected area of Lawngtlai (established in 1880), Sangau (1901), Pangkhua (1773) and Bungtlang S' (1870). These villages were having an elongated history comparing with Sekulhkai village (established in 2008) etc., of very low level of development, basically means that the long-standing and stable villages are more developed than new-fangled established and immature newly villages in the study area.

Number of population may lead to an increase in socio-economic development of a state, and, the developmental activities also attract the growth of population in urban as well as rural area. It means that the large number of population in the urban/rural villages has a high level of development and, the less number of urban/rural populations scores the low level of development (Hmingsangzuala & Rinawma, 2017). Unless historical and political factors avail, high concentration of population could not be found, but, high proportion of population in some places was started due to illegitimate migration. Based on this perception, the village with a large number of population/houehold likes Lawngtlai town with a total selected household of 572 was scored the highest value of development. The villages of Kamalanagar (389), Sangau (181), and Bungtlang S' (112) and Pangkhua (61) were categorized under very high level of level development (8.410 to 23.910 score value) whereas the other selected five villages with a least number of population/household like Dumzautlang (24), Vartek (10), Sekulhkai (9), W. Saizawh (18) and Charluitlang (20) were scored a low value of -8.506 to -14.098, and then categorized under very low level of development.

When historically disadvantaged ethnic, racial, and social groups are concentrated in particular regions, group-based inequities become reflected in spatial inequalities. In the present study, Lusei and Lai ethnics dominated rural block of Lawngtlai and Sangau which is more advanced society than Chakma speaking people area of Chawngte RD block and, Bungtlang S' block with different small tribal groups like Lai, Bawm, Pang, Chakma and Bru etc.,. The cultural differences in the region influences attitudes, hygienic and habits of diets, pattern of house-type and its environment within their own area which

impacts health conditions of the people. Interestingly, the larger ethnic regions were more enlightened than small ethnic region in the study area.

The Lai and Lusei tribes were mostly settled in the hill top due to safety and security from neighboring tribe since time immemorial. Chakma tribes are always settled in the riverine area. This type of location stimulus by the cultural entities which affects the scarcity and availability of water as Perennial River is the main source of water in many part of the district.

As education is an all round development, bigger size of population and aptness of site become the space with having higher education which influence the rate of literacy as well as attainment level directly or indirectly co-related with the standard of living. The largest number of population in the selected area was found in Lawngtlai town as it has better infrastructure in health and education. Kamalanagar village also the second highest number of population, it comprises higher education and community health centre which is not found in other block centers except Lawngtlai town.

5.3 Geographical factors:

Geography has strong and pervasive effects on economic and social development (Gallup, 2000). The role of geography in economic development has been woefully analyzed in recent decades. Geography and development are closely linked is the very first, powerful impression one gets examining the global distribution of economic activity (Sachs, 1997).

5.3.1 a) Physical factors: Geographical locations or spatial characteristics of a region are of paramount importance in defining development, and availability of natural

resources concert fundamental role in deciding the shape and size of development in a country while factors like proximity to high mountains, deserts and wild forests hamper pace of growth to a great extent. The relationship of distance (location) and over-all socio-economic development in Lawngtlai district is positive i.e. 0.358. It means that the location of the villages or town influences social and economic development, the central region score a high value of development while peripheral regions were scored a low value with lack in infrastructure, mass-media exposure and inadequate transportation facilities. Five villages were categorized as the lowest level of development such as W. Saizawh (191 kms from district capital), Vartek (153 kms), Charluitlang (145 kms), Dumzautlang (125 kms) and Sekulhkai (96 kms) as they were situated in remoted and isolated area which obstructs governmental activity especially infrastructure facility in electric supply (more than 30 per cent households were unelectrified) safe drinking water (government provides drinking water for 24.91 per cent of the family) and educational facilities (1.78 schools per 500 populations). Distance and pattern of construction of house or house-type also closely related as higher distance from block center has large number of thatch house. The product of Karl Pearson coefficient of correlation between distance and house-type is 0.522, i.e highly positive. It means that the far-flung dwelling places from block centres are more thatch house or nearby villages were more RCC building due to accessibililty of construction materials from district capital or block centers.

Geographical variables are strongly correlated with recent economic growth in cross-sectional studies (Gallup, Sachs, and Mellinger, 1999). Geographical features such as climate, topography, water, vegetation are primordial factors in setting the models of

development in a region. Physical geography mainly impacts economic and social development through three path-ways: accessibility, agricultural productivity, and disease (Gallup, 2000). A more sophisticated view on how geography affects growth was developed by Gunnar Myrdal. He stated that "serious study of the problems of underdevelopment…should take into account the climate and its impact on soil, vegetation, animals, humans and physical assets - in short, on living conditions in economic development." (Myrdal 1968). This view states that the productivity of technology of the countries in the temperate zone were far higher than those of technologies developed in the tropics. This argument refers mainly to technologies related to agriculture. However, when actual data are compared, it is during and after the industrial revolution that differences in incomes and growth rates started to become wider (Samyukta, 2014). The natural endowments of the country determine the development path of a country, and this becomes the destiny of the country. It encourages or hinders a country's ability to trade with others, its agricultural productivity, marketing facilities etc., thus making absolute geography the ultimate determinant of economic growth and development (Samyukta, 2014).

The himalayan hilly structure, rugged topography and tropical dense forest with large amount of rainfall obstructed the transportation development in the region, road in the eastern hilly region of Sangau block and western dense forest in the reverine areas were tied up narrow and unmetalled road. These roads are inacessbility during rainy season which could bring a very serious threat, provoke unbalance health development as 36.27 per cent of the respondents were having transportation related problems while taking check-up in their nearby hospital or medical institutions. And, 26.96 per cent of

the respondents were committed that pitiable condition of roads immaculate transportation development.

The region is endowed with diverse climatic condition as it overwhelm the highest mountain ranges of the state in the eastern part and the low elevation of Tuichawng plain with extreme climate during summer and winter seasons. Harsh climatic condition in the western adjacent of the district affects the work rate of the people as Semple distinquishes the attitudinal characteristics of the people living in different physical settings and point out that the dweller of mountains are essentially conservative. Huntington (1939) belived that owing to the humid, hot, oppressive weather which makes the people lethargic, lazy, inefficient, suspicious and timid. The work culture of the eastern side (Lawngtlai and Sangau blocks) was more efficient than the western side (Bungtlang S' and Chawngte blocks) from the angle of the size of land holdings (average size of holdings) - Lawngtlai (2.97 ha), Sangau (0.80 ha), Chawngte (0.65 ha), Bungtlang S' (0.59)). The working statuses of RD blocks simply focus the efficiency of the people. Lawngtlai block (47.81 per cent of the respondents), Bungtlang S' (47.13 per cent) and 54.04 per cent of Sangau block were involved for six day in a week in their place of work while the extreme climatic region of Chawngte block having a large number of working group (40.21 per cent) which were actively work for five day in a week.

5.3.2 b) Social and Economic factors: Social inequality refers to disparities in the distribution of economic assets and income as well as between the overall quality and luxury of each person's existence within a society while economic inequality is caused by the unequal accumulation of wealth; social inequality exists because the lack of wealth in

certain areas prohibits these people from obtaining the same housing, health care, etc., as the wealthy, in societies where access to these social goods depends on wealth.

The source of income in various sectors is unevenly distributed which contribute disproportion of per capita income. The average annual income of the district was Rs 13,639. Out of the total population, 65.46 per cent was engaged in cultivation sharing third largest annual income (Rs 19,508). 13.96 per cent of population was government servant with sharing largest annual income (Rs 48,480). Only 8.06 per cent were business persons contributing the second highest annual income of Rs 19,748. Another sector like (Rs 3775), private services (Rs 3081), private company (Rs 663) industry (Rs 222) and other shared a little amount of income. These sectors were absent in some parts of the district.

Income, house-type and household amenities were closely link with each other. Generally, high income villages were high percentage of RCC building with scoring high value of amenities, low income group were also possessed large number of thatch houses. Lawngtlai, highest income area holds largest number of RCC building with a score value of 86.71 in development of household amenities whereas 86.6 per cent of Jamersury and 71.42 per cent of Vaseitlang-II villages were used thatch roof and falls under very low level of development in household amenities with a score value of 15.73 and 9.07.

Mass-media exposure can be used for transforming role by bringing social change in a way that it inspires the people aim for higher quality of life. It helps the people to be aware about and develop a concencus upon essential developmental issues. People aware better atmosphere, standard of living, better infrastructure and better quality of life through mass-media. It has influenced public opinion, education, popular culture and the

depiction of society. The resulting weight of the mass-media exposure is 0.949 which is the highest weight among 16 developmental indicators of the present study. Mostly, the remote areas with low level of literacy rate like Sekulhkai (18.7), Vaseikai (21.46), Dumzautlang (25.63), Jamersury (26.65), Vaseitlang-II (53.04) and Charluitlang (77.27) villages were considered under low level of development and these villages were fully absent of newspaper, power supply and internet facilities.

In Lawngtlai district, only 20.00 per cent of the respondents were subscribed newspaper (national and local), 41.03 per cent access television and 17.42 per cent were used Radio which is higher than number of internet subscriber (1.30 per cent). This inadequate media exposure impedes the developmental works which could be able to chalk-out by the society or government.

Rural market provides substantial market to village dweller's goods and agriculture products which increase purchasing power of rural community, and, returned earnings to the producer. The availability of market place within area or vicinity has delivered uplift socio-economic status. The three villages of Pangkhua, Ngengpuikai and Vaseikai were scored a high value of development due to availability of rural marketing. The agricultural products of Pangkhua village were supplied to Sangau village which has a number of people who are rely on agricultural products of the village. Roadside marketing of Ngengpuikai village is viable to uphold the economy of the people. Most of the cultivators were sowing day-to-day and basic needs or commercial crops which could earn profit through roadside market. Vaseikai village is also located in the west, warm and humid climate, no power supply and absence of higher education but the economy

was boost by rural marketing as the vicinity and neighborhood were relied on rural marketing system of Vaseikai.

Political will is another important asset for country's development. It plays dominant role in progressing countries economy as noble leaders shaped the appearance of the earth. Legislatures constitute laws to promote future of the society. The administrator, beauracrat and politician are the key to influences the policies that affect economic development. Political system of a country, reliability, durability of government structure and its instability decreases or increase developmental activities, social security and formulation of quality of life. Political instability is likely to shorten policy maker's horizons leading to sub-optimal short term macro-economic policies. It may also lead to a more frequent switch of policies, creating volatility and thus, negatively affecting macro-economic performance (Osman & Minyonga, 2018).

Unlike the other district of Mizoram, Lawngtlai district have been unique characteristics i,e., autonomous district council. The administrative powers of various disciplines have been vested to the council according to provision of the constitution. The pioneers of socio-economic development entrusted to the district council authority. For instances, primary and middle sections of education are under authorization of the district councils of CADC and LADC. It means that the foundation of educational development hand-over to the councils as they are the quardian of the people. They have all powers regarding teacher recruitment, construction of school building etc., under their jurisdiction. Meanwhile, administration of higher education has been undertaken by the state government. Cooperation and co-ordination of state goverment and district council authority would bring a bridge of education developments in the district.

The total numbers of banks in the study area are 9, of which 6 were possessed by Lawngtlai town. Only 1 bank of each are possessed by Kamalanagar, Bungtlang S' and Sangau villages. 27.04 (2,439) per cent were bank account holder and 3.52 (318) per cent subscrided insuarance policy. Opening more banks and providing better facilities of banking, perhaps, could drive the developmental activities.

Most of the villages in the study area were electrified except Sekulh, Tuithumhnar and Dumzautlang villages. However, the average power supply available is not sufficient. 37.7 per cent of the respondents received power supply less than one hour in a day. 1.61 per cent received more than 10 hours in a day. 77.31 per cent of the respondents were not satisfied in this regard. Availability of drinking water is a vital factor for existing social life. 27.94 per cent of the respondent's gets safe drinking water through public water point (owned and managed by community). River and lakes were used as source of water supply for 24.91 per cent of the respondents while 25.56 per cent were under government supply. To enhance banking facilities, enrich power supply and providing safe drinking water, responsibility could turn into political arena.

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CHAPTER-VI
CONCLUSION AND SUGGESTION

Spatial disparity in socio-economic development is a universal phenomenon. Although the developing countries were late to recognize the defects of imbalance, implementing several policies directed at achieving balanced development in their space economies is a current manifestation. The space within the different locations is the clustering of various groups of people who share various socio-economic statuses. Some communities have a greater range of resources and services and then those that would be able to change that do not live near or associate with those communities making it almost impossible to change. In general, social and economic inequalities widespread to capitalist societies result in spatial inequalities, regional and local differences within and between communities.

Inequality among societies and between geographical areas is a critical developmental issue and now become a social problems links with economic threats of the nation. Geographer's role is to understand analyses and interpret such issues and complex nature of society to cope with meaningful strategy for development in geographic space and time. The present study is also an attempt to observe inter and intra spatial disparity in socio-economic development with its major factors in the hilly region.

Mizoram was selected as the site of study as the fast growing and peaceful state in the north eastern Himalayan region, has not received a detail analysis regarding socio-economic development disparity before. The inter district disparity was analyzed from 124 socio-economic indicators in 14 dimensions such as Agriculture, Health, Industry, Education, Sericulture and Fisheries, Livestock and Veterinary, Transportation, Mass-Communication, Social Welfare, Social Security, Working Status, Consumer Affairs,

Electricity and Banking with the help of Z-score techniques. After calculating development level of all the districts, Lawngtlai district was scored the lowest value and then selected for an intensive analysis to understand the level of development and its factors of disparity.

The first research question that there exists socio-economic disparity among the districts has been validated successfully. Variables related to socio-economic status form the level of development. It was found out that the geographical location, history and political factors play an important role that variation of over-all development ranging between -8.03 to 22.3 scored values amongst the districts of Mizoram.

The development concentrated in the core region while the peripheral region scores lower value but the region dependent on each other as conceived by Friedmann's Core-Periphery model. The central, north and north eastern part were more developed than south and western part of the state. The highest value of development was scored by Aizawl district (22.3) as it is commercial, administrative and educational centres with capital of the state. High level of development falls in the district of Lunglei (4.26) and Champhai (3.25) with large area, number of population and opportunity to promote trades. Kolasib (-2.50) and Serchip district were scored a value of -2.50 and -5.39 which falls medium and low level of development. Three districts of Mamit (-6.83), Saiha (-7.20) and Lawngtlai (-8.03) were falls under very low level of development. It was also found that the periphery area has insufficient transportation facilities, low level of literacy, weak in mass-media exposure. Lawngtlai district scored the lowest value of development as it has been authenticated second research question.

An intensive analysis of disparity in socio-economic development of Lawngtlai district was complemented from I71 selected developmental indicators in 16 dimensions from various angles including inter, intra block and village/town-wise disparity. Variables indicators of inter and intra block disparity were measured using standard score (Z-score), and, spatial disparity of selected villages/town was analyzed by Principal Component Analysis (PCA) and Factor Analysis (FA). Calculating the level of disparity in each dimensions were the first task of the study. After finding final product of all dimensions, over-all output in socio-economic development was worked out.

The third research question of the study is that 'there is development disparity amongst the rural development blocks in Lawngtlai District'. This question was enclosed keeping in mind that lowest developed district of Mizoram has also been experienced variation in terms of development which led to regional hitches in the state. Rural-urban inequality is a common phenomenon in the developing countries, but, the degree of rural-rural imbalances is not a mutual statuses as the society is compact and coherence. The analysis, however, revealed that the variation of socio-economic status of rural area has been increased due to geographical, cultural and political factors. The variables form inter-block disparity as Lawngtlai block was scored highest value of 12.92. It was followed by Sangau block and Bungtlang S' block with a scored value of -0.039 and - 4.85. The lowest level of socio-economic development was Chawngte block with a scored value of -8.03 which validated the fourth questions. It was found that the higher altitudes of the eastern portion scores higher value of development than the western lowlands because of historical and political factors. Generally, the establishment of

settlements and age of building in the eastern side (Sangau and Lawngtlai block, 4.38) was much older than the western region (Bungtlang S' and Chawngte block, 12.23).

Existence of intra block variation of socio-economic development in Lawngtlai district is another question of the study. To approve this research question, four rural development blocks were analyzed with the help of standardized score; the variable indicators bring into being intra block disparity which is observed simultaneously as under:-

In Lawngtlai block, Lawngtlai town was scored highest value of 20.00 while the lowest value of -7.075 was scored by Tuithumhnar village. The periphery and isolated areas of R.Vanhne, Mualbu L and Ngengpuikai villages were scored a value of -1.53, -5.44 and -5.95. It was found that the location and distance from district capital influences the degree of development in this block.

The analysis of variables attained in Sangau block found that the block center of Sangau village was scored a value of 10.41 and followed by Pangkhua village with a score value of 4.878. Rawlbuk village was also score a value of 4.34. The low value was scored by Thaltlang (-7.15) and Vartek (-12.47) villages. It was reveals that the pattern and size of settlement as well as transportation development plays a dominant role in this area.

Bungtlang S' village was scored highest value of 19.93 and Vaseikai village was scored a value of 1.55. Three villages of Hmunnuam, Sekulhkai and Dumzautlang were scored a value of -5.52, -5.87 and -10.07 which indicates lack of infrastructural development in transportation, education, health and mass-media exposure led the backwardness of village economy.

Kamalanagar village is located in western part of Lawngtlai district. It is the headquarters of CADC and centers of Chawngte block which was scored a value of 18.34. The adjacent village of W.Saizawh (4 kms from Kamalanagar) also scored a value of 2.013. The villages which are located in high distance like Jamersury (14 kms), Charluitlang (60 kms) and Vaseitlang-II (52 kms) were scored a value of -5.65, -6.31 and -8.39 which clearly shows that higher distance villages scores lower value and high value was scorevd by nearby villages from district capital.

Spatial disparity in socio-economic development Lawngtlai district was also analyzed, and, then classified the level of development into five categories (Table 4.3.126). It was found that Lawngtlai town (scored value of 23.91) and four villages of Pangkhua (11.32), Kamalanagar (10.87), Sangau (9.77), and Bungtlang S' (8.40) were categorized under very high level of development. These areas are block centres as they ensure administrative function except Pangkhua village. Pangkhua village is located near Sangau village with large number of households. Accumulation of government office, easy accessible, historical and religious place endorses improvement of these villages. Five villages of Rawlbuk (4.337), Hmunnuam (3.941), R.Vanhne (3.129), Vaseitlang-II (-1.994) and Ngengpuikai (-1.735) were falls under high level of development. These villages are well connected with metalled road and found in the nearby notified towns. Historical, Geographical and Political factors plays a significant role.

Three villages of Vaseikai, Mualbu L and Tuithumhnar were scored a value of -2.46, -3.54 and -3.75 which falls under medium level of development. Vaseikai village lies in the boundary areas of Bungtlang S' and Chawngte RD block which is suitable for commercial activities and high fertility of soil. Mualbu L village is well-connected by

district road but hard to access better education because of absence in educational institution. Tuithumhnar village is located nearby district capital (14 kilometers) provides opportunity for better standard of life. However, it is still unelectrified as well as unmetalled road which obstructs quality of life in many aspects. Thaltlang and Jamersury villages were falls under low level of development with a scored value of -6.19 and -6.39. These villages were mainly dependent on shifting cultivation but no surplus product. Lack of adequate transportation facilities, low income, backward in education, absence of newspaper and banking facilities are the major drawbacks.

There are another five villages of Dumzautlang, Vartek, Sekulhkai, W. Saizawh and Charluitlang under very low level of development with a scored value of -8.50, -8.07, -9.76, -9.21, and -14.09. Dumzautlang, Vartek, Sekulhkai and Charluitlang villages were located in remote areas without power supply, unmetalled road and absence of mass-media exposure, no medical store and health sub-center, low income with high cost of transportation, unavailability of banking services, availability of higher educational institution, access upto primary school and more than 80 per cent of houses are thatch roof. It was found that there exists a gap between the socio-economic developments within the districts; the final output also confirmed that inequality of society as highest value was 23.910 while the lowest value of -14.09 was scored by selected areas.

Confirming to the fifth research question, 'major factors of development are education, health, mass-media exposure and geographical location (distance)'. The study revealed that these indicators are important determining factors but others also major contributors (table 4.3.124). The component loading explained that there is no single indicator to provide level of development; the combination of variables explained

disparity. The component consists of mass-media exposure, household amenities, health development, marketing facilities, banking development, transportation facilities, housing pattern and availabilty of power supply are important component that determines disparity of socio-economic development as it explains 36.837 per cent of the total variance. The two variables of income and distance or location explained 13.888 per cent variation. Two variables of social security, occupation and work status explained 10.414 per cent of the variation. The component of educational development, age and sex structure explains 9.371 per cent while safe drinking water and fuel use for cooking purposes also explains 8.248 and 7.145 per cent of the total variance.

The culmination of the study is the identification of disparity in terms of socio-economic development at state level and intensive purposive analysis of Lawngtlai district. Inter-district, inter and intra block, village/town socio-economic variation of Lawngtlai district were categorized into five levels on the basis of composite and factor scores obtained from Z-score and Factor Analysis. The final output of the study found that existence of socio-economic development disparity at the level of district, block as well as village. Generally, the central and interior part of the study area score high value while remote areas score lower value. It means that the core region have high chance of development than the peripheral region because of easy access of developmental flow.

Suggestions:

By considering level of socio-economic development, the following points are suggested to reduce spatial inequalities for equitable development:-

i) Social and economic inequality is a basic drawback of development but not received attention. In depth analysis of socio-economic status of the whole state is an urgent call for tackling imbalances of development.

ii) Industrial sector is an infantile stage in Mizoram, promoting resource base industry is prime important for sustainable development.

iii) Development is mainly concentrated in district capital, block centers and its adjacent areas. Promotion of growth centres for the areas which could not deliver development from existing administrative centers to enhance balance growth. This center would provide better facilities for its surrounding villages. It includes higher educational institution, health centers and banking facilities. It is expected that the growth centers attracts population which promote commercial activity, improve communication, transportation development, employment opportunity and better standard of living for lacking regions.

iv) Some villages are absence of health sub-centers, health care facilities and medicinal shops. Improvement of health care services especially in remote and isolated villages is compulsory.

v) Improvement of elementary education is highly necessary for better literacy rate (Literacy rate of Lawngtlai district is 65.88 which is lower than state record of 91.33 per cent) as some villages are absence of educational institution. Many of the primary school in the study area is also run by Church or Christian Missionaries.

vi) Lawngtlai district is located in the southern tip of the state. Many villages in the district are not accessible during rainy season which encourage backwardness of the people. It is expected that development of transport sector could reduce social and economic variation**.**

viii) More than 60 per cent of the total populations are engaged in agriculture but the cropland is only 7.41 per cent (table 4.2.3). It is estimated that 1,465.46 (56.87 per cent) is able for practicing permanent and shifting cultivation based on its slope (table 4.2.2) and land use/land cover data (table 4.2.3). Promotion of agriculture and allied activities in the reverine area could bring economic prosperity of the region (especially for lowest score block of Chawngte and Bungtlang S').

ix) Providing electricity for all villages. Some electrified villages were also received a little amount of power supply. Irregularity of power supply generates slow growth of education, stagnant of small and cottage industry.

x) One of the main problems is absence of mass-media exposure and communication. Availability of newspaper, television and accessible internet facilties could bring wider scope of development and understanding of political behavior. Educational, political and social awareness is highly needed in the study area.

xi) Promotion of tourism sector in the remarkable, enchanting and delightful places of Phawngpui range and Ngengpui Wildlife Sanctuary to bring substantial revenue to the people of Sangau, Lawngtlai and Bungtlang S' blocks and expected to help conservation of forest resources.

xii) Financial inclusion is another important factor of development. Openning of banks in Bualpui NG in Sangau block, Borapansury in Chawngte Block, Vathuampui

in Bungtlang S' block and south western part of Lawngtlai block could enhance capital investment of masses.

xiii) Establishment of new settlement form small group of backward population sparsely settled in hilly region which attracts illegal migrants. This could make out administrative backdrop and extortions of internal security. Providing better facilities of dispersed settlements is a huge task, threatening widespread spatial economic inequality. Unlawful establishment of settlements should strictly proscribe.

xiv) Promotion of border trade: - Indo-Bangladesh trade for promotion of Chawngte block economy and Indo-Myanmar trade for Lawngtlai and Bungtlang S' blocks. Marketing development is also important to handle foreign as well as local products. Promotion of local market may enhance the subsistence economy of indigenous people.

xv) Transparency, accountability and strengthening of Chakma Autonomous District Council (CADC) and Lai Autonomous District Council (LADC) functions are essential step as numerous developmental works lay down in their hands.

:

Plate No 1: Photographs showing Lawngtlai town

Plate No 2: Photographs showing Sangau Village

Plate No 3: Photographs showing Kamalanagar Village

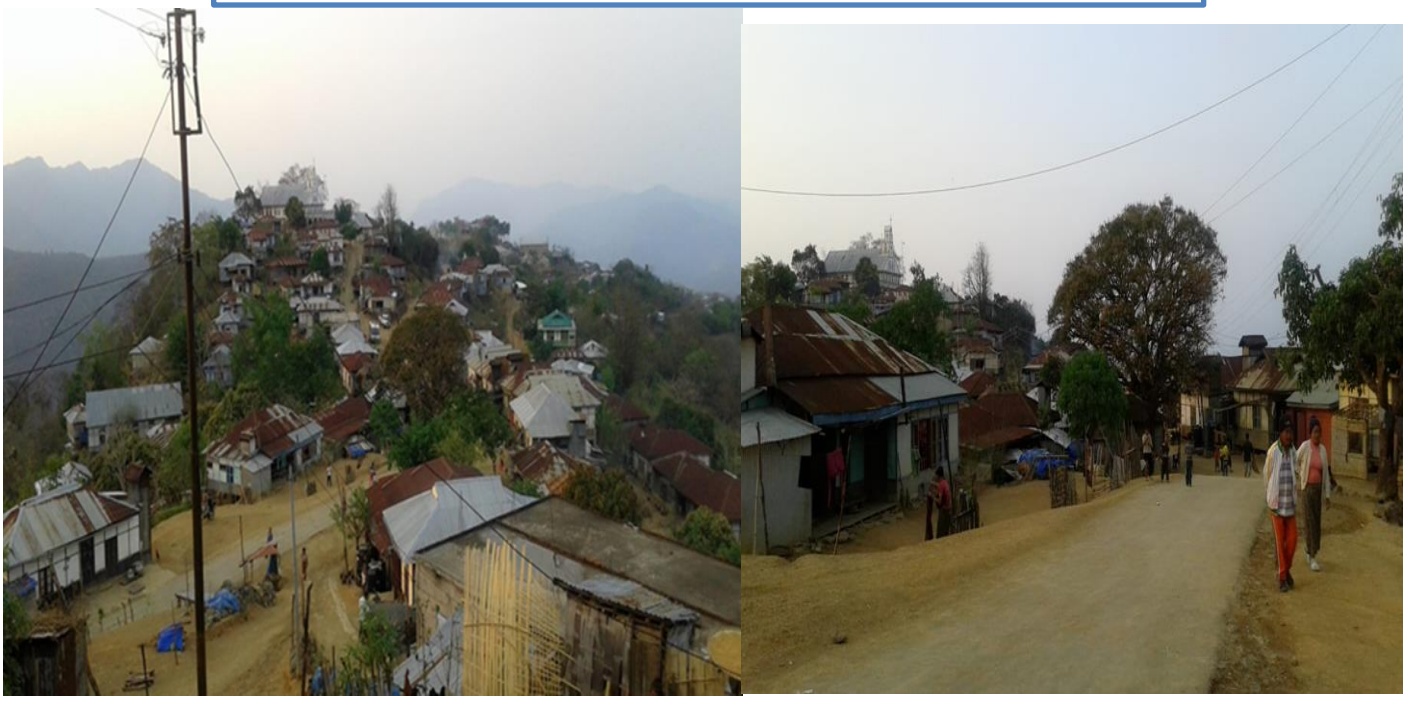
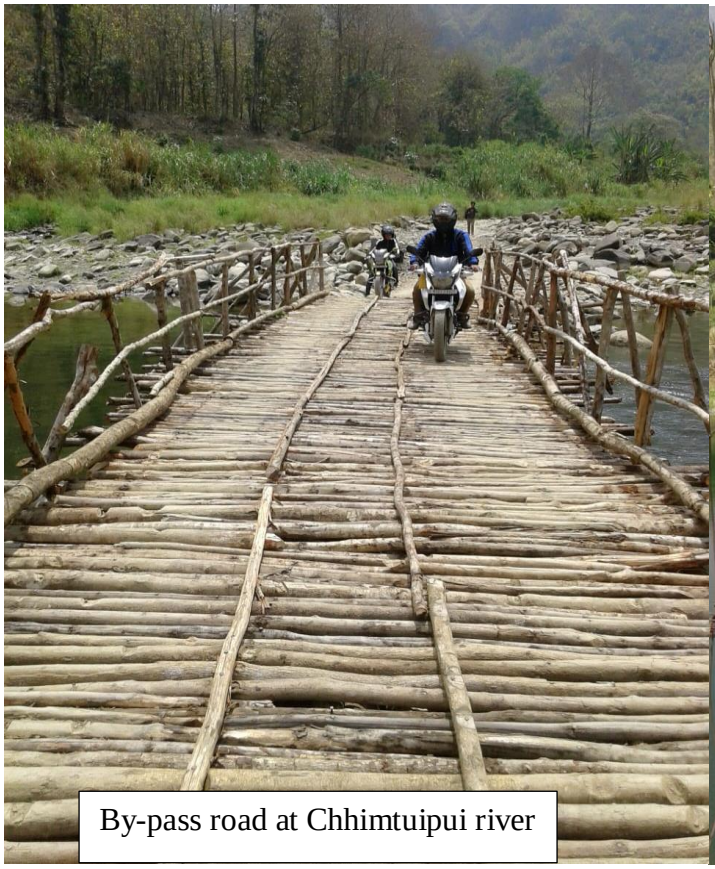
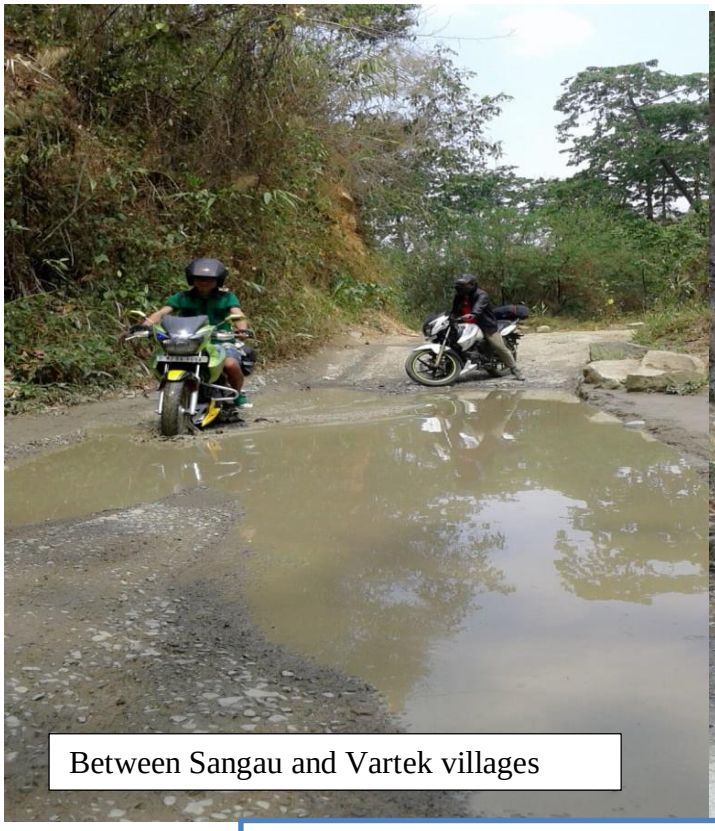


Plate No 4: Photographs showing Pangkhua Village

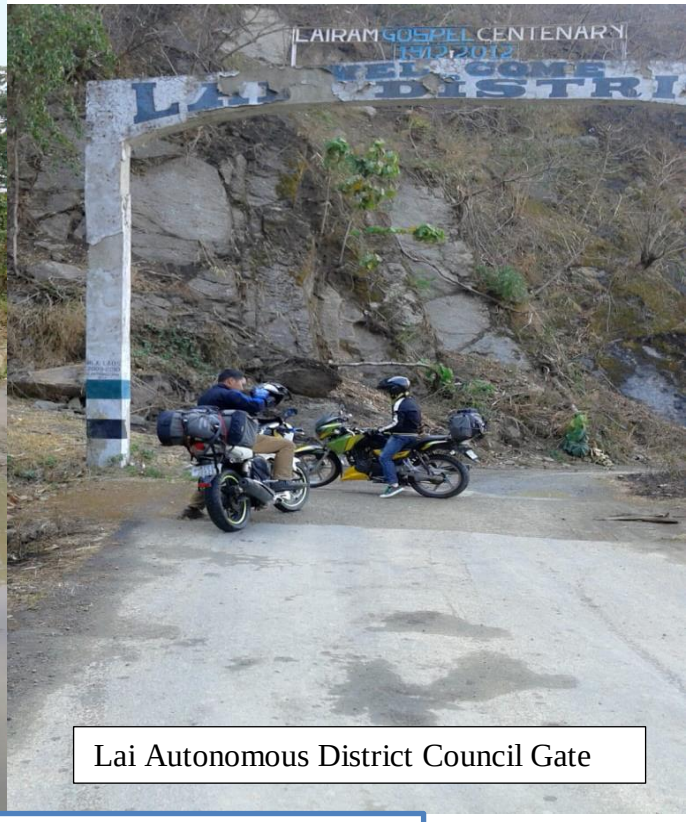


By-pass road at Chhimtuipui river

Chhimtuipui River



Between Sangau and Vartek villages



Lai Autonomous District Council Gate

Plate No 5: Photographs showing Road/Bridges

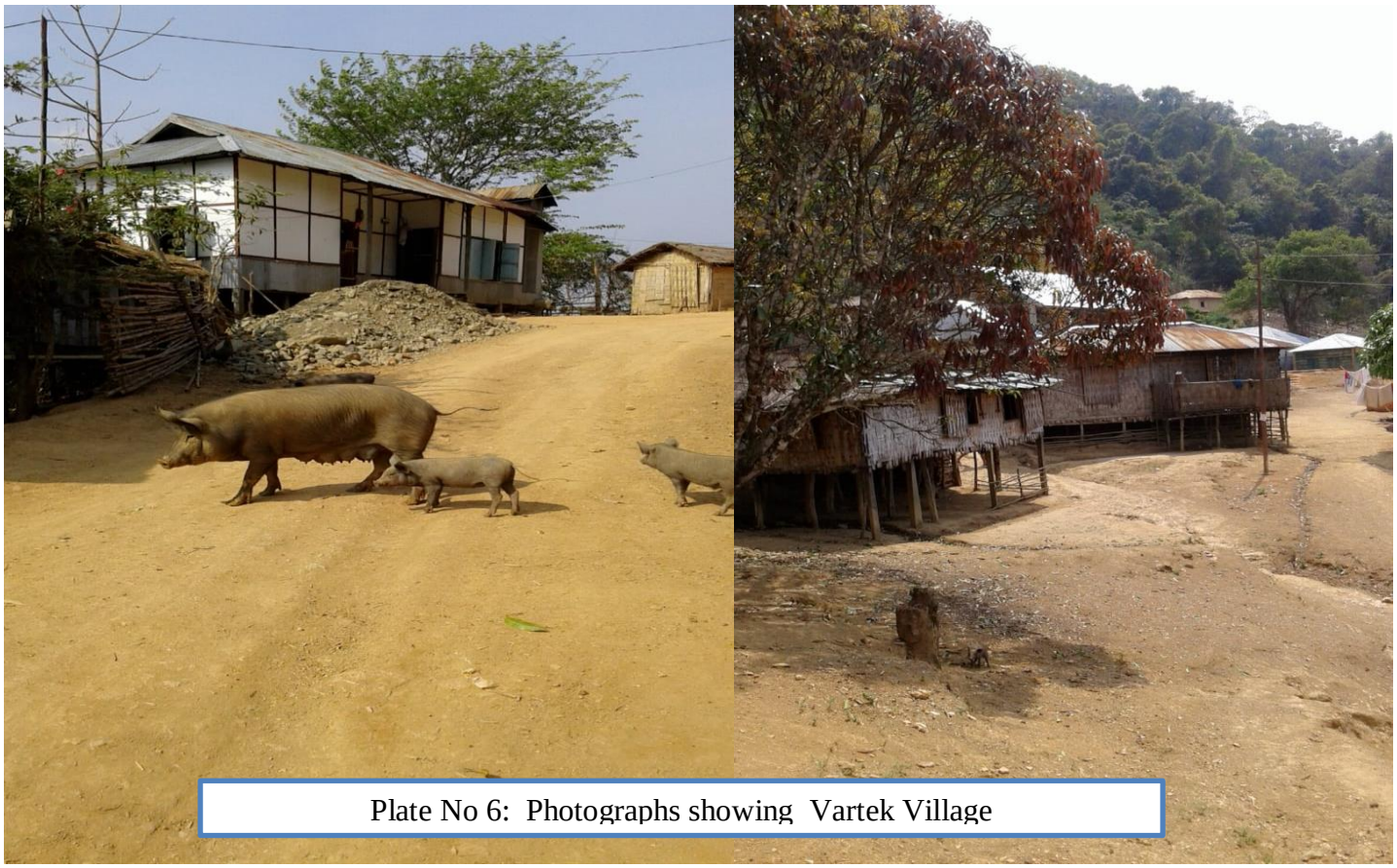


Plate No 6: Photographs showing Vartek Village

Plate No 7: Photographs showing Thaltlang Village

Plate No 8: Photographs showing Bungtlang S' Village

APPENDICES

Appendix-A: Schedule for Surveying

The survey is only about for analysis of socio-economic development of Lawngtlai district. It is purely intended for research purpose and the responses will be kept confidential.

Name of the Village/Town :
Name of R.D Block :

Part A : Schedule for Household Survey

1. Type of Houses (tick √) : RCC/Semi-Permanent/Assam Type/ Thatch
   i) No. of Storey :
   ii) Age of Building :
   iii) Ownership (tick√) : Owner/Rental (Quarter /Private Building)

2. Family & Educational Status:

Sl No.	Name	Sex (M/F)	Age	Edn. Qlfn.
1				
2				
3				
4				
5				
6				
7				

3. Occupational Status:

Occupational Status	Average Annual/Monthly Income	Occupational Status	Average/Annual/ Monthly Income
Daily Wages		Private Company*	
Cultivator		Private Services	
Trade and Business		Others#	
Govt. Employee			
Industrial Worker			

**Private Company includes Airtel, Jio, Reliance, Bsnl, Bank etc.*
 # Others include Cement Mistiri, Carpenter, Blacksmith, Tailoring, Handicraft Weaving, and Knitting etc.

If **Cultivator**, Size of land holding (in tin/ hectare) : _____
(3tin=1 hectares approx.)
Pattern of Cultivation : _____
Major crops : _____
Production : _____

4. Working Status/Rate (tick√):

Start of working day	Finish of Working Day	Once in a week	Twice in a week	Thrice in a week	Fourth in a week	Fifth in a week	Sixth in a week	Whole week

5. Type of fuel used for cooking (tick√)

Firewood	Gas	Kerosene	Electric Power	Solar	Bio-Gas

6. Type of Domestic light used (tick√)

Electricity	Solar	Kerosene	Generator	Inverter	Bio-Gas

7. Ethnic Status

Sl No	Religion/ Denomination†	Mother Tongue Ethnicity *	No. of year(s) living in the village	Reason (tick√)	If migrated Origin≠	Year	Reason (tick√)
1				1) Ancestors 2) Job 3) Marriage 4)War/Internal disturbance 5) Others			1)Ancestors 2)Job 3)Marriage 4)War/Internal disturbance 5)Others
2							
3							
4							
5							
6							
7							
8							

† Religion includes Christian (Presbyterian, Baptist,etc) Hindu, Muslim, Buddhist and others
** Ethnicity includes Lusei, Lai, Hmar, Mara, Chakma, Pang, Bawm and others*
≠ Origin indicates name of the village/state/country

8. Household Amenities:

Sl No	Amenities	No	Sl No	Amenities	No
1	Mobile Phone		10	Motor Vehicle (Two Wheeler)	
2	Landline Connection		11	Motor Vehicle (Four Wheeler)	
3	Computer		12	Water Connection	
4	Internet Connection		13	LPG Connection	
5	Television		14	No of Bank Account	
6	Refrigerator		15	Insurance Scheme Subscribe	
7	Washing Machine		16	Pit-Latrine	
8	Room		17	Septic Tank	
9	Bathroom with in premises		18	Toilet within premises	

9. Mode/Source of Drinking Water Supply: How the villagers/household get drinking water? (tick√)

Spring Well	Public Well (Concrete)	Private Well Ring Well	Govt Supply (Pipeline/ stand point)	Govt Supply (Tanker)	Hand pump	River/ ponds /Lakes/ Water	Rain Water

If Govt Supply, (Last Month Water Bill) : _____

Are you satisfied in Supply of Water which you get from different sources? (tick√)

Yes	No

10. Eletricity:

Sl No	Electrified House (tick√)	Yes	No	If yes, Source of Supply	
1				Govt	Private
2	Last Month Electric Bill (in Rs.)				
3	Regularity of Supply (tick√)				
Less than one hour in a day		1-4 hour in a day	5-10 hour in a day	More than 10 hour	Others

Are you satisfied in supply of electricity which you get from different sources? (tick√):

Yes	No

11. Distance from your house of the following (in Km/Meter/Feet):

School	College	Hospital/ Sub Centre	Post Office	Market	Bank	Main Road	Water Supply	Play-ground

12. Mode of transportation to village from the district/block headquarter for the villager (tick√):

Sl No	Transportation	No of Vehicle	Regularity (tick√)				
			Daily	Thrice in a week	Twice in a week	Once in a week	After one week/month
1	MST Bus						
2	Private Bus						
3	Sumo						
4	Taxi						
5	Auto Rickshaw						
6	Private Vehicle (4 wheeler)						
7	Private Vehicle (2 wheeler)						
8	By foot						
9	Others						

13. Main problem regarding transportation: i) ……
i) ……
ii) ……

14. Household Expenditure:

Sl No	Items	Expenditure (in Rs)	Sl No	Items	Expenditure (in Rs)
1	Fooding		5	Construction of building	
2	Education		6	Clothing	
3	Medical		7	TV Bill	
4	Transportation		8	Newspaper	

15. Mass Media Exposure / Communication

Sl No	Mass Media			Availabil-ity of Exposure	Time (Mins/ Hour in day/week)	Channel / Column Sites
1	Newspaper	Daily	National			
			Local			
		Weekly/ Monthly	National			
			Local			
2	Television	National				
		Local				
3	Internet	National				
		Local				
4	Radio	National				
		Local				

16. Health and family welfare:

Sl No	Subjective Questions	Yes	No	If yes, (Number)	Reasons
1	Are there any chronic diseases in the family?				
2	Is there maternal dead in the family?				
3	Is there prenatal dead in the family?				
4	Is there perinatal dead in the family?				
5	Is there neonatal dead in the family?				
6	Is there infancy dead in the family?				
7	Did you have medical checkup regularly?				
8	Do you have any problem while visiting medical centre/institution/hospital?				
9	Are you satisfied with medical treatment in your village/town?				

17. Market:

Sl No	Market	Daily	Fifth in a week	Fourth in a week	Thrice in a week	Twice in a week	Once in a week
1	Frequency of visiting market						
2	Availability of meat						
3	Availability of green vegetable						
4	Availability of fruits						
6	Are you satisfied with your market						

18. Political Behavior (tick√)

Which tops your priority list right before election						
Party	Policy	Money	Ethnic	Wave of Party Campaign	No Choice among Candidates	Others

19. Voting Behavior

Which tops your priority list right before election						
Party	Policy	Money	Ethnic	Wave of Party Campaign	No Choice among Candidates	Others

20. Social Security (Tick√)

Sl No		Very agree	agree	no idea	disagree	Very disagree
1	Is there disparity or discrimination based on location amongst society					
2	Feeling of insecurity made by religious					
3	Welfare activity by administratiors is based on ethnic status					
4	Linquistic variation creates discrimination					
5	Development disparity creates regionalism					
6	Development disparity creates seperatism					

Part-B: Schedule for prominent persons in the villages/town

Investigator's Signature :
Date of Investigation :

1. Name of the District :
2. Name of R.D Block :
3. Name of the Village/Town :
4. Area (in sq km) :
5. Year of Estd :
6. Altitude (Mean Sea Level) :
7. Average Temperature :
8. Total No of Population : …….. Male: ……. Female: …….
9. No. of Household :
   - No of RCC :
   - No of Semi-RCC :
   - No of Assam Type :
   - No of Thatch Roof :
10. Major tribe :
11. Major Dialect :
12. Connectivity :
    1) Whether there is road connectivity to village (tick√): Yes_____ No_____
    2) Condition of the Village Road (Please (tick√)"

Road Condition		Length (Km or M)
Metalled		
Partially Metalled		
Unmetalled		

13. Distance (in km/m):

Sl No	Place	Distance	Sl No	Place	Distance
1	District Hqtr		8	CHC	
2	RD Block Centre		9	PHC	
3	Daily Market		10	Sub-Centre	
4	Main Road*		11	School	
5	Bank		12	College& others°	
6	Post Office		13	Church	
7	Police Station		14	Hospital	

*Main road indicates National Highway, State Highway, and District Road etc.

° College and others includes College, Computer institutions, Technical and Vocational Training Institutes etc.

14. Electricity:

Whether there is electricity in the village : Yes/No

Total number of electrified houses : _____

Total number of un-electrified houses : _____

Source of Electricity : Private/Government

Are you satisfied in supply of electricity which you get from different sources? : Yes/No

15. Water Supply:

Number of water connection : _____

Number of water public point : _____

Number of hand pump installed : _____

Are you satisfied in supply of water? : Yes/No

16. Mode of transportation to village from the district/bock headquarter for the villager (tick√):

Sl No	Transportation	No of Vehicles	Regularity (tick√)				
			Daily	Thrice in a week	Twice in a week	Once in a week	After one week/month
1	MST Bus						
2	Private Bus						
3	Sumo						
4	Taxi						
5	Auto Rickshaw						
6	Private Vehicles (4 Wheeler)						
7	Private Vehicles (2 Wheeler)						
8	By foot						
9	Others						

17. Recreation:

Sl No	Name	No of Centers
1	Football Playground	
2	Volley Ball ground	
3	Cinema hall	
4	Botanical Garden/Zoological Park	
5	Picnic Spot	
6	Others	

18. Education:

Sl No	Particulars	Year of Estd	Owned by		No of Institutions	No of Teachers	No of Students
			Govt	Private			
1	Pre Primary School/Anganwadi						
2	Primary School's						
3	Middle School's						
4	High School's						
5	Higher Secondary School's						
6	Art College(s)						
7	Science College(s)						
8	Computer Training Centre(s)						
9	Vocational Training Centre(s)						

19. Health and Family Welfare:

Sl No	Name	Year of Estd	No.of health institution	No of Doctors	No of Nurses	No of Pharmacist	No of Tech	Asha	TBA*
1	CHC								
2	PHC								
3	Sub-Centre								
4	Private Clinic								
5	Dispensary								
6	Pharmacy/ Chemist shop								
7	Retailer/ Wholesaler								

*TBA indicates Traditional Birth Attendance

20. Others:

Sl No	Name	No	No of workers
1	Police Station/Out Post		
2	Bank*		
3	Cooperatives		

* Bank includes Central Bank, Commercial Bank, Credit Institution, Insurance Corporation, Non-banking financial company, corpus funds and others.

Appendix B: Normalized indicators of over-all socio-economic development in Lawngtlai district

Sl No	Selected Area	House-type	Age & Sex Structure	Education	Income	Occupation and Working	Fuel Wood	Household Amenities	Drinking Water	Electricity	Distance (location)	Transportation	Health	Market	Social Security	Banking	Mass-Media Exposure
1	Lawngtlai	1.000	0.643	0.443	0.718	0.523	0.180	1.000	0.107	0.480	0.817	1.000	0.900	0.938	0.527	1.000	1.000
2	Mualbu	0.469	0.248	0.537	0.252	0.565	1.000	0.257	0.208	0.291	0.411	0.911	0.516	0.062	0.687	0.007	0.381
3	Ngengpuikai	0.396	0.716	0.193	0.224	0.472	0.001	0.161	1.000	0.683	0.305	0.662	0.473	0.816	0.418	0.006	0.560
4	R. Vanhne	0.555	0.762	0.367	0.760	0.167	0.000	0.113	0.302	0.385	0.939	0.578	0.218	0.274	0.514	0.006	0.430
5	Tuithumhnar	0.306	0.750	0.390	0.831	0.315	0.000	0.051	0.167	0.069	0.480	0.342	0.594	0.000	0.391	0.005	0.238
6	Kamanagar	0.586	0.764	0.805	0.532	0.284	0.099	0.661	0.205	0.777	0.327	1.083	0.892	0.382	0.515	0.225	0.804
7	Vaseitlang -II	0.255	0.000	0.176	0.306	0.497	0.000	0.151	0.207	0.229	0.245	0.275	0.393	0.447	0.264	0.007	0.080
8	Jamersury	0.100	0.542	0.089	0.000	0.377	0.167	0.076	0.000	0.644	0.456	0.103	0.073	0.266	0.608	0.002	0.378
9	Charluitlang	0.188	0.738	0.185	0.059	0.193	0.000	0.043	0.120	0.096	0.277	0.000	0.000	0.184	0.902	0.002	0.000
10	W Saizawh	0.658	0.931	1.000	0.014	0.588	0.000	0.155	0.239	0.129	0.356	0.268	0.166	0.184	-0.128	0.004	0.085
11	Bungtlang S'	0.755	0.606	0.764	1.000	0.647	0.000	0.274	0.516	0.568	0.689	0.799	0.914	0.368	0.364	0.128	0.761
12	Hmunnuam	0.443	0.627	0.273	0.611	0.204	0.000	0.008	0.497	0.501	1.000	0.821	0.364	0.180	0.383	0.005	0.355
13	Dumzautlang	0.108	0.113	0.000	0.359	0.734	0.000	0.005	0.250	0.000	0.000	0.295	0.361	0.022	0.000	0.005	0.200
14	Vaseikai	0.342	0.517	0.379	0.307	0.144	0.000	0.038	0.558	0.098	0.269	0.386	0.474	0.584	0.297	0.006	0.399
15	Sekulhkai	0.000	0.428	0.155	0.768	0.750	0.000	0.000	0.395	0.000	0.842	0.316	0.431	0.083	0.630	0.000	0.137
16	Sangau	0.802	0.568	0.724	0.272	0.657	0.000	0.378	0.418	1.000	0.412	0.852	1.000	0.747	0.473	0.155	0.757
17	Vartek	0.338	0.804	0.303	0.155	1.000	0.000	0.154	0.271	0.719	0.285	0.134	0.406	0.516	0.476	0.010	0.444
18	Thaltlang	0.506	0.894	0.143	0.194	0.621	0.000	0.256	0.353	0.628	0.447	0.564	0.269	0.589	1.000	0.012	0.200
19	Pangkhua	0.490	0.587	0.397	0.196	0.000	0.001	0.313	0.355	1.079	0.341	0.991	0.623	1.000	0.926	0.075	0.921
20	Rawlbuk	0.607	1.000	0.831	0.203	0.032	0.000	0.379	0.449	0.966	0.251	0.793	0.669	0.668	0.668	0.028	0.465

Appendix C: Standardized indicators of over-all socio-economic development in Rural Development Block, Lawngtlai district																
RD Block	House-type	Age & sex Composition	Education	Income	Occupation & Working Status	Fuel use for Cooking	Household Amenities	Drinking Water	Electricity	Transportation	Mass-media Exposure	Banking	Health	Market	Distance (location)	Social Security
Lawngtlai	2.738	0.168	9.615	6.916	-0.065	4.414	15.604	1.714	4.878	2.597	2.976	1.415	3.889	1.660	-1.146	-0.770
Chawngte	-0.798	2.307	-3.995	-5.037	2.887	1.352	-5.957	-2.745	-2.681	-1.955	-2.020	-1.953	-8.716	-3.841	3.735	-3.940
Bungtlang S’	-0.399	-1.120	-7.184	0.650	-1.327	-3.148	-9.023	1.568	-0.186	-1.729	-2.968	-1.690	0.413	0.175	-5.281	3.059
Sangau	-1.542	-1.355	1.564	-2.529	-1.494	-2.619	-0.624	-0.537	-2.011	1.087	2.012	2.228	4.414	2.005	2.693	1.651

Appendix D: Standardized indicators of over-all socio-economic development in Sangau Rural Development Block, Lawngtlai district																
RD Block	House-type	Age & Sex Composition	Education	Income	Occupation & Working Status	Fuel use for Cooking	Household Amenities	Banking	Drinking water	Electricity	Distance (location)	Transportation	Mass-media exposure	Health	Market	Social Security
Sangau	1.049	-0.639	0.958	1.734	-0.058	0.303	1.130	1.668	1.197	0.313	1.742	0.453	0.150	1.408	-0.925	-0.067
Vartek	-1.036	-1.003	-0.628	-0.586	1.663	-1.165	-1.368	-0.722	-1.464	-0.795	-0.427	-1.574	-1.359	-0.553	-0.403	-1.057
Thaltlang	-0.939	1.308	-1.071	-0.752	-0.048	-0.665	-0.619	-0.671	0.605	-0.896	-0.604	-0.136	-0.558	-1.269	-0.609	-0.235
Pangkhua	-0.045	-0.473	-0.425	-0.250	-0.683	1.450	0.202	0.186	-0.164	-0.182	-0.644	1.133	1.243	0.296	1.575	1.654
Rawlbuk	0.971	0.807	1.166	-0.146	-0.873	0.077	0.655	-0.462	-0.174	1.560	-0.068	0.124	0.525	0.118	0.362	-0.294

Appendix E: Standardized value of over-all socio-economic development in Lawngtlai Rural Development Block, Lawngtlai district																
RD Block	House-type	Age & Sex Composition	Education	Income	Occupation & Working Status	Fuel use for Cooking	Household Amenities	Banking	Drinking water	Electricity	Distance (location)	Transportation	Mass-media exposure	Health	Market	Social Security
Lawngtlai	1.659	-0.196	1.458	1.771	-0.425	1.706	1.733	1.789	0.195	1.039	1.598	1.563	1.756	1.404	1.705	1.253
Mualbu	0.214	-1.026	-0.409	-0.583	0.415	0.082	-0.203	-0.445	-1.127	-0.198	-0.065	-1.009	-0.716	0.244	-0.698	0.081
Ngengpuikai	-0.709	0.157	-1.295	-0.580	-1.555	-0.485	-0.248	-0.448	0.841	0.217	-1.097	0.010	-0.437	0.044	0.085	-0.455
R. Vanhne	-0.690	1.609	0.132	-0.293	0.727	-0.660	-0.449	-0.448	1.041	0.538	-0.488	-0.719	-0.422	-1.364	-0.564	0.517
Tuithumhnar	-0.474	-0.543	0.115	-0.316	0.837	-0.643	-0.833	-0.449	-0.949	-1.595	0.052	0.155	-0.181	-0.327	-0.528	-1.396

Appendix F: Standardized value of over-all socio-economic development in Bungtlang S' Rural Development Block, Lawngtlai district																
RD Block	House-type	Age & Sex Composition	Education	Income	Occupation & Working Status	Fuel use for Cooking	Household Amenities	Banking	Drinking water	Electricity	Distance (location)	Transportation	Mass-media exposure	Health	Market	Social Security
Bungtlang S'	3.967	1.385	9.816	9.010	2.871	2.768	16.665	5.345	1.221	10.905	6.764	4.086	3.702	7.997	2.312	9.261
Hmunnuam	-1.590	1.786	1.507	-2.512	-4.265	-1.075	-0.577	-1.111	-1.880	4.502	2.203	0.726	-1.107	-10.799	-1.448	-7.912
Dumzautlang	-1.669	-5.477	-7.485	-3.608	4.300	-0.613	-6.264	-1.191	-0.814	-6.318	-7.770	-2.552	-2.974	-5.516	-2.375	0.852
Vaseikai	1.363	1.671	0.731	0.004	-1.484	1.224	0.602	-1.559	-1.192	-2.772	-0.983	-2.231	2.726	4.784	6.554	-1.835
Sekulhkai	-2.072	0.634	-4.569	-2.895	-1.422	-2.304	-10.426	-1.484	2.666	-6.318	-0.214	-0.029	-2.347	3.534	-5.042	-0.366

Appendix G: Standardized value of over-all socio-economic development in Chawngte Rural Development Block, Lawngtlai district																
RD Block	House-type	Age & Sex Composition	Education	Income	Occupation & Working Status	Fuel use for Cooking	Household Amenities	Banking	Drinking water	Electricity	Distance (location)	Transportation	Mass-media exposure	Health	Market	Social Security
Kamalanagar	3.685	0.436	4.671	8.356	1.840	6.940	18.644	5.364	4.887	7.539	1.705	7.412	3.971	9.507	2.647	7.033
Vaseitlang -II	-4.908	-3.913	-3.576	-3.433	-4.214	-3.805	-6.120	-1.258	-2.673	-0.072	-7.339	1.517	-3.049	11.653	6.082	-0.768
Jamersury	-2.430	0.461	-6.843	-2.144	-1.988	-0.061	-4.958	-1.321	3.976	-5.653	1.915	-4.218	-1.155	-6.436	-4.386	5.270
Charluitlang	-0.734	1.101	1.316	-2.224	0.630	-1.300	-8.318	-1.416	-5.948	-2.449	0.983	-5.266	-0.214	-9.312	-2.171	-5.426
W Saizawh	4.387	1.915	4.432	-0.554	3.731	-1.774	0.752	-1.369	-0.241	0.636	2.736	0.555	0.447	-5.413	-2.171	-6.108

Appendix H: Standardized value of over-all socio-economic development in Mizoram														
District	Agriculture	Industry	Livestock & Veterinary	Sericulture & Pisiculture	Electricity	Transport	Education	Social Welfare	Working Status	Consumer affairs	Health	Mass-communication	Banking	Social security
Mamit	-0.55	-0.71	-0.62	0.33	-0.94	-0.56	-0.55	-0.33	-0.54	-0.55	-0.43	-0.42	-0.75	0.31
Kolasib	1.00	0.42	-0.33	1.22	-0.75	-0.37	-0.85	-0.81	-0.43	-0.57	-0.46	-0.18	-0.65	0.48
Aizawl	0.96	2.04	2.06	1.53	0.46	2.37	0.68	2.13	2.16	2.32	1.05	2.40	2.34	1.86
Champhai	0.92	0.72	0.67	-0.14	0.37	-0.08	0.85	-0.10	0.08	0.02	0.78	-0.45	-0.32	-0.34
Serchhip	-0.76	-0.78	-0.82	-0.58	-0.73	-0.38	0.74	-0.51	-0.64	-0.47	0.67	-0.31	-0.59	-1.72
Lunglei	0.72	-0.60	0.41	-0.04	1.35	0.23	0.85	0.77	0.64	0.37	0.11	0.05	-0.28	-0.08
Lawngtlai	-0.82	-0.35	-0.75	-1.10	1.31	-0.64	-1.87	-0.30	-0.32	-0.53	-2.07	-0.80	0.14	-0.29
Saiha	-1.48	-0.73	-0.63	-1.23	-1.07	-0.57	0.15	-0.85	-0.95	-0.58	0.35	-0.30	0.11	-0.23

PARTICULARS OF THE CANDIDATE

NAME OF CANDIDATE	:	C.HMINGSANGZUALA
DEGREE	:	Ph.D.
DEPARTMENT	:	DEPARTMENT OF GEOGRAPHY & RESOURCE MANAGEMENT
TITLE OF THESIS	:	SPATIAL DISPARITY IN SOCIO-ECONOMIC DEVELOPMENT IN DISTRICT LAWNGTLAI, MIZORAM
DATE OF PAYMENT OF ADMISSION	:	29.07.2013
APPROVAL OF RESEARCH PROPOSAL	:	

1. BOARD OF STUDIES : 16.04.2014
2. SCHOOL BOARD : 02.05.2014

REGISTRATION NO & DATE : MZU/Ph.D./614 of 02.05.2014

EXTENSION (IF ANY) : 02.05.2021

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Head

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