CHAPTER 3

METHODOLOGY AND DATA SOURCE

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3.1 Introduction

This chapter dedicates with the methodology adopted in this study. This study analyses not only the recent performance and trends in horticulture crops in India but the export competitiveness of major horticulture crops in India from 2001 to 2015. For the purpose of fulfillment of the objective, this study has utilized the percentage analysis method and Revealed Comparative Advantage Method. The Percentage Analysis Method is adopted for trend and performance analysis and revealed comparative advantage method is adopted for export competitiveness of the horticulture crops in India.

3.2 Techniques Used in the Study

To achieve the objectives of study two techniques has used which are as follows:

3.2.1 Percentage Method Analysis

To achieve the first and second objectives of the study percentage growth rate method has used to analyses the trend and performance of horticulture crops and their export performance. The following formula has used to calculate and analyze the trend and performance:

$$\text{G.R. of } X = \{(X_t - X_{t-1})/X_{t-1}\} * 100$$

Here, G.R refers to Growth Rate, X_t is value of the current year and X_{t-1} is value of the previous year.

3.2.2 Regression Analysis

It is a statistical tool to examine the relationship between the variables taken in this study. Generally the researchers establish causal effect of one variable upon another variable.

The analysis with a single independent variable is said to be simple regression analysis. General equation for regression analysis is written as follows:

$$Y_t = \beta_0 + \beta_1 X_t + \mathcal{E}_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3.1)$$

Where,

Y_t = Dependent variable

β_0 = Constant term

β_1 = Slope of the independent variable

X = Independent variable

$\mathcal{E}$ = Error term

t = time

In this study the regression analysis has been adopted to examine the trend of taken variables according to time. Here regression has been run separately with all the variables with time. In other words the variables taken in this study are treated as dependent and time is treated as independent.

The above regression equation can be rewritten for trend analysis as follows:

$$Y_t = \beta_0 + \beta_1 T_1 + \mathcal{E}_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. \quad (3.2)$$

Here,

Y_t = Dependent variable

β_0 = Constant term

β_1 = Slope of the independent variable

T = Time as an independent variable

$\mathcal{E}$ = Error term

Indicators taken in this study are area of fruits and vegetables, production of fruits and vegetables, export of quantity and values in India. In each variable time is taken as independent variables.

When, area of fruits and vegetables is taken as dependent variable and time is independent variable then the equation (3.2) will be written as

$$Y_t = \beta_0 + \beta_1 T_1 + \mathcal{E}_t \qquad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{ (3.3)}$$

Y_t = Dependent variable i.e. area of fruits and vegetables

β_0 = Constant term

β_1 = Slope of the independent variable

T = Time as an independent variable

$\mathcal{E}$ = Error term

The regression equation for other variables can also be written as equation (3.3).

3.2.2 Revealed Comparative Advantage Method

To fulfill the third objective of study which access the export competitiveness of major horticulture crops in India, Revealed Comparative Advantage Method has used which is given by Balassa is the best measurement of export competitiveness. It is an index which is based on Ricardian comparative advantage theory. It was founded by Bela Balassa in 1965. Balasa's Revealed Comparative Advantage Method is used to evaluate the patterns of trade and specialization of countries in commodities which they have a competitiveness edge. It has been broadly used in economics literature. RCA index can be calculated annually which reveals the past trade data and through which trends in competitiveness in a sector or commodity can be identified. Balassa (1695) assumed that in the absence of comprehensive data on factor costs, export performance could be used to reveal the comparative advantage of individual countries. The RCA (known as the Balassa index) is defined as:

$$R_{ih} = (X_{ih} / X_{it}) / (X_{wh} / X_{wt})$$

Here,

R_{ih} = Revealed comparative advantage ratio for India in product h.

X_{ih} = India's export of product h

X_{it} = Total exports of India

X_{wh} = World export of product h

X_{wt} = Total world export

The RCA ratio is the share of a given product in a country's exports to its share in world exports. A country is said to have the revealed comparative advantage in the product if the ratio is greater than one (RCA>1). The ratio is less than one (RCA< 1) Implies a disadvantage. The ratio is influenced by the individual countries' internal and external trade policies like government interventions, import restrictions, subsidies and high tariffs, etc. thus, a disadvantage may not be a true picture of the comparative status, but it may also indicate that the trade policies are not in favor of the export of the produce (Mittal, 2007).

3.3 Data Source of the Study

 To achieve the objective of the study, secondary data from 2001 to 2015 has been collected from various sources like data related to Area and Production of Fruits and Vegetables has been taken from National Horticulture Database 2014 (NHB) and Horticultural Statistics at a Glance 2015, Horticulture Statistics Division Department of Agriculture, Cooperation & Farmers Welfare Ministry of Agriculture & Farmers Welfare Government of India. The quantity and value of export of Fruits and Vegetables has been obtained from Agricultural & Processed Food Products Export Development Authority (APEDA), Ministry of Commerce and Industry Government of India and Export-Import Data Bank, Department of Commerce Ministry of Commerce &Industry. World trade data have been taken from International Trade Statistics 2001- 2015(ITC).

3.4 Variables Used in the Study:

To fulfill the objectives of the study various variables has taken which are as follows

- ➢ Area of Fruits and Vegetables (thousand hectares)
- ➢ Production of Fruits and Vegetables (thousand metric tons)
- ➢ Productivity of Fruits and Vegetables (metric tons/thousand hectares)
- ➢ Quantity of Fruits and Vegetables (metric tons)
- ➢ Values of Fruits and Vegetables (rupee lakhs)