Chapter One
INTRODUCTION

SPICES entered into human history around 5000 years before Christ and spice trade has a legacy of 5000 years. Such was the value of spices that hundreds of caravans pulled by camels used to tread across the continents from Kozhikode, Goa and the other parts of East to the ancient spice markets in Babylon, Rome, Alexandria and Carthage. The history of east is full of myths and adventures in which spices were the heroes and heroines. Wars were fought for the supremacy in trade, particularly spice trade. Never one can exaggerate the significance of spices to the West and East. For the East, it was the source of income and variety of other materials, and for the West, it was their life and without the stock of it, it was wild to dream about the winter to come.

From time immemorial, the prosperity and development of societies and regions were attained through the exchange of goods between different civilizations of far reach regions and even between the continents. For centuries, India had been the dream land for navigators to reach in. In ancient and medieval periods, India was the epicentre of global trade. For a long period of time, India has been endowed with much land and labour, but capital was a scarce factor. With this background, India remained better off in the production of natural resource intensive and labour intensive commodities. After medieval period, before independence, India’s export mainly composed of plantation crops and raw materials, while the imports consisted of some consumer goods and other manufactures. At that time the structure of India’s foreign trade was a reflection of systematic exploitation by the Westerners.
After independence, till 1985 India had followed a strict import substitution policy. But it was a total failure for the industrial development of the country. It led to the rapid increase in the country’s import bill and deficit in the balance of payment. This condition compelled India to shift its policy towards an export oriented or outward looking strategy. Prior to reform, India’s trade policy was an example of dualism. Several policy measures were against export, but at the same time some measures were taken to encourage export. India’s trade policy shift from import substitution to export promotion was not sudden. During the reform period, the country’s policy was a mix of both import substitution and the export promotion. It gradually shifted towards export oriented growth as the East Asian Growth Model (Paul W Kuznets, 1988). Restrictions on manufactured exports were removed between March 1990 and March 1993. However, the control on the export of agricultural commodities acted as significant obstruction to the growth of Indian export.

The World Trade Organisation (WTO) came into being on 1st January 1995. A new era of international trade had begun with the establishment of WTO. Even though India introduced policy reforms in July 1991 encompassing various sections of the economy including external trade, trade restrictions on agricultural products were lifted subsequently through different policies and programmes like EXIM Policy, Foreign Trade Policies, Agricultural Export Zones, Special treatment of Special Economic Zone and Regional co-operation and Integration.

India has a well known reputation as the land of spices from time immemorial. Indian spices have much popularity for their flavour in both domestic and foreign markets. They are widely used in different medicines because of their carminative, preservative and
stimulative properties. For long, the country had produced almost all the known spices in the world. Each and every state in India had been gifted with some spices. The diverse agro climatic conditions existing in different parts of the country provide an enormous scope for cultivation of different variety of spices. Out of the 109 spices listed by ISO, India now produces as many as 75 spices in different varieties; of them 52 are under Spices Board of India.

Spices may be dried fruits, roots, seeds or barks of vegetable substance primarily used to flavour, colour or preserve food. “Spices and Herbs are dried parts of various plants cultivated for their aromatic pungent or otherwise desirable substances. This consists of rhizomes, bulbs, barks, flower buds, stigmas, fruits, seeds and leaves. They are commonly spoken of loosely as spices, spices seeds and herbs. Spices are highly esteemed, fragrant or pungent plant products of tropical and subtropical regions, the dominant spices of trade including cardamom, cinnamon, cloves, ginger and pepper. Spices seeds are the tiny aromatic fruits and oily seeds of herbaceous plants including aniseed, caraway, cumin, fennel, poppy and sesame. Herbs are the fragrant leaves of such plant as marjoram, mint, rosemary and thyme” (Encyclopaedia Britannica).

Spices are distinguished from herbs. Herbs are the sub set of spices. They are generally derived from fresh or dried leaves for flavouring or as garnish. But in the definition given by ISO there is no distinction between spices and herbs.

The details of Spices Export of India during the period 2008-09 to 2012-13 is provided in Table 1.1 and Fig 1.1
Table 1.1

India’s Spices Export during 2008-2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity in Tonnes</th>
<th>Value in Million Rupees</th>
<th>Value in US dollar</th>
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<tr>
<td>2008-09</td>
<td>470520</td>
<td>530025</td>
<td>1168.40</td>
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<tr>
<td>2009-10</td>
<td>502750</td>
<td>556050</td>
<td>1173.75</td>
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<td>2010-11</td>
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<td>2011-12</td>
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<tr>
<td>2012-13</td>
<td>726613</td>
<td>1211275.8</td>
<td>2,212.13</td>
</tr>
</tbody>
</table>

Source: Spices Board of India (2014), Kochi

Figure 1.1

India’s Spices Export during 2008-13

Source: Spices Board of India (2014), Kochi
Today India produces number of spices with different varieties. They can broadly be classified into five categories.

1. **Major Spices:**

   Black Pepper, Cardamom (small and large), Ginger, Turmeric and Chillies.

2. **Seed Spices:**

   Coriander, Fenugreek, Celery, Fennel, Caraway, Aniseed, Dill seed, Poppy seed, Mustard, Parsley and Ajwan.

3. **Tree Spices:**

   Tamarind, Cinnamon, Nutmeg/Mace, Clove, Tejpat, Cambodge, Kokam, Curry leaves, cassia, All spices, Asafoetida and Pomegranate.

4. **Herbal Spices:**

   Manjoram, Thyme, Basil, Oregano, Savory, Tarragon, Rose marry, Horse Radish, Hyssop and lovage.

5. **Miscellaneous Spices:**

   Vanilla, Garlic, Saffron, Juniper berry, Pepper long, Greater Galaga, Curry Powder, Spice Oils and Oleoresins and Spice Mixtures

**1.1 STATEMENT OF THE PROBLEM**

The importance of export to economic development has been well documented in empirical as well as theoretical literatures. Various empirical studies proved that, export leads to greater capacity utilisation, incentives for technological improvement, economies of scale, and efficient management because of competitive pressures from foreign counterpart. The classical and neo-classical
The economists’ argument that international trade could be an engine of growth has come to fore. The trade policy is integrally tied up with the overall development strategy (Kruger O.A 1998).

Export has assumed an important place in the development process of any economy. For achieving rapid growth, a minimum of foreign exchange is necessary for a developing country like India. The three important sources of foreign exchanges are-Export Earnings, Foreign Aids and foreign Investment. Due to the heavy restrictive conditions imposed by the donor countries, the prospects of foreign aids are not bright. Foreign private investment leads to ruthless exploitation of natural resources of the country by multinational corporations and increase in the external influence on the policy and economy. Hence the safest and reliable source of foreign exchange in the long run is export earnings.

India now exports both traditional and non traditional items. Traditional products are the products whose production process is highly intensive in semi and unskilled labours, Since this is the factor with which India is relatively well endowed, export of such products are argued to have been the obvious choice. For centuries India has comparative advantage in the production of labour and natural resource intensive commodities.

As stated by Kamal Nath, the former Minister for Commerce and Industry, Government of India, ‘the primary purpose is not the mere earning of foreign exchange, but the stimulation of greater economic activity’. ‘Studies have suggested that nearly 14 million jobs were created directly or indirectly as a result of augmented exports in the five year period of Foreign Trade policy 2004-2009’ (Anand Sharma 2009).
In the modern globalised world, trade and exchanges between different countries have become inevitable. But Indian foreign trade scenario is not very encouraging even though India is an emerging economy. The share of India in the world trade is still very low. In GDP terms, India is the second fastest growing country, but she ranks 19\textsuperscript{th} in merchandise export and 13\textsuperscript{th} in merchandise import with only 1.7% share in total world export, while import stands at 2.5%. Recently, India is trying to gain new markets and increase competitiveness in new areas, but it is losing markets in some traditional areas.

India is known to the world as “The Home of Spices” from time immemorial. She has natural comparative advantage in the production of many spices. The demand for spices and spice products are continuously increasing both in the domestic and foreign markets.

But the present international trade scenario, after the establishment of WTO and the subsequent trade liberalization due to the adoption of new EXIM Policy, Foreign Trade Policies, Agricultural Export Zones, Special treatment of SEZ, Agreement on Agriculture (AoA) and regional trading blocs like AFTA, Bangkok Agreement, SAFTA etc. had a major impact on India’s agricultural trade. During this period, the levels of comparative advantages of Indian agricultural commodities in the global market have changed significantly and they responded to the new world trade scenario differently.

In this study, the researcher attempts to examine the changing pattern in the export performance, growth rate, trend, composition, direction and comparative advantage of spices and
spice product trade during WTO regime and also compares the performance of export during the Pre-WTO and WTO period.

1.2. HISTORICAL BACKGROUND

“The history of cultivation and use of spices is perhaps the most romantic story of any vegetable product”

(Henry N Ridley 1912).

Indian spices are well known all over the world for their taste and strong aromatic flavour. The history of the world and world trade actually begins with the history of Indian spices. So the history of the spices is as old as human civilization. It is the history of the discovery of new land, wars won and defeated, empires built and brought down, treaties signed and flouted, and the rise and fall of different religious beliefs and practices. So great was the value of spices in ancient and medieval times. Spices were often equated with gold and precious metals at that time.

So any study about spices and spice trade will be incomplete without mentioning their historical significance and background.

1.2.1 Spices in the Ancient Period

During the ancient period, people had used spices mainly to enhance or change the flavour of their food. They had also used some spices in order to preserve food like meat for long without refrigeration. Historical evidence shows that, in the sixth century AD, cloves were used to preserve food without refrigeration. Studies show that cloves contain a chemical called ethanol that prevents the growth of bacteria. It is also a natural antibiotic and is still used to preserve food like Virginia ham. Some other spices were also found to have preservative qualities. Historical evidence also shows that, when
spices were not available during certain periods, people could not preserve their food for winter and this led to starvation. Such was the importance of spices in ancient times.

‘Spices such as black pepper, turmeric, cardamom and cinnamon have been known and produced in India for thousands of years, with references made in early sacred writings and evidences in excavation sites’(Pruthi.JS 1993). The Vedas, The Bible and The Quran have referred to Indian spices directly or indirectly. The earliest literary records which mentioned Indian spices are the Rig-Veda (around 6000BC),Yajur Veda, Sama Veda and Atharva Veda. Epics such as Ramayana and Mahabharata (Mahindru S.N1982) and both Old and New Testaments of the Bible (Good News Bible, 2010) have mention spices in various places. It is interesting to see that Prophet Mohammed (PBUH) was also an experienced spice merchant (Rosengarten 1969).

Excavations in the Indus Valley area had found that spices were used before 1000BC.Arthasastra written by Kautilya in the third century BC has a number of remarks about spices such as pepper, cardamom, ginger, fenugreek, coriander and mustard (Khan.MT 1990).

India had trade relation with ancient civilisations such as Greeks, Romans, Assyrians, Babylonians, Phoenicians, Chinese and Arabs during the ancient period.

Spices were imported by ancient Egyptians. The major spices of India such as black pepper, cardamom, turmeric and cinnamon have been known in Egypt for thousands of years (Rosengarten, 1969). Ancient Egyptians had used various spices for flavouring their food, in cosmetics and also for embalming their dead bodies as mummies.
There are number of historical evidence showing the importance of South India as a source of superior quality spices even in the period of Babylonian and Assyrian civilizations (Balaraman Nair, 1989). It was stated that when Queen Sheba visited The King and Prophet Solomon in 992 BC, She came with a great company of camels that carried spices and gold in abundance and precious stones.

Ancient Greeks used Indian spices such as pepper, ginger and cinnamon for various purposes. The very commonly used word ‘AROMA’ is the ancient Greek word for spices. The importance of medicinal values of spices was recognised by Greek medical science also. Hippocrates (460-377 BC), the father of modern medicine, Theophrastus (372-287 BC), the Greek Philosopher and scientist and Dioscorides (40-90 AD), the father of Botany, all had explicitly mentioned spices in their writings. All these clearly indicate that spices were an unavoidable part of the life of human beings even from the very early stage of history (Rosengarten, 1969).

Ancient Romans used spices for many purposes. They used spices not only for flavouring and preserving food, but as cosmetics also. History says that ancient Romans used pepper corns as currency to pay taxes, rents, tolls and even dowries as it was a valuable thing (Mahindru S.N1982). Some early written reports of Pliny (AD 23-79) mentioned even the price of pepper at that time (Rosengarten 1969). He had given the prices of certain varieties of pepper in the report. According to him during that period, the price of black pepper was 4 Denarius, White pepper 7 Denarius and long pepper 15 Denarius per pound. At that time Rome had an active spice trade with Arabia and India. Critical observers blamed that there was a constant drain of gold from Rome to the East. This drain
was in the form of high prices paid for spices, gems, silk, sandal wood and balms.

The spices trade between India and Rome came to an end when Arabs conquered Alexandria in 641 AD. The extension of great influence of Muslim philosophy from Spain (in the west) to China (in the East), by the middle of eight century AD was mainly because of the trading habits of the Arabs.

1.2.2 Spices in the Medieval Period

During the medieval period, India was known to the foreigners as a land of Maharajas, ivory, diamonds, fine textiles, and spices. During this period, spices were extremely expensive and were in great demand by those who could afford them. A pound of ginger was worth a sheep, a pound of mace was worth three sheep or a half cow. Pepper was the most valuable spice at that time. It was counted out in individual pepper corns. A sack of pepper was said to be the worth of a man’s life. It is well known that lure of Indian spices were largely responsible for the discovery of a sea route in the 15th century.

During the age of geographical discovery, Columbus, Vasco de Gama and others had tried to find out more direct sea routes from Europe to the lands of spice production areas in Asia. Vasco de Gama’s success in it intensified an international power for control of the spice trade. From then, for three centuries Western European nations such as Portugal, France, Spain, Dutch (Holland) and England fought with each other in order to capture the spice producing areas of East. So the history of spices in the medieval period is the story of exploration, adventure, conquest and fierce naval rivalry. Therefore the story of spices in the East Indies during the 17th and 18th centuries was written in blood. This was due to
the ruthless competition and the resultant rivalry between the Dutch, the British and Portuguese for gaining domination over the spices producing countries of the East (Rosengarten 1969).

1.2.3 Spices in the Modern Period

The international spices market until the 16th century was exclusively centred in India. But during the subsequent centuries the situation has changed considerably. With the discovery of the American continent, new spices entered into the world market including allspice, bell and chilli pepper, vanilla and chocolate as products. Similarly new spice producing countries entered into the trading group. Substantial spice plantations were established in different parts of the world such as in countries of the Central America, South America, Africa and East Asia. Now cardamom is produced in large quantities in Guatemala; pepper is being produced in Brazil, Vietnam, Indonesia, Madagascar, Malaysia, Thailand etc. China and Pakistan are the major countries competing with India in the international ginger and chilli market. India is facing severe competition from Morocco, Egypt and Iran in the field of coriander, cumin seed and aniseed.

In the modern era, a large number of initiatives were undertaken by the government since 1950 in order to develop new technologies for spice processing and packaging and to address agronomic and marketing problems of Indian spices. India assumed a leadership role when a sub-committee on spices and condiments was formed in the early 1960s at the International Organisation for Standardisation (ISO). International Pepper Community was established in the year 1972 in which India was one of the founder members. As an apex body for the promotion of spice export, the Spices Board of India was established in the year 1987. It regulate
the export of spices and provide a coordinated support to the development and promotion of India’s spices export, ensuring quality control and giving export licenses. In the year 1988, the All India Spices Exporters Forum was formed as an industry association to liaise with the Spices Board and other governmental departments and agencies. It provides technical, regulatory and other information to its members.

Another important development in the history of Indian spices trade is the beginning of international pepper exchange under the auspices of IPSTA-ICE. It was inaugurated in the year 1997 at Cochin, Kerala. It is regulated by Markets Commission of India, and functions under a steering committee constituted by the Government of India for the purpose. It is expected that, the exchange would help India to regain the past glory of becoming the centre of the world spice trade (Rosengarten 1969).

1.3 SCOPE OF THE STUDY

The study ‘Export Performance of Indian Spices in the WTO Regime: A Disaggregated Analysis’ has been undertaken to evaluate the performance of major spices and spices products in the WTO regime. India is known to the world as the ‘Home of Spices’ from time immemorial. India is the world largest producer, consumer and exporter of spices and spice products. India produces more than 70 types of spices and exports them to more than 150 countries around the world. A study about all these spices and spices products, and also the export to all countries, are beyond the scope of the study. In this study the researcher has selected only 13 spices and spice products for the performance study and only major countries of the export destination for analyzing the changing the direction of trade.
1.4 OBJECTIVES OF THE STUDY

The basic objective of the study was to examine the changes in the export performance of Indian spices during the WTO regime. Considering the recent Indian as well as world trade scenario, the study was initiated with the following specific objectives.

1. To analyse the growth in the export of major Indian spices and spices products during the Pre-WTO and WTO period.

2. To examine the instability and trends in the growth rate of spices export during the Pre-WTO and WTO period.

3. To examine the changes in composition and direction of Indian spices export during WTO regime.

4. To find out the export performance of various spices and spices products during WTO regime and to compare the performance with Pre-WTO period.

5. To find out the prospect of major items of spices and spices products to earn foreign exchange.

1.5 METHODOLOGICAL ISSUES

1.5.1 The data

The study is exclusively based on secondary data. No specific geographical delimitation is brought into effect in this study on account of the peculiarity of the research topic. So, time series data related with spices and spice products of both India and other countries, obtained from official sources have been taken into account. For obtaining data, 6 digit level Harmonised System (HS) of classification of UN is considered.
Data were obtained from

1. COMTRADE Statistics 1988 to 2013
2. WTO Statistics, 2014
3. FAO Trade Year Book 1985 to 2014
4. FAO Production Year Book 1985 to 2014
5. Spices Board, Cochin 1985 to 2014
6. RBI Hand Book 2014
7. RBI Bulletin 1985 to 2014
8. Directorate of Commercial Intelligence and Statistics 1985 to 2014

1.5.2 Tools and Analytical Models

The data collected were analysed using different analytical tools which have been widely used all over the world. Some statistical and mathematical software like Excel and Gretl were used for analysis.

The important Statistical and Mathematical tools, and analytical models used in this study are-

**Simple Growth Rate**

The growth of exports of major spices of India during the WTO period and pre-WTO were calculated on annual basis and average of five years, ten years and eighteen years using simple growth rate.

\[ \text{Growth rate} = \frac{(V_{\text{Final}} - V_{\text{Initial}})}{V_{\text{Initial}}} \times 100 \]
Where, PR = Present Rate or Growth Rate
V present = Present Value and,
V past = Past Value

**Average Annual Growth Rate (AAGR)**

\[ AAGR = \frac{(\text{Growth Rate in Period A} + \text{Growth Rate in Period B} + \text{Growth Rate in Period C} + \ldots \ldots \text{Growth Rate in Period X})}{\text{Number of Periods}} \]

**Compound Growth Rate (CGR)**

The growth of export of major spices and spice products for a period of 28 years from 1985-86 to 2012-13 were also computed using Compound Annual Growth Rate (CAGR) analysis. For comparing the growth rate between the Pre-WTO and WTO period, two periods were taken as 1985-86 to 1994-95 as period I and 2003-04 to 2012-13 as period II.

\[ \text{CAGR} = \left( \frac{\text{Ending Value}}{\text{Beginning Value}} \right)^{\frac{1}{\text{# of years}}} - 1 \]

**Standard Deviation**

The extent of variability in the growth rate of export of major spices over the years, were analyzed through Standard Deviation

\[ s_{N} = \sqrt{\frac{1}{N} \sum_{i=1}^{N} (x_{i} - \bar{x})^2} \]

**Method of Least Squares**

The export growth trend of various spices and spice products from 1985-86 were obtained by using the method of least squares.
This method is an algebraic device and widely used. It gives us a straight line from which the sum of the deviations on either side will be equal to zero.

\[ Y = a + bX \]

Where

\[ b = r \frac{\text{STDV}_y}{\text{STDV}_x} \]

\[ r = \frac{\sum xy - \frac{\sum x \sum y}{N}}{\sqrt{\left( \frac{\sum x^2 - \frac{\sum x^2}{N} \right) \left( \frac{\sum y^2 - \frac{\sum y^2}{N} \right)}}} \]

\[ a = \bar{Y} - b \bar{X} \]

- \( b \) = The slope of the regression line
- \( a \) = The intercept point of the regression line on y axis.
- \( X \) bar = Mean values of X
- \( Y \) bar = Mean values of Y
- STDV x= Standard Deviation of X
- STDV y= Standard Deviation of Y

**Balassa’s Revealed Comparative Advantage (Export Performance Ratio)**

The performance of various spices and spice products during the WTO period and the comparison of the performance during the Pre-WTO and WTO period are done using the RCA analysis. RCA Indices used to find out the products in which the country has comparative advantage, by comparing India’s spices trade with world average.

\[ RCA = \frac{E_i/CE}{W_i/WE} \]

- \( E_i \) = Export of \( i^{th} \) commodity from the country
- \( CE \) = the aggregate export of the country
- \( W_i \) = total world export of \( i^{th} \) commodity
- \( WE \) = aggregate world exports during the period.
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RCA takes the value between zero and positive infinity. If RCA >1, the country has comparative advantage in export of that commodity and vice versa (Balassa 1965). Change in RCA between two periods shows the change in comparative advantage in that product during the same period.

**Elasticity of Value with respect to Quantity**

For comparing the performance under the Pre-WTO and WTO regime and also to find out the prospects of earning foreign exchange, Spice exports during 1985-95 (Period I) were compared with that of 2003-13 (Period II).

Changes during the two periods were analysed by change in Quantity (QC) and value (VC) and elasticity of value with respect to quantity.

\[
EV = \frac{VC}{QC} \\
VC = \frac{(Value \text{ in period II} - Value \text{ in period I}) \times 100}{Value \text{ in period I}} \\
QC = \frac{(Quantity \text{ in period II} - Quantity \text{ in period I}) \times 100}{Quantity \text{ in period I}}
\]

EV >1 means unit value realization from exports of that particular product is on increase. Higher the EV, greater is the prospect for that product to earn Foreign Exchange for that country (Datta 2001)

**Chow Test**

In order to find out whether there is a structural change in the growth of spices export between two periods-Pre WTO and WTO, a popularly used test known as ‘Chow Test‘ is used
$$F = \frac{(RSS_R - RSS_{UR})/ k}{(RSS_{UR})/ (N_1 + N_2 - 2k)}$$

The test statistic follows the F distribution with k and $N_1 + N_2 - 2k$ degrees of freedom.

Where,

- $RSS_{UR} = RSS1 + RSS2$
- $RSS_R = RRS3$
- $RSS_1 = \text{Residual Sum Squares (for period 1985-86 to 1994-95)}$
- $RSS_2 = \text{Residual Sum Squares (for period 1994-95 to 2012-13)}$
- $RSS_3 = \text{Residual Sum Squares (for period 1985-86 to 2012-13)}$
- $K = 2$, $n_1 = 10$, $n_2 = 18$

Here the null hypothesis is that there is no structural change between the pre-WTO and WTO period. If $P > 0.05$ the hypothesis- ‘there is no structural change between two periods’ is accepted. If $P < 0.05$ the hypothesis is rejected it has to be concluded that there is a structural change in the growth of export of spices during the two periods.

**1.5.3 Period of the Study**

The study is based on the time series data of 28 years from 1985-86 to 2012-13. Since the data related with the world export of spices are available from 1988, for the calculation of RCA Index only a period of 23 years from 1990 to 2012 is considered. This period includes both the Pre-WTO period WTO period and also the latest data related with the study.
1.6 CHAPTER SCHEME

This research work is presented in seven chapters. The first chapter deals with the introduction, research problem, history, scope, objectives, methodology, limitations and scheme of the study. The second chapter deals with an extensive review of relevant literature for providing a holistic view of the topic and to find the research gap. In the third chapter an attempt is made to give an overview of India’s spices export. The fourth chapter discusses the growth, trend and variability of spice export during the WTO period. Similarly, the fifth chapter provides the composition and direction of Indian spices export during the WTO Regime. In the sixth chapter the performance of spices export during the WTO regime is discussed using Revealed Comparative Advantage and Elasticity of Value with respect to quantity approach. Chapter VII summarizes the study and provides the emerging suggestions.

1.7 LIMITATIONS OF THE STUDY

In the social sciences, studies used to face various limitations. So this study is also not free from limitations. The important limitations of this study are:

1. This study is exclusively based on secondary data because of the nature of the study

2. Data are obtained from different sources. So there has been problem of obtaining sufficient homogeneous data from all sources

3. The study is confined to the export of major items of spices and major countries of destination, not all spices and countries
4. Even though the analytical models used in this study are widely used methods all over the world for studying this type of problems, they are also not free from limitations.

5. The data obtained from different sources based on different classifications are used for studying different objectives.

6. UN Comtrade data are available only from 1988 to 2012; RCA is computed only for a period of 23 years.