Chapter 3

Theoretical Framework and Methodology

This chapter contains two important sections viz; conceptual and theoretical framework (explained in the section 3.1) and the methodology for the study (explained in section 3.2). The details of these two sections are discussed in the following:

3.1 Conceptual and Theoretical Framework:

This section deals with some concepts about women empowerment and the theoretical dimensions of empowerment, empowerment indicators and how theoretically women empowerment is related with the economic development. These are discussed in the following sequentially.

Concept of Women Empowerment:

The word ‘empowerment’ is a multi-dimensional phenomenon and has several different and inter-related aspects. In the last few decades, the concept of women empowerment has undergone a sea change from welfare oriented approach of women empowerment to equity approach. It is used in many different contexts and by many different organizations. There are a variety of understandings of the term empowerment due to its widespread usage.

The idea of ‘power’ is at the root of the term empowerment. Power can be understood as operating in a number of different ways:

- Power over: This power involves an either / or relationship of domination / subordination. Ultimately, it is based on socially sanctioned threats of violence and intimidation, it requires constant vigilance to maintain, and it invites active and passive resistance;
• Power to: This power relates to having decision-making authority, power to solve problems and can be creative and enabling;

• Power with: This power involves people organizing with a common purpose or common understanding to achieve collective goals;

• Power within: This power refers to self-confidence, self awareness and assertiveness. It relates to how individuals can recognize through analysing their experience, how power operates in their lives, and gain the confidence to act to influence and change this (Williams et al, 1994).

The various ideas of power deep-rooted in the concept of empowerment carry with it different approaches to empowerment in practice. The empowerment approach which has its origins in feminist and third world organizations call attention to the collective (power with) dimensions of empowerment.

Many researchers try to impart pertinent definitions of women empowerment. Women are the most susceptible segments of population in the society due to the gender inequality. They can’t take their own decisions because of male dominance attitude. Empowerment is the process of enabling or authorizing an individual to think, behave, take action and to control work in an autonomous way. It is the state of feelings of self-empowered to take control of one’s own destiny. It includes both control over resources (Physical, Human, Intellectual and Financial) and over ideology (belief, values and attitudes) (Bathiwala, 1994). Parveen (2007) describes it as a process of changing the power potential within an individual first and consequently, a change of relationships at different individuals, groups and societal levels. These changes would be permanent and thus necessitate constant efforts by development agencies over a long period of time. Thus, women empowerment seems a struggle against patriarchal social system. It is both a process and a result of the process. Empowerment can
also be viewed as a means of creating a social environment in which one can take decisions and make choice either individually or collectively for social transformation. It is a multi-dimensional social process that helps people gain control over their own lives, communities and in their society, by acting on issues that they define as important. Empowerment occurs within sociological psychological economic spheres and at various levels, such as individual, group and community and challenges our assumptions about status quo, asymmetrical power relationship and social dynamics (Biswas, 2007). Rowlands (1995) points out that empowerment is not only about opening up access to decision making, but also must include processes that lead people to perceive themselves as competent and enable them to occupy that decision-making space. Empowerment is also sometimes described as being about the ability to make choices, but it must also involve being able to shape what choices are on offer. Empowerment corresponds to women challenging existing power structures which subordinate women. As such, what is seen as empowering in one context may not be in another (Oxaal and Baden, 1997). Empowerment also involves challenging the forms of oppression which compel millions of people to play a part in their society on terms which are inequitable, or in ways which deny their human rights (Oxfam, 1995). Hossain et al. (2006) have defined empowerment as a concept that gives women the authority to make choices and decisions that facilitates the development of knowledge and control over resources to exercise the rights.

In light of the above definitions, women empowerment can be defined as a process whereby women gain their self-determination which enables them to make choices and decisions of which they have been denied of and this helps them in challenging and eliminating their own subordination. It entails the putting up of a society, wherein women can take breaths without the fear of compulsion, maltreatment, exploitation, apprehension and the
general feeling of discrimination which indeed helps them in challenging a patriarchal society.

**Indicators of Empowerment:**

The claims for women’s empowerment to be the goal or ultimate objective of many development policies and programmes lead to a demand for indicators of empowerment, both to reveal the extent to which women are already empowered, and to evaluate if such policies and programmes have been effective towards their stated aims. There are a variety of ways in which indicators of empowerment can be developed. Each of the indicators has some value, but none can be taken as complete measures, because the nature of empowerment as a multi-faceted concept means that it is not readily quantifiable (Oxaal and Baden, 1997).

Hashemi et al. (1996) in their research to measure the effects of programmes on the empowerment of women have used a model based on eight indicators of empowerment which are:

- mobility;
- economic security;
- ability to make small purchases;
- ability to make larger purchases;
- involvement in major household decisions;
- relative freedom from domination within the family;
- political and legal awareness;
- and involvement in political campaigning and protests.
According to Oxaal and Baden (1997), Gender Empowerment Measure (GEM) is one of the broad indicators of women’s empowerment which attempts to measure women’s empowerment at a broader societal level in order to gain information and make comparisons.

United Nations Development Programme (UNDP)\(^2\) proposes to promote the empowerment of women through

- promotion of women in policy and decision-making processes and positions;
- emphasizing women’s income-generating activities;
- providing women with access to empowering facilities (such as education, orientation and training of all kinds).

UNICEF (1994)\(^3\) has adopted the Women’s Framework, developed by Sara Lange, as an appropriate approach to be used in mainstreaming gender. The framework states that women’s development can be viewed in terms of five levels of equality of which empowerment are an essential element at each level. The levels are in the following:

1. Welfare: this addresses only the basic needs of women, without recognizing or attempting to solve the underlying structural causes which necessitate provision of welfare services.

2. Access: equality of access to resources such as educational opportunities, land and credit is essential for women to make meaningful process. The path of empowerment is initiated when women recognize lack of access to resources as a barrier to their growth and overall well-being and take action to redress this.


3. Awareness-raising: for women to take appropriate action to close gender gaps or gender inequalities there must be recognition that their problems stem from inherent structural and institutional discrimination.

4. Participation: this is the point where women take decisions equally alongside men. Mobilization is necessary in order to reach this level. Women will be empowered to gain increased representation, by organizing themselves and working collectively, which will lead to increased empowerment and ultimately greater control.

5. Control: the ultimate level of equality and empowerment, where there is a balance of power between women and men and neither has dominance. Women are able to make decisions regarding their lives of their children and play an active role in the development process. The contributions of women are fully recognized and rewarded.

United Nations Population Information Network (POPIN), 1995 has identified five components for women empowerment. These are –

i) Women’s sense of self-worth;

ii) Their right to have and to determine choice;

iii) Their right to have access to opportunities and resources;

iv) Their right to have their power to control their own lives, both within and outside the home; and

v) Their ability to influence the direction of social change to create a more just, social and economic orders, nationally and internationally.

The Canadian International Development Agency (CIDA) has developed a range of indicators of women’s empowerment, both quantitative and qualitative. CIDA’s quantitative indicators of empowerment are:

Legal empowerment indicators include:

- The enforcement of legislation related to the protection of human rights;
- Number of cases related to women’s rights heard in local courts, and their results;
- Number of cases related to the legal rights of divorced and widowed women heard in local courts, and results;
- The effect of the enforcement of legislation in terms of treatment of offenders;
- Increase / decrease in violence against women;
- Rate at which the number of local justices / prosecutors / lawyers who are women / men is increasing / decreasing;
- Rate at which the number of women / men in the local police force, by rank is increasing or decreasing.

Social empowerment indicators include:

- Numbers of women in local institutions (e.g. women’s associations, income generating groups etc.), and numbers of women in positions of power in local institutions;
- Extent of training or networking among local women, as compared to men; control of women over fertility decisions (e.g. number of children, number of abortions);
- Mobility of women within and outside their residential locality, as compared to men.

Political empowerment indicators include:

- Percentage of seats held by women in local councils / decision-making bodies;

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5 Oxaal Zoe and Baden Sally (1997) “Gender and empowerment: definitions, approaches and implications for policy”. Bridge development-gender
- Percentage of women in decision-making positions in local government;
- Percentage of women in the local civil service;
- Percentage of women / men registered as voters / percentage of eligible women / men who vote;
- Percentage of women in senior / junior decision-making positions within unions;
- Percentage of union members who are women / men;
- Number of women who participate in public progress and political campaigning as compared to the number of men.

For economic empowerment, changes that are to be noted over time are:

- Changes in employment / unemployment rates of women and men;
- Changes in time use in selected activities, particularly greater sharing by household members of unpaid housework and child-care;
- Salary / wage differentials between women and men;
- Changes in percentage of property owned and controlled by women (land, houses, livestock), across socio-economic and ethnic groups;
- Average household expenditure of female households on education / health;
- Ability to make small or large purchases independently;
- Percentage of available credit, financial and technical support going to women from government / non-government sources.

**Dimensions of Women Empowerment**

The present study has focussed on the three important dimensions of women empowerment viz; social, political and economic dimensions.

Social dimension of empowerment implies reputable and even-handed positioning in the society and dismantling of all the taboos and social barriers through education and legal
steps. Political dimension of empowerment relates to their involvement in the governance of the nation. Whereas economic empowerment means to enable them to have equality of opportunities in employment, ownership of production means and active participation in management decision making process of the associations of which they are members.

Based on these three dimensions, a large number of indicators of women empowerment can be pointed out. Some of them are mentioned in the following:

(i) Decision Making Power:

Decision making power is the foremost step to the ladder of empowerment. Women who have more autonomy in making decisions like purchase of daily household needs, visit to relatives, decision regarding issue of pregnancy, decision regarding family planning, regarding children’s education, regarding son’s and daughter’s marriage and other major household decision are more empowered.

(ii) Educational freedom and accessibility:

Women’s educational freedom and accessibility is one of the important indicators of women empowerment. Education helps women to know of themselves, develops their skills, imparts knowledge, changes their attitudes and improves their self-confidence. It is important to know whether the women have any educational freedom and whether they are encouraged by their family members or not.

(iii) Employment opportunity

Women’s employment opportunity and accessibility is another important indicator of women empowerment. It is important to know whether employed women are free from any family obligation or any binding restriction. Employment gives women income and improves their economic position.
(iv) Financial autonomy

Financial autonomy provides a person economic empowerment. Without economic empowerment a person cannot get complete economic freedom. Financial autonomy includes spending rights and autonomy which implies that they can spend money according to their own choice.

(v) Exposure to media

Exposure to media is an important source of empowerment. Greater proportion of women without having access to media reflects the relatively disadvantageous position of women in relation to men with regards to empowerment.

(vi) Political Participation

Women’s political participation is another input to their empowerment. It encompasses all voluntary actions like voting, holding party office, contesting elections, making public policies, administrating public affairs etc.

(vii) Domestic humiliation and violence

Violence against women affects their productivity, autonomy, quality of life, and physical and mental well being. Globally, 30 per cent of women are coerced into sex, beaten or otherwise abused at least once in their lives (Tinker, Finn and Epp 2000). Women’s protest against domestic humiliation and violence are the indicators of women empowerment.

(viii) Freedom of opinion and voting in electoral process

It is important to know whether women are free to give opinion and vote by their own choice or that is totally controlled by the family. That is whether they are enjoying political freedom or not.
(ix) Protest against unequal gender role

Women’s protest against unequal gender role in terms of their attitude towards preferences for son, wife beating etc is also an indicator of women empowerment.

(x) Family’ interest on women’s education

Family’s interest and encourage on women’s education enhances empowerment of women.

**Women Empowerment and Development:**

The need to bring women into the mainstream of development has been a national concern since early fifties. In this connection, Mahbul-Ul-Haq (1995) in his HDR has stated that, ‘development, if not engendered, is endangered.’

Recent UN conferences have advocated that women’s empowerment is central to development. The United Nations Conference on Environment and Development (UNCED) Agenda 21 mentions women’s advancement and empowerment in decision-making, including women’s participation in ‘national and international ecosystem management and control of environment degradation’ as a key area for sustainable development (Wee and Heyzer, 1995). The Copenhagen Declaration of the World Summit on Social Development (WSSD), have recognized that empowering people, particularly women, to strengthen their own capacities is the main objective of development, and that empowerment requires the full participation of people in the formulation, implementation and evaluation of decisions determining the functioning and well-being of societies. This shows that the involvement of women in the development process is equally important as that of men and so their empowerment is a prime necessity. This is supported by the World Summit-2005 where governments of all nations agreed that progress for women is progress for all. The report of the UN Fourth
World Conference on Women also called its platform for action ‘an agenda for women’s empowerment’ meaning that ‘the principle of shared power and responsibility should be established between women and men at home, in the workplace and in the wider national and international communities’ (UN, 1995a). Adams and Kruppenbach (1987) have also mentioned that women make a major contribution to the economic production of their communities and assume the health of their families as their primary responsibility. Their active support is crucial to the utilization of development objectives. There can be no societal transformation without their support and leadership.

Development Alternatives for Women in New Era (DAWN) founded in the mid-1980s is also closely associated with the development of ideas about women’s empowerment. It stresses the importance of women’s organizations in demanding and promoting change towards their vision of society, and to create the political will for serious action by those in power. For DAWN, empowerment of poor women is central to their overall vision of development and has implications not just for the types of activity they promote but also for organizational structures and procedures. According to Nayak and Mahanta (2008), female education is an important input of the production function i.e., “Human Development Function” explains the effectiveness of expenditure directed to human development. The authors have opined that female education has important bearings on child health and their survival and moreover increased female share over household income leads to increased spending on human development enhancing items like food, healthcare etc and reduced spending on tobacco.

According to Olopoenia (1983) and Pradip (1984), development is not an isolated activity, for it implies a progress from a lower state to a higher and preferred one. Meer

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(1998) opines that unless more effort is put into organizing women in poor rural communities around their common interests, they are unlikely to benefit from favourable development policies. Thus development is a process by which people are awakened to opportunities and so it is necessary that women should be involved in ongoing development initiatives which help them to increase their understanding and commitment towards upliftment and empowerment of women development aspects.

The concept of development can be divided into three categories viz; social development, political development and economic development. Women empowerment can reflect these development aspects. The concept of social development implies making use of opportunities which help in improving and enriching each of the composite parts of a society in many ways. It also refers to the development in the social order of the society and the notion of social progress and socio-cultural evolution. It also includes cultural and spiritual development which can also help mental development in the family relationship. The concept of political development of a particular area implies the political awareness of the people of that area. Political development enhances the state’s capacity to mobilize and allocate resources and to process policy inputs into implementable outputs. The contemporary notion of good governance also dwells on efficient, effective, and non-corrupt public administration. If people are politically developed then they can play a crucial role in making societal development (infrastructural and economic development) through forming local government. The concept of economic development implies well-being, quality of life, standard of living, economic opportunity, improvement of employment status etc.

**Economic Development and Role of Women:**

Economic development is very much important for any contemporary society as it is economic development that gives a country the potential to prosper and grow. The actual goal
of economic development is the improvement of the quality of life of ordinary citizens. So, in this sense, economic development creates a completely new life-standard for people and thereby transforms a simple, low-income economy to a modern, high-income economy. In other words, economic development is the development of economic wealth of countries or regions for well-being of their inhabitants. Economic development can also be enhanced if the local quality of life is improved.

The process of economic development is a multi-sided process as the improvement of quality of life includes numerous aspects such as the development of the social sphere, the development of culture and national creativity, the creation of favourable social climate, social security, labour supply and many others. Besides, economic development is also the creation of a competitive business environment where competition is the driving force for the development of the companies which ultimately leads to the economic development of the country.

The term economic development is far more comprehensive than economic growth. By economic growth, we simply mean increase in country’s output of goods and services which is generally measured in terms of GNP but economic development implies progressive changes in the socio-economic structure of a country. Apart from rise in output, it involves changes in composition of output, shift in the allocation of productive resources, and elimination or reduction of poverty, inequalities and unemployment. In this connection, Friedman (1972) defines growth as an expansion of the system in one or more dimensions without a change in its structure and development as an innovative process leading to the structural transformation of social system. Thus, economic growth is related to a quantitative sustained increase in the country’s per capita output or income accompanied by expansion in its labor force, consumption, capital and volume of trade. On the other hand, economic development is a wider concept than economic growth. According to Myrdal (1974), it is the
upward movement of the entire social system. It describes the underlying determinants of
growth such as technological and structural changes. But it is difficult to imagine
development without economic growth in the absence of an increase in output per capita,
particularly when population is growing rapidly.

Nowadays, the government is emphasizing on inclusive growth and development.
Both men and women are treated as factors of production in the production function of any
economic variable. Though woman is a significant determining factor of household
production function but woman can also be a significant determining factor of other
production function except household production. Women can generate income and
contribute not only in families’ total income but also in National Income. Recently, women
are generating income through Self Help Group (SHG) formation which can develop their
economic status. So, without involvement of women and without empowering women, a
country’s economic development cannot be progressive. Women empowerment can
accelerate economic development.

3.2 Methodology

The methodology for this study is divided into two parts viz; methodology for data
collection and methodology for data analysis which are discussed in the following two
subsections:

3.2.1 Methodology for Data Collection:

The study is based on both primary data and secondary data. Primary data have been
collected from the urban area and the rural area of Barak Valley. A set of primary data have been
collected from the urban area of the Barak Valley by using two-stage stratified random sampling
method. In the Barak Valley, there are three districts viz. Cachar, Karimganj and Hailakandi and
in each districts, there are one Municipal Board (MB) and one Town Committee (TC) and some
Census Town (CT). In the first stage, only one urban area is selected from each district. The selection of urban area is based on large demographic size. Naturally, the district headquarters have been selected from each district because of its huge population. In the second stage, the number of households have been selected proportionately (5:2:1) according to their demographic size from the three selected head-quarters of these three districts. A total of 160 households have been selected randomly from the urban area.

Another set of data have been collected from the rural area of Barak Valley by using three-stage stratified random sampling method. There are 15 blocks in Cachar District, seven in Karimganj District and five in Hailakandi District. In the first-stage, three blocks from Cachar District, two from Karimganj and one from Hailakandi have been selected proportionately. The selections of blocks are based on large demographic size. In the second stage, five large villages have been selected from the each selected block according to demographic size. So, a total of 30 villages have been selected accordingly. In the last stage, eight households have been selected randomly from each of the selected villages. So a total of 240 households have been selected from rural area. Finally, 400 households have been selected from both urban and rural areas of Barak Valley. The primary data have been collected by taking interview from an adult married woman of each family through a same set of scheduled questionnaire for both urban and rural sectors.

The sources of secondary data are already mentioned in the introductory chapter (Chapter 1).

3.2.2 Methodology for Data Analysis:

For the data analysis, sophisticated graphical, mathematical, statistical and econometric tools have been used. Objective-wise detailed methodologies are explained in the following:
To examine the socio-economic status of the women the analysis has been divided into two parts. In the first part overall socio-economic status has been examined by using Gender Development Index (GDI) measurement. In the second part, some socio-economic aspects like the educational status of the women, the decision making power of the women, freedom of movement within and outside the locality and monetary accessibility of the women have been analyzed for knowing their present status on these aspects separately and finally Gender Empowerment Measure (GEM) has been constructed. GDI reflects the status of development of the women. GDI has been measured by considering two dimensions viz; social dimension and economic dimension. Social dimension is reflected by education and economic dimension is reflected by work participation rate and income. Equal weights have been used for calculating Equally Distributed Economic Index (average of Equally Distributed Work Participation Index and Equally Distributed Income Index). Equally Distributed Social Index is alternatively used as Equally Distributed Literacy Index.

GDI has been calculated by the following three steps. Firstly, female and male indices in each dimension are calculated according to this general formula:

\[
\text{Dimension Index} = \frac{\text{Actual Value} - \text{Minimum Value}}{\text{Maximum Value} - \text{Minimum Value}} \quad \ldots (a)
\]

Secondly, the female and male indices in each dimension are combined in a way that penalizes differences in achievement between men and women. The resulting index is calculated according to the general formula:

\[
\text{Equally Distributed Index} = \left\{ \left[ \frac{\text{female population share(female index}^{1-e})]}{\text{male population share(male index}^{1-e})]} \right\}^{\frac{1}{1-e}} \quad \ldots (b)
\]

Here, \(e\) measures the aversion to inequality. The value of \(e\) is the size of the penalty for gender inequality. The larger the value, the more heavily a society is penalized for having
inequalities. If $\varepsilon=0$, gender inequality is not penalized. As $\varepsilon$ increases towards infinity, more and more weight is given to the lesser achieving group. The value 2 is used in calculating the GDI. This value places a moderate penalty on gender inequality in achievement.

Thus, the general equation becomes:

$$\text{Equally Distributed Index} = \left\{ \left[ \text{female population share} \left( \text{female index}^{-2} \right) \right] + \left[ \text{male population share} \left( \text{male index}^{-2} \right) \right] \right\}^{-\frac{1}{2}}$$

Equally Distributed Index gives the harmonic mean of female and male indices. Finally, the GDI has been calculated by averaging of these two equally distributed indices.

The second part of the first objective has been analyzed by using only primary data. To measure decision making power of women on six different aspects, coding and scaling have been used. As decision making is a quality aspect, a binary option is taken to quantify it. If the women have no decision making power then the value is considered zero otherwise it is considered as one. These six different aspects are viz; purchase of daily household needs, visit to relatives, family planning, children’s education, son’s and daughter’s marriage and major household decisions. To take some crucial decisions like children’s education, son’s and daughter’s marriage etc, sometimes joint decision is commonly preferable than the single decision. So, it is important to check whether the women are playing participatory role in this decision making process or not. For joint and single decisions, the value is considered one as women are playing participatory role. For the total six aspects maximum value of the coding is six. To measure the degree of autonomy in the decision making process, we have used three scaling; the value of the coding up to two out of six have been considered as low degree of autonomy, up to four as medium degree and above four as high degree of autonomy.
Gender Empowerment Measurement (GEM) captures the following three key areas viz; political participation and decision making power for voting, economic participation and decision making power and power over economic resources. Political participation is measured by women’s and men’s percentage share of contestant in the election. Economic participation is measured by women’s and men’s occupational status. Power over economic resources is measured by women’s and men’s estimated earned income (PPP US$ as it is used by UNDP).

GEM has been calculated by the following two steps:

Firstly, for each of the above three dimensions, an Equally Distributed Equivalent Percentage (EDEP) are calculated as a population-weighted average according to the following general formula:

\[
\text{Equally Distributed Equivalent Percentage} = \\
\left\{ \frac{[\text{female population share}(\text{female index}^{1-c})]}{[\text{male population share}(\text{male index}^{1-c})]} \right\}^{1/(1-c)}
\]

\[\text{2(a)}\]

\(c\) measures the aversion to inequality. Just as in GDI, in GEM also \(c = 2\) which places a moderate penalty on inequality. The formula is thus

\[
\text{Equally Distributed Equivalent Percentage} = \\
\left\{ \frac{[\text{female population share}(\text{female index}^{-1})]}{[\text{male population share}(\text{male index}^{-1})]} \right\}^{-1}
\]

\[\text{2(b)}\]

For political and economic participation and decision making, the EDEP is then indexed by dividing it by 50. The rationale for this indexation is that in an ideal society with equal empowerment of the sexes, the GEM variables would equal 50 per cent i.e., women’s share would equal men’s share for each variable.
Secondly, the GEM is calculated as a simple average of the three indexed EDEPs.

To investigate the problems faced by the women, tabular and graphical analysis have been done.

For measuring women empowerment status, Women Empowerment Index (WEI) has been constructed. For the construction of Women Empowerment Index (WEI), Principal Component method has been used. Before using principal component analysis a multi-variate factor analysis is used to address the inter-relationship among the set of observed variables. The primary purpose of factor analysis is the derivation of a set of observed variables in terms of new categories called factors. A factor explains the several observed variables. There can be one or more factors depending upon the nature of the study and the number of variables involved in it. Now, Principal Component method has been used for the construction of WEI. The aim of Principal Component method is the construction of a given set of variables Xj’s (∀ j = 1, 2, ..., k) of new variables (P1, P2, ...,Pk), called ith Principal Components which are linear combinations of the Xk

\[ P_1 = a_{11}X_1 + a_{12}X_2 + \ldots + a_{1k}X_k \]
\[ P_2 = a_{21}X_1 + a_{22}X_2 + \ldots + a_{2k}X_k \]

\[ \vdots \]

\[ P_k = a_{k1}X_1 + a_{k2}X_2 + \ldots + a_{kk}X_k \]

The method is being applied mostly by using the standardized variables, i.e.,

\[ Z_j = \frac{(X_j - \bar{X}_j)^2}{\sigma_j} \]

\[ \text{..........................3(a)} \]
The $a_{ij}$'s are called factor loadings and are worked out in such a way that the extracted principal components satisfy two conditions: (i) principal components are uncorrelated (orthogonal) and (ii) the first principal component ($P_1$) has the maximum variance, the second principal component ($P_2$) has the next maximum variance and so on.

According to the Kaiser’s criterion only the Principal Components having latent root or characteristic root greater than one are considered as essential and that should be retained. The Principal Components so extracted and retained are then rotated from their beginning position to enhance the interpretability of the factors. Communality, symbolized as $h^2$, is then worked out which shows how much of each variable is accounted for by the underline factors taken together. A high communality figure means that not much of the variables are left over after whatever the factors represent is taken into consideration.

So, $h^2$ of the $i^{th}$ variable = $(i^{th}$ factor loading of factor A)$^2$+(i$^{th}$ factor loading factor B)$^2$ + ……

The amount of variance explained (sum of squared loadings) by each Principal Component factor is equal to the corresponding roots. When these roots are divided by the number of variables they show the characteristic roots as proportions of total variance explained. The variables are then regressed against each factor loading and the resulting regression co-efficients are used to generate what are known as factor scores. To compute a WEI, the factor scores ($f_{jk}$) and the corresponding weight are used. So, a composite index is to be developed as weighted sum of scores, the weight being the percentage of the variations explained by the factors. If the percentage of $k^{th}$ factor is denoted by $S_k^2$, then the index for the $j^{th}$ area is calculated by using the formulae: $H_j = \sum S_{kj}^2 f_{jk}$ where; $j=1, 2 \ldots j \ldots \ldots \ldots 3(b)$

To examine the rural urban disparities, a comparison of women empowerment status between rural sector and urban sector has been done.
For examining the link between women empowerment and economic development, Economic Development Index (EDI) has been constructed by using eight indicators viz; per capita income, per capita expenditure, literacy, pucca housing condition, sanitary condition, pure drinking water, treatment of drinking water and calorie surplus. EDI is computed by using Principal Component Analysis which is mentioned earlier.

For examining the impact of women empowerment on economic development, regression analysis has been done by using the following specifications:

\[ EDI_i = \alpha + \beta WEI_i + U_i, \quad \text{for all } i = 1, 2, 3 \ldots n \] ........................ 4(a)

Where; \( WEI_i \) represents Women Empowerment Index which is treated as independent variables and \( EDI_i \) represents Economic Development Index of the \( i^{th} \) village / urban area which is treated as dependent variable. \( \alpha \) and \( \beta \) are the parameters, \( U_i \) is stochastic error component which follows normal distribution with zero mean and common variance \( \sigma^2 \).

To check the impact of economic development on women empowerment the reverse regression has been done

\[ WEI_i = \gamma + \delta EDI_i + U_i, \quad \text{for all } i = 1, 2, 3 \ldots n \] ........................ 4(b)

Where; \( \gamma \) and \( \delta \) are the parameters used in the specification and \( U_i \) is stochastic error component which follows normal distribution with zero mean and common variance \( \sigma^2 \). \( WEI_i \) and \( EDI_i \) represent Women Empowerment Index and Economic Development Index of the \( i^{th} \) village / urban area.

Now, to examine the difference in the relationship between women empowerment and economic development in rural area and urban area, the whole data set has been separated into two groups. One set of data is collected from 30 sample villages from rural area and other set is collected from eight urban areas as per the sampling design.
For examining the difference in the impact of women empowerment on economic development in the rural area and urban area, the regression equations are

\[ EDI_i = \alpha_1 + \beta_1 WEI_i + U_i \]
for all \( i = 1, 2, 3 \ldots 30 \) for the rural area

\[ EDI_i = \alpha_2 + \beta_2 WEI_i + U_i \]
for all \( i = 1, 2, 3 \ldots 8 \) for the urban area

A test for stability of the parameters between the populations has been done by checking the following hypothesis

\[ H_0: \beta_1 = \beta_2 \text{ and } \alpha_1 = \alpha_2 \]

If this hypothesis is true, we can estimate a single equation for the data set by pooling the two data sets. The Chow \( F \)-test that is to be used is given below:

\[ F = \frac{[RSS_p - (RSS_1 + RSS_2)]/l}{(RSS_1 + RSS_2)/(n - 2k - 2)} \sim F_{l, n-2k-2} \]

Where; \( RSS_1 + RSS_2 = \) unrestricted residual sum of squares of two samples containing \( n_1 \) and \( n_2 \) observation.

\( RSS_p = \) Pooled residual sum of squares obtained by pooling the observations of two samples (i.e.; \( n = n_1 + n_2 \) observations)

\( l = \) number of restrictions imposed by the hypothesis

\( k = \) number of explanatory variables

To get the unrestricted residual sum of squares, we estimate the regression model for each of the data sets separately.

\( RSS_1 = \) residual sum of squares for the data set of rural areas

\( RSS_2 = \) residual sum of squares for the data set of the urban areas

\( RSS_1/\sigma^2 \) has a \( \chi^2 \) - distribution with d.f \( (n_1-k-1) \)
RSS$_2/\sigma^2$ has a $\chi^2$ distribution with d.f $(n_2-k-1)$

Now, to examine the reverse impact of EDI on WEI the following regression equations is used

\[
WEI_i = \gamma_1 + \delta_1 EDI_i + U_i \quad \text{for all } i = 1, 2, 3 \ldots 30 \text{ for the rural area}
\]

\[\text{...........................................4(f)}\]

\[
WEI_i = \gamma_2 + \delta_2 EDI_i + U_i \quad \text{for all } i = 1, 2, 3 \ldots 8 \text{ for the urban area}
\]

\[\text{...........................................4(g)}\]

The null hypothesis is $H_0$: $\delta_1 = \delta_2$ and $\gamma_1 = \gamma_2$

By following the same procedure (Chow # 1) as above the value of F is again calculated.