

CHAPTER: III

METHODOLOGY

The Chapter deals with the research methods and also considers the logic behind the methods. The researcher explains the content and the reason why some particular methods and techniques are used, so that research results are capable of being evaluated and might be systematically solve the research problem.

3.1 Method Used:

The present study is a type of Ex- post facto research based on the descriptive research that includes attempts by researchers to discover causes even when the variables cannot be controlled which is a main characteristic of a descriptive study. Descriptive studies are more than just a collecting of data; they involve measurement, classification, analysis comparison and interpretation of the results.

3.2 Variables Selection and Data Sources:

The present study utilizes broadly two types of variables, first is Employment according to usual status (ps+ss) and another is real Gross Domestic Product (GDP) at factor cost, in order to avoid indirect taxes, at 2004-2005 base year prices. The information upon employment are of various types, like- labour force, workforce, unemployment, unemployment rate, LFPR, that is gender wise, location wise, age wise, education wise, and social groups wise and WPR that is also gender, location, age, education, industry, nature and social group wise data are utilized so that a valid general conclusion might be drawn. The data upon real gross domestic product at factor cost during 2004-2005 base year prices is in absolute figure and industry wise so that the elasticity of employment and labour productivity might be found out.

In order to examine the objectives of the study, the study uses the unit level data sets on employment and unemployment situation in India, social groups of the 61st and 66th rounds of the National Sample Survey Organization(NSSO) covering the period from 2004-05 to 2009-10. The data on real Gross Domestic Product(GDP) at 2004-05 base year prices have emanated from

the Handbook of Statistics on Indian Economy, September 14, 2012, Annual Reports, Publication of the Reserve Bank of India for 2004-05 and 2009-10.

3.3 Population of the Present Study:

Population or universe refers to the entire observations or elements of about which information is desired¹. On the basis of area of present study entitle “An Appraisal on Work Force in Labour Market of India with reference to the 61st and 66th Rounds of NSSO” the population for the present study is entire information about labour force, work force, unemployment and real GDP at factor cost in 2004-05 base year prices the data must cover from 2004-05 to 2009-10.

3.4 Sample Design:It refers to the technique or the procedure that the researcher would adopt in some sampling units from population or census or universe.²

Sample is a part or segment of the population or universe so that time, money, effort, etc. might be saved. Sample may be two types ‘small sample’ which consists less and equal to 30 elements. Those sample which consist more than 30 elements known as ‘large sample.’

Small sample: *Number of elements* (n) \leq 30

Large sample: *Number of elements* (n) $>$ 30

Sampling is the technique or process which helps researchers in selecting some observations or elements as a sample for research. It is of two types ‘random or probability sampling’ (every element has equal chance in selecting as sample) another is ‘non-random or non-probability sampling’ (every element has not equal chance in selecting as sample).³

In the present study both, 61st and 66th quinquennial rounds are judgmentally (a type of non-probability or non random sampling) selected out of six rounds (38th, 43rd, 50th, 55th, 61st, and 66th) of EUS of NSSO. Because all rounds of EUS of NSS except 61st and 66th do not provide information upon casual labour in public works and in MGNREGS so that casualization of public work might be highlighted.

¹Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. Second revised Edition

²*Ibid.*

³*Ibid.*

3.5 Methods of Analysis:

The present study, being a descriptive study on workforce in labour market of India with reference to the 61st and 66th rounds of NSSO, the selection of methods make in such a nice way that the present study might be come out with a reliable, valid and sufficient conclusion.

3.5.1 Compound Annual Growth Rate (CAGR): The compound Annual Growth refers the year over year growth rate of an investment over a specific period of time which is calculated by taking the n^{th} root of total percentage growth rate, where n is the number of years in the period being considered. Derivation of formula of CAGR: Let current (ending) value is V_n and initial (beginning) value is V_0 and i is CAGR:

$$V_n = V_0(1 + i)^n$$

$$\text{Or } (1 + i)^n = \frac{V_n}{V_0}$$

$$\text{Or } 1+i = \left(\frac{V_n}{V_0}\right)^{\frac{1}{n}}$$

$$\text{CAGR (i)} = \left(\frac{V_{tn}}{V_{t0}}\right)^{\frac{1}{n}} - 1$$

Where,

V_{tn} = Ending value

V_{t0} = Beginning value

i = Compound Average Growth Rate

$n = (t_n - t_o)$ = The number of years in the period being considered.

In the present research, the compound average growth rate (CAGR in percentage) has computed between 2004-05 and 2009-10 for five years by using Microsoft Office Excel which is calculated in some steps, as follows:

First Step: Two figures have been drawn on a variable for 2004-05 and 2009-10 respectively, it may be in absolute figure, per 1000 or percentage but all figures must be in same unit.

Second Step: After drawing figures the researcher used formula of CAGR on Excel Microsoft Office worksheet i.e. = '**POWER(Ending vale/Begining value , 1/5) – 1.**'

For converting it into percentage the CAGR value has been multiplied by 100 i.e. CAGR in percentage = '**{POWER(Ending vale/Begining value, 1/5) – 1} * 100**' by using this formula.

Third Step: After computing one value of CAGR for one variable, CAGR for remaining variables have been computed by dragging the used formula over the remaining variables. The results reveal the growth rate of employment (in percentage) per annum during 2004-05 to 2009-10. The CAGR has been computed by the researcher on the basis of location, gender, age, education, industries, nature and social groups.

3.5.2 Employment Elasticity to output:

The elasticity of employment to output provides a numerical measure of how employment growth varies with growth in economic output, which is calculated by the proportionate change in employment divided by the proportionate change in output.

$$\text{Employment Elasticity to output} = \frac{\text{Proportionate change in employment}}{\text{Proportionate change in output}}$$

$$E_{\text{employment to output}} = \frac{\frac{\Delta N}{N}}{\frac{\Delta Y}{Y}}$$

$$E_{\text{employment to output}} = \frac{\Delta N}{\Delta Y} * \frac{Y}{N}$$

Where,

ΔN = Change in employment, N = Initial Employment, ΔY = Change in output and Y = Initial output.

In the present study, the researcher has also computed ‘employment elasticity to GDP by industry’ to check out that which industry has the potential to generate new employment opportunities and which industry is at saturation point in employment generation. To compute employment elasticity the researcher has used industry wise real Gross Domestic Product (GDP) at factor cost in 2004-05 base year prices for 2004-05 and 2009-10. Since the industry wise employment growth rate per year (in percentage) has been already computed for 2004-05 to 2009-10, therefore, the researcher has computed industry wise CAGR (in percentage) of output for the same period in order to compute elasticity of employment which has been computed by the formula:

$$\text{Elasticity of employment} = \frac{\text{CAGR of employment (\%)}}{\text{CAGR of output (\%)}}$$

It is found by this formula which states that how employment growth varies with 1% growth in GDP in Indian economy during 2004-05 to 2009-10.

3.5.3 Labour Productivity:

Productivity refers to the amount of output per unit of input achieved by a firm, industry or country.⁴ This may be per unit of a particular factor of production like- 'labour productivity' that refers the amount of output per unit of labour. This is key measure of economic performance.

$$\text{Labour Productivity} = \frac{\text{Total Output}}{\text{Total no.of labours' unit}}$$

$$P_l = \frac{Q}{L}$$

Where

P_l stands for total labour productivity of a firm, industry or a country.

Q stands for total output of a firm, industry or country.

L stands for total number of workers who are engaged in same firm, industry or country.

In the present study, to compute the labour productivity, the real gross domestic product (GDP) at factor cost in 2004-2005 base year prices in the level of industries and in absolute figures have been used. At first the researcher has computed productivity through dividing total output by total number of labours for the year 2004-05 and 2009-10 for all industries (Agriculture, Mining and quarrying, Manufacturing, Electricity, gas and water supply, Construction, Industry, Hotels and restaurants, Transport, storage and communications, Financial, Insurance, Real estate and business services, Community, social and personal services and Services). After computing industry wise labour productivity for both 61st and 66th rounds of NSSO, the industry wise CAGR shows the nature of per annum growth of industry wise labour productivity between 2004-05 and 2009-10.

⁴Black, Hashimzade and Myles, *A Dictionary of Economics*, Fourth Edition, oxford University press, 2012, p.325

