

CHAPTER 1: INTRODUCTION

1.1: INTRODUCTION

Honey, the nature's golden wonder, is the first biological sweet (Nagaraja & Rajagopal, 2009, p. 1) and only sweet of the ancients (Root, 1980, p. 20). Honey retained its primary position until it was superseded by sugar obtained from the sugarcane which originated in India. In fact, it was with the coming of Alexander the Great to India that sugar was known to the world. It is believed that during 326-325 BC Nearchus, Alexander the Great's admiral, brought news of the reed which gives "honey without bees" (Crane, 1999, pp. 492-493). Compared to sugar or for that matter other sweets, honey is the sweetest natural food. Needless to say that honey is an important part of human day to day lives. In India, however, it has a greater relevance as it has many cultural and religious attachments. Thus, we find the usage of honey in every occasion right from birth to death. In most of the Indian culture, the first food that the new borns are fed with, besides mother's milk, is honey. It is believed that honey enhances the voice quality of a child. Honey is also used during the after death rituals wherein the mouth of the dead is smeared with honey. Hence, honey has become integral part of human daily lives. Even the common phrases have mention of honey. As such we use the phrase 'Honeymoon' and even address out dear ones as 'honey'.

Beekeeping has an ancient history. It is related to human life from the time immemorial. This relationship is established through religion, culture, status, business, taxation and so on. Since the Vedic age, honey has continually been in use as holy item, as well as, in our household or for religious purposes. As such honey has become a house-hold item and people keep honey at least in a small quantity for various purposes, including many home-made remedies for ailments.

The value of honey can be understood from the fact that it has multi-purpose usages right from health, nutrition to medicine. However, humans have been wasting a large quantity of honey at daily basis throughout the world. This results primarily due to the lack of knowledge and ability to convert natural source (nectar) into finished product (honey). In other words, human beings are inept in producing and collecting honey directly from flower. Honey is created from "Nectar" and only flower can produce it. Though there are many insects that collect nectar, it is only the honey bee that has the ability to collect the nectar, convert it into honey and save it for future. As such, since ancient times, humans have been engaged in the practice of collecting and producing honey indirectly by keeping honey bees. This rearing of honeybees to produce and collect honey is called "Bee keeping".

Bee keeping is also known as “Apiculture”. It is a part of agriculture and is also a firm under ‘cottage industry’. Apiculture as such has the ability to develop the economy of a region or a country. Moreover, this Eco-friendly industry requires ignorable amount of land, labour and capital at micro level so that the rural people can also develop their economic condition through this industry. Consumption of honey and its by-products are increasing every day. Since demands increase there is enough potentiality to increase marketing facilities along with the area of internal and external market. Our neighbouring country China has been occupying a lion’s share of world market of apiculture product for long time (FAO estimate 1998-2012). In spite of having native bee species “*Apis Cerena Indica*”, sufficient population, sufficient sources of nectar, India occupies a small share of world production and market. But it can be possible to improve the production and market of the products of this industry by taking various measures of production and Marketing procedures. There is much scope to adopt suitable measures through which production can be improved and marketing can be developed. The beekeeper can earn a considerable amount for their products if suitable marketing strategy is adopted. They can organize and can improve marketing strategy to make a suitable condition for fixing reasonable price, reasonable profit and trouble less market. There is another opportunity to generate enough employment through this apiculture industry considering the fact that the self-employment is an ongoing need in our country. The apiculture industry’s developmental activities can be carried on by the co-operative societies in West Bengal especially in South 24 Parganas and North Dinajpur districts in order to develop the economic condition in this area. This study emphasizes on the marketing of apiculture industry mainly through co-operative society in west Bengal. This study emphasizes on the importance of honey and honey bees, production, sales procedure, problems and prospect of apiculture industry.

Most of Indians do not know the multifarious uses of honey. For this reason where per capita consumption of honey of World is 200 grams (Pradip, 2005, p. 109) and per capita consumption of Germany is 1800 gms, whereas, the per capita consumption of India is only 8 gms (Agrawal, 2014, p. 134). The world has made significant change in raising food consumption. By 2050, world population is projected to grow in between 9 and 10 billion people. One of every three bites of food eaten worldwide depends on bees like pollinators. So we have to increase our bees’ population to save our population. India needs minimum 75 lakhs bee colonies just to pollinate 12 major crops. As against this very urgent need we have about 12 lakhs bee colonies in India, at present. Moreover, bees are disappearing around the

world for reasons like – Global warming, Deforestation, Random use of insecticides and pesticides etc., Pollution of water and air and Steady decline of trained beekeepers, research and extension workers. Through research work (Abrol, 2002, pp. 244-248) it has been known that a man can maintain 5-10 bee-colonies without employing any extra effort in addition to his own occupation. But till today to protect the nature people are not interested in keeping a bee-colony. Middlemen plays vital role in these marketing activities. The poor producers are the actual pillars in the field and form the basic unit or the very backbone of the apiculture activities. But they are always indebted to the clever middlemen. There are only seven beekeepers cooperative societies in West Bengal out of which two co-operative societies in South 24 Parganas district. One is 24 Parganas Bee-Keepers' Cooperative Society Ltd. and the other is Baruipur Apiculture Industrial Co-operative Society Ltd. There is enough possibility to increase the number of members in every bee-keepers cooperative society in West Bengal. North Dinajpur has no beekeepers cooperative societies till date. But this district has enough potential to establish beekeepers cooperative society.

The local name of honey is 'Mou'. For this reason, who goes to forest for collecting 'Mou' is called 'Mouley'. They have been doing this job from almost 3 to 4 ancestors. But in recent few years this profession has been very tough. It is essential to introduce modern bee-keeping practice with this age old profession. Otherwise this profession will be ruined in near future. This study will attempt to help popularize honey and by-products of beekeeping. The study also will help to know how middlemen exploit beekeepers and Mouleys. How bees are important for pollination, peoples and planet, this study can give us an idea. Existence and nature of sales procedure of honey as well as selling efficiency of the cooperative societies of West Bengal also have been analyzed in this study. This study can help to explore the unexplored area of production and marketing. Proper marketing planning, channel and beekeeping popularization process can also be developed through this research work. This study can give some measures for protecting bees, agriculture, horticulture, beekeepers, Mouleys, beekeepers cooperative societies and beekeeping industry as a whole.

1.2: SHORT AND LONG STATEMENTS OF PROBLEM ISSUES

1.2.1: Short Statement

Apiculture marketing through cooperatives in West Bengal with special reference to South 24 Parganas and North Dinajpur districts.

1.2.2: Long Statement Including Problem Perspective

For producing and collecting honey, keeping of honey-bees is called “Bee-keeping”. Bee-keeping is also known as “apiculture”. This eco-friendly and agro-based industry has the ability to develop the economy of a region or a country. Developmental activities of this industry can be carried on by the cooperative societies. This study emphasizes on the marketing of apiculture industry mainly through cooperatives in West Bengal with special reference to South 24 Parganas and North Dinajpur Districts.

The Apiculture industry in West Bengal has to suffer many problems. The beekeepers’ co-operative societies are trying their best to contribute towards production and marketing activities of apiculture products. In spite of their sincere care for this industry, some of the problems remain unresolved such as ----

- There is no significant increase in the number of members in the co-operative society during the period 1998-1999 to 2015-2016.
- Co-operative societies have been suffering from scarcity of capital for a long time. (1998-1999 to 2015-2016)
- A considerable portion of the members of co-operative societies does not sell honey always only to the co-operative societies, which hinders the development of the co-operative societies.
- Insufficient number of field-men.
- High production cost.
- Lack of mechanism for price fixation.
- Insufficient training facilities to the beekeepers.
- Declining trend in rate of net profit and sales.
- Want of skilled management.
- No tools of management accounting are followed seriously by the management of the co-operative society to find out the overall profitability in marketing activities and efficiency of management.
- No steps have been taken to popularize honey as a quality food in addition to medicinal purpose.
- No special care has also been taken for these eco-friendly and agro-based products.
- General people of the area make themselves indifferent to the development of co-operative societies.

A study of process of marketing of apiculture product and improvement of Apiculture Industry as a whole through co-operative societies in West Bengal is needed to overcome the problems stated above. The study has the intention to review and examine critically the problems in this field. The preparation of the study is to assess specially the marketing efficiency of the co-operative societies and also to examine its' impact on the economic development of West Bengal.

1.2.3: Universe of study for the Research Problem

Though the apiculture industry covers a considerable portion of globe, the universe of study is limited to the state of West Bengal. This study covers the marketing activities of cooperatives which are formed and registered within the jurisdiction of West Bengal.

1.3: THEORETICAL AND POLICY FRAMEWORK OF PROBLEM

1.3.1: Broad Classification of Problem Area

Cooperative Marketing.

1.3.2: Brief Justification for Classification

This study is related to the marketing of Apiculture industry through cooperative societies in West Bengal especially in South 24 Parganas and North Dinajpur Districts. This study wants to explore the unexplored area of marketing. Proper marketing planning, appropriate marketing channel, sound marketing strategy as well as rational pricing system can be developed through this study. The general farmers, rural people and even housewives can get a way of earning through different facet of apiculture industry. They can know about the services of cooperatives. This study attempts to make an appraisal of the role of marketing of apiculture cooperatives registered in West Bengal and to assess the impact of this industry on the economic development.

1.3.3: Categorisation of Problem

Theoretical character: Micro and Macro

Problem Domain: Production, Consumption and Distribution

Study Approach: Supply-side as well as Demand-side

Methodological approach: Positive

1.3.4: Brief Justifications for Categorisation

This study critically analyzes honey production, import and export of India and makes a comparative analysis with other countries of the world at macro level. At the same time, it emphasizes on the activities of raw honey producers, middlemen and cooperative societies at grassroots levels.

Besides production and value addition of honey at different stages, consumer behaviour, marketing constraints and different distribution channels are also studied here.

Critical analysis is also made on beekeepers, middlemen and cooperative societies who produce and supply honey as well as on the consumers in this study.

This research work is mainly deals with positive approach. This study is based on evidences and suggestive measures are detected to deal with specific problems on the basis of such evidences. Therefore, the recommendation is considered as conclusive one.

1.4: REVIEW OF LITERATURE

1.4.1: Review Approach

There are two types of literature review, namely, conceptual literature and other research literature. In this review both are studied. Research literatures also are viewed in two separate points of view, namely, directly related studies in the literature and spatially / contextually relevant empirical research. After making clear cut boundaries and writing down the problems and areas of study literatures are reviewed extensively. Journals, conference proceedings, reports, books, articles, research thesis, serials, monographs also are tapped here.

1.4.1.1: Theoretical / Development Perspective on the Research Problem

This book, "Great Ideas in Management", (Parkinson, Rustomji, & Sapre, 1993) has outlined in simple way the basic ideas of some of the world's greatest management experts like F.W.Taylor, Frank Gilbreth, Elton Mayo, Robert Owen, Mary Follett, Henry Fayol, Oliver Sheldon, S. Rowntree, Col. Urwick, Abraham Maslow, Douglas McGregor, Herbert Simon, Peter Drucker, Harold Koontz and J.K.Galbraith, who lead almost one hundred years ago to present-day. These ideas have not been described as a whole but only to the extent which are

relevant to today's management outlook. This book has given sound practical suggestions which are of relevance and help to today's managers.

The book "Cooperative Management – Principles and Techniques" (Nakkiran, 2006) has described the nature and concept of management. It has especially traced on cooperative management. Functions of management as applied to cooperatives, area management as applied to cooperatives, functional areas of management as applied to cooperatives, issues in cooperative management has also been described in this book. Under 'area management as applied to cooperatives' the author has chosen production management, material management, inventory management, financial management and office management. In this book, management of marketing cooperatives, industrial and processing cooperatives as well as dairy cooperatives have been described elaborately. Managerial problems of Indian cooperatives also have been described here.

The subject matter of the book, "Rural Cooperative and Economic Development" (Bhuimali, 2003) written by Anil Bhuimali, is rural cooperatives and their impact on the rural economy. Anil Bhuimali has described that cooperation is an instrument of growth in various countries, he has also discussed general experience on cooperation in India, cooperative movement in west Bengal, government initiatives in cooperative credit society. He also has made an assessment of impact of cooperation. He has analysed in his book about a private initiative cooperative credit society and its impact. For proper understanding of the activities of such societies in rural India and their consequent impact on the economy and society three case studies have been elaborately presented. One case study presents the impact of a limited-liability society, another the study of an unlimited-liability society and the third one is related to an agricultural marketing society of rural west Bengal. He has depicted a mockery of cooperative marketing and also has given an evaluation of cooperative legislations, recommendation and warnings in his book.

This book, "Indian Economy Since Independence" (Kapila, 2013) is consisting of various famous authors, which is edited by Uma Kapil. It has five chapters. First chapter is on planning, institutional framework, constraints and role of the state, second chapter is on agriculture, third chapter is on industry and infrastructure, fourth chapter is on the external sector and last chapter is on growth and structural Change since 1950 and assessment of the growth Experience. With other issues of Indian economy the editor has discussed on planning and the market, role of planning in a market economy. She has noticed that besides state

intervention and the market mechanism, there is the third alternative way of coordinating economic activity i.e. cooperative action. Development itself opens up new opportunities for social cooperation. The recent expansion of cooperative action on a global scale (involving concerns such as environmental protection, the debt crisis and world peace) is one example of this process. Just as the state and the market are highly complementary institutions (even though they are often seen in antagonistic terms) a similar relation holds between cooperative action on the one hand and the state or the market on the other. Among various authors, the authors Pulapre Balakrishnan, Ramesh Golait and Pankaj Kumar have discussed on agricultural growth in India since 1991; the authors S.Mahendra Dev and N. Chandrasekhara Rao have emphasized on agricultural price policy, farm profitability and food security; Depak Mazumder and Sandip Sarkar have discussed on the employment problem in India and the phenomenon of the missing middle; T.S. Papola and Alakh N. Sharma have discussed on labour and employment in fast growing India: issues of employment and inclusiveness; C.H.Hanumantha Rao has discussed on inclusive growth: role of socio-political factors comparative experience of India and China and the authors Angus Deaton and Zean Dreze have discussed on poverty and Equality of India: A reexamination.

Dr. C.B.Gupta has discussed in his book, "Organisation And Management", (Gupta C. B., 1993) about different aspects of management. He has discussed basic concept of organization and management, nature and type of organization, historical development of management, process and functions of management, organizational objectives and social responsibilities of management. Each function of management like planning, decision-making, control, decentralization, staff relation, communication, motivation, leadership, coordination etc are also discussed in the book. More important is that he has given here some case studies.

The authors (Kotler, Kartajaya, & Setiawan, 2010) have said about new marketing concept, marketing 3.0 in this book entitled "Marketing 3.0". They have written here that over the years marketing has evolved through three stages that we call Marketing 1.0, 2.0 and 3.0. Many of today's marketer still practice marketing 1.0, some practice marketing 2.0, and a few are moving into marketing 3.0. The greatest opportunities will come to marketers practicing 3.0. Now we are witnessing the rise of marketing 3.0 or the value driven era. Instead of treating people simply as consumers, marketers approach them as whole human beings with minds, hearts and spirits. Increasingly, consumers are looking for solutions to their anxieties about making the globalized world a better place. In a world full of confusion they search for companies that address their deepest need for social, economic and environmental justice in

their mission, vision and values. They look for not only functional and emotional fulfillment but also human spirit fulfillment in the products and services they choose. Marketing 3.0 goes beyond “messaging” customers to cover how a business defines and represents its values for a variety of stakeholders. It explores how brands have an impact on issues such as poverty, socio-cultural change, and environmental sustainability. It also looks at how value-driven marketing affects employees, channel partners and shareholders. To understand marketing 3.0 better, it is needed to examine the rise of three major forces that shape the business landscape toward marketing 3.0. The three major forces are the age of participation, the age of globalization paradox and the age of creative society.

The authors (Kotler & Kotler, 2013) in their book entitled “Market Your Way to Growth - 8 Ways to Win” have told that companies now find themselves operating on a two-track global economy. It is unlike the past economy- the one in years before 2008. During that time the world’s countries typically all rose together and then dipped together as the global economy became increasingly interdependent. There is no doubt that the world today has countries operating at two different levels (low and high) and at two different speeds (slow and fast) relative to economic growth. The authors have suggested eight ways to grow in the present market. The ways are- grow by building your market share, grow through developing committed customers and stakeholders, grow by developing a powerful brand, grow by innovating new products, services and experiences, grow by international expansion, grow by mergers, acquisitions, alliances and joint ventures, grow by building an outstanding reputation for social responsibility, grow by partnering with government and NGOs.

This book entitled “Kellogg on Marketing” (Tybout & Calder, 2010) has included different discussions of a group of intellectuals, who are the authors of this book, on marketing strategy. Their writings have discussed under three sections -developing a marketing strategy, implementing the marketing strategy and perspectives on contemporary issues in marketing. This book has depicted the different areas on marketing like the changing nature of distribution including new digital channels, advertising on blogs, web-sites, Youtube and more, the effects of social media on branding, marketing to customers in underdeveloped or developing markets, innovating successfully in an age of short product life-cycles and adopting a customer focus throughout your organization etc.

The author, in his book – “The Next Asia - Opportunities and challenges for a new globalization”, (Roach, 2010) has looked at the global economic crisis and the debate over

globalization. He has emphasized China's challenges in rebalancing its economy and at the same time he has examined U.S. - China tensions over trade policy. In this book the author has analyzed the additional challenges which are facing Japan, India and Korea. He has noticed that in the greatest beneficiary of globalization, Asia continues to take an important indication from the broader global environment. He has identified that Japan's technological prowess, China's ownership transition driven by state-owned enterprise reforms, India's large number of world-class competitive companies, Korea's still powerful chaebol System, Vietnam's newly emerging manufacturing capabilities, Indonesia's rich resource endowments, and so on. He has said that Asia is a mosaic of different resource endowment, different human skill sets, different approaches to economic development and different market and regulatory systems. The author has thought that India has many serious problems, especially the negative effects of poverty, but India's macro and micro economics are finally coming together in a powerful combination. India is now on the move and could well be one of the world's most exceptional economic development stories over the next three to five years.

The author (Scott, 2012) has said in his book, "The New Rules of Marketing and PR" prior to the Web, organizations had only two significant choices to attract attention- buy expensive advertising or get third-party ink from the media. But the Web has changed the rules. Organizations those understand the New Rules of marketing and PR develop relationship directly with consumers. Now the Web has opened a tremendous opportunity to reach to place of consumers directly with targeted information that cost is a fraction of big-budget advertising costs. This book has described about how the web has changed the rules of marketing and PR, Web-based communications to reach buyers directly and action plan for harnessing the power of the new rules. Under 'Action plan for harnessing the power of the new rules' the author has noticed various important things like about how to create for your buyers, how Web content influences the buying process, mobile marketing and social networking sites and marketing etc.

In the book 'God Goes to Work' (Zender, 2010) the author has wanted to say that Current successful companies and individual have begun to instead design their organizations around the principles of quantum physics and relativity. This change has given rise to the "quantum executive" : a highly motivating and connected individual whose twin goals – improving his business's profit margins as well as the lives of his colleagues – fully support one another. The quantum executive is able to do this because he has tapped into an age-old process that

has governed the principles of a good business deal since the very beginning – the spiritual transactions. A spiritual transaction maximizes the potential of every business deal, and is the foundation of the kind of company that can compete in the new economy. These transactions foster a positive atmosphere that allows its members to work harder and faster, and with increased innovation. The ideas in this book show you how to simplify and maximize the quality of your life and organizations to which you belong. The ideas provide the guideline necessary to excel in a twenty first century economy and to relinquish the unnecessary stress and anxieties so commonly associated with the business world.

The authors (Singh & Singh, 2011) have said, in their article entitled “CRM: An Ultimate Tool in Marketing Management”, that Building relationships with customers becomes necessary in the present scenario of globalization and internationalization of markets. Based on different analysis, the system of CRM enables to determine the best strategies and their effective implementation that company should apply for particular customer groups. CRM is the system that integrates management of customer groups, establishment and management of marketing companies referring to marketing concept, especially relationship marketing. CRM is a system to enhance and support the efforts of the company as a whole by organizing and analyzing information. The author also depicted that if implemented correctly, CRM can be a great tool for improving profitability, customer satisfaction and reducing overall costs. Generally speaking, the cost of implementing CRM is quite high. Today implementing CRM is such a major project that most executives are apt to think that CRM is a software tool that will manage customer relationship by itself. Actually in real sense, CRM is the bounding of customer strategy and processes, supported by the relevant software, for the purpose of improving customer loyalty and eventually, corporate profitability.

The authors in their article, “Indian Agricultural Marketing- A Review” (Rehman, Selvaraj, & Ibrahim, 2012), have depicted that Indian agriculture are moving from commoditization to commercialization and drives it towards market orientation. They have said India can claim to have largest network of agri-business cooperatives in the world, engaging in performing manufacturing, procurement and marketing of agricultural produce. These have proven to occupy important place in our economy. The government must examine its policies and regulations with a view to strengthen the marketing network and ensure that prices are being determined on competitive basis and markets are being manipulated. Using modern ICT can bring out better solutions as it can facilitate agricultural marketing functions and processes

include buying and selling, payment, grading, standardization, transportation in an efficient manner.

The authors (Entehabu & Rao, 2014) have discussed in their article, “Experiences and Challenges of Cooperative Marketing in Ethiopia (A Case of Meki Batu Fruit and Vegetable Growers’ Cooperative Union, Oromia Region)”, that pooling is the most commonly used system for allocating members’ income for fruit and vegetable cooperatives. Pooling is a typical cooperative practice in which decisions on marketing and price are made by cooperative organization. All members’ products are collected to be sold by the cooperative’s marketing people. Meki Batu Vegetables and Fruits growers cooperative union was established in 11 May 2002 in Oromia regional state, East Showa Zone, Dugda district Meki Town. It is located 135km south East of Addis Ababa and 60km from the nearby Mojo town. The purpose of its existence is to alleviate input supply problems, facilitate microfinance and mitigate market risks for vegetable farmers. The operational areas of the union include Adami Tulu, Dugda, Bora, Ziway Dugda and Adama district. The study has made on the cooperative union to assess the practices and challenges regarding the production and marketing services it provides to its members. The study has revealed that the union is trying for providing production inputs like chemicals, seed, water pumping motors and trainings, market information and link with outside markets.

This paper entitled ‘Problems and Prospects of the Cooperative Movement in India under the Globalization Regime’ (Das, Palai, & Das, 2006) intends to analyze the problems prospects of cooperative sector in India under free marketism. It is now increasingly recognized that the co-operative system in India has the capacity and potentiality to neutralize the adverse effects emerging from the process of globalization. After economic liberalization under the new economic environment, cooperatives at all levels are making efforts to reorient their functions according to the market demands. The failure of the public sector in several cases is a worrisome trend. Privatization has also failed to make an impact in the rural areas. Therefore there is great hope on the cooperative sector. The paper has examined the causes of slow progress and highlights the emerging role and challenges of the cooperative sector. In comparison to the step-motherly treatment of the past, cooperatives are now considered an important plank of development. The government is committed to cooperative development. The cooperatives have inherent advantages in tackling the problems of poverty alleviation, food security and employment generation. Cooperatives are also considered to have immense potential to deliver goods and services in areas where both

the state and the private sector have failed. The paper has focused on several pitfalls and shortcomings like: poor infrastructure, lack of quality management, over-dependence on government, dormant membership, non-conduct of elections, lack of strong human resources policy, absence of professionalism, etc. It has suggested to evolve strong communication and public relations strategies which can promote the concept of cooperation among the masses. It should also push forward by developing effective strategies to overcome existing weaknesses and for continuing growth of the sector. The paper makes an assessment of the future prospects of the cooperative sector of India.

The book entitled “Marketing Channels” (Coughlan, Anderson, Stern, & El-Ansary, 2005) has dealt with marketing channels, structure, functions and channel design with demand, supply and competition. It has discussed also about channels and their implementation and performance measurement. The authors have stated the retailing, non-store retailing, electronic channels, whole selling, chain management and franchising.

This book,” Marketing Management Analysis, Planning, Implementation and Control” (Kotler, 1991) has dealt mainly with the understanding of marketing management. The author has analyzed marketing opportunities, researching and selecting target markets, designing market strategies and organizing, implementing, controlling marketing effort.

The article entitled “Marketing of Co-operative Products: Challenges and Social Benefits” (Anbumani, 2007) has discussed about the concept of cooperative in details. He has enumerated the situation of cooperative in India, their development, merits, prospects, challenges and needs. The author has stated the social benefits of the cooperatives.

The books, “Cost Accounting”, (Banerjee B. , 1994) has depicted about Concept of cost. Analysis and classification of cost also have been clearly elaborated. Different costing technique has also been discussed in this book. Marginal costing is a technique of ascertaining cost used in any particular method of costing. According to this technique variable costs are charged to cost unit and the fixed cost attributable to the relevant period is written off in full against the contribution for that period. This book has given concepts about marginal cost. In marginal costing the author has depicted about nature and scope of marginal costing, break even chart, margin of safety and other aspects related to marginal costing. Differential cost analysis, standard costing, decision making also have been discussed in the book.

Professor Bhabatosh Banerjee (Banerjee, 2002) has discussed in his Books “Financial Policy and Management Accounting” about various financial policies which are required for a business concern. Every business requires finance and this should be properly utilized to gain optimum value. This book has discussed about sources of finance, working capital management, accounting ratios and financial analysis, cost of capital, capital structure theories and planning, investment decisions, cost concepts, management decisions.

In the “Management Accounting” book, (Gupta & Sharma, 2005) Shashi K Gupta and R K Sharma have given the concept and meaning , scope, nature and other various aspect of Management accounting. They have also described about financial statements, funds flow statements and cash flow statements, marginal costing, working capital, cost of capital, capital budgeting.

S.P. Jain and K.L. Narang in their book entitled “Cost and management accounting” (Jain & Narang, 2008) have said in detail about nature and scope of cost accounting, cost analysis, concepts and classifications, nature of management accounting, financial statements, analysis of financial statements, ratio analysis, marginal costing, applications of marginal costing and differential cost, capital budgeting decisions.

Dr. Anjan Bhattacharyya in his book (Bhattacharyya, 2000) “Practice in Management Accounting” has discussed about origin of accounting, recent trends in the development of accounting, profile of the present progress of accounting, nature and management accounting, ratio analysis, business finance and capital structure, cost-volume-profit analysis.

In the book ‘Advertising – Theory and Practice’ (Chunawalla, Kumar, Sethia, Subramanian, & Suchak, 2006) the authors have discussed about advertising as a tool of communication, role of advertising in marketing mix, kinds of advertising, economic aspects of advertising, social aspects of advertising, market segmentation, targeting and theme identification, advertising budget, campaign planning, creativity and psychology in advertising etc. the authors have also shown the processes of construction of an effective advertisement.

The book, “Financial Decision Making: Concept, Problem and Cases” (Hampton, 1977) mainly has dealt with the financial analysis. It has discussed about the risk and return, financial securities and markets, ratio analysis, working capital management, profit planning, capital budgeting and leverage. The author has stated the financial problems and decision making with the help of case studies.

The book, “Environmental Science” (Santra, 2006) has emphasized on environment science, resource and eco-systems, pollution, current environmental issues, environmental economics and education. The author has discussed about the sustainable agriculture and sustainable development.

The main objective of this study, “CRM : An Ultimate Tool in Marketing Management”, (Sing & Singh, 2011) is to realize the importance of Customer Relationship Management (CRM) in the present scenario of globalization and internationalization. The authors have said that rationale approach is viable reasonable approach which is based on natural values related to betterment of humanity. No doubt recent practices have changed but the rationale approach demands honest dealings and proper CRM and supply of proper material which are in the interest of the customers as well as proving the integrity of the manufacturers and suppliers.

1.4.1.2: Directly Related Studies in the Literature

The author, Eva Crane, (Crane, 1999) who was director of the International Bee Research Association for 35 years, has provided extensive coverage of historical and methodological information about bees, beekeeping, and honey in the book entitled “The World History of Beekeeping And Honey Hunting”. The author has offered a fascinating account of bees and their complex relations with both human beings and animals. The book has explored how bees, honey and other bee products have been gathered and utilized throughout the world. It is an excellent source book with chapters regarding honey-storing insects throughout the world, the origins of hive beekeeping in ancient world, controlling bees, drinks made from the fermentation of honey, and beeswax etc. Over 400 black-and-white drawings, diagrams, and woodcuts have been illustrated in the book.

Kshitish Chandra Das Gupta, (Das Gupta, 1945) the author of the book entitled “The romance of scientific bee-keeping”, is a great contributor for development of modern beekeeping in West Bengal. This book is one of the oldest books on modern bee-keeping in India and it is the first book on modern beekeeping written by an Indian from 24 Parganas of the state West Bengal. It is a hand book as well as guide book which is helpful for beginners and apiarists. The author in his book has described about composition and properties of honey, bee and beekeeping at a glance, honey bees in India, hives and appliances, management of apiary, feeding of bees and handling of bees, spring management and surplus of honey, honey flow and extraction of honey, wild honey, process of blending of honey, Bee

wax, process of moving stocks, procedure for increasing bee colonies, storage and retail packing of honey. He has estimated about possibility of commercial beekeeping in India. Contributions of different provinces of India in honey supply in past also have been depicted in this book. He has discussed further about legal standard of honey.

The monograph entitled “Monograph on Traditional Sciences and Technologies of India – Honey Industry” (Suryanarayana, 1994) consists of few valuable discussions under the following heads - Honey industry in India, Summary, Introduction, Ancient Beekeeping, Recent Past, Current Trends and Emerging Scenarios, Apiculture Technology (Part-1, Part-2, & Part-3), Material Resources, Human Resources Scene, Market, Policy Needs, Looking Back and Looking Forward, Development Plan. Research workers, teachers and the students of beekeeping also will find enough material for their interest in beekeeping from this monograph. In the chapter ‘Market’ the author has discussed various aspects of the apiculture industries relating to marketing. This chapter has included Production and Consumption, Bee-wax, Honey, Consumption of Honey, Product Quality and Reliability, Common Adulterants of Honey, Honey – a natural Product with no substitute, Use of Common substitutes in Industry, Local and non-local Market performance: Forest Honey, Apiary Honey, Market Preferences, Price structure, Political social and economical lessons from the market: Neglect of the industry, Beekeeping – on Agricultural Activity, Honey in Religion and Medicine, Honey in social and cultural Traditions, Quality versus Price, competition between Rock bee and Apiary Honeys and Assistance to the Beekeeper. This monograph will serve as a ready reference to all stakeholders of bee keeping. The information which is given in this monograph will help to run a long way in tapping the potential of beekeeping in India.

Rachel D. Carlson in his PhD thesis, (Carlson, 2015) has demonstrated the prevalence of the bee as a symbol and source of comparison throughout antiquity. He has looked at diversity of genres and authors in order to offer a better understanding of the ideas that informed the uses of bee imagery in classical literature. The thesis mainly has included three chapters. The first chapter offered an exploration of the uses of the bee as a symbol in Greek and Roman mythology and showed that the bee was thought of as a creature capable of crossing boundaries and processing associations with the realms of the living, the dead, the earth, and the heavens as well as particular connections with Zeus, Prophecy, Delphi. In addition to these ties to death and rebirth, the bee was used as a symbol of fertility and production, which was connected to the underworld and ideas of death and rebirth. The second chapter has provided an overview of the bee as a political and social symbol and demonstrated how the

bee was seen as naturally political, due to the hive's seemingly hierarchical system. The final chapter of this dissertation examines the hive as an emblem of god and evil and how this conception is used in Greek literature to discuss the erotic and women.

“The Complete Book on Beekeeping and Honey Processing” (NPCS Board of Consultants & Engineers, 2015) is a book has written by NIIR Project Consultancy Services(NPCS). This book has included history of beekeeping in India, present status and future about beekeeping, world scenario in beekeeping, the role of KVIC for developing beekeeping in India, beekeeping research set-up, achievements and future strategies, major constraints in beekeeping, bees and their economic importance. Besides these the book has also discussed about morphology, anatomy, colony organization and life cycle of bees. This book has given an idea about beekeeping equipments, seasonal activities and social behaviour of honey bees, food of the honey bees. To get idea about migratory beekeeping this book has provided information on bee flora and honey flow periods, Seasonal management of honey bee colonies, migratory beekeeping, diseases of bees and their enemies. Bee hive products, bees and agriculture, non-apis bee pollinators, pesticidal poisoning to honey bees, bee pasturage, queen rearing and artificial queen bee insemination, beekeeping and ancillary industries, handling bees, marketing of bee products have also been included in this book. Honey and honey bee is the part of environment. Honey bees - environmental quality indicators and Honey analysis, these two chapters have given a clear concept about bees' requirement in nature. Promotion of beekeeping in Kerala, Punjab and Himachal Pradesh also has described in this book. Conclusion and future strategies has given a way of future development in beekeeping. This book has given few bee forages in India and at the same time list of important beekeepers and suppliers of beekeeping equipments in different states.

The book “Beekeeping Industry in Rural Industrialization” (Soundarapandian, 2009) consists of some discussions on Beekeeping a rural industry, Rural industrialization and Khadi and Village Industries Commission (KVIC), Honey production and beekeeping industry, Beekeeping industry and rural industrialization and Policy implications. M. Soundarapandian has depicted in his book “Beekeeping Industry in Rural Industrialization” that Beekeeping in India is mainly forest based and decentralized industry. Beekeeping is an ideal activity for development as a subsidiary occupation providing supplementary income to large number of rural, hilly, tribal populations and also for agriculturists and horticulturist because of rich flora available in the country. The present book gives a clear picture about the growth and development of rural industries after implementation of New Economic Policy in India. The

performance of the Rural Employment Generation Programme implemented by the Khadi and Village Industries Commission has been critically analyzed and a special analysis on the role of beekeeping enterprises in rural industrialization is also presented in the book. The book provides valuable and suitable measures for rural industrialization through the Beekeeping rural enterprises, which will be useful to the policy makers.

The author in his book, “Madhu Mom Moumachhi” (Dutta, 2001) has enumerated about the utility of beekeeping, history of beekeeping, place of honey bees in the animal kingdom and suitable species for rearing, morphology and anatomy of the honey bees, honey comb and life cycle of the honey bee, colony life and behavior of honey bee and environmental influence on it. She also has given details on bee pasturage and relation with agriculture. She has depicted about honey, wax and other bee products. Beekeeping in artificial way, apiary and its management, seasonal management of apiary and methods of collection of different bee products, these all have been emphasized in her book. She has clarified bee diseases and enemy of the honey bee, effects of natural and pesticidal poisoning to honey bees. She has discussed about honey bee and cross breeding experiments and various researches on honey bees.

The report “entitled India’s market opportunities for imported fresh and processed foods” (Madras Consultancy Group, May 2009) has depicted that the market for imported honey is growing rapidly in India. China is the largest supplier of natural honey to India and accounts for around 83.5 per cent of India’s total import of natural honey. The study has focused on the different aspects associated with the growth and prospects of the imported foods market in India and it reviews, an overview of the Indian horticulture and food processing sector, current status and trends in India’s imported food sector with focus on products that are mostly imported, import of food products and countries of origin, overview of the food retail sector in India, distribution structure, logistics and infrastructure development, pricing structure and tariffs as well as regulatory and policy framework in India. This report has given views about Indian agriculture and food processing sectors, distribution channels and logistics, overview of production and consumption in major sectors, overview of the food retail sector in India, growth of retail in India, evolution of food retail in India, retail models in India, profile of food retail stores in India, distribution structure, logistics and infrastructure development.

Relationship exists between Bees and Humans. In ancient time for procuring honey human applied the technique named “Bee-killing”. Thereafter “Bee-having” has come. Now Beekeeping practice is developed. This book, “Small Scale Beekeeping” (Gentry, 1982) has depicted about the details of these. The book “Small Scale Beekeeping” has elaborately discussed about the reasons behind the development of beekeeping. This book has give plan about beekeeping project as an integrated activity, beekeeping as an educational activity. The author has also depicted types of bees, climate and beekeeping, the essence of beekeeping, the bee space, types of hives, some considerations before starting, management practices of beekeeping and also about honey, beeswax, pollen, bee brood and others like diseases, pests, and insecticides. Main thing is that author has thought that beekeeping also works well in cooperatives. He has said many cooperatives have beekeeping projects as part of their activities. In some cooperatives, beekeeping is the sole activity. He has said that in some cases, beekeeping cooperatives have been very successful.

The author (Lord, 2001) has detailed in this article, “Armenian Honey - The Status of Honey Marketing Honey Quality and Quantity the Beekeeping Industry in Armenia” about current beekeeping situation in Armenia. He has argued that beekeeping remains a cottage industry in Armenia and young men are entering beekeeping because it is viewed as a positive economic opportunity. He has said about size of industry. He has given Armenia beekeepers’ hive numbers range from 1 to 300 per beekeeper with a median size of 50 hives. He has argued that 5 – 6 hives are considered sufficient to maintain a family at a minimal living standard of \$30 per month (yield of 15 kg/hive sold @\$5/kg). He also has given detail about honey prices and marketing. He has told that honey is sold privately to “friends and neighbors”. Surplus honey is taken to Yerevan to sell through family networks privately or is fed back to the bees. Customers provide containers for honey. Prices range honey is from \$4 - \$6 per kg which is usually depending on local supply and demand. There is no organized wholesale honey market and a fragmented retail market in Armenia. The beekeepers yield honey range from 5 – 30 kg per hive per year, 15 kg per hive per year is a fair median yield. Bulk honey is stored in 10 – 30 kg aluminum milk cans. There is little bulk honey in storage. Poly floral honey is produced by the Armenian beekeepers, meaning it a mixture of floral sources rather than being from one species of plant. He has depicted the problems listed by beekeepers of Armenia by region and also about organic honey.

The report entitled “Competition for World Honey Market: an Alberta Perspective” (Competitive Intelligence Unit , April 2001) has shown that a new retail environment exists

in Alberta where honey consumers are approaching for ever-lower prices while urgent suppliers to be more efficient than reliable. The report has revealed that there are competitive threats to honey from new health food types of sweeteners and there are also opportunities for new uses of honey. Confusion and uncertainty in the US market is due to (1) ongoing dumping and countervailing cases against Argentina and China and, (2) the countries 2000 crop loan deficiency payment (LDP) programme. Alberta's honey industry can be competitive in the global context. This study has provided comprehensive analysis of the competitiveness of Argentina, China, the United State, and Alberta in global honey markets. This research has been organized according to the effect and impact of six competitive forces which are the bargaining power of buyers (packers, food processor, and retailers), the bargaining power of suppliers (include suppliers of feed material, bee packages and queens, Barrels, etc.), the threats of substitutes (like Jam or corn syrup), the opportunities posed by complements (tea, Breakfast cereal, and health food) and lastly the rivalry among existing global competitors and the threat of new entrants or competitors.

The authors contend in their article entitled "The Competitiveness of China's Honey in Target International Markets Compared with Argentina" that recently, China (Song & Jensen, 2014) has faced increasing competition in honey trade from Argentina in its three target markets: the US, Japan, and EU. Various measures of competitiveness can draw inferences on the changes that have taken place in trade over the last two decades. The authors have used the measures of Target Market Share (TMS), Unit Import Price (UIP), Quality Competition Index (QCI), and Regional Revealed Symmetric Comparative Advantages (RRSCA) to evaluate the competitiveness of China's honey compared with Argentina. The results show that China's honey is more competitive in terms of UIP and less competitive based on the QCI and RRSCA measures in all of its target markets. On the other hand, China's honey is disadvantaged in the US market under the TMS measure because of anti-dumping provisions that have an effect on the trade. At the same time, China has expanded a larger market share in the Japanese honey market compared to Argentina. This growing advantage may be explained by the happening of annual bilateral meetings for beekeepers, processors, and government officials. After suffering setbacks in 2002 due to food safety and quality concerns, China's honey has been gaining advantage in the EU market as it has improved its level of food safety and quality and gained the confidence of EU consumers. Increased domestic demand, appreciation of the Chinese Yuan (CNY) and governmental trade policies are among factors that have affected the global honey trade.

In this book, “Beekeeping An Indian Perspective” (Abrol, 2002), author has emphasized that bee keeping is ideally suited to the rural areas because it utilizes the available resources which otherwise go waste. The success of beekeeping depends upon understanding of their biological behaviour and proper management techniques. This book has been written with the objective to provide information to those who wish to make beekeeping as their hobby and or profession. Entrepreneurs and even layman also, will find an opportunity through this book of great utility. The contents of this book have included the history and scope of bee keeping, systematic position and anatomy, honeybee species, colony organization, beekeeping equipments, social behaviour, bee flora, manipulation of colonies, seasonal management, mass rearing of queens, crop pollination, pesticide management, beehive products, diseases and enemies, beekeeping and ancillary industries, conclusion and strategies. This book will be highly useful to field extension workers and officials, persons who are directly or indirectly associated with beekeeping, younger generation who wish to adopt it as a hobby or profession, research workers, teachers and the students who are interested to keep bee. The chapters, ‘economics of beekeeping’, ‘information sources of bees and beekeeping’, ‘honeybees’ products’ are very much useful for research in bee keeping especially marketing. This book has included various tables and pictures, which provide information in a systematic and easier process. In this book under the chapter ‘economics of bee keeping’, the analysis of income expenditure and profit earning capacity of colonies have been placed clearly and objectively which is not only helpful to the beekeepers but also to the researchers especially in production and marketing areas.

This book,” Bee-Keeping In Punjab “, (Sharma & Atwal, 1967) has deal with the contents: ’You a bee-keeper’, ‘Importance of bee-keeping’, ‘What is bee-keeping and how to start it?’, ‘ How to get and where to place bees?’, ‘Beehive and appliances’, ‘What is a bee-colony?’, ‘Seasonal activities’, ‘What is honey flow?’, ‘Food of the bees’, ‘The flight of bees’, ‘The manipulation of bees’, ‘The management of bees’, ‘The enemies of bees’, ‘The diseases of bees’, ‘Prospects of bee-keeping’, ‘Bee-keeping for running colonies’, ‘Suppliers of bee-keeping equipment’ and ‘A list of book on bee-keeping’. Authors have discussed all these fields with some pictures and tables which are helpful not only to the beekeepers, researchers of Punjab but also helpful to all. Income and expenditure analysis as well as year wise profit earning analysis are very sound in this book. Few tables of this book mainly relating to bee-keeping practice round the year, bee flora of Punjab (with nectar and pollen), diseases, symptoms and operation, general recommendations for the safe use of pesticides with respect

to honey bees are very much helpful to all people related to bee-keeping. Everyone can know about the term honey flow and natural diet of bees. In the chapter ‘manipulation of bees’ they have discussed about the instincts of bees, examination of a colony, uniting colonies, introducing a queen, comb space, and the transporting and moving of bees, increasing the number of colonies, the queen mating problems which brings a valuable concept of bee-keeping. Most interesting thing is that this book has noted some information about the sources of bees and various bees’ appliances

This article entitled “New Design in the Honey Agribusiness (the case " Mieleles naturales de la bahia-MR")” (Napolitano, 2006) consists of 6 heads; those are Description of the world market for honey and Argentina’s insertion in it, Situation of Argentina, Objectives, Materials and Methods, Results and Discussion and Conclusions. Under the chapter “Description of the world market for honey and Argentina’s insertion in it” the author has emphasized the importance of worldwide increasing demand situation, average consumption of the world as well as few major countries’ per capita consumption relating to honey. The author has also ranked the countries according to per capita consumption of honey. he also discussed worldwide production of honey and growth in production during 1999 to 2005. He has also described, with bar chart presentation’ the production in major countries and with histogram the volumes of honey commercialized in the global market and with pie-chart presentation participation percentage in world exports of honey. This chapter also includes evolution of Argentine exports of honey and sells by counter. he has also emphasized the price evolution of honey exports. In Chapter2, he has discussed the situation of Argentina about production of honey. He has noted that Argentina has the potential for about 4.5 million beehives. He has described the percentage of participation and yield per beehive of the provinces in the production of honey as well as number of beehives, apiculturists and beehives per producer in the provinces of Argentina. The author has also discussed with bar diagram the evolution of the production of Argentine honey during 1998 to 2003. He has collected data from secondary sources of different official and institutions. In addition he has interviewed different persons of the public and private sector. He has also used SWOT analysis. The case study method is used to describe the business design of the group “Mieleles Naturales de La Bahia”. These are discussed in the chapter ‘Materials and methods’. In the chapter ‘results and discussion,’ he has given conclusions by noting down the Weaknesses, Strengths, Threats and Opportunities of Argentine honey industry, which is relevant to most of the honey producing countries. “Mieleles Naturales de la Bahia” is a group of honey

producers of Argentina. This group has decided to develop three Good Practice Protocols (GPPs) for field production, for harvesting and storage and for commercialization. In the case study of the group few limitations have been recognized, these are marked individualism of the produces, financial limitations, require third party certification and no formal structure. In the chapter 'conclusion' he has appraised the innovative design of "Mieles Naturales de la Bahia".

This thesis (Seagle, 2008) has analyzed about beekeeping and especially the production and sale of honey. Beekeeping is an on-farm diversification strategy that has significance to rural livelihoods in some of the most economically and environmentally marginalized regions of the world. Beekeeping also supports sustainable agriculture since it requires that vegetation and forest cover remain intact. However, the limited resources of beekeepers, including marketing constraints, make it difficult for them to realize the full value of their beekeeping enterprises. This professional paper has focused on the Eco-Morazán Cooperative in El Salvador as a case study to examine the costs, benefits and market potential of three types of certification schemes: 1) Fair Trade, 2) organic, and 3) Rainforest Alliance certification. The paper has drawn on information from existing literature, and extended field visits and informal interviews with representatives from the cooperative. It has concluded with recommendations on how the cooperative can take advantage of the benefits of these certification schemes. This article has included few suggestions for both the cooperative and Rainforest Alliance initiative.

The authors have described in their article entitled "Approaches, methods and processes for innovative apiculture development: Experiences from Ada'a-Liben Woreda, Oromia Regional State, Ethiopia " (Girma, Ballo, Tegegne, Alemayehu, & Belayhun, 2008) that in Ethiopia, apiculture has been practiced for centuries around the country and its potential is well documented. However, apiculture is still operating in traditional ways implying the need for modernization. In spite of its potential, products obtained from this sector have been very low due to lack of improved bee management system, low quality of hive products and lack of skill by beekeepers. To this effect, the Ministry of Agriculture and Rural Development (MoARD) has formulated a honey and beeswax development and marketing plans for the country. The Improving Productivity and Marketing Success (IPMS) of Ethiopian Farmers project has also included beekeeping as one of the priority marketable commodities in a number of its Pilot Learning Woredas (districts) of which Ada'a-Liben woreda is one. The main objective of the apiculture development study undertaken in Ada'a-Liben woreda was

to identify the current beekeeping potentials, problems, and solutions through the introduction of market-oriented modern beekeeping practice. This paper has provided highlights of strengths and constraints of apiculture in Ethiopia. It has described apiculture development potential and works done to improve the existing production system in Ada'a-Liben woreda in particular. It has presented IPMS intervention strategies and the lessons learned in knowledge sharing, capacity building, market linkage, and beekeepers group formation for better production technologies, input supply, and marketing and credit facilitation. This working paper has also provided valuable information and/or shares good thoughts to those who have already launched or planning to launch apiary development program as an alternative income-generating activity at the household level.

A three-part (Yirga & Teferi, 2010) assessment and diagnostic study (Livelihood systems assessment, integrated honeybee management needs assessment and diagnostic survey) has been undertaken from 2006-2008 in Tigray, Ethiopia to identify market and technological constraints facing the honey sub sector and has assessed bee pests and the control measures taken. The article, "Participatory Technology and Constraints Assessment to Improve the Livelihood of Beekeepers in Tigray Region, northern Ethiopia", has mainly emphasized on Market and honey production constraints and technological constraints and problems. The article has mentioned lack of adequate bee forages, poor market, lack of trained development agents, inadequate government support, bee pests and inadequate training are mainly the problems facing the honey sub sector in the region. Because of these and other related factors, the region and the rural beekeeping households have not been sufficiently benefited from the honey sub sector. Hence, the government should give enough attention and take beekeeping into consideration as one of the strategies for reducing poverty and ensuring food security, and further attain MDG (Millennium Development Goals). Adequate supply of modern beehives, encouraging participation of households in beekeeping and increasing their production through planting bee plants, facilitating financial services and regular training, conservation of natural vegetation, introducing multi-purpose trees and strengthen bee forages to increase production of honey and wax on a sustainable basis in the region have been elaborated in this article.

The book entitled "Beekeeping for Poverty Alleviation and Livelihood Security" (Gupta, Reybroeck, Veen, & Gupta, 2014) is a complete book on beekeeping which gives an idea about livelihood development through beekeeping. History of beekeeping in developing world has been discussed in this book. Taxonomy and distribution of different honeybee

species, beehives in the world, beekeeping practices for management of *Apis Mellifera*, beekeeping practices for management of Africanized bees, management of Asian honeybees have been depicted in details by the authors in this edited book. Contemporary issues on beekeeping like prevention of honeybee diseases, role of pollinators in sustainable farming and livelihood security, apitherapy (a holistic healing through the honeybee and bee products in countries with poor healthcare system), impact of environmental change on honeybees and beekeeping, quality control of honey and bee products, technological innovations and emerging issues in beekeeping , bee products: production and processing, quality and regulation of honey and bee products have been discussed in this book.

The author (Smith, 1960) has emphasized in his book, “Beekeeping in Tropics “, the basic principles of beekeeping, apiary equipments, bee management and the crop of beekeeping. He also has given details about honey hunting and primitive beekeeping. Apart from giving detail about commercial beekeeping, he has also depicted about hobbyist and sideline beekeepers, he has said that some of the most experienced and successful bee farmers consider that one man can manage between two and three hundred hives on intensive system of management and a expert beekeeper with two unskilled assistant can manage five hundred hive intensively. He has mentioned the financial aspects of part time beekeeping and commercial beekeeping. He has suggested another way in which beekeeping development can be fostered, which is the formation of beekeeper’s associations for exchange and spread of information on beekeeping. He has also described about publicity and advertisement about honey bee products.

A survey study (Kaura, 2011) has been conducted to study the profitability index of apiculture enterprise in Pathankot, Gurdaspur district, Punjab. The study entitled ” Financial Management of Apiculture: A Case Study” has revealed that Profitability Indices of apiculture were 2.81 and 1.88 respectively in case of inclusion and exclusion of the income received from colony selling. It has showed that apiculture industry is running in profit in both cases. But in former case, the profitability index is higher than the latter case. The research findings have showed that in former case the investment would take 0.35 years to pay back and in latter case it would take 0.53 years to payback the returns, hence it has concluded that beekeeping with colony selling is better investment option and a good source of income . Further, it has also suggested that Govt. of Punjab should encourage the apiculture by giving timely loan at reasonable interest rate, arranging training programmes to create awareness of the latest techniques to the farmers and keeping good procedure of the

financial records, so that the beekeepers can assess the best technique of cultivation for generating quick and high return.

“The Beekeeper’s Bible” has described (Jones & Sharol, 2011) about bees and beekeeping history, understanding the honey bee, practical beekeeping, honey and other bee products, recipes and home crafts, the honey bee in myth and symbol, honey hunting and early beekeeping, scientific advances in beekeeping and the global spread of the European honey bee. The book is as much an ultimate guide to the practical essentials of beekeeping. This is a history book as well as a handbook, and some time it is useful as a cookbook. It also contains a wealth of information about the culinary, medicinal, cosmetic and domestic uses of honey, beeswax and pollen, with no aspect of beekeeping omitted. Detailed instructions for making candles, furniture polish, beauty products, and many honey-based recipes are included in this book.

“The ABC & XYZ of Bee Culture” (Root, 2007) is an encyclopedia pertaining to the scientific and practical culture of honey bees. This book is the premier Beekeeping information sources since 1877. A cyclopedia of everything pertaining to the care of the honey bee gleaned from the experience of thousand of beekeepers, honey bee experts and in author’s own apiary. This book is arranged like as the order of a dictionary.

This document entitled “Integrated Sustainable Business Project – PINS: apiculture productive chain” (Agribusiness Intelligence Center (PENSA), 2008) has aimed to the introduction of a marketing analysis related to apiculture, an economic activity those results in the production of honey and other by-products from the bee’s work. This project report has depicted clearly about features and competitiveness of the Valley of the Sao Francisco and Parnaíba Rivers, cases of companies of the region and analysis of the agribusiness and attractions in those Valleys. It has also discussed about honey consumption, distribution channels, processing and production. The article has pointed out input and hardware needed in the apiarian activity and opportunities of investments in the production of honey in the Valley of the Sao Francisco and Parnaíba Rivers. This project has given a new idea regarding a “cooperatives central” without profit ends which able to organize in an efficient manner, the small producers’ cooperatives, and independent producers. The center of these cooperatives would work as an anchor company in the project. The main role of this center would be to integrate process and commercialize the production of these singular cooperatives, so as to aggregate value and optimize the apiarists’ revenue, affording economic and social

improvement to the apiarists and their families. The role of the single cooperatives would be grouping the producers of the same region and accomplish the same improvement process in the raw material.

Traditional beekeeping (Tiwari P. , Tiwari, Singh, & Singh, 2013) with *Apis Cerana* is widely practiced by rural people in district Chamoli who inherited the tradition from their forefathers and maintain it to this day. It is not a full time pursuit, however, but a supplementary one. Honey is the only product of beekeeping to the villagers. The state of Uttarakhand is extremely rich in bee forage plants, but proper use of this resource is not being made. Since authentic documentation of traditional beekeeping in this region is lacking, the present study is an attempt to record the knowledge and methods of traditional beekeeping as practiced in district Chamoli. This article, “Traditional beekeeping with the Indian honey bee (*Apis Cerana* F.) in District Chamoli, Uttarakhand, India” has revealed that a small proportion (14%) of total families in the district was engaged in traditional beekeeping as a subsidiary with agriculture. Most of the respondents (85%) learnt beekeeping from their parents, elders or from the neighborhoods, 10% developed their own skills through experience, while 5% gained it from training organized by different agencies. This article has also discussed about hives used for traditional beekeeping, methods of attracting and catching swarms, honey extraction, classification of honey, sting protection, colony management, protection from pests and diseases, traditional knowledge about bees, knowledge about bee forage and uses of honey in the study area. In conclusion the study has revealed that traditional beekeeping is a live heritage in the area. Besides using traditional bee keeping, there is a need to adopt modern beekeeping practices. Sectors like, bee management, better extraction and storage practices with the potential of raising the quality and quantity of honey, need to be strengthened which will help in rapid multiplication of *A. carana* colonies.

A study (Tiwari, Tiwari, & Singh, 2013) has carried out in Gairsain block of district Chamoli of Uttarakhand state. The data has collected through the direct interview of local inhabitants by administrating a set of structured questionnaires during the year 2011-2012. The study entitled “Changing Scenario of Traditional Beekeeping in Garhwal Himalaya: A Case Study from Gairsain Block of District Chamoli, Uttarakhand “ has revealed that the number of traditional wall hives and colonies are decreasing with parallel to increasing modern cemented houses. As such the total average number of wall hives/ house has decreased from 11.23 in 1980 to 8.44 in 2010. This average will reach below as the traditional houses will complete their life span in near future. If the trend is not checked, then there will be no wall

hives in the region in coming future. Thus, there is urgent need to conserve the traditional beekeeping to sustain the bee habitat and to provide nesting site for honey bees.

Beekeeping or apiculture (Qaiser, Ali, Taj, & Akmal, 2013) is the preservation of honey bee colonies to get pure honey and helps in pollination. Beekeeping is a useful mean of strengthening livelihoods because it creates a variety of assets. A study was conducted on Impact Assessment of Beekeeping in Sustainable Rural Livelihood in Sargodha and Chakwal district. The main focus of the study, “Impact Assessment of Beekeeping in Sustainable Rural Livelihood”, was to assess the impact of beekeeping training given by Society of Facilitator and Trainer (SOFT) to females in Sargodha and Chakwal district. Capacity building of rural women in beekeeping was the focus and fifteen trainees’ beekeepers were selected randomly from each district for survey to assess the impact of beekeeping in their livelihood. The analysis has suggested that there are some social and cultural barriers which restrict women to go out in the fields for the management practices of beekeeping. For future selection criteria of participants have to be focused and without the involvement of male member they can’t manage this whole activity in a better way. For young females it was very difficult to handle bees, proper colonies management, their supplement feeding, honey extraction, movement of hives etc. Economically, beekeeping increased keepers’ income but the rate of income was very low in the targeted area. Training had to be gender based for sustaining livelihood. There are some problems identified by the beekeepers. Finally the authors have drawn some recommendations for future beekeeping trainings. In not case there was no positive impact of beekeeping training of rural women elsewhere in the project area.

Ethiopia (Ejigu, Gebey, & Preston, 2009) has been amongst the principal honey and beeswax producers worldwide for centuries. Beekeeping in Amhara region could be one way of assisting millions of the region’s farmers to improve their cash income, provide additional food, assist in pollination, generate employment and at the same time produce honey, beeswax and other hive products which can bring foreign currency into the country. This paper entitled “Constraints and Prospects for Apiculture Research and Development in Amhara Region, Ethiopia” has discussed the constraints and the future prospects on apiculture development of the region. The challenges are many but can be overcome while the opportunities are very encouraging. As a conclusion, developing appropriate policy and beekeeping development strategy that would be applicable to the different production systems will ensure the sustainable development of apiculture sub sectors.

The author (Waine, 1955) has told about the sweets which human beings seek in his report entitled “Curative Properties of Honey and Bee Venom”. He has emphasized the private life and public life of the honey bees. He also has described about the keeper of the bees, the tools of the trade relating to beekeeping, procedure to start beekeeping, the plan of campaign, the special manipulations for beekeeping, the process of honey harvest and the troubles involve in beekeeping. He has given the profit and loss account as well as expenditure and receipts accounts where he has noticed that keeping of single colony has no potential to give profit. Atleast ten colonies are required to earn profit from beekeeping. Though he also has noticed a philosophical thought that 10000 to 15000 bees live in a small colony, 60000 bees live in a strong colony and 20000 to 40000 bees live in an average colony. So when any one ultimately own a colony of his/her own, have to remember that he/she is the over-lord and supreme ruler of this microcosm of 40000 or more living creatures and that the power of life and death lies in his/her hands. He has said that this is the place where the major pleasures of beekeeping cannot be seen in a profit and loss account.

Sarvodaya Samiti, Koraput, is a state-level, non-governmental, non-political organization, Registered in 1970-71 under the societies registration act xxi of 1860 and it is committed to the all-round and sustainable development of tribal and other under-privileged communities of the society. This article entitled “Sarvodaya Samiti, (Pradhan, Sarvodaya Samiti., 2004) has described a real-life situation faced, a decision or action taken by an individual manager or by an organization at the strategic, functional or operational levels by analyzing the management case of the Sarvodaya Samiti. This article depicts with few background, staffing pattern of the organization, honey production in local economy, viability of the Samiti, marketing and processing, procurement, some facts about honey, information on ‘Apis Mellifera’ species, procurement plans of rock bee honey, packaging and branding of honey, honey market, product variants of Sarvodaya Samiti and its competitors, market share of Sarvodaya Samiti, Dabur, and others in honey markets of Orissa, comparative prices of different brands, policy/government regulations and some strategic issues to select one among five different alternatives.

The author (Broadman, 1962) in his book, “Bee Venom – the natural curative for arthritis and rheumatism” has discussed about the uses of bee-venom for arthritics, arthritis and rheumatism. He has defined first arthritics, arthritis and rheumatism. Then he has wanted to know about bee venom and its application on arthritics, arthritis and rheumatism patients. The author has given few facts which are related to some of his case histories. He has

analysed and compared the work done in America compared with work done in other countries.

The author (Sharma R. C., 2006) has described about honey in his book, “Honey- Its Value added Products for Human Health”, in details like- honey for human health, characteristics of some natural honeys, properties of honey, medicinal value of honey, processing of honey, honey with some medicinal herbs, utilization of honey in foods, fermented honey (Mead), honey based common products, medicinal honey and honey cosmetics. He has tried to know utilities of honey in human life.

The author (Kshirsagar, 1998) has described in his book, “Friendship with Bees “, about the insects, the rulers of the world. He also has given details about honey bee. He has said honey bee is a perfect social insect and he has described its’ communication which is the basis of social life. He has detailed about the kinship of honey bees with flowers. He has felt about the requirements of making friendship with bees and bee flora and has suggested about how to make friendship with bees and bee flora. He has thought that bees as commercial partners of human and has given details on beekeeping scenario India.

The authors in their book, “Honey As Food, Medicine, Cosmetics and Honey Recipes”, (Ghosh & Ghosh, Honey As Food, Medicine, Cosmetics and Honey Recipes, 1999) have depicted about type of honey, grade of honey, bee-flora and honey. They have detailed on honey as food, food recipes from honey, soft drinks from honey, alcoholic drink or mead from honey, specially prepared honey. Honey as cosmetics, honey with herbs, honey and disease as well as medicinal recipes from honey have been discussed by the author in this book.

The author (Singh, 1958) has said about honey and its elements, honey versus sugar, different uses of honey and tests for purity of honey in his book-“ Honey for Health “ . The author has given details about Indian honey and Indian honey bee races. He has given an idea about honey and beekeeping information. He has also suggested few schemes for popularization of beekeeping.

The authors (Whitehead & Shaw, 1951) have given idea about beekeeping, bee behavior, handling of bees, swarming of bees in his book- “Honey Bees and Their Management”. They have detailed about the parent colony, the honey flow, bees and pollination. By knowing about concepts on health of hive, bee anatomy, queen rearing, enemies of bees, insecticides,

fungicides, the authors have suggested for training about hive management in different seasons. They have also given ideas about nectar and pollen plants.

The book, “Beekeeping Techniques”(Deans, 1963), has dealt with bee breeding, queen rearing, queen appraisal, queen introduction, swarm control, honey production, heather honey production, honey judging, bee disease control and diagnosis, pollen analysis of honey, honey analysis. The author has given advice by providing ideas about different concepts relating to beekeeping to introduce beekeeping with good quality management.

The authors (Eckert & Shaw, 1960) have described in detail about beekeeping in their book entitled “Beekeeping: Success to Beekeeping”. They have given an idea that beekeeping can be taken as occupation, hence they have given the way to start beekeeping. they have enumerated about everything on beekeeping like, beekeeping equipments, sources of nectar and pollen, the colony organization, growth and development of honey bees, anatomy and physiology of bees seasonal management and uses of honey etc. but most important things that they have emphasized on processing, packaging and marketing of honey bee products. They have given details on processing of honey for the retail trade, blending honey for trading, processing of honey for hone markets, labeling of containers and grading honey etc.

The author (Ioyrish, 1974) has discussed in his book, “Bees and People “, about biology of bees, honey and its properties, honey as medicine and remedy, honey in the home, the curative properties of bee venom, the curative properties of beeswax and other bee products etc. Most important is that the author has expressed in his book a method of obtaining vitaminized and medicinal honeys.

The author (Shenoy, 1994) has discussed in his book entitled “Honey: Nature's gift to man “ about various uses of honey like foods, fermented beverages, health food, pharmaceutical application of honey, pharmaceutical formulations, medical and pathological uses of honey and honey in cosmetics etc.

This book entitle “Bees; a book on the biology of the bee-colony and the achievements of bee-science” (Khalifman, 1953) is an important document on experimental research on beekeeping. The author has depicted interrelationship between nature, man and bees. He has given an idea about bees in different continents. Activities inside and outside the beehives, like cycle of duties, divisions of labour, bee dances, the road home, honey and venom, enemies of bees, swarming seasons, have been given details by the author. He has augured

that beekeeping can be a profession. He has depicted also in this book regarding the stages in development of the theory of beekeeping. He has depicted about feeding table, bee clock and bee-calendar.

The author (Manley, 1946) has depicted the essentials of beekeeping in his book entitled “Honey Farming”. He has given details on climate, pasturage and apiary, apiary equipments, breeding of bees, the various seasons of beekeeping, swarm control and summer work, introduction of queen bees, moving of bees, honey harvest, diseases and pests of honey bees. He has given an idea about beginning of beekeeping and has given suggestion for beginners.

The author (Conrad, 2013) has written in his book, “Natural Beekeeping- Organic Approaches to Modern Apiculture” about how one can have healthy hives of bees without using synthetic pesticides, antibiotics or artificial diets. The author has depicted environmental and human threats like poison plants, chemical pollution, biological pollution, theft and damage, globalism and beekeepers error, which polluted bee and bee products. The author has thought that organic beekeeping is significantly needed at present. He has given few ways of organic beekeeping from field to markets. He has given importance on hive management, apiary location, feeding, urban beekeeping, honey harvesting and honey marketing etc.

The researcher (Ezreth, 2010) has pointed out in his thesis a vast profile of honey industry in Kanyakumari District. He critically has emphasized production, rates and other profile of productions of honey. He has analyzed in detail the marketing of honey in the district. In conclusion he has given some suggestions from the point of loan facilities, transport facilities, advertisement. Storage etc. to government and to beekeepers.

The author, N.P.Yoirish, (Yoirish, 1959) has given some general data on bee biology in his book entitled “Curative Properties of Honey and Bee Venom”. He also has described the therapeutic uses of honey, new kind of honey, therapeutic uses of bee venom, curative properties of bees wax, propolies, pollen and royal jelly. He also has shown that beekeeping is a profitable occupation. He has given an idea that beekeeping may be accepted by school student and also by invalids.

This book entitled “Beekeeping For All” (Warre, 2012) has given an overall idea on beekeeping. It has emphasized on the purpose of beekeeping, the benefits of beekeeping, beekeeping is a good school, the bees and bee colony management as well as various corners

of beekeeping. It has discussed on different hives and mainly on People's Hive. The problems of beekeeping, monitoring the apiary, bee diseases, harvesting the honey are also discussed simultaneously in this book.

This guidebook, “Beekeeping Basics”, (Collison, Frazier, Caron, Harmon, & Englesdrop, 2004) is all about beekeeping like understanding honey bee biology, getting started, managing bee colonies for enjoyment and/or profit and is designed to help anyone to become a successful beekeeper. This book has potential to induce everyone to enter in the world of beekeeping.

The article entitled “Traditional beekeeping in Kinnaur district, Himachal Pradesh” (Beszterda, 2000) has discussed about beekeeping from the side of the historical context, the economic context, the technological context, and the political and administrative contexts. It also has discussed the present status and perspectives of beekeeping in Kinnaur district of Himachal Pradesh. In conclusion the author has pointed out the mere act of introduction of hundreds of modern hives to Kinnaur will not solve various problems. The article has also suggested that it would be unwise to neglect Traditional knowledge of beekeepers, which came down from their fathers, in the process of modernization.

This hand book, “Instructions on Bee-Keeping” (Ghosh, 1937) has mainly deal with various impotent aspects of beekeeping like the bee-colony, products of honey bees, keeping honey bees, which bee to keep, frames for combs, manipulating bees, how to procure bees, make a start and some general information regarding beekeeping. it is a helpful guide book for beginners.

This book,” Beekeeping in Asia”, (Akratanakul, 1990) consists of different chapters like Honeybees of the genus apis, Honeybee biology, Bee forage and floral calendars, Beekeeping with oriental honeybees (Apis cerana), Beekeeping with the common (European) honeybee (Apis mellifera), Bee pests and diseases, Pesticides and beekeeping, Honeybees and crop pollination. This book helps to increase beekeeping profession and its production.

A study (Yadav, 2010) has been conducted to know the share of Dabur India Ltd in the market and to identify the impact of current marketing strategy on the consumers as well as the brand positioning of the product. This study is an attempt to know about the exact expectation of consumers’ awareness regarding product honey of Dabur India Ltd. in Ghaziabad. This study has revealed that Dabur honey enjoys good brand loyalty but product

is under constant threat from its competitors and losing its market share. The study also has realized that the Dabur honey brand is a major player in the market. But due to insufficient distribution and sales network its true potential is yet to be realized.

1.4.1.3: Spatially / Contextually Relevant Empirical Research

The study, “Constraints of Milk Production: A Study on Cooperative and Non-cooperative Dairy Firms in West Bengal”, (Sarker & Ghosh, 2010) has shown the constraints that cooperative and non-cooperative dairy farms face in expanding milk production, which have been reported based on a field study on some cooperative and non-cooperative dairy farms in the state of West Bengal. The study has shown that non-cooperative farms face major constraints and high severity compared with cooperative farms in expanding milk production. Also important is that most of the severe or more severe constraints are infrastructural in nature. The study has suggested that for expanding milk production, the expansion of cooperative dairy farms other than non-cooperative dairy farms may overcome most of these difficulties.

The report on “India and FAO Achievements and success stories, FAO Representation in India” (FAO, 2011) has emphasized about India’s White Revolution which was backed by thousands of rural milk cooperatives covering 80000 villages and over 10 million farmers. It is one of India’s most celebrated success stories in development. The dairy sector sustains tens of thousands of farm families and provides nutrition, draught power, and manure for agriculture. The turnover of the dairy sector, around US\$29 billion, almost equals the combined value of paddy and wheat produced. Growth in India’s formal dairy industry was first spurred by high demand from metro cities and the cooperative movement was driven by the desire of farmers to maximize financial rewards from their work. The momentum for growth was supplemented in the early 70s when automatic bulk milk vending machines gave birth to Mother Dairy. The cooperative dairy movement and Operation Flood based on the ‘Anand model’ gave rise to the White Revolution spearheaded by the National Dairy Development Board (NDDB). It not only laid the foundation of self-sufficiency in milk but also played a key role in giving supplementary incomes to the rural poor.

A study (Bhaskaran, 2006) has conducted on “A Study of Scheduled Tribe Co-Operative Societies in Wayanad District-Performance, Problems and Prospects” with the principal objective of evaluating the performance of ST co-operative societies functioning in Wayanad District and has suggested measures to overcome the problems encountered by the societies.

The performance of twelve Scheduled Tribe Co-operative Societies functioning in Wayanad District has been studied from both the institutional and enterprise aspects. The data has been collected from the records of select societies and 760 tribal members. Discussions with the Presidents and Secretaries of all the twelve societies have also held as part of the study. The study has covered the period from 1st April 1998 to 31st March, 2004. The study has revealed that the ST co-operative societies in Wayanad District could bring only a very small portion of the total tribal population in the district into the co-operative fold. The ST co-operative societies in Wayanad district are functioning under the administrative control of different departments of the government. But the audit of all societies is conducted by the department of co-operation. This duality causes problems for ST co-operatives. The number of ST co-operative societies actually functioning is much lower than the number of societies registered. There is no co-ordination among the different departments involved in the administration of ST co-operative societies. Audit for many years is conducted at one time. Hence the defects noted and suggestions given are not of much practical use in the management of societies. The departments exercising administrative control over the ST co-operatives do not take timely action to solve the problems encountered by the societies. Financial assistances to the ST co-operatives by the government are granted not on the basis of properly prepared projects. The share of females in the tribal population of Wayanad District is more than that of the males. But in the membership of ST co-operatives the share of males is much higher than the share of females. So there is male domination in the membership of ST co-operatives, The ST societies have not contributed to building managerial or entrepreneurial capacity among the members to any significant extent.

The purpose of this book, "Cooperative Marketing Its Advantages as Exemplified in the California Fruit Growers Exchange" (Cumberland, 1917) is to point the way towards better system of food distribution. The author has depicted that the history of the cooperative movement in the citrus industry of California demonstrates by achievement the possibility of improvement over the ordinary plan for getting farm products to market. In the cooperative organizations of the citrus industry marketing machinery has been developed to a degree not even approximated in other agricultural industries. The book has emphasized on food distribution as a field for cooperation in marketing; origin, extent and nature of the citrus industry in California; beginnings of cooperative marketing among citrus fruit growers; democratic organization of the cooperative exchange; constitution of the California citrus growers' exchanges; organization of producers in the California citrus industry; the growers'

selling agency; the central exchange of the cooperative organization; value of the exchange system, measured by results in California; benefits of cooperation for producers seeking a market; affiliated cooperative organizations in the citrus industry and relation of exchange system to general marketing problem.

The paper entitled “Reviewing the Literature of Agricultural Marketing in Assam with Reference to Jute Marketing” (Das & Chanu, 2014) is about the exploration of the existing literature in agricultural marketing with regard to jute in order to find out the research gap. Since, the question of exploitation by the middlemen or intermediaries as has been found as the common marketing channel in marketing of agricultural commodities that has been practicing in most of the parts of the country including Assam, there is need for alternative arrangement for the producers to get optimum benefit. The paper attempts to show the studies which have been conducted earlier in this area. In the present agricultural market, in Assam, there are two extreme situations: one “system operated freely by private enterprises” that is without state intervention and other is the “the systems completely under state control”. Between these two extreme situations, there are a number of marketing situations which are either semiprivate or semi govt. However, India has been experiencing different forms of marketing systems time to time with changing nature of economic policies, pattern of production and marketing situation.

A study (Dilipkumar, 2015) has been conducted in Farmers Cooperatives Society, Kosh Village, Surat District, in Gujarat to analyze the financial performance by using the data in five years' (2009-10 to 2013-14) annual audit reports of the financial statements and participatory discussion with stakeholders of the farmers cooperatives society. This study entitled “A study on Performance evaluation of Farmers Cooperative society” has examined the financial performance and health, financial growth trends, efficiency of Farmers Credit Cooperative society, the loan services strategies. The health check-up on financial growth trend conducted in the framework of most common financial ratios used in the study. Financial data has concluded that Farmers Credit Cooperative Society has healthy position on liquidity; has good financial growth every year and has sound overall management efficiency.

A study entitled “Credit Cooperative Society in Tribal Area” (Patel & Patel, 2015) has been conducted in most successful Credit Cooperatives Society, Waroli, Valsad District, Gujarat to analyze the financial performance by using the data in Five years (2008-09 to 2012-13) annual audit reports of the financial statements and participatory discussion with others who

are related with the society. This study has examined the financial performance and health, financial growth trends, efficiency and the loan services strategies of the society. The study has revealed that the Credit Cooperative Society has healthy position in liquidity, growth and in overall efficiency.

The book “Financial Analysis of Cooperative Society” (Patel, Financial Analysis of Cooperative Society, 2015) is related with a study which is based on secondary data from records and profile of the Cooperative Societies in Dharampur and Ahva taluk in south Gujarat in India. The Ratio analysis is the process of Observation the financial soundness and cost effectiveness of the firm by establishing relationship between the items of balance sheet and profit and loss a/c. This study has kept major concentration in ratio analysis, from the six years’ balance sheet and profit and loss a/c. An objective of the study has been included the profitability Ratio, Structural ratios, Liquidity ratios, and Activity ratio of Cooperative Societies in Dharampur, and Ahva taluk in south Gujarat in India. Overall financial performance of the Cooperative Societies is discussed. Short term-long term positions are sound in study period of the Selected Cooperatives. Suitable suggestion was given by the authors for a better soundness and cost effectiveness & Test Hypothesis ‘T’ test has been applied in the study.

The author (Varghese, 2012) has depicted in the article entitled “Challenges and Opportunities of Cooperative Marketing with Respect to Small Rubber Growers in Kerala” that India is the fourth largest producer of natural rubber with a share of eight per cent in the world after Thailand, Indonesia and Malaysia. Kerala accounts for 78 percent of the area under rubber in the country. The rubber plantation sector in India is dominated by small holdings which account for 92% of the production and 89% of the area of rubber in the country. In spite of this major contribution the small rubber growers are vulnerable to exploitations by dominant groups like traders, manufacturers, politicians etc. Small rubber farmers in the country are considered one of the biggest and impoverished sectors. They are basically exploited due to lack of information and training to interpret movements of trade in the market, lack of capital and postharvest facility logistics to increase their output and undertake value-adding activities to augment and improve their economic livelihood. Rubber Board took vigorous steps from early 1960 to encourage them to organize under dedicated rubber marketing co-operatives societies. These Cooperatives confront many distinct economic challenges that underline their need for coordinated planning and opportunities. Cooperatives confront many distinct economic challenges that underline their need for

coordinated planning and opportunities. A cooperative system is a dual business of cooperative operations and of members' farm enterprises. The major challenge for cooperatives is to simultaneously facilitate and augment economic performance of their members' businesses, while maintaining their own financial solvency. Another distinct economic challenge for cooperatives is benefits they provide that cannot be exclusively captured by those who have paid for them through membership. These external effects occur from marketwise actions of cooperatives in negotiating higher prices with processors, managing an even flow of product deliveries, or in conducting promotional activities that enhance prices. Interco operative coordination of planning can help cooperatives manage their distinct challenges. There are several benefits to joining a cooperative marketing venture: obtaining economies of scale, entering new market(s), accessing professional services, maintaining more of the retail dollar, increasing bargaining power, and preserving existing markets.

A study (Shah, 2007) has carried out in the state of Maharashtra of India during 2003-04 and it has focused on assessing the functional dimensions of agribusiness cooperatives and identifying the reasons for their unsuccessful functioning. The study is based on a case of agribusiness cooperative dealing with the marketing of mainly fruit with its spectrum spread over various other marketing activities. The study has evaluated the performance of Khanapur Group Fruit Sale Co-operative Society (KFCS) which is located about 15 km from Raver taluka of the Jalgaon district in Maharashtra. Though it mainly deals with the marketing of banana, its functional dimensions also encompass input marketing and various other welfare activities. The evaluation of KFCS has revealed several deficiencies in its functioning, the major ones being its poor grasp of studying the market forces, its own internal drawbacks in terms of managing the Society, its own personal interests involved in the functioning of Society, and its failure to generate allies for lobbying to safeguard as well as promote interests of the Society or its members. Since the existence of internal interest-cum-entrepreneurial group in providing dedicated and efficient leadership stands very low as the members of the Board are reported to be self-centered with lack of motivation in terms of growth of the Society, there has been adverse impact on the working of this Society. The study has also revealed that because of lack of funds and losses incurred by the Society, coupled with selfish nature of the management, the member farmers have started diverting their produce to private traders. All these factors have led to some adverse implications insofar as the functioning of the society is concerned. The study has concluded that any

agribusiness cooperative marked with such deficiencies will end-up with a similar fate as has been noticed in the case of KFCS.

The author in the article entitled “Margins in Fish Trade and Need for Cooperative Marketing in India” (Jino, 2006) has depicted that the harvesting strategies in open access marine fishery and marketing patterns of marine products have undergone rapid structural changes in the post liberalization era of the Indian Economy. There is a continuous increase in demand and price of the fish both in domestic and export markets and the thrust on exports mainly led to growth of seafood industry. The present paper has briefly highlighted (i) the fishermen’s share in consumer’s rupee for commercially important varieties of fish in private and cooperative marketing channels (ii) the distribution pattern of consumer’s rupee to the producers and middlemen and (iii) comparative advantages of cooperative fish marketing in ensuring remunerative price for the fisher folk. Fish marketing in India is characterized by monopsony and oligopsony conditions and hence, the fishermen are unable to get maximum advantage of high price prevalent in the consumer markets. It is seen that hardly 5 % of the fish is traded through fishermen’s’ organizations or cooperatives and the rest by private marketing channels. The fishermen’s’ share in consumer’s rupee ranges from 30 to 70 percent for different varieties in private marketing channels whereas it is 60 to 80 percent in fish marketing carried out by cooperatives. The study reveals that most of the existing malpractices can be avoided by revitalizing the cooperative fish marketing system in India. Fisheries cooperatives can further provide substantial employment opportunities in coastal rural areas by involving itself in the preparation of value added products suitable for exports.

Mangoes (Gopalakrishnan, 2013) account for approximately half of all tropical fruits produced worldwide. India is the largest mango producer, accounting for about half of the global mango production. But, less than five per cent of the produced mangoes are processed and mango pulp is the main export product both in terms of volume and value. Contract system is the major marketing system in the supply of mangoes because (1) Producers usually avoid the marketing of fruit by themselves as they do not want to be involved in the complication of the marketing system, (2) They do not want to take risk of price and income variation due to perishability, qualities and seasonality and (3) Lack of knowledge of marketing. This paper entitled “Marketing System of Mangoes in India” attempts to study about the type of marketing systems existing at present in India and suggestions to realize higher value for the produce.

The authors have realized that Operation (Rajendran & Mohanty, 2004) Food and dairy co-operatives emerged in India as the largest rural employment scheme, enabling the modernization of the dairy sector to a level from where it can take off to meet not only the country's demand for milk and milk products but can also exploit global market opportunities. This article entitled "Dairy Co-operatives and Milk Marketing in India: Constraints and Opportunities" has reviewed the existing status of milk marketing and dairy co-operatives in India and provides recommendations to meet future challenges. The results of the study indicate that 80 percent of the milk produced by the rural producer is handled by an unorganized sector and the remaining 20 percent is handled by an organized sector. It is found that the dairy co-operatives play a vital role in alleviating rural poverty by augmenting rural milk production and marketing. Involvement of intermediaries; lack of bargaining power by the producers; and lack of infrastructure facilities for collection, storage, transportation, and processing are the major constraints which affect the prices received by producers in milk marketing. Milk quality, product development, infrastructure support development, and global marketing are found to be future challenges of India's milk marketing.

The article entitled "Marketing of Sweet Orange (Malta) in India"(Gunwant, Raturi, Hussain, Khan, & Rana, 2013) has shown the findings of a study which has been conducted in order to access the marketing of sweet orange in the state of Uttarakhand, India. Primary data has collected from various stakeholders constitute forty growers and two and three mediators operating at each level of marketing channels. Present study has identified that three distribution channels are exist in the market. More than 68 per cent of the produce was sold directly to the village commission agent/contractor. Present study has also revealed that marketing problems of hilly areas is different from other regions of the country. Scattered farms, poor roads and terrains, contributed high labour and transportation cost are the main problems. For these reasons farmers are unenthusiastic to bring their produces in the market. Hence, the marketing system is dominated by village traders/contractor. Producers are getting very low share of the consumer's price in case of sweet orange. Spatial price difference between local market and distant market is very wide. Keeping in view the very high price spread and low producers' share, there is needed to form the active marketing groups. The farmers of the hilly areas must be properly linked to the market through proper roads and other infrastructure and through co-operative federation. There is a need to form the active Farmer Producer groups / Farmer co-operative groups which can take the advantage of the

distant and competitive markets, benefiting the members by remunerative price. To reduce the spatial differences in the price of produce, better transport, storage and village level processing unit facilities are also required for which consumers and producers both will be benefitted.

The authors in their article (Ranganathan & Rajarajan, 2014) entitled “Reasons for Slow Progress of Cooperative Marketing Societies in Tamilnadu” have told that marketing is a system designed to transfer, in the most effective way, the production from the producers to the consumers. But the existing marketing system in the traditional rural areas highly exploits the producers and the consumers both. This marketing system pays to the producers the lowest possible price, and at the same time, sells to consumers at the highest possible price. This system is composed of too many intermediary stages, and each of these stages takes its part from the total payment by the consumers. The authors have identified few reasons for slow progress of cooperative marketing societies in Tamil nadu like transport facilities are not available for the carriage of the produce from the villages to the societies; farmers are indebted to local traders and enter into advance contracts with them for the sale of the crop; farmers are in immediate need of cash after the harvest to meet their personal obligations, therefore, they sell Their produce to local traders; they cannot wait for the time required to move the produce to the mandi; there is lack of loyalty among members to co-operative marketing societies because of their poor education and absence of the co-operative feeling; members lack confidence in co-operative organizations, for most of the co-operative sector enterprises run at a loss and managers of societies do not offer business advice to members etc.

In the article (Moharir, 2012) entitled “Role of Co-Operative Societies in Agriculture Product Marketing in Maharashtra” the author has said that the topic of the article includes the words a co-operative society, agriculture and marketing. These three are different term which works for each other. If there are development in one than it develops other also. The author has emphasized that the Co-operative marketing has granted multifarious advantages on the farmers. Due to ignorance and illiteracy often farmers have to face well-organized mass of clever middlemen. But since farmers join hands and form Co-operative societies, they are less prone to exploitation and malpractices. Now, instead of marketing their produce separately, they market it together through one agency. This has increased their bargaining in relation to merchants and intermediaries. The Marketing Co-operative Societies in Maharashtra provide credit to the farmers to save them from the necessity of selling their

produce immediately after harvesting. It ensures better returns to the farmers. The Co-operative marketing societies generally have storage facilities. Thus the farmers can wait for better prices and can safeguard from damages. Bulk transport of agricultural produce by the cooperative societies is often easier and cheaper, which reduces cost and botheration of transporting produce to the market. A strong marketing co-operative have achieved, better prices for agricultural produce.

Dr.S.Velanganni, the author in the article entitled ” An Assessment of Socio– Economic Effect of Tiruchengode Agricultural Producers Cooperative Marketing Society with Reference to Namakkal District in Tamil Nadu (TCMS): An Empirical Study” (Velanganni, 2014) has described that Marketing cooperative societies have been creating, maintaining and enhancing the economic development among the community even in the most remote rural areas. They try to find to raise agricultural output, create employment and eradicate poverty by providing market accessibility to farm producers, securing reasonable and remunerative prices, supplying adequate production inputs, agricultural implements at reasonable prices, implementing effective linking of credit with marketing, distributing consumer articles at reasonable prices etc. The study has analyzed the demographic indicators (age, gender, education, community and family size), social indicators (social participation, exposure to mass media and contact with change agents) and economic indicators (occupation, family annual income, assets, size of land holdings and debts) influencing individuals. The study has revealed that as regards to farmers categories, big farmers have high perception towards the economic contributions of marketing cooperatives, farm income, assets, occupation, knowledge about cooperative management, and participation in cooperative management have greatly affected to realize the economic contributions of marketing cooperatives. Thus the marketing cooperatives in the study area have made imprints on the economic lives of the farming community in the region. This study has indicated the existence of significant level of differences among farmers in their socio, economic profile as well as cooperation indicator variables like knowledge about cooperative, cooperative management and services availed from cooperatives.

The authors, Md Abdullah and Mohammad Rokibul Hossain, in their article entitled “A New Cooperative Marketing Strategy for Agricultural Products in Bangladesh” (Abdullah & Hossain, 2013) have described that Bangladesh, an agro based country where 17.3% of GDP comes from agriculture. Crop production has also exceeded the national demand in the last few years. But the farmers are always deprived of the fair price for their products due to

improper marketing systems that exist in Bangladesh. The authors have conducted a survey over the two villages considering the intensity of the high crop production in both areas named Nimshar from Comilla and Shitakundu from Chittagong district. The survey has revealed that the farmers of both villages do not get fair price as they cannot access the real market which is fully dominated and captured by the middlemen. Agricultural marketing requires changes for bringing sustainable development to the agricultural sector. The authors have suggested that a producer organization or growers' cooperative can be established to reduce the plethora of middlemen from the supply chain of agricultural products. The cooperative society will perform as marketers for the farmers ensuring fair price for farmers and consumers. That cooperative society must be controlled and monitored by the farmers of local area. Activities like proper management, capital requirement, marketing orientation programs must be considered as major issues in the cooperative.

The authors, S. Rajendran And B Gandhimathy, have depicted in their article "SWOT Analysis of Coir Cooperative Marketing Society – A Case Study from Salem Region" (Rajendran & Gandhimathy, 2011) that India is the largest coir producer, accounting to nearly 80 per cent of the total world production, employing more than 6.4 lakh persons of whom a majority is from rural areas of economically backward society. Tamil Nadu occupies the first place in producing brown fibre and second in coir fibre contributing about 65 per cent of total production, providing direct employment opportunities to 52,648 and indirect employment opportunities to 20192. In and around Salem district, more than ten thousand families are benefited from coir industry via both cooperative and private as a home based industry and getting employment opportunities including women, skilled and semi skilled workers. The overall performance of The Salem central marketing cooperative society has been expressed by using SWOT analysis in this article. The SWOT analysis is done based on the extensive literature surveys, field visits, interaction with officials and members. The authors have suggested that in order to revive the cooperative sector there is a need for an innovative strategy and transformation of technology from the private sector and application of it into the cooperative sector is need of the hour to explore a wide range of activities. The best solution for removing vicious circle between capital scarcity and under development in the coir sector is need to design the efficient and effective optimum rate of capital accumulation in the coir sector.

The authors, Anshu Singh, Prodyut Bhattacharya, Pradeep Vyas and Sarvashish Roy, in their article, "Contribution of NTFPs in the Livelihood of Mangrove Forest Dwellers of

Sundarban” (Singh, Bhattacharya, Vyas, & Roy, 2010) have discussed that Sundarbans are the world’s largest mangrove biomes having highest mangrove biodiversity, which are used for subsistence and commercial purpose by the local inhabitants. It is one of the essential components of the livelihood of the forest dependant population of the area. The paper has tried to explore the spectrum of NTFPs being collected from Sundarbans and its contribution in the livelihood of the people. It has also attempted to assess the livelihood assets of the people and how much of it is attributed to NTFPs. It has explored the livelihood vulnerability and stress coping mechanisms of the local population and how NTFPs help as a “safety net”. The study has shown that the contribution of NTFPs is quite high as it contributes almost 79% (Rs. 80,000) on an average to the annual income of the collector’s family. Of course not every family of the village goes for NTFP collection but nonetheless their number is significant. The major NTFP that are being collected includes firewood, prawn, fishes, crab, honey and bee wax. The collection of NTFPs is a daunting task, which involves risk from man-eater tigers. The authors have told that if, these biomes are to be conserved it is necessary that Sundarban Development Authority must consider the role of NTFPs in the livelihood and develop the Sustainable Livelihood Framework accordingly so that the biomes as well as people’s need could be sustained.

A study (Sarker & Ghosh, 2010) has empirically investigated the price spread, marketing costs, marketing margins, marketing efficiency, and profit efficiency among market middlemen under cooperative and non-cooperative marketing channels in the domestic trade market of liquid milk in West Bengal. This study has revealed that, both producers’ price and consumers’ price of liquid milk in all markets in both cooperative and non-cooperative marketing channels are not uniform. All marketing agencies under cooperative channels receive much lower abnormal profit per unit of milk as compared with non-cooperative channels. All marketing agencies under cooperative channels fail to provide much economic benefit, either to the producer or to the consumer, because of the burden of much higher fixed cost per unit of liquid milk.

In his PhD thesis (Menon, 1987) entitled “Processing, Procurement and Marketing of Pepper with Particular Reference to Cooperative Sectors” the researcher has said about history and historical importance of paper. He also depicted about cultivation and production of pepper, processing and marketing of pepper, Indian pepper exports, a study of procurement and marketing of pepper. He has emphasized the role of NAFED and role of cooperative sector in marketing of pepper.

The article entitled “Conceptual Framework of Collective Action in Indian Co-operative Sugar Industry”(Gohil, 2004) has stated the theory of collective action, the stake holders of the Indian co-operative sugar industry and its few problems. The author has discussed the conceptual framework, role, applicability, validation and views of collective action.

The author (Kuriakose, 1995) in his thesis entitled “A Study of The Marketing Channels of Natural Rubber with Special Reference to Co-Operative Marketing in Kerala” has discussed about history of natural rubber, its production as well as consumption. The author has emphasized on the marketing channels of natural rubber, the role of cooperative sector in Marketing and at the end gives some summary of conclusions and suggestions.

The article entitled “Alternative Agriculture Marketing System: the case of Rythu Bazar” (Rao, 2008) has stated the concept of ‘Rythu Bazar’ which is an alternative agricultural marketing systems, its needs, importance, objectives, salient features, progress, organizational structure, performance, problems and prospects. The author has given a new concept of market where no exploitation of middleman can exist.

1.5: RESEARCH GAP

Various works and research have been done at international and national level pertaining to apiculture and its related issues. However, most of those works, so far, are done at a macro level. As the literature survey demonstrates, various aspects of apiculture like its history, its problems and prospects, contributions towards economic development, production issues, techniques and methods, financial issues, international trade, by-products, relation with agriculture and horticulture and so others have been done. In case of India, though, what is important to note is the fact that, works at micro level have not been undertaken which includes research and academics. Though such works been undertaken in the states like Punjab, Kerala, Himachal Pradesh and Uttar Pradesh; still an in depth study of the same is yet to be undertaken. Thus, the study seeks to fulfil this gap and in doing so, takes the Indian state of West Bengal as a case study.

In addition, there also exists a gap regarding the analysis of the current problems faced by the apiculture cooperative societies of West Bengal on the issues of production, marketing, financing, profitability, earnings of beekeeper members, middlemen exploitation and environmental perspective of apiculture industry in West Bengal. Thus, the study tries to

make an in depth study of these issues and problems with special reference to ‘marketing’ and tries to provide alternatives as well as policy suggestions of the same.

1.6: IMPORTANCE OF THE STUDY

The proposed study is related to the marketing of apiculture industry through co-operative society in West Bengal especially in South 24 Parganas and North Dinajpur districts in the state of West Bengal. This study facilitates to search out the unexplored area of marketing and its strategy. This study can help to open the way of self-employment and show the way of creating employment opportunity. Proper marketing planning, channel, pricing system can be developed through this study. The general farmers, rural people and even housewives can get a way of earning with the help of the study and contribute to their family. They can know about the services of co-operatives. This study attempts to make an appraisal of the role of marketing of apiculture industry through the co-operative societies of West Bengal as well as to review the overall position of the ‘apiculture’ in the state and also to assess the impact of this industry on the economic development of West Bengal for the period 1998-1999 to 2012-2013.

1.7: OBJECTIVES OF THE STUDY

- To examine critically of growth and development of apiculture, its market, area and organization.
- To analyze marketing of apiculture.
- To examine the impact of apiculture industry on the economic development of West Bengal.
- To make an appraisal of role of marketing of apiculture industry through cooperative societies.
- To make inter-firm comparison between the cooperative societies formed and registered in the districts of West Bengal.
- To examine the managerial efficiency of the cooperatives dealing with production and marketing of honey.
- To search out the unexplored area of marketing and its strategy.
- To find out the way of achieving sustainable development through apiculture.
- To aware about the services of cooperatives.

- To offer suitable suggestions for implementing effective marketing strategy of apiculture and its overall development.

1.8: LIMITATION OF THE STUDY

1.8.1: Area

Though this industry covers a considerable portion of the Globe - but this study is limited to West Bengal. This study also limits only to the marketing aspect of honey of this industry. Although other areas may come indirectly, but they have not been considered significantly within the area of the study. Marketing of this industry is done by individual, partnership-firm, family, society, companies and even MNCs. This study relates to those marketing which are done by cooperative societies formed and registered within the jurisdiction of West Bengal. Apiculture industry gives us various things other than honey. Since, the cooperative societies of this state are mainly involved with the producing and selling of honey, this study only related to honey.

1.8.2: Period

Bee keeping has an ancient history. It is related to human life time to time. This relation is established by religion, culture, status, business, taxation and so on. In spite of having a scope of further extensive research work in future this study is restricted only in eighteen consecutive years.

1.9: PERIOD OF STUDY

The Study covers the period of eighteen years beginning with the financial year 1998-1999 and ending with the financial year 2015-2016. This study depends on secondary as well as primary data. But secondary data are collected and analyzed for fifteen years beginning with the financial year 1998-1999 and ending with the financial year 2012-2013 due to unavailability of data in time.

1.10: SPECIFIC RESEARCH QUESTIONS

There are specific research questions in the study like-

- How to find out trend of honey production, export, import and average growth rate of eminent countries, which will help to forecast the production, export and import?

- What is the procedure to be followed to find out the degree of consistency of production and profits made by Cooperative societies of West Bengal dealing with honey along with the reasons of inconsistency?
- Is it possible to explore the complex relationship of flow of honey, information and cash among producers, middlemen, retailers and consumers and indicate the reasons of exploitation of producers (beekeepers/apiculturists)?
- What are the strength, weakness and opportunity and threat elements of producing and marketing activities of apiculture cooperative societies in West Bengal especially in South 24Parganas and North Dinajpur districts and disclose the reasons of strength, weakness, opportunity and threat?
- How the initial cost of investment is expected to pay for itself, which will disclose the number of years required for net cash inflows to recoup the original cost of investment?
- Is there any way to find out the strategic position of sales and production activities of honey of Co-operative societies and beekeepers in West Bengal and detect the safety and soundness position of the business along with the comparative profitability of Co-operative societies and beekeepers in West Bengal?
- What will be the process to analyze socio economic impact of the apiculture industry in West Bengal especially in South 24Parganas and North Dinajpur districts?
- What will be the pricing policy?
- What would be the mechanism to measure the operating efficiency, managerial efficiency and overall profitability of the beekeepers' co-operative societies in West Bengal especially in South 24Parganas district?
- How will the objective of sustainable development be attained along with the apiculture activities?
- Is it possible to judge against keeping of Apis Cerana bees (indigenous bees) with Apis Mellifera bees (foreign bees) in West Bengal especially with the help of a simple mechanism to test the viability of investment?
- Is it possible to compare uniquely between modern and traditional method of production relating to apiculture industry in West Bengal especially in South 24Parganas district with the help of a simple mechanism to test the viability of investment?

1.11: CONCEPTUAL FRAMEWORK

- The trend and consistency of production, export, import of honey has been made by applying Compound Annual Growth Rate method, Measure of Central Tendency, Dispersion over the years. This has depicted the average growth rate of production, export, import as well.
- Pie chart / Bar diagram has been made to find out the market participation.
- Co-efficient of variation has been used to measure the degree of consistency of production, sales and profit.
- Picture / Diagram model has been used to find out complex relationship among producers, middlemen, retailers and consumers.
- SWOT analysis has also been made to find out the strength, weakness, opportunity and threat elements.
- 'Pay Back Period model' of capital budgeting decision has been used to test the viability of investment and also to find out the effect on the profitability of the respective concerns.
- Break-even-chart has been prepared to find out the strategic position of sales and production of honey of beekeepers and indicate the margin of safety and comparative profitability.
- Pricing policy has been verified by making cost sheet after classifying different elements of cost.
- Different accounting ratios have been used to measure the operating efficiency, managerial efficiency, stability and overall profitability of co-operative societies.
- An attempt for analysis on the basis of statistical information has been pursued to establish the fact that apiculture activities persist all round development without causing environmental disaster. Attempt has been made to approve that the apiculture activities have the potential to drive for economic development, environmental development and socio-cultural development.
- Cost benefit analysis has been used to make a comparison between traditional and modern method of production and test the viability of investment in this industry in South 24Parganas.
- Net cash inflows technique has been used to test the viability of investment in keeping of Apis Cerana bees (indigenous bees) and in Apis Mellifera bees (foreign bees) in West Bengal.

1.12: RESEARCH METHODOLOGY

The study is essentially a fact finding approach of existing state of affairs. This study can properly present the statistical information and facts on the basis of actual happening. In this study an event or occurrence is measured again and again over a period of time. For this, time series study has been followed. In addition, cross sectional study is also taken for descriptive analysis. The study also involves comparative policy studies. Cooperative societies formed and registered within the districts of West Bengal are running separately. The study is attempted to compare different policies which are adopted by the societies, especially on marketing aspect and to frame a general policy for all societies. The present study is considered as a time series analysis in relation to the project itself. Here also to appraise the marketing issues of Apiculture in West Bengal and to evaluate its impact on different numbers of variables, application of sophisticated statistical methods, use of simple mathematical tools, tools of economics as well as tools of cost and management accounting are sought for. The present study is based on primary as well as secondary sources of data and information.

1.12.1: Primary as well as Secondary Nature

This study is essentially empirical in nature. For this, collection of primary data requires intensive field survey. This study also attempts to review and makes use of the existing literatures relating to the apiculture industry to the extent possible.

1.12.2: Primary Source of Data

Bee-keepers, Mouleys (collectors of honey from jungle), Bee-keepers' cooperative societies, Consumers, Retailers, Concerned Government officials and Researchers etc.

1.12.3: Secondary Source of Data

The study attempts to review and make use of the existing literatures (i.e. research based books, articles and reports published in India and abroad) relating to the Apiculture Industry to the extent possible. The secondary data generated from the researches carried out with respect to this industry in India and abroad are also to be systematically made use of the primary data, after being meaningfully related to the secondary data available at the national level and international level are duly analyzed and interpreted by using the standard statistical tools.

1.12.4: Principal Secondary Data Source

Annual Report of Cooperative Societies; Report from Assistant Register of Cooperative Society; Report from District Cooperative Society Audit; District Statistical Hand Books; Ministry of Agriculture, Government of India; Ministry of Agriculture, Government of West Bengal; State Forest Report, West Bengal; INDIASTAT, New Delhi; FAOSTAT, Rome; Indian Bee Journal, Ludhiana; National Bee Board, Pune,

1.12.5: Nature of Secondary Data Source

The nature of secondary data are time-series and cross-sectional. Secondary data are basically static in nature. The research is related with eighteen consecutive years (1998-99 to 2015-16) but secondary data is taken in this study only for fifteen consecutive years (1998-99 to 2012-13) due to lack of availability of information relating to apiculture activities in time. Since the research work is taken for eighteen consecutive years, in some fields the nature of secondary data are changeable with the development of apiculture.

1.12.6: Primary Data Based Study Type

Primary data has been collected with the help of structured questionnaires. The questionnaires have been carefully designed with a view to gather relevant data relating to the major functional areas of an organization, apart from basic data. The responses obtained through the questionnaires have also been supplemented by interviewing on a selected basis.

1.12.7: Questionnaires

Primary Data have been collected with the help of Structured Questionnaires, which have been presented to conversant-persons of a representative number of apiculture units located in the area.

1.12.8: Design of Questionnaires

The questionnaires have been carefully designed with a view to gather relevant data relating to the major functional areas of an organization, like- production, marketing, finance and personnel, apart from basic data relating to such organization. Purpose of the questionnaires is to locate the major problem affecting apiculture units in West Bengal and also to identify the potentialities of the industries at the enterprise level.

1.12.9: Interview

The response obtained through the questionnaires are also to be supplemented by interviewing on a selective basis, a representative number of persons associated with the apiculture industry in West Bengal in various capacities, like-

- Concerned Government officials
- Bee-keepers
- Collectors of honey from jungle (Mouley)
- Bee-keepers association.
- Employees Association
- Consumers.
- Retailers.
- Researchers and scientists.

1.12.10: Sampling Norms

As because the population is not large enough, instead of trying to follow rigorous sampling norms, a reasonably representing number of apiculture units operating in this area have been carefully selected, keeping in mind the differences in such organization in terms of size (e.g. small, medium and large), form (e.g. sole proprietorship, partnership, co-operative and company), nature of ownership (e.g. private., public and joint sector) and technology (e.g. traditional and modern).

1.12.11: Location of Sample-Study

For the purpose of collecting data about beekeepers two samples are taken from beekeepers of West Bengal. One is South 24Parganas and the other is Malda along with both North and South Dinajpur districts.

A sample study has been conducted in Chandanpidi village of Namkhana forest range for collecting data about Mouley (the honey hunter in Sunderban region of West Bengal).

Two sample surveys have been done about availability of apiculture cooperative societies' honey in retail shops in two areas. One is in Malda Town Market, Malda and other is in Baruipur Town Market, South 24 Parganas (now within the jurisdiction of extended megacity, Kolkata).

Three surveys are carried out in three religious places in West Bengal to know about availability of apiculture cooperative societies' honey in retail shops of religious items. First, is in Ganga Sagar Market, South 24 Parganas. Ganga Sagar is famous for sage "Kapil Muni Temple". Pilgrimages, from every parts of India, come here every year. Second, is in Ganjer Bazar Market, South 24Parganas. Ganjer Bazar Market is in the immediate vicinity of popular temple of Goddess "Dhanwantari (Kali)" and Joynagar semi-town. Visitors from every parts of Bengal especially South Bengal, come here every year. Third, is in Kaliyaganj Market, Uttar Dinajpur. Kaliyaganj Market is the immediate vicinity of popular temple of Goddess "Bayera Kali". Visitors, from every parts of North Bengal, come here every year.

A sample survey has been organized to know about the purpose of consumption of honey and brand preference for honey of general people. For this purpose Baruipur railway station is selected for sample area. The station position is very important. This is a popular junction. Every place of South 24 Parganas district is connected by bus. The railway junction is directly connected with Sealda, Budgbudg, Canning, Diamond Harbour, Namkhana, Kulpi and Kakdeep. This junction is popular fruit market in West Begal. Moreover, two cooperative societies of South 24 Parganas district are situated in this area and different types of people by age, religion, income group and occupation come to this junction every day.

1.12.12: Comparison of Sample

The study involves comparison of sample from same population. Element of cost involved in production, amount of cost incurred for production, productivity, barriers faced, interest and concept about cooperatives and others which can be varied from beekeepers to beekeepers will be compared by taking sample from same population. The study also involves comparison of sample from separate population. Production of honey by beekeepers and retailers' marketing strategies are compared between different areas of West Bengal.

1.12.13: Location and Method of Sample

For bee-keepers' respondent, sample locations are few agriculture fields of South 24 Parganas, Malda, North Dinajpur and South Dinajpur districts and have used cluster sampling method. Period which has been selected for sample study at South 24Parganas is during 'March to April, 2014'. In these periods flowers of mangrove plants are blossomed in the Sundarban area of South 24 Parganas District and from the end of April the flowers of Litchi are also available in the field of Baruipur area of South 24 Parganas district. Maximum

beekeepers of West Bengal use to come here during this 'honey flow period'. Similarly Period which has been selected for sample study at Malda and both Uttar and Dakshin Dinajpur districts is 'December 2013 to January 2014'. Malda and both Uttar and Dakshin Dinajpur are good sources of mustard flowers. The best 'Major honey flow period' of West Bengal is occurred in this period at the field of Malda and both Uttar and Dakshin Dinajpur districts. Most of the beekeepers come here to collect honey. Total 150 numbers of beekeeper respondents are available during survey.

For Mouley respondents, sample location is Chandanpidi village of Namkhana forest range of South 24 Parganas district and has used snowball sampling method. 30 Mouley families have been interviewed during January, 2016 of this study.

For retailers' respondents, sample locations are Malda Town Market, Malda and Baruipur Town Market, South 24 Parganas and have used simple random sampling method. This survey has been done in December 2015 about availability of apiculture cooperative societies' honey in retail shops in these two areas. Total 50 samples are taken from each market.

For retailers' respondents (Religious Retail shops), locations are in three religious places in West Bengal. First, is in Ganga Sagar Market, South 24 Parganas. Ganga Sagar is famous for sage "Kapil Muni Temple". Pilgrimages, from every parts of India, come here every year. Period considered in survey is December 2015, one month before the famous "Sagar Mela". Second, is in Ganjer Bazar Market, South 24Parganas. Ganjer Bazar Market is in the immediate vicinity of popular temple of Goddess "Dhanwantari (Kali)" and Joynagar semi-town. Visitors from every parts of Bengal especially South Bengal, come here every year. Period considered in survey is December 2015. Third, is in Kaliyaganj Market, Uttar Dinajpur. Kaliyaganj Market is the immediate vicinity of popular temple of Goddess "Bayera Kali". Visitors, from every parts of North Bengal, come here every year. Period considered in survey is December 2015. All religious shops of these areas have been considered for collection of data.

For consumers' respondents, location is Baruipur railway station. The station position is very important. This is a popular junction. Every place of South 24 Parganas district is connected by bus. The railway junction is directly connected with Sealda, Budgbudg, Canning, Diamond Harbour, Namkhana, Kulpi and Kakdeep. This junction is popular fruit market in West Begal. Two cooperative societies of South 24 Parganas district are situated in this area.

Different types of people by age, religion, income group and occupation come to this junction. Total 150 people are taken in the survey as respondents and accidental sampling method has been used here.

1.12.14: Tools and Analysis

In analyzing the study statistical tools like, CAGR, measures of central tendency, variation measurement and popular tools of management like, break even analysis, accounting ratio analysis, SWOT analysis, Discounted Pay Back Period analysis and tools of economics are adopted.

1.12.14.1: Compound annual growth rate (CAGR)

Compound annual growth rate (CAGR) is frequently used in business presentations and reports to show how a particular part of the business has grown over time. CAGR takes growth rates from multiple periods and translates them into a consistent growth rate which represents the same growth.

$$CAGR(\text{from first year, to last year}) = \left(\frac{\text{The value at the end of the period}}{\text{The value at the start of the period}} \right)^{\frac{1}{(\text{last year} - \text{first year})}} - 1.$$

Objectives-

- To remove the volatility of the year on year growth and smooth out the growth rate.
- To compare the performances of different countries or apiculture cooperative societies in productions, exports and imports of honey.

1.12.14.2: Discounted Pay-back Period Method

Pay-Back Period (PBP) is that number of years for which initial cost is equal to cumulative net cash inflows. But the study is done by Discounted Pay Back Period. This method is takes into account the time value of money by combining payback with discounted cash flows (i.e. all cash flows are discounted for arriving at net present values). By applying simple interpolation formula,

$$PBP = \text{Year Before Turning Point} + \left| \frac{\text{Cumulative Discounted Net Cash Inflows Before Turning Point}}{\text{Discounted Net Cash Inflows At Year of Turning Point}} \right|$$

Note: | Cumulative Discounted Net Cash Inflows before Turning Point | is taken as positive value.

Objectives-

- To know the period within which total cost of the beekeepers can recover.

1.12.14.3: Marginal Costing

Marginal Costing is a principle whereby variable costs are charged to cost units and the fixed cost attributable to the relevant period is written off in full against the contribution for that period.

Objectives -

- To know Profit/Volume Ratio, Break-even point (BEP) and Margin of Safety (M/S).
- To measure the strengths of the beekeepers of West Bengal.
- To assess safety position of the beekeepers of West Bengal.

1.12.14.4: Intrinsic Value of Share Method

Intrinsic Value Method involves estimation of the current values of assets and liabilities and determination of the exact net worth or net assets of the business so as to give the value of shares as –

Value of Shares= Net Worth/ No. Of Shares

Intrinsic Valuation may be either on a “going concern Basis” or on a “Break-up Basis”. In the former case utility of an asset to the business should be considered for the purpose of arriving at the value of the asset, while in the latter case the realisable value of an asset should be taken into consideration.

Objectives-

- To measure equity value of only women apiculture cooperative societies in West Bengal.

1.12.14.5: SWOT Analysis

SWOT analysis is an examination of an organization's internal strengths and weaknesses, its opportunities for growth and improvement, and the threats, the external environment presents to its survival.

Objectives-

- To know the Strengths(S), Weaknesses (W), Opportunities (O) and Threats (T) of Apiculture cooperative societies of West Bengal individually and as a whole.
- To identify the Strengths, Weaknesses, Opportunities and Threats of beekeepers of West Bengal.

1.12.14.6: Ratio Analysis

It is an important technique of financial analysis. Absolute figures are valuable but they standing alone convey no meaning unless compared with another. Accounting ratios show inter-relationships which exist among various accounting data. Ratio analysis stands for the process of determining and presenting the relationship of items and groups of items in the financial statements.

Objectives-

- To judge financial stability and health of the apiculture cooperative societies of West Bengal.
- To analysis financial position of the apiculture cooperative societies of West Bengal.
- To assess the operational efficiency of the apiculture cooperative societies of West Bengal.
- To locate the weak spots of the apiculture cooperative societies of West Bengal.
- To make comparison between the performances of all apiculture cooperative societies of West Bengal.

1.13: REASONS FOR APICULTURE

- Apiculture gives us honey which gives us valuable food and money.
- Besides honey, apiculture gives us various by-products like beeswax, propolis, pollen, venom and royal jelly, which also help to create income.
- Apiculture is possible even by people having minimum resources.

- Land ownership is not required for bee-keeper. Bees collect nectar and pollen from any field. Hence, wild-area, agriculture or horticulture land and even wasteland are valuable for beekeeping.
- Nectar and pollen are harvested only by bees, so there is no competition with other industry.
- Different sectors are benefited from a beekeeping industry
- Huge amount of self employment is created by this industry.
- Honey-Bees pollinate flowering plants and help to cultivate crops, thereby maintain the ecosystem.
- Beekeeping encourages ecological awareness. Beekeepers want to conserve the environment so that flowers are available and bees are protected.
- Since, bee-keeping does not need daily care and can be done with other works, any person can be a beekeeper irrespective of age, sex, religion and even of physical barriers.
- Beekeeping is eco-friendly as well as agro-based industry. Agriculture and beekeeping is correlated with each other. They are inter dependent and can be improved simultaneously.

1.14: AREA PROFILE

Bees' world is 56 million older than human world. Keeping of bees is an ancient culture of man. In 15000 B.C. at Medalenian period of Spain in the cave painting of Valencia it was found that a man collected honey from honeycomb. Moorecraft visited Kashmir during 1820s and in his book "Travels in Hindustan from 1819 to 1825" he wrote " The same colony of bees thus produces honey year after year in the same hive, and generation after generation, and has probably done so from the original Aryan settlement of the Cashmere valley" (Suranarayana, 1994). But it cannot be said they took that first attempt in India. Many controversies exist in this regard. But it can be said that modern bee keeping was first introduced in India in 1882 by Mr. John Douglas, an employee of the Telegraph department, Calcutta, who kept the Indian bees in the modern moveable frame hives. In production, China takes a leading part. USA, Argentina, Ukraine, Mexico, Russian Federation, India, Ethiopia, and Spain also produce a considerable portion of world honey production. In India Punjab occupies a significant place since the conception of modern beekeeping. Besides Punjab, U.P., Karnataka, Kashmir, Jharkhand, Bihar and West Bengal are good honey producing

states. In West Bengal North 24 Parganas, Nadia, East Midnapore, Malda, and South 24 Parganas districts are pioneer in the production of honey. This study covers the territorial jurisdiction of West Bengal State of India. Marketing, production, management, finance etc. are the various domains to do research work in the apiculture Industry. Every aspect is equally important to explore new thinking for the improvement of the industry. Various organizations like NGOs, Co-operative Societies, Corporate Bodies, MNCs, Partnership-Firms, Government organizations and even individuals are engaged in various activities of the apiculture industry. This study only considers marketing of apiculture industry in West Bengal through co-operative societies with special reference to South 24 Parganas and North Dinajpur districts. Few favourable points regarding the area are given bellow-

1.14.1: West Bengal

The name of Bengal or Bangla, is derived from the ancient kingdom of Vanga or Banga. In 3rd century BCE, it formed part of the extensive Mauryan Empire inherited by the emperor-Ashoka. In the 4th century CE the region was absorbed into the Gupta Empire of Samudra Gupta. Later it came under control of the Pala dynasty. From the beginning of the 13th century to the mid-18th century, Bengal was under Muslim rule—at times under governors acknowledging the suzerainty of the Delhi sultanate but mainly under independent rulers. In 1757 British forces under Robert Clive defeated those of the nawab (ruler) of Bengal, Sirāj al-Dawlah, in the Battle of Plassey near present-day Palashi. In 1765 the Mughal emperor of northern India, Shah 'Ālam II, granted to the British East India Company the *dīwānī* of Bengal, Bihar, and Orissa (now Odisha)—that is, the right to collect and administer the revenues of those areas. By the Regulating Act of 1773, Warren Hastings became the first British governor-general of Bengal. The British-controlled government, centred at Calcutta (now Kolkata), was declared to be supreme: essentially, the governor-general of Bengal was the chief executive of British India. Britain was not, however, the only European presence in Bengal. The town of Hugli, north of Calcutta, was the location of a Portuguese factory (trading post) until 1632; Hugli-Chinsura (Chunchura), the next town south, was the Dutch post until 1825; the next town, Shrirampur (Serampore), was the Danish post until 1845; and Chandernagore (Chandannagar) remained in French hands until 1949. Bengal was constituted an autonomous province in 1937. After the British withdrawal in 1947 the eastern sector of Bengal, largely Muslim, became East Pakistan (later Bangladesh); the western sector became India's West Bengal state. In 1950 the princely state of Cooch Behar (Koch Bihar) was integrated with West Bengal. After the linguistic and political reorganization of

Indian states in 1956, West Bengal gained some 3,140 square miles (8,130 square km) from Bihar. The additional territory provided a link between the previously separated northern and southern parts of the state. The Indian National Congress (Congress Party) dominated the West Bengal government during the state's first three decades. In 1977 the Communist Party of India (Marxist; CPI-M) won a majority of seats in the state legislative elections and became the ruling party. The CPI-M remained in power as the world's longest-serving democratically elected communist government until it was voted out of office in 2011. The winner of the legislative elections that year, the All India Trinamool (or Trinamul) Congress (AITC), had been an ally in what was then the Congress Party's national ruling coalition government. The AITC's founder and leader, Mamata Banerjee, became the state's first female chief minister. In the state legislative elections, 2016 Trinamul Congress alone has won a majority of seats and has become the ruling party (Encyclopaedia Britannica).

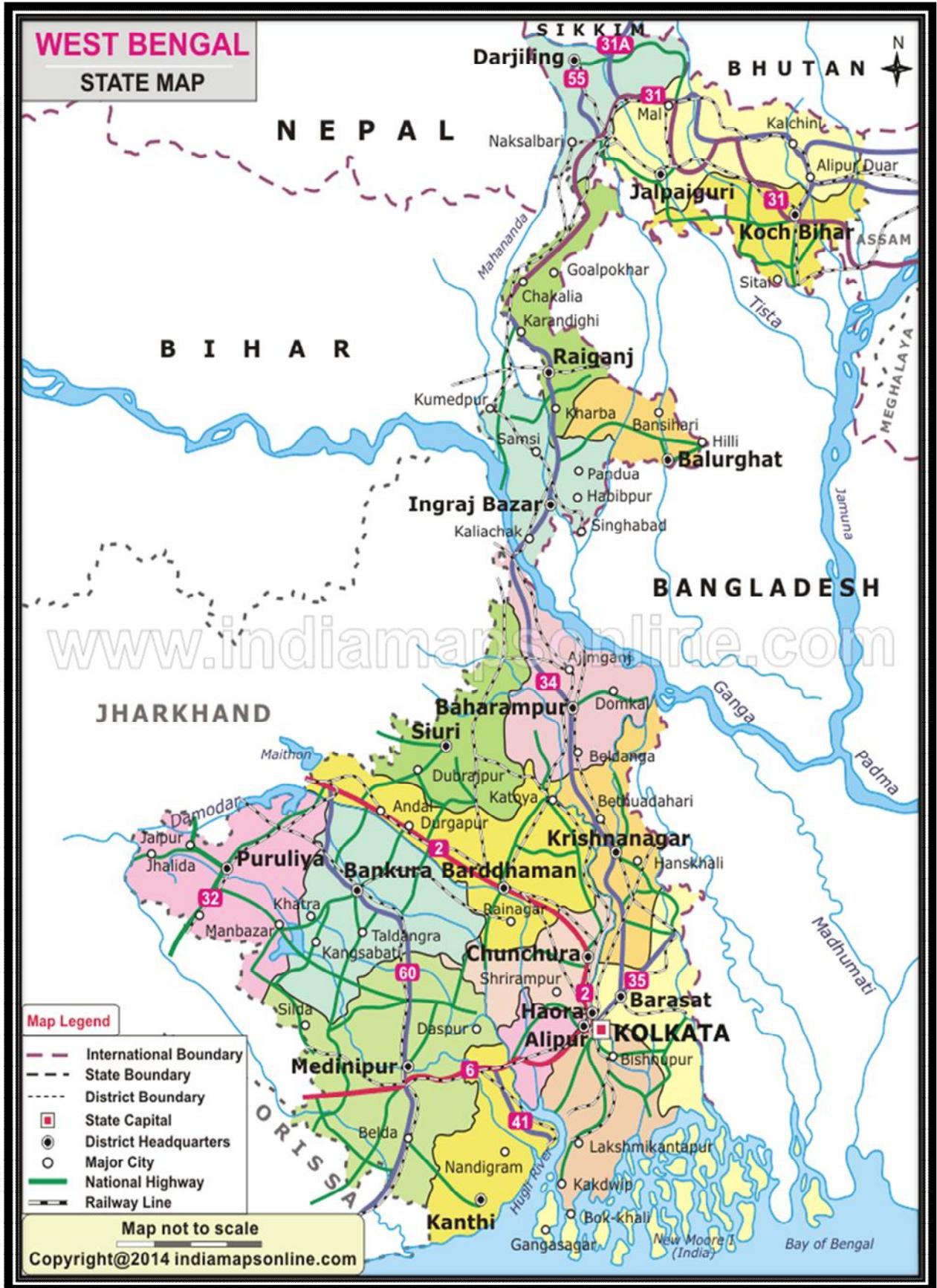
1.14.1.1: Geographical Location:

West Bengal, the only Indian State to have a coastline as well as the Himalayas, is situated in the eastern part of the country between 21°20' and 27°32' N latitude and 85°50' and 89°52' E longitude (Forest Survey of India, 2009, p. 163). It is bounded to the north by the state of Sikkim and the country of Bhutan, to the northeast by the state of Assam, to the east by the country of Bangladesh, to the south by the Bay of Bengal, to the southwest by the state of Odisha, to the west by the states of Jharkhand and Bihar, and to the northwest by the country of Nepal (Encyclopaedia Britannica).

1.14.1.2: Climate:

The State has a diverse climate, varying from moist tropical in the southeast to dry tropical in the southwest and from subtropical to temperate in the mountains in north (Forest Survey of India, 2009, p. 163). Throughout West Bengal there is a pronounced seasonal disparity in rainfall. For example, Kolkata averages about 64 inches (1,625 mm) per year, of which an average of 13 inches (330 mm) falls in August and less than 1 inch (25 mm) in December. The state also is subject to considerable variability from year to year. In the sub-Himalayan region, rainfall is considerably greater (Encyclopaedia Britannica). Annual rainfall varies from 900 mm in southwest to about 5,000 mm in northern parts of the State. The temperature also ranges between sub-zero in the hills during the winters to about 46°C in southern parts during the summer (Forest Survey of India, 2009, p. 163). The year may be broadly divided

MAP 1.1: WEST BENGAL STATE MAP



Source: (MapsofIndia, 2014)

into three marked seasons—the hot and dry season (March to early June), with dry sultry days and frequent thunderstorms; the hot and wet season (mid-June to September), when rain-bearing monsoon winds blow from the southwest; and the cold (cool) season (October to February), when days are dry and clear and stable atmospheric conditions prevail. (Encyclopaedia Britannica)

1.14.1.3: Area:

Geographical area of the State is 88,752 km² which is 2.7% of the total area of the country. (Forest Survey of India, 2009, p. 163).

1.14.1.4: Administrative Set up (Bureau of Applied Economics & Statistics, 2014, p. 1):

Capital of the State: Calcutta

Number of District: 19 (+2)

Number of Division: 3

Number of Sub division: 66

Number of police station: 507

Number of Blocks: 341

Municipal Town: 127

Non-Municipal Town: 785

Number of Villages: 40218

Number of Inhabited Village: 37469

Municipal Corporation: 6

Number of Municipality: 121

Number of Panchayat Samity: 333

Number of Gram Panchayat: 3349

1.14.1.5: Population:

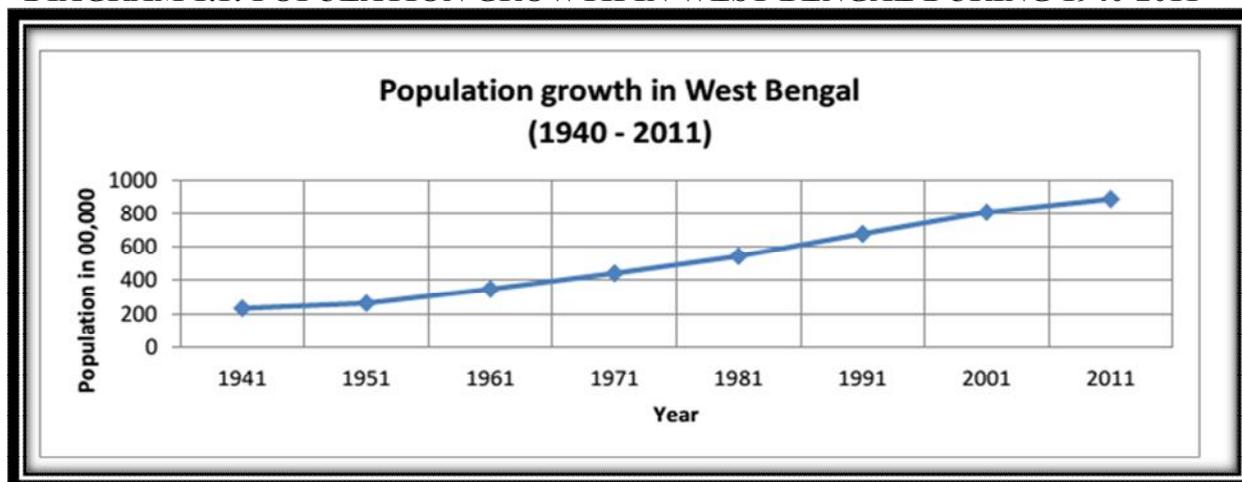
Total number of population is 91276115 out of which 46809027 are male and 44467088 are female. In percentage 51.28% are male and 48.72% are female. Numbers of females per 1000 males are 950; Density of population per square km is 1028. Most of the people live in rural area. 68.13% people live in rural area where as only 31.87% people are lived in urban area. In 2001, total population was 80176197 in which males were 41465985 while females were 38710212. The total population growth in this decade was 13.84 percent while in previous decade it was 17.84 percent. The population of West Bengal forms 7.54 percent of India in

2011. In 2001, the figure was 7.79 percent (Census of India, 2011).The populations in the different districts fall into four categories (Rajarhat PRASARI, 2011, p. 7):

1. Low population districts – Darjeeling, Dakshin Dinajpur, Cooch Bihar, Uttar Dinajpur and Purulia.
2. Moderately populated districts – Jalpaiguri, Maldah, Bankura, Birbhum
3. Medium populated districts – West Midnapur, East Midnapur, Nadia, Hooghly, and Howrah.
4. Highly populated districts – Murshidabad, Bardhman, North and South 24 Parganas.

The following Diagram 1.1, Table 1.1 and Table 1.2 show population growth in west Bengal over decades, population profile of West Bengal in condense form and district wise population by sex respectively.

DIAGRAM 1.1: POPULATION GROWTH IN WEST BENGAL DURING 1940-2011



Source: (Rajarhat PRASARI, 2011, p. 7)

**TABLE 1.1: POPULATION PROFILE OF WEST BENGAL
(in number)**

| Event | Males | Females | Total |
|-----------------------------|----------|----------|----------|
| Population | 46809027 | 44467088 | 91276115 |
| Urban Population | 14964082 | 14128920 | 29093002 |
| Rural Population | 31844945 | 30338168 | 62183113 |
| Urban Sex Ratio | 1,000 | 953 | |
| Rural Sex Ratio | 1,000 | 944 | |
| Population Sex Ratio | 1,000 | 950 | |
| Literates | 33818810 | 27719471 | 61538281 |
| Schedule Caste | 11003304 | 10459966 | 21463270 |
| Schedule Tribe | 2649974 | 2646979 | 5296953 |

Source: (Census of India, 2011)

TABLE 1.2: DISTRICTWISE POPULATION BY SEX

| Districtwise Population by Sex in West Bengal, Census 2011 | | | | | | |
|------------------------------------------------------------|--------------------|------------|----------|----------|----------|----------|
| District | Area in Sq. Km.(P) | Population | | | | |
| | | Male | Female | Total | Rural | Urban |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| West Bengal | 88752 | 46809027 | 44467088 | 91276115 | 62183113 | 29093002 |
| Burdwan | 7024 | 3966889 | 3750674 | 7717563 | 4639264 | 3078299 |
| Birbhum | 4545 | 1790920 | 1711484 | 3502404 | 3052956 | 449448 |
| Bankura | 6882 | 1838095 | 1758579 | 3596674 | 3296901 | 299773 |
| Purba Medinipur | 4713 | 2629834 | 2466041 | 5095875 | 4503161 | 592714 |
| Paschim Medinipur | 9368 | 3007885 | 2905572 | 5913457 | 5190771 | 722686 |
| Hooghly | 3149 | 2814653 | 2704492 | 5519145 | 3390646 | 2128499 |
| Purulia | 6259 | 1496996 | 1433119 | 2930115 | 2556801 | 373314 |
| North 24-Parganas | 4094 | 5119389 | 4890392 | 10009781 | 4277619 | 5732162 |
| South 24-Parganas | 9960 | 4173778 | 3988183 | 8161961 | 6074188 | 2087773 |
| Kolkata | 185 | 2356766 | 2139928 | 4496694 | - | 4496694 |
| Howrah | 1467 | 2500819 | 2349210 | 4850029 | 1775885 | 3074144 |
| Nadia | 3927 | 2653768 | 2513832 | 5167600 | 3728727 | 1438873 |
| Murshidabad | 5324 | 3627564 | 3476243 | 7103807 | 5703115 | 1400692 |
| Uttar Dinajpur | 3140 | 1551066 | 1456068 | 3007134 | 2644906 | 362228 |
| Dakshin Dinajpur | 2219 | 857199 | 819077 | 1676276 | 1439981 | 236295 |
| Malda | 3733 | 2051541 | 1937304 | 3988845 | 3447185 | 541660 |
| Jalpaiguri | 6227 | 1983064 | 1889782 | 3872846 | 2812495 | 1060351 |
| Darjeeling | 3149 | 937259 | 909564 | 1846823 | 1118860 | 727963 |
| Cooch Behar | 3387 | 1451542 | 1367544 | 2819086 | 2529652 | 289434 |

Source : Primary Census Abstract, 2011.

1.14.1.6: Religion and Caste

Hindu population and Muslim population are 70.54 % and 27.01 % respectively in this state. Schedule caste and schedule tribe populations are 26760223 in total. 29.32% of total populations are schedule caste and schedule tribe (Table 1.3).

TABLE1.3: DETAILS OF POPULATION OF WEST BENGAL ACCORDING TO RELIGION AND CASTE

| Description | Number of people | % |
|----------------|------------------|-------|
| Hindu | 64385546 | 70.54 |
| Muslims | 24654825 | 27.01 |
| Christian | 658618 | 0.72 |
| Sikh | 63523 | 0.07 |
| Buddhist | 282898 | 0.31 |
| Jain | 60141 | 0.07 |
| Others | 942297 | 1.03 |
| Not Stated | 228267 | 0.25 |
| Schedule Caste | 21463270 | 23.51 |
| Schedule Tribe | 5296953 | 5.80 |

Source: (Census of India, 2011)

1.14.1.7: Literacy

Total literates are 67.42% of total population. Male literacy rate (% of male literates out of male population) is 72.25% and that of Female is 62.34%.

1.14.1.8: Land Utilization

Total reporting area is 8684 thousand hectares out of which 1174 thousand hectares are forest area, 1733 thousand hectares are area under non-agricultural use, 21 thousand hectares are barren & unculturable land, 5 thousand hectares are land under Permanent Pastures & Other Grazing Land, 58 thousand hectares are land under miscellaneous tree groves not included in cropped land, 34 thousand hectares are culturable waste land, 22 thousand hectares are fallow land other than current fallow, 341 thousand hectares are current fallow and 5296 thousand hectares are cropped area (Table 1.4). Total available land in West Bengal is 8684 thousand

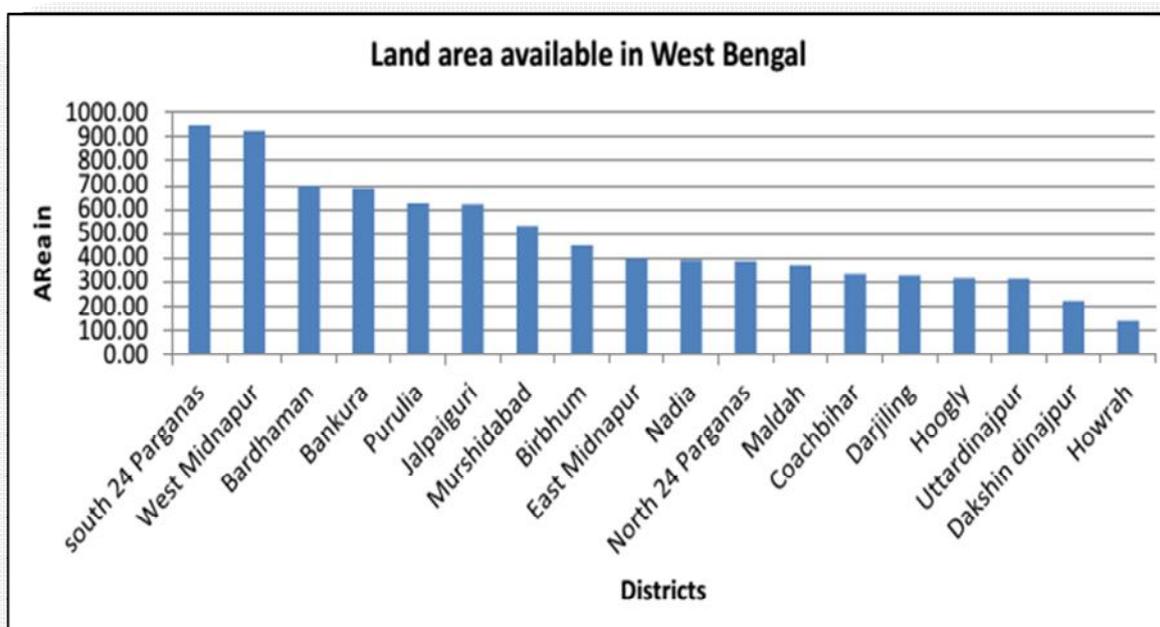
hectares, out of which above 50 percent is available in only 6 districts. South 24 Parganas District rank first in land availability and Howrah rank last (Diagram 1.2). But in agriculture area West Midnapur secures first position (Diagram 1.3).

TABLE 1.4: LAND UTILIZATION PATTERN IN WEST BENGAL

| Sl. No. | Land Utilization Pattern | Area (In '000 hectares) |
|---------|-------------------------------------------------------------------|-------------------------|
| 1 | Forest Area | 1174 |
| 2 | Non-Agricultural Use | 1733 |
| 3 | Barren & Unculturable Land, | 21 |
| 4 | Permanent Pastures & Other Grazing Land | 5 |
| 5 | Land Under Miscellaneous Tree Groves Not Included In Cropped Land | 58 |
| 6 | Culturable Waste Land, | 34 |
| 7 | Fallow Land Other Than Current Fallow | 22 |
| 8 | Current Fallow | 341 |
| 9 | Cropped Area | 5296 |

Source: (Bureau of Applied Economics & Statistics, 2014, pp. 81-83) & (Rajarhat PRASARI, 2011, p. 8) (Forest Survey of India, 2009, p. 163)

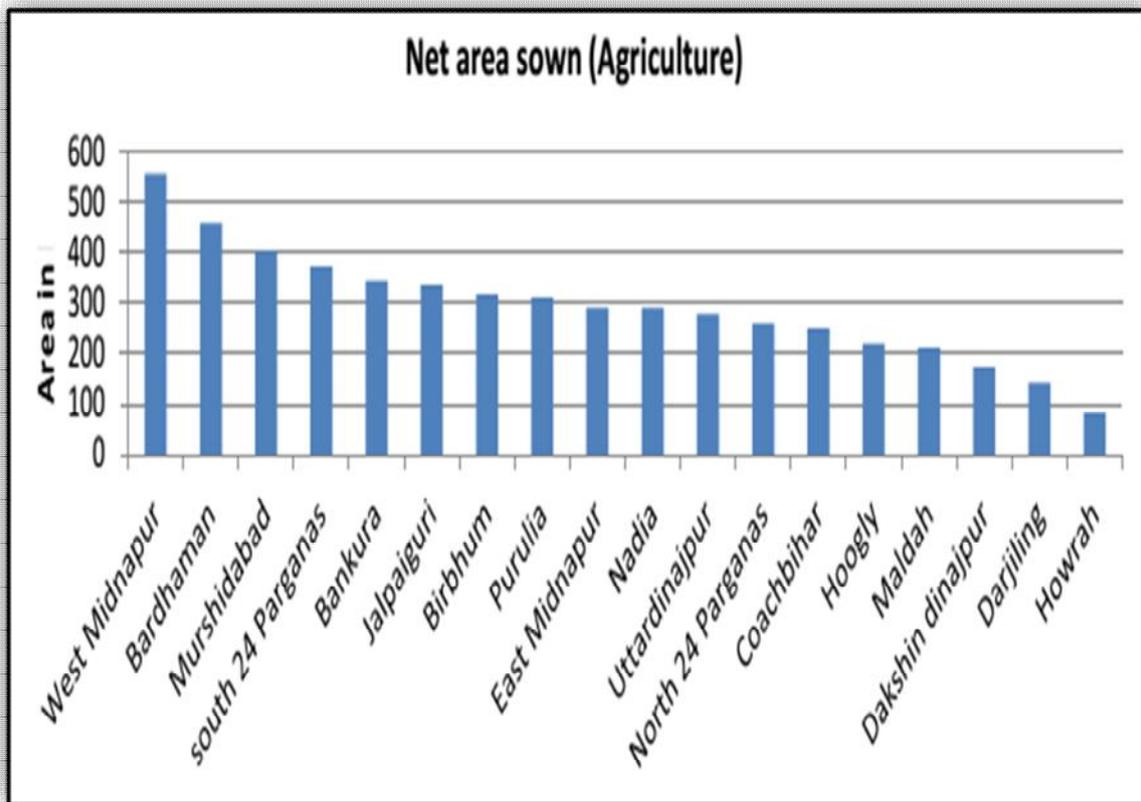
DIAGRAM 1.2: DISTRICTWISE LAND AVAILABILITY IN WEST BENGAL
(In '000 hectares)



Source: (Rajarhat PRASARI, 2011, p. 8)

DIAGRAM 1.3: DISTRICTWISE LAND AVAILABILITY FOR AGRICULTURE IN WEST BENGAL

(In '000 hectares)



Source: (Rajarhat PRASARI, 2011, p. 9)

1.14.1.9: Agriculture

Agriculture in West Bengal contributes considerably towards the country's annual crop production. Blessed with highly fertile lands and adequate irrigation facilities, Agriculture in West Bengal is characterized by high quality seeds and advanced farming techniques (Mapsofindia, 2013). Total cropped area is 5296 thousand hectares (Table 1.4) and total cultivators are 5116688 (Table 1.5), out of which 4500041 are male and 616647 are female (Census of India, 2011, p. 18). Area utilized for agriculture and the agriculture production in West Bengal are shown in Table1.6. Persons engaged in agriculture directly or indirectly in this district are also shown in table 1.5. In West Bengal around 96 per cent land holding is with “Marginal and Small farmers” with less than 2 Ha land (Choudhury, 2016). In West Bengal here is scope for cultivation of diversified agriculture and horticultural crops harvesting the wide climatic diversity in different geographical regimes (Rabo India Finance Pvt. Ltd, 2005, p. 6).

**TABLE 1.5: PERSONS ENGAGED IN AGRICULTURE DIRECTLY OR
INDIRECTLY IN WEST BENGAL**

| Sl. No. | Different Persons | Number |
|---------|---------------------|----------|
| 1 | Cultivators | 5116688 |
| 2 | Bargadars | 1539617 |
| 4 | Small Farmers | 980000 |
| 5 | Marginal Farmers | 5853000 |
| 6 | Agricultural Labour | 10188842 |

Source: (Agriculture Census Division, 2014, pp. 16-18) (Census of India, 2011, pp. 17-18)

Note: Marginal farmer possesses agriculture land measuring upto 1 hectare, Small farmer possesses agriculture land measuring more than 1 hectare and upto 2 hectares.

**TABLE 1.6: AREA UTILIZED FOR AGRICULTURE AND THE AGRICULTURE
PRODUCTION IN WEST BENGAL**

| Sl. No. | Crops | Area (thousand hectares) | Production (thousand tones) | No. of Cut Flowers (crore) |
|---------|-------------------------|--------------------------|-----------------------------|----------------------------|
| 1 | Cereals | 5903 | 16320 | |
| 2 | Pulses | 218 | 202 | |
| 3 | Oil Seeds | 728 | 821 | |
| 4 | Fibers | 585 | 8312 | |
| 5 | Spices | 76 | 123 | |
| 6 | Plantation Crops (tea+) | 140 | 279.30 | |
| 6 | Fruits | 220.60 | 3172.50 | |
| 7 | Vegetable & Misc. Crops | 417 | 13260 | |
| | Vegetables | 961.35 | 13875.51 | |
| 8 | Rose | 1.72 | | 79.36 |
| 9 | Tuberose | 5.17 | | 121.87 |
| 10 | Gladiolus | 2.65 | | 39.70 |
| 11 | Chrysanthemum | 0.50 | | 13.36 |
| 12 | Marigold | 6.33 | 53.42 | |
| | Jasmine | 0.46 | 0.63 | |
| 13 | Seasonal Flower | 4.75 | 7.83 | |
| 14 | Misc. Flower | 2.83 | 3.36 | |

Source: (Bureau of Applied Economics & Statistics, 2014, pp. 86-103)

1.14.1.10: Electricity

Striving to provide optimum electricity resources to all the districts, Power Sector of West Bengal works towards meeting the ever-increasing demands of the state. Attracting investors from all corners of India, the Power industry of West Bengal aims to establish more units within its premises (Mapsofindia, 2013). Total 37941 inhabited villages [no village in

Kolkata] (Bureau of Applied Economics & Statistics, 2014, p. 2) of West Bengal are electrified (Table1.8). Almost 99.9 % is that amount. Major source of electricity is Thermal. Solar Power is used very minimal. Details are given in table 1.7.

**TABLE1.7: GROSS GENERATION OF ELECTRICITY IN WEST BENGAL
(excluding N.T.P.C.)**

| Sl. No. | Particulars | 2012-2013 (in MKWH) |
|---------|-----------------|------------------------|
| 1 | Hydel | 555.87 |
| 2 | Thermal | 50887.95 |
| 3 | Diesel and Wind | 0.29 |
| 4 | Gas | .. |
| 5 | Solar Pv | 1.54 |
| 6 | Pump Storage | 797.50 |

Source: (Bureau of Applied Economics & Statistics, 2014, p. 118)

**TABLE1.8: DISTRICTWISE NO. OF VILLAGES ELECTRIFIED IN WEST
BENGAL**

| Sl. No. | Particulars | 2013 (in number) |
|---------|-------------------|---------------------|
| 1 | Burdwan | 2438 |
| 2 | Birbhum | 2256 |
| 3 | Bankura | 3577 |
| 4 | Purba Medinipur | 2964 |
| 5 | Paschim Medinipur | 7580 |
| 6 | Howrah | 727 |
| 7 | Hooghly | 1886 |
| 8 | North 24 Parganas | 1571 |
| 9 | South 24 Parganas | 2086 |
| 10 | Nadia | 1250 |
| 11 | Murshidabad | 1924 |
| 12 | Uttar Dinajpur | 1477 |
| 13 | Dakshin Dinajpur | 1579 |
| 14 | Malda | 1639 |
| 15 | Jalpaiguri | 742 |
| 16 | Darjeeling | 640 |
| 17 | Cooch Behar | 1138 |
| 18 | Purulia | 2467 |
| | West Bengal | 37941 |

Source: (Bureau of Applied Economics & Statistics, 2014, p. 120)

1.14.1.11: Market

The developments in the FMCG (fast moving consumer goods) Market in West Bengal have been remarkable in the past few years. The state has been experiencing massive developments in construction, industries, services sectors, etc, which has enhanced the level of income in turn increasing the expenditure levels. The penetration in the rural areas is not that high as compared to the cities. The FMCG companies should make efforts for enhancing the penetration levels by making people aware of the products and their advantages (Mapsofindia, 2016). Few popular market in West Bengal are Bankura, Barasat, Bardhaman, Basirhat, Contai, Dinhata, Dalkhola, Darjiling, Egra, Haldia, Jhargram, Canning, Raidighi, Joynagar, Baruipur, Kakdwip, Namkhana, Diamond Harbour, Sibanipur, Pathar-bazar, Amtala, Falta. Budge-budge, Krishnagar, Kulti, Mathabhanga, Mal, Mekliganj, Murshidabad, Memari, Nabadwip, Naihati, Panskura, Panihati, Purulia, Raiganj, Rampurhat, Ranaghat, Santipur, Srerampur, Sonamukhi, Suri, Taki, Tamluk, Tufanganj, Uluberia, Bagnan and Bhangar etc. The major cities in West Bengal where the concentration of FMCG market is more (Mapsofindia, 2016), are -

Kolkata: One of the largest cities in India, the cultural capital of the country, and home to a number of different industries, Howrah: Important railway terminus and contains several big industrial units, Durgapur: It is one of the most important industrial towns in India and the home to the SAIL steel plant, Asansol: Important for its industries, Midnapore: District Headquarter of Midnapore (West), important educational center, Kharagpur: The home of the premier engineering institute IIT Kharagpur, Siliguri: The largest town in North Bengal, important tourist base for travels to Hilly regions of West Bengal and Sikkim, Malda Town: The District Headquarter of Malda, famous for its mango production, Murshidabad: One of the oldest cities in West Bengal, famous for its rich historic past. Major Players (Mapsofindia, 2016) Of the FMCG Market in West Bengal are below-

ITC Kitchen of India, Cadbury India ltd, Britannia India ltd, Pepsi co., Marico, Parle Foods Pvt Ltd, Dabur India ltd., Nirma ltd, Reckitt Beckinser, Priya Foods, Colgate-Palmolive India, MTR Ready to Eat Range, Jyothy Laboratories, Cargill, ITC Ashirvad, Procter & Gamble, Coca-cola, Heinz co, Nestle, Coca-cola (Mapsofindia, 2016). Moreover this state has some regulated markets in different districts. Regulated markets in West Bengal by category and by district are given in the following table 1.9.

TABLE 1.9: REGULATED MARKETS IN WEST BENGAL

| District | (In Number) | |
|-------------------|--------------------------|--------------------|
| | Principal Market Yard | Sub-Market Yard |
| (1) | (2) | (3) |
| Burdwan | 4 | 41 |
| Birbhum | 3 | 29 |
| Bankura | 1 | 21 |
| Purba Medinipur | 2 | 23 |
| Paschim Medinipur | 2 | 31 |
| Howrah | 1 | 6 |
| Hooghly | 3 | 85 |
| North 24-Parganas | 1 | 53 |
| South 24-Parganas | 1 | 45 |
| Kolkata | 1 | - |
| Nadia | 3 | 9 |
| Murshidabad | 4 | 27 |
| Uttar Dinajpur | 2 | 26 |
| Dakshin Dinajpur | 1 | 16 |
| Malda | 2 | 17 |
| Jalpaiguri | 3 | 57 |
| Darjeeling | 2 | 37 |
| Cooch Behar | 6 | 108 |
| Purulia | 2 | 10 |
| West Bengal | 44 | 641 |

Source: Directorate of Agricultural Marketing,
Government of West Bengal.

Source: (Bengal Chamber, 2011-2012, p. 91)

1.14.1.12: Transport

Transport facilities in West Bengal are quite developed, contributing to the economy of the state. Transport facilities in West Bengal are quite developed, contributing to the economy of the state (Mapsofindia, 2013).

1.14.1.12.1: Road - In this state surfaced road length is 118954.17 km and unsurfaced road length is 118217.77 km. This road includes National highways, State highways, District roads and Village roads. Details of roads are given below in table 1.10

TABLE 1.10: DETAILS OF ROADS IN WEST BENGAL

| Sl.No. | Road Maintained By | 2012-2013 (in Kilometers) |
|--------|-------------------------------------------------------------------------------|------------------------------|
| 1 | PWD | 18442 |
| 2 | Municipalities & Municipal Corporations: Surfaced Unsurfaced | 28767.78 9042.56 |
| 3 | Zilla Parishad Surfaced Unsurfaced | 18935.92 20351.05 |
| 4 | Panchayat Samities and Gram Panchayats Surfaced Unsurfaced | 52808.47 88824.16 |

Source: (Bureau of Applied Economics & Statistics, 2014, pp. 146,147,151)

1.14.1.12.2: Rail – The different districts of West Bengal are very well connected by rail. The two railway stations of the capital city of Kolkata: Howrah and Sealdah are the major stations of the eastern region. Kolkata occupies a central position in Indian railways, as it is the headquarters of Eastern Railway and South Eastern Railway, which are the two sections of the Indian Railways. The Northeast Frontier Railway connects the northern parts of West Bengal. The Kolkata metro is another means of transport within Kolkata and it is the first underground railway in India. The Darjeeling Himalayan Railway (NFR) connects the hill station, Darjeeling with other parts of the state. UNESCO has declared it a World Heritage Site (Mapsofindia, 2013). From Kolkata, Malda, Siliguri, New-Jalpaiguri, Howrah, Khargpur, Midnapur and Burdwan frequent train service is available to communicate with different places of this state. Local trains cover almost the whole area of this state. Total rail routes are 4511.18 kilometers out of which 2434082 kilometres of Eastern Railway, 1075.9 kilometres of South-Eastern Railway, 975.51 kilometres of North-East Frontier Railway and

25.15 kilometres of Metro Railway. Total number of rail stations is 822 (Bengal Chamber, 2011-2012, p. 184)

1.14.1.12.3: River – The river transport has huge potential to develop daily transport, tourism and business activities. This state has also river transport facilities both inland and international. The river Ganga is not only an inland transporting river but is also used for international transport. Following a central proposal to develop a water transport service along 12 rivers in West Bengal, the state irrigation and waterways department has started a survey to come up with a plan to spruce up the rivers to make them navigable. The 12 rivers identified for the inland waterway transport are the Damodar, Rupnarayan, Subarnarekha, Ajay River, Ichhamati, Bakreswar, Mayurakshi, Jalangi, Darakeswar, the Ganga-Bhagirathi stretch, DVC canal and the Sunderban waterways (Chakraborti, 2015). Inland Water Transport (IWT) route from Haldia to Bangladesh runs through the Sunderbans delta. This is a tidal inland waterway route which forms part of the trade and transit route under the Indo-Bangladesh Protocol. The hydrographic survey was conducted in 1988-89 and proposal submitted to the Government for its declaration as National Waterway. (Water Resource Information System of India). Ganga-Bhagirathi-Hooghly river system from Allahabad to Haldia was declared as National Waterway No.1 vide National Waterway (Allahabad-Haldia stretch of the Ganga Bhagirathi- Hooghly river) Act 1982 (49 of 1982). It became operative from 27th Oct 1986 after the formation of the IWAI. The waterway extends from Haldia to Allahabad for a distance of 1620 kms. The Hooghly river portion of the waterway from Haldia to Nabadwip is tidal. Sea going vessels navigate up to Calcutta (140 kms) and the fairway up to Calcutta is maintained by the Calcutta Port Trust. From Calcutta up to Tribeni there is no restriction for navigation by inland vessels of a loaded draft up to 4m. From Nabadwip to Jangipur the waterway is formed by Bhagirathi river. Bhagirathi river is a regulated river because of the Barrages at Farakka and Jangipur. With the controlled discharge from the Farakka Barrage and limited river conservancy work a navigable depth of 2m is maintained in this route throughout the year. From Farakka upstream the navigable route is through the main Ganga river. The Feeder Canal and the navigation lock at Farakka become the link between the Bhagirathi and main Ganga upstream Farakka Barrage. The large variation in discharge along with unstable morphological condition of bank and bed, heavy sediment load, continuous braiding and meandering make development of navigational channel a complex task. NW-1 stretch is defined as Ganga-Bhagirathi-Hooghly river system from Allahabad to Haldia (1620km). This waterway is declared as National Waterway in

1986.NW-1 is passing through UP, Bihar, Jharkhand and West Bengal.Length of Haldia–Farakka waterway is 560Km, of Farakka–Patna is 460Km and of Patna–Allahabad is 600 km. (Water Resource Information System of India)

1.14.1.12.4: Port – The state has two ports of its own, Kolkata and Holdia, Trials are going on to make private ports in Sagar, Kulpi of South 24 Parganas district and Tajpur of East Medinipur district considering the prospect of marketing of agricultural and industrial products.

1.14.1.12.5: Airport – The state has an international airport, Netaji Subhash Chandra Bose International Airport, in Kolkata, the state capital and another domestic airport at Bagdogra near Siliguri, in the northern Bengal. These two airports are served by nearly all public and private airlines and linked to major Indian cities like Delhi, Mumbai, Chennai and so on. Most of the destinations in West Bengal are located at convenient distance from Kolkata and Bagdogra (Mapsofindia, 2013). First aerotropolis and first private airport of India is located in Andal. It is West Bengal's second largest airport. The state Government has proposed recently to establish airports in Durgapur, Cooch-Behar, Behala, Malda and Balurghatt.

1.14.1.13: Workers

Percentage of total workers to total population is 38.09%. That means most of the population are non-workers, which is 61.91% of total population. Among workers 14.72% workers are cultivator, 29.32% workers are agricultural workers (Table 1.11).

1.14.1.14: Communication

On January 1882, telecom service was initiated in Kolkata, only six years after Graham Bell invented telephone (Mapsofindia, 2013). Total number of telephone exchanges is 1877 out of which 1365 are under West Bengal Telecom and 512 are under Kolkata Telephones. Total number of post offices in this district is 8756 out of which 7669 are rural and 1087 are urban post offices (Bureau of Applied Economics & Statistics, 2014, p. 152). All network systems are available through mobile phone and Internet in this district.

1.14.1.15: Commercial Bank

Total number of commercial banks is 111778 out of which 41626 banks are located in rural area, 29909 are in semi-urban and 40245 are located in urban-metropolitan area (Bureau of Applied Economics & Statistics, 2014, p. 165).

**TABLE 1.11: WORKERS' PROFILE OF WEST BENGAL
(in number)**

| Total | Event | Males | Females | Total |
|--------------------------|-------------------------------|----------|----------|----------|
| Population = 91276115 | Workers | 26716047 | 8040308 | 34756355 |
| | Non- Workers | 20092980 | 36426780 | 56519760 |
| Workers = 34756355 | Main Workers | 21678279 | 4008351 | 25686630 |
| | Marginal Workers | 5037768 | 4031957 | 9069725 |
| Workers = 34756355 | Cultivator | 4500041 | 616647 | 5116688 |
| | Agricultural Labourers | 7452814 | 2736028 | 10188842 |
| | Workers in Household Industry | 1114683 | 1349441 | 2464124 |
| | Others Workers | 13648509 | 3338192 | 16986701 |

Source: (Bureau of Applied Economics & Statistics, 2013)

1.14.1.16: Cooperative Societies

The state has 25607 numbers of co-operative societies in which 6966 thousand members are registered. Total working capitals are running for these societies are Rs. 2433302 lacs (Table 1.12).

1.14.1.17: Newspapers & Periodicals and Radio & TV Station

Total number of Newspapers and periodicals are published in the state are 5089 out of which 273 are dailies, 11 are tri/bi weeklies, 942 are weeklies, 972 fortnightlies, 1519 monthlies, 888 are quarterlies, 60 are annual and 244 are others. Total number of radio stations is 11 and total number of T.V. Transmitting Centres is 36 in West Bengal (Bureau of Applied Economics & Statistics, 2014, pp. 216-217).

1.14.1.18: Places for Tourist Importance

Presenting a rich and vibrant heritage of West Bengal, Tourism industry offers an incredible palate of sightseeing options to the visitors. Adorned with ancient glory and bright traditions, each and every Tourist corner of West Bengal speaks of a distinct tale. From north to south and east to west, the entire region of the state is brimming with pristine beauty (Mapsofindia, 2013). Kolkata, Digha, Mandarmoni, Mukutmonipur, Bankura, Purulia, Falta, Raichak,

Diamond Harbour, Bakkhali, Gangasagars, Kishorinagar, Jaynagar, Nimpith, Susunia, Tarapith, Mayapur, Murshidabad, Nabadwip, Malda, Gour, Adina, Siliguri, Cooch-Behar, Malbazar, Darjeeling, Jalpaiguri, Baxaduar and mangpu etc. are the places of the state which have tourist importance. A large number of tourists have been coming, visiting and spending money for their enjoyment and collecting few things as a memento of their tour (Table1.13). During 2013 total 1245202 number of foreign tourist came here (Bureau of Applied Economics & Statistics, 2014, p. 215).

1.14.1.19: Forest Area

Total Forest area of the state is 1188 thousand hectares consisting of 706 thousand hectares of reserved forests, 377 thousand hectares of protected forests and unclassified state forest and others are 105 thousand hectares. The State has an area of 0.29 million ha i.e. 3.26% of its geographical area under Protected Areas comprising 5 National Parks and 15 Wildlife Sanctuaries. There are 2 Tiger Reserves, namely, Sundarbans and Buxa in the State. In addition, 2 Elephant Reserves namely Eastern Duars and Mayur Jharna have been formed in the northern and southern parts of the State, respectively (Forest Survey of India, 2009, p. 163). Table 1.14 shows district wise forest cover in West Bengal in square kilometres during 2007.

TABLE 1.12: DETAILS OF CO-OPERATIVE SOCIETIES IN WEST BENGAL

| Number, Membership and Financial Position of Co-operative Societies of West Bengal in different years | | | | | | |
|-------------------------------------------------------------------------------------------------------|---------|---------|---------|---------|---------|---------|
| Particulars | 1990-91 | 2000-01 | 2010-11 | 2011-12 | 2012-13 | 2013-14 |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Number of Societies | 17150 | 21885 | 25265 | 25515 | 25607 | 26564 |
| (a) Credit | 11932 | 13502 | 12316 | 12389 | 12392 | 13030 |
| (b) Non-Credit | 5218 | 8383 | 12949 | 13126 | 13215 | 13534 |
| Number of Members (in thousand) | 6741 | 7943 | 6172 | 6777 | 6966 | 7071 |
| (a) Credit | 6044 | 7076 | 5502 | 6098 | 6202 | 6231 |
| (b) Non-Credit | 697 | 867 | 670 | 679 | 764 | 840 |
| Working Capital (Rs. In lakh) | 190698 | 864204 | 2157272 | 2663636 | 2433302 | 2526270 |
| (a) Credit | 178835 | 836150 | 2064923 | 2552817 | 2396616 | 2491695 |
| (b) Non-Credit | 11863 | 28054 | 92349 | 110819 | 36686 | 34575 |
| Loans Advanced (Rs. In lakh) | | | | | | |
| (a) Credit | 77588 | 361463 | 1117362 | 1500586 | 1598917 | 1679748 |
| (b) Non-Credit | - | - | - | - | - | - |

Note : Excluding the Co-operative Societies of Weavers, Industries, Milk and Fisheries.

Source : Registrar of Co-operative Societies, Govt. of West Bengal.

TABLE 1.13: DETAILS OF FOREIGN TOURIST ARRIVALS IN WEST BENGAL

| Countrywise Foreign Tourist Arrivals in West Bengal | | | | | | | Number |
|-----------------------------------------------------|-------------------|---------|---------|---------|---------|---------|---------|
| Sl. No. | Country of Origin | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 1 | United Kingdom | 45223 | 47080 | 47551 | 48026 | 49225 | 50210 |
| 2 | U.S.A. | 37437 | 38979 | 39370 | 39765 | 40709 | 41525 |
| 3 | Sri Lanka | 16635 | 17320 | 17493 | 17668 | 18110 | 18475 |
| 4 | France | 23182 | 24137 | 24378 | 24622 | 25262 | 25770 |
| 5 | Germany | 29497 | 30712 | 31020 | 31335 | 32113 | 32755 |
| 6 | Japan | 54101 | 56330 | 56893 | 57465 | 58870 | 60000 |
| 7 | Italy | 17080 | 17784 | 17962 | 18144 | 18595 | 19000 |
| 8 | Malaysia | 10122 | 10539 | 10644 | 10750 | 11020 | 11250 |
| 9 | Saudi Arabia | 3607 | 3756 | 3794 | 3834 | 3926 | 4000 |
| 10 | Canada | 21560 | 22448 | 22672 | 22896 | 23461 | 23950 |
| 11 | Australia | 23418 | 24383 | 24626 | 24866 | 25502 | 26010 |
| 12 | Singapore | 18354 | 19110 | 19301 | 19494 | 19982 | 20380 |
| 13 | U.A.E. | 3110 | 3238 | 3270 | 3303 | 3384 | 3450 |
| 14 | Switzerland | 6599 | 6870 | 6938 | 7006 | 7181 | 7332 |
| 15 | Iran | 1880 | 1957 | 1976 | 1995 | 2045 | 2100 |
| 16 | Bangladesh | 448056 | 466515 | 471180 | 475892 | 477930 | 487500 |
| 17 | Nepal | 4729 | 4924 | 4973 | 5023 | 5161 | 5265 |
| 18 | Thailand | 6392 | 6655 | 6721 | 6786 | 6965 | 7100 |
| 19 | Burma | 4262 | 4437 | 4481 | 4526 | 4638 | 4730 |
| 20 | Sweden | 1274 | 1326 | 1339 | 1352 | 1390 | 1420 |
| 21 | China | 2628 | 2736 | 2763 | 2790 | 2861 | 2920 |
| 22 | Korea | 3611 | 3759 | 3796 | 3832 | 3938 | 4020 |
| 23 | Netherlands | 1513 | 1575 | 1590 | 1604 | 1648 | 1680 |
| 24 | Spain | 2634 | 2742 | 2770 | 2800 | 2868 | 2925 |
| 25 | Bhutan | 3910 | 4071 | 4112 | 4153 | 4248 | 4330 |
| 26 | Israel | 571 | 594 | 600 | 606 | 623 | 635 |
| 27 | Ireland | 939 | 977 | 987 | 997 | 1080 | 1100 |
| 28 | New Zealand | 1179 | 1227 | 1240 | 1254 | 1290 | 1315 |
| 29 | Russia | 1839 | 1914 | 1933 | 1955 | 2015 | 2055 |
| 30 | Others | 338329 | 352323 | 355846 | 361507 | 362300 | 372000 |
| Total | | 1133671 | 1180418 | 1192219 | 1206246 | 1218340 | 1245202 |

U.A.E. = United Arab Emirates. Source : Directorate of Tourism,
Government of West Bengal.

TABLE 1.14: DISTRICTWISE FOREST COVER IN WEST BENGAL IN 2007
(Area in km²)

| District | Geographical area | Very dense forest | Mod. dense forest | Open forest | Total | % of G.A. | Change* |
|--------------------------------|-------------------|-------------------|-------------------|--------------|---------------|--------------|-----------|
| Bankura ^T | 6,882 | 214 | 510 | 332 | 1,056 | 15.34 | 2 |
| Bardhaman ^T | 7,024 | 44 | 135 | 82 | 261 | 3.72 | 3 |
| Birbhum ^T | 4,545 | 0 | 42 | 63 | 105 | 2.31 | 1 |
| Kolkata | 185 | 0 | 0 | 0 | 0 | 0.00 | 0 |
| Coochbehar | 3,387 | 0 | 15 | 79 | 94 | 2.78 | 0 |
| Dakshin Dinajpur ^T | 2,219 | 0 | 2 | 13 | 15 | 0.68 | 0 |
| Darjeeling TH | 3,149 | 714 | 663 | 912 | 2,289 | 72.69 | -1 |
| Howrah | 1,467 | 0 | 53 | 93 | 146 | 9.95 | 0 |
| Hoogli | 3,149 | 0 | 9 | 52 | 61 | 1.94 | 0 |
| Jalpaiguri ^T | 6,227 | 681 | 514 | 1,311 | 2,506 | 40.24 | 6 |
| Malda ^T | 3,733 | 0 | 113 | 51 | 164 | 4.39 | 0 |
| Medinipur ^T | 14,081 | 255 | 1,169 | 1,171 | 2,595 | 18.43 | 5 |
| Murshidabad ^T | 5,324 | 0 | 63 | 44 | 107 | 2.01 | 0 |
| Nadia | 3,927 | 2 | 74 | 53 | 129 | 3.28 | 0 |
| North 24 Parganas | 4,094 | 20 | 18 | 51 | 89 | 2.17 | 0 |
| Purulia ^T | 6,259 | 43 | 373 | 381 | 797 | 12.73 | -4 |
| South 24 Parganas ^T | 9,960 | 1,014 | 889 | 501 | 2,404 | 24.14 | 12 |
| Uttar Dinajpur | 3,140 | 0 | 2 | 174 | 176 | 5.61 | 0 |
| Total | 88,752 | 2,987 | 4,644 | 5,363 | 12,994 | 14.64 | 24 |

* Change compared to 2005 assessment (revised).

Source: (Forest Survey of India, 2009, p. 165)

1.14.1.20: Educational Institutes

Total number of schools of West Bengal is 82522, out of which 51034 students are studying in Primary / Junior Basic, 3991 in Junior High and 9102 in High & Higher Secondary. Numbers of students are 7248376, 4270456 and 3830541 in Primary / Junior Basic, Junior High and High & Higher Secondary schools respectively. In these three categories of schools total number of students is 15349373. Following Table 1.15 gives the details-

1.14.1.21: Houseless

In 2011, total 134040 peoples are lived on footpath or without any roof cover in West bengal. Out of which 91839 are males and 42201 are females. 9556 houseless are bellow 6 years age. 41.02% of houseless populations are literates (Census of India, 2011).

TABLE 1.15: NUMBER OF SCHOOLS BY SCHOOLS' TYPE

| Sl.No. | Type of School | Number of Schools |
|---------------|----------------------------------|--------------------------|
| 1 | Primary / Junior Basic | 51034 |
| 2 | SSK & SSP | 16105 |
| 3 | Junior High | 3991 |
| 4 | NSK | 1819 |
| 5 | High and Higher Secondary | 9102 |
| 6 | ICSE | 305 |
| 7 | CBSE | 166 |
| | TOTAL | 82522 |

Source: (Bureau of Applied Economics & Statistics, 2014, pp. 76-77)

1.14.1.22: Disability

Total number of disables in this state is 2017406, out of which 1127181 are male disables and 890225 are female disables. In this state disable in speech are 147336 and disable in hearing are 315192 (Census of India, 2011).

1.14.1.23: Reasons for Selecting West Bengal

- As a part of Bengal West Bengal have been getting honour from past. Political stability continues here for long time from history, whether it was Mauryan Empire, Gupta Empire, Pala dynasty, Muslim ruler or British-controlled government. Even after independence The Indian National Congress (Congress Party) dominated the West Bengal government during the state's first three decades, then the CPI-M led left front remained in power 34 years and now Trinamul Congress took the charge of government since 2011 and is continuing.
- Since, West Bengal, is bounded to the north by the state of Sikkim and the country of Bhutan, to the northeast by the state of Assam, to the east by the country of Bangladesh, to the south by the Bay of Bengal, to the southwest by the state of Odisha, to the west by the states of Jharkhand and Bihar, and to the northwest by the country

of Nepal , it is suitable for expanding business with other states of India and with outside the countries especially with SAARC countries.

- Total reporting area is 8684 thousand hectares out of which 13.52% are forest area and 60.99 % are cropped area. Agriculture in West Bengal contributes considerably towards the country's annual crop production. In West Bengal, there is a scope for cultivation of diversified agricultural and horticultural crops in different geographical regions with the wide climatic diversity. With these agricultural and horticultural activities flowers, nectars and pollens are available in maximum days of a year, which is suitable for apiculture development.
- In area, West Bengal ranks (14th) as one of the smaller states of India and as per population West Bengal ranks (4th) as one of the largest states of India. The capital is Kolkata, India's third largest metropolitan city after Mumbai and Delhi. Total number of Villages: 40218 in West Bengal. Most of the people live in rural area. Total minority populations are 29.21 % in this state. Schedule caste and schedule tribe populations are 29.32% of total populations. Total Number of Literates is 67.42% of total population. Hence, here is huge scope of self employment through apiculture. Apiculture training and awareness programme can motivate these people for keeping honey-bees.
- Most of the populations are non-workers, which is 61.91% of total population. Among workers 14.72% workers are cultivator, 29.32% workers are agricultural workers. In West Bengal around 96 per cent land holding is with “marginal and small farmers” with less than 2 hectares land. Total number of bargadars in the state is 1539617. In addition, Total houseless people are 134040 and partially disables (speech & hearing) are 462528 in the state. Beekeeping can give them alternative source of income so that they can empower.
- Total number of schools of West Bengal is 82522. In Primary / Junior Basic, Junior High and High & Higher Secondary schools total number of students is 15349373. Special awareness and motivating camp as well as beekeeping training programme can be made at school level. If 10% of these students can able to keep bees then India can partially fulfill the target of one crore bee-colonies.
- Business support activities like electricity. Huge number of popular markets, good transport facilities especially for migratory beekeeping, sound communication facilities,

sufficient number of commercial bank, .strong experience in co-operative activities are available in West Bengal, which is suitable for development of apiculture cooperative marketing.

- Since most of the places of state have tourist importance, there remains a great scope of popularizing the apiculture products through the tourism industry.

1.14.2: South 24 Parganas

The district of South Twenty Four Parganas derives its name from the number of parganas comprised in the Zamindari (Land Lordship) of Calcutta (modern Kolkata), which was ceded to East India Company in 1757 by the then Nawab (King) of Bengal Mir Jafar. On the 20th December 1757, Nawab Mir Jafar, made an agreement with the East India Company regarding the Zamindari or landholder's right over a tract of country known as the Zamindari of Calcutta or as the Twenty Four Parganas Zamindari from the number of parganas including in it. The names of such parganas were : (1) Akbarpur (2) Amirpur (3) Azimabad (4) Balia (5) Baridhati (6) Basandhair (7) Calcutta (8) Dokhin Sagar (9) Garh (10) Hathiagarh (11) Ikhtiarpur (12) Kharijuri (13) Khaspur (14) Maidanmal (or Mednimall) (15) Magura (16) Manpur (17) Mayda (18) Munragacha (19) Paikan (20) Pechakuli (21) Satal (22) Shahnagar (23) Shahpur, and (24) Uttar Pargana. The tract lay chiefly to the south of Calcutta and comprised an area of 882 square miles. On 1st March 1986, Twenty Four Parganas district has been bifurcated into two districts and North Twenty Four Parganas and South Twenty Four Parganas districts have been commissioned. The physical features of the district Twenty Four Parganas are those common to deltaic land within the limits of the Gangetic delta and it is little raised above flood level (Census of India, 2011, pp. 9-11). Some important points (Census of India, 2011), (Bureau of Applied Economics & Statistics, 2013) have to be noted, for the purpose of this study, are as following -

1.14.2.1: Geographical Location

South 24 Parganas district lays between latitude 22°33.45" north to 21°29.00" north and longitude 89°04.50" east to 88°03.45" east. South Twenty Four Parganas is the largest district of West Bengal State and the second most populous district, located at the South-East corner of the State. Kolkata and north 24 Parganas districts have specified its north boundary and the south boundary is specified by the Bay of Bengal, east by 'Bangladesh' and West by the famous river the Ganges.

1.14.2.2: Climate

Normal Annual rainfall is 2178 mm.

Average annual Range of Temperature is

Maximum - 38° Celsius

Minimum - 7° Celsius

1.14.2.3: Area

Total area of this district is 9960 square Km. According to the volume of area the district stands first in position out among the districts of West Bengal.

1.14.2.4: Administrative set up

District Head Quarters: Alipore

Sub division: This district consists of five sub divisions. Those are Alipore Sadar, Baruipur, Canning, Diamond Harbour and Kakdwip.

Number of police station: 34

Number of Inhabited villages: 1994

Number of Mouza: 2139

Number of Municipality: 7

Number of Block: 29

Number of Panchayat Samity: 29

Number of Gram Panchayat: 310

Number of Gram Sansad: 4882

1.14.2.5: Population

Total number of population is 81,61,961 out of which 41,73,778 are male and 39,88,183 are female. In percentage 51.14% are male and 48.86% are female. Numbers of females per 1000 males are 956; Density of population per square km is 819. Most of the people live in rural area. 74.42% people live in rural area where as only 25.58% people are lived in urban area. According to the census report in last four consecutive years 1981, 1991, 2001 and 2011 the population of this district are 52,09,942; 57,15,030; 69,06,689 and 81,61,961. South 24 Parganas District ranks 4th in decadal Population growth rate among the Districts with 18.2%. According to population the district is placed in 2nd position and according to population density per sq. km it ranks 12th out of all districts of West Bengal. (Table 1.16)

**TABLE 1.16: DISTRICT PROFILE OF SOUTH 24 PARGANAS
(in number)**

| Event | Males | Females | Total |
|-----------------------------|--------------|----------------|--------------|
| Population | 41,73,778 | 39,88,183 | 81,61,961 |
| Urban Population | 10,64,559 | 10,23,214 | 20,87,773 |
| Rural Population | 31,09,219 | 29,64,969 | 60,74,188 |
| Urban Sex Ratio | 1,000 | 961 | |
| Rural Sex Ratio | 1,000 | 954 | |
| Population Sex Ratio | 1,000 | 956 | |
| Literates | 30,43,277 | 24,88,380 | 55,31,657 |
| Schedule Caste | 12,66,504 | 11,97,528 | 24,64,032 |
| Schedule Tribe | 49,195 | 47,781 | 96,976 |

Source: (Census of India, 2011, pp. 17-18)

1.14.2.6: Religion and Caste

Hindu population and Muslim population are 63.17% and 35.57% respectively in this district. Schedule caste and schedule tribe populations are 2561008 in total. 31.38% of total populations are schedule caste and schedule tribe (Table 1.17). South 24 Parganas District has highest Scheduled Caste Population in the State. South 24 Parganas District occupies 14th position in terms of Scheduled Tribe Population in the State.

1.14.2.7: Literacy

Total literates are 67.77% of total population. Male literacy rate (% of male literates out of male population) is 72.91% and that of Female is 62.39%.

TABLE 1.17: DETAILS OF POPULATION OF SOUTH 24 PARGANAS DISTRICT ACCORDING TO RELIGION AND CASTE

| Description | Number of people | % |
|----------------|------------------|-------|
| Hindu | 5,155,545 | 63.17 |
| Muslims | 2,903,075 | 35.57 |
| Christian | 66,498 | 0.81 |
| Sikh | 2,783 | 0.03 |
| Buddhist | 2,494 | 0.03 |
| Jain | 972 | 0.01 |
| Others | 6,065 | 0.07 |
| Not Stated | 24,529 | 0.30 |
| Schedule Caste | 24,64,032 | 30.19 |
| Schedule Tribe | 96,976 | 1.19 |

Source: (Census of India, 2011)

1.14.2.8: Land Utilization

Total reporting area is 948710 hectares out of which 426300 hectares is forest area, 144470 hectares is area under non-agricultural use, 240 hectares is barren & unculturable land, 3340 hectares is land under miscellaneous tree groves not included in cropped land, 430 hectares is culturable waste land, 250 hectares is fallow land other than current fallow, 13100 hectares is current fallow and 360580 hectares is cropped area. (Table 1.18)

TABLE 1.18: LAND UTILIZATION PATTERN IN THE DISTRICT OF SOUTH 24 PARGANAS

| Sl. no. | Land Utilization Pattern | Area (In Hectares) |
|---------|-------------------------------------------------------------------|--------------------|
| 1 | Forest Area | 426300 |
| 2 | Non-Agricultural Use | 144470 |
| 3 | Barren & Unculturable Land, | 240 |
| 4 | Permanent Pastures & Other Grazing Land | - |
| 5 | Land Under Miscellaneous Tree Groves Not Included In Cropped Land | 3340 |
| 6 | Culturable Waste Land, | 430 |
| 7 | Fallow Land Other Than Current Fallow | 250 |
| 8 | Current Fallow | 13100 |
| 9 | Cropped Area | 360580 |

Source: (Bureau of Applied Economics & Statistics, 2013)

1.14.2.9: Agriculture

Total cropped area is 360580 hectares and total cultivators are 355350, out of which 302118 are male and 53232 are female. Area utilized for agriculture and the agriculture production in

the district of South 24 Parganas are shown in the following Table 1.20. Persons engaged in agriculture directly or indirectly in this district are shown in the following Table 1.19.

TABLE 1.19: PERSONS ENGAGED IN AGRICULTURE DIRECTLY OR INDIRECTLY IN SOUTH 24 PARGANAS

| Sl. No. | Different Persons | Number |
|---------|---------------------|--------|
| 1 | Cultivators | 355350 |
| 2 | Bargadars | 142562 |
| 3 | Patta Holders | 182897 |
| 4 | Small Farmers | 67263 |
| 5 | Marginal Farmers | 538112 |
| 6 | Agricultural Labour | 803250 |

Source: (Bureau of Applied Economics & Statistics, 2013) (Census of India, 2011, p. 18)

Note: Marginal farmer possesses agriculture land measuring upto 1 hectare, Small farmer possesses agriculture land measuring more than 1 hectare and upto 2 hectares.

TABLE 1.20: AREA UTILIZED FOR AGRICULTURE AND THE AGRICULTURE PRODUCTION IN THE DISTRICT OF SOUTH 24 PARGANAS

| Sl. No. | Crops | Area (thousand hectares) | Production (thousand tones) | No. of Cut Flowers (crore) |
|---------|-----------------|--------------------------|-----------------------------|----------------------------|
| 1 | Cereals | 382.0 | 914.7 | |
| 2 | Pulses | 23.1 | 18.8 | |
| 3 | Oil Seeds | 13.1 | 17.0 | |
| 4 | Fibers | 2.9 | 50.7 | |
| 5 | Miscellaneous | 8.7 | 99.5 | |
| 6 | Fruits | 9.1 | 169.83 | |
| 7 | Vegetable | 68.34 | 1076.68 | |
| 8 | Rose | 0.088 | | 0.978 |
| 9 | Chrysanthemum | 0.061 | | 0.910 |
| 10 | Gladiolus | 0.032 | | 0.330 |
| 11 | Tuberose | 1.030 | | 13.260 |
| 12 | Marigold | 0.748 | 6.750 | |
| 13 | Seasonal Flower | 0.122 | 0.250 | |
| 14 | Misc. Flower | 0.050 | 0.110 | |

Source: (Bureau of Applied Economics & Statistics, 2013)

1.14.2.10: Electricity

Out of 2139 Mouzas 2069 Mouzas are electrified.

1.14.2.11: Market

Few popular market in this district are Canning, Raidighi, Joynagar, Baruipur, Kakdwip, Namkhana, Diamond Harbour, Sibanipur, Pathar-bazar, Amtala, Falta. Budge-budge and Bhangar etc. Though Kolkata is not within this district but Kolkata takes a biggest share of market both directly and indirectly.

1.14.2.12: Transport

1.14.2.12.1: Road - in this district surfaced road length is 13765.74 km and unsurfaced road length is 19334.08 km. This road includes National highways, State highways, District roads and Village roads. Number of originating/terminating bus routes are 186. (Table 1.21)

1.14.2.12.2: Rail – From Kolkata frequent train service is available to communicate with different places of this district such as Budge-budge, Diamond Harbour, Namkhana, and Canning. Local trains cover almost the whole area (except Reserve forest area) of this district. All block head quarters are not so distance from rail station. Average distance between railway station and respective block head quarter is almost 12kms with minimum distance of 1km and maximum distance of 44 kms.

1.14.2.12.3: River – This district has also water transport facilities both inland and international. The rivers - Muriganga, Thakuram, Kankalmari, Matla, Bidya, Gasaba has the capability of inland transporting. The river Ganga is not only an inland transporting river but is also used for international transport. Facilities of 143 number of ferry services are available in the rivers of this district.

1.14.2.12.4: Port – This district has no port of its own. But two Famous ports Holdia and Kolkata are in the immediate vicinity of this district. Trials are going on to make private ports in Sagar and Kulpi of South 24 Parganas district considering the prospect of marketing of agricultural and industrial products.

1.14.2.12.5: Airport – This District has no airport of its own. But ‘Netaji Subhas International airport’ of Kolkata is not far from this district. The state Government has proposed recently to establish an airport in ‘Behala’ of South 24 Parganas District.

TABLE 1.21: DETAILS OF ROAD IN SOUTH 24PARGANAS DISTRICT DURING 2012-13

| Length of Roads maintained by different agencies in the Blocks of South 24-Parganas for the year 2012-13 (K.M.) | | | | | | | | | |
|-----------------------------------------------------------------------------------------------------------------|------------------------|----------|------------|----------------|------------|-----------------------------------|------------|----------------------------------|------------|
| Sl. No. | Name of Block | P.W.D. | | Zilla Parishad | | Gram Panchayat & Panchayat Samity | | Pradhan Mantri Gram Sadak Yojana | |
| | | Surfaced | Unsurfaced | Surfaced | Unsurfaced | Surfaced | Unsurfaced | Surfaced | Unsurfaced |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| 1 | Thakurpukur-Maheshkala | 23.40 | - | 285.08 | 84.17 | 212.00 | 109.00 | 5.94 | - |
| 2 | Bishnupur-I | 19.77 | - | 313.65 | 412.05 | 92.40 | 148.60 | 6.00 | - |
| 3 | Bishnupur-II | 42.60 | - | 176.39 | 304.45 | 291.08 | 65.25 | 5.50 | - |
| 4 | Budge-Budge-I | 24.00 | - | 251.80 | 121.35 | 292.00 | 5.00 | - | - |
| 5 | Budge-Budge-II | 56.28 | - | 202.80 | 327.07 | 348.00 | 250.00 | 4.40 | - |
| 6 | Sonarpur | 35.00 | - | 325.96 | 170.79 | 154.00 | 85.25 | 18.75 | - |
| 7 | Jaynagar-I | 48.92 | - | 222.15 | 2313.80 | 190.00 | 583.00 | 6.00 | - |
| 8 | Jaynagar-II | 58.40 | - | 122.49 | 584.41 | 361.78 | 274.94 | 4.50 | - |
| 9 | Kultali | 22.50 | - | 130.48 | 580.42 | 125.00 | 380.00 | 12.00 | - |
| 10 | Baruipur | 112.42 | - | 291.85 | 128.80 | 693.21 | 93.72 | 110.20 | - |
| 11 | Bhangan-I | 18.44 | - | 257.43 | 110.80 | 203.90 | 16.50 | 28.00 | - |
| 12 | Bhangan-II | 26.20 | - | 228.50 | 83.00 | 150.00 | 310.25 | 18.00 | - |
| 13 | Canning-I | 82.95 | - | 104.56 | 608.85 | 361.00 | 665.00 | 28.00 | - |
| 14 | Canning-II | 6.00 | - | 239.53 | 233.34 | 283.00 | 705.00 | 10.00 | - |
| 15 | Basanti | 72.70 | - | 197.12 | 637.43 | 9.00 | 35.00 | 30.00 | - |
| 16 | Gosaba | - | - | 56.00 | 620.30 | 49.00 | 280.00 | 8.00 | - |
| 17 | Mograhat-I | 92.89 | - | 213.95 | 358.55 | 273.49 | 199.45 | 19.00 | - |
| 18 | Mograhat-II | 25.87 | - | 191.05 | 265.05 | 272.00 | 130.00 | 4.25 | - |
| 19 | Mandirbazar | 35.20 | - | 221.90 | 211.10 | 90.00 | 160.00 | 5.00 | - |
| 20 | Kulpi | 43.45 | - | 152.55 | 177.30 | 310.00 | 180.00 | 12.00 | - |
| 21 | Falta | 40.14 | - | 134.70 | 231.67 | 122.00 | 49.00 | 58.93 | - |
| 22 | Diamond Harbour-I | 32.28 | - | 135.05 | 264.20 | 89.00 | 124.00 | 3.50 | - |
| 23 | Diamond Harbour-II | 46.37 | - | 139.68 | 225.95 | 124.80 | 49.80 | 6.30 | - |
| 24 | Mathurapur-I | 28.90 | - | 304.60 | 584.65 | 98.50 | 127.50 | 64.00 | - |
| 25 | Mathurapur-II | 32.58 | - | 140.12 | 453.71 | 255.00 | 96.00 | 19.00 | - |
| 26 | Kakdwip | 47.75 | - | 259.75 | 437.45 | 215.00 | 259.00 | 28.50 | - |
| 27 | Namkhana | 28.90 | - | 115.02 | 512.70 | 261.46 | 530.05 | 15.50 | - |
| 28 | Sagar | 31.80 | - | 158.32 | 678.76 | 125.00 | 40.00 | 10.00 | - |
| 29 | Patharpratima | 22.30 | - | 120.80 | 1328.65 | 265.00 | 332.00 | 56.56 | - |

Sources : 1) Exe. Engr., P.W.D. (Roads), South 24-Parganas
2) Exe. Engr., Zilla Parishad, South 24-Parganas
3) Gram Panchayat & Panchayat Samity, South 24-Parganas

1.14.2.13: Workers

Percentage of total workers to total population is 36.32%. That means most of the population are non-workers, which is 63.68% of total population. Among workers 11.99% workers are cultivator, 27.21% workers are agricultural workers (Table 1.22).

**TABLE 1.22: WORKERS' PROFILE OF SOUTH 24 PARGANAS DISTRICT
(in number)**

| Total | Event | Males | Females | Total |
|------------------------|-------------------------------|-----------|-----------|-----------|
| Population = 81,61,961 | Workers | 23,56,571 | 6,07,923 | 29,64,494 |
| | Non- Workers | 18,17,207 | 33,80,260 | 51,97,467 |
| Workers = 29,64,494 | Main Workers | 17,48,714 | 2,54,971 | 20,03,685 |
| | Marginal Workers | 6,07,857 | 3,52,952 | 9,60,809 |
| Workers = 29,64,494 | Cultivator | 3,02,118 | 53,232 | 3,55,350 |
| | Agricultural Labourers | 6,55,262 | 1,51,300 | 8,06,562 |
| | Workers in Household Industry | 1,33,787 | 1,07,189 | 2,40,976 |
| | Others Workers | 12,65,404 | 2,96,202 | 15,61,606 |

Source: (Census of India, 2011, p. 18)

1.14.2.14: Communication

Total numbers of post offices in this district are 774. All network systems are available through mobile phone and internet in this district.

1.14.2.15: Commercial Bank

Total number of banks is 320 out of which number of Commercial Banks is 251 and number of Gramin Banks is 69.

1.14.2.16: Co-operative societies

This district has 942 numbers of co-operative societies in which 551208 members are registered. Total working capitals are running for these societies are Rs. 1916908. Block wise details of cooperative societies are given in Table 1.23.

1.14.2.17: Newspapers and periodicals

Total number of Newspapers and periodicals are published in the district of south 24 Parganas are 52 out of which 10 are weekly, 9 fortnightly, 3 monthly and 4 others. As per language version 21 are Bengali, 2 is English, 1 is Urdu and 2 is Hindi. In addition to these newspapers and periodicals, many newspapers and periodicals of national and international level are also available with their agents' offices within the district.

**TABLE 1.23: DETAILS OF COOPERATIVE SOCIETIES IN SOUTH 24 PARGANAS
DISTRICT**

| Co-operative Societies in the Blocks of South 24-Parganas for the year 2012-13 | | | | |
|---------------------------------------------------------------------------------------|------------------------|--------------------------------------|-----------------------|------------------------------------|
| Sl. No. | Name of Block | No. of Co-operative Societies | No. of Members | Working Capital (' 000 Rs.) |
| (1) | (2) | (3) | (4) | (5) |
| 1 | Thakurpukur-Maheshtala | 6 | 5356 | 15782 |
| 2 | Bishnupur-I | 19 | 12765 | 7621 |
| 3 | Bishnupur-II | 21 | 11552 | 9582 |
| 4 | Budge-Budge-I | 16 | 9112 | 96821 |
| 5 | Budge-Budge-II | 7 | 10712 | 119654 |
| 6 | Sonarpur | 52 | 73855 | 195894 |
| 7 | Jaynagar-I | 34 | 13210 | 165878 |
| 8 | Jaynagar-II | 20 | 10525 | 9614 |
| 9 | Kultali | 22 | 10575 | 20112 |
| 10 | Baruipur | 59 | 10975 | 10322 |
| 11 | Bhangar-I | 35 | 10422 | 8821 |
| 12 | Bhangar-II | 19 | 9337 | 9625 |
| 13 | Canning-I | 39 | 15822 | 23958 |
| 14 | Canning-II | 20 | 49937 | 5766 |
| 15 | Basanti | 35 | 15922 | 133854 |
| 16 | Gosaba | 35 | 26821 | 136954 |
| 17 | Mograhat-I | 28 | 15995 | 8357 |
| 18 | Mograhat-II | 23 | 16524 | 12381 |
| 19 | Mandirbazar | 35 | 20285 | 19712 |
| 20 | Kulpi | 48 | 18978 | 10654 |
| 21 | Falta | 28 | 14957 | 8801 |
| 22 | Diamond Harbour-I | 44 | 20521 | 9904 |
| 23 | Diamond Harbour-II | 32 | 13798 | 23456 |
| 24 | Mathurapur-I | 35 | 16821 | 26124 |
| 25 | Mathurapur-II | 41 | 17217 | 179654 |
| 26 | Kakdwip | 50 | 18258 | 197524 |
| 27 | Namkhana | 39 | 18622 | 196104 |
| 28 | Sagar | 54 | 29997 | 59431 |
| 29 | Patharpratima | 46 | 32337 | 194548 |

Source : Asslt. Registrar of Co-operative Societies, South 24-Parganas

1.14.2.18: Places for tourist Importance

Birlalpur, Bakhrabat, Bhasa, Falta, Narpur, Raichak, Diamond Harbour, Mandirbazar, Kulpi, Kakdwip, frazerganj, Bakkhali, Gangasagars, Kishorinagar, Jaynagar, Nimpith, Neta Dhopani, Sajnekhali, Pakhiralay etc. are the places of South 24 Parganas district which have tourist importance. A large number of tourists have been coming, visiting and spending money for their enjoyment and collecting few things as a memento of their tour.

1.14.2.19: Forest Area

Total Forest area of this district is 460138 hectares consisting of 423896 hectares of reserved forests, 36242 hectares of protected forests. The littoral and swamp forests, the mangroves are situated in this area called Sundarbans. This forest is known as the Sundarban Reserve Forest which is included in the UNESCO World Heritage Site. Sundarban is a prominent National Park, Tiger Reserve and Biosphere Reserve in the country and in the world. Important species are Goran, Gnewa, Sundari, Kalisa, Keya, Kewra, Hogla, Golpata and Hental etc.

1.14.2.20: Educational Institutes

Total number of educational institutes of this district is 16731 in which 1125888 students are studying. Out of these students 49.58% students are male and 50.42% students are female. Total number of general schools is 4766, out of which 3731 primary schools, 267 middle schools, 337 high schools and 431 secondary schools. Total number of students of these schools is 499333. Here is also number of degree colleges, technical schools and colleges, SSKs, MSKs and non-formal education centres etc. details of educational institution of this districts are given in the following Table 1.24.

1.14.2.21: Houseless

In 2011, total 1,408 families live on footpath or without any roof cover in South Twenty Four Parganas district of West Bengal. This population is 5,436. This is approximately 0.07% of total population of this district.

1.14.2.22: Disability

Total number of disable in this district is 227129, out of which disable in speech are 13563 and disable in hearing are 32965 (Table: 1.25).

**TABLE 1.24: DETAILS OF EDUCATIONAL INSTITUTIONS IN SOUTH 24
PARGANAS DISTRICT**

| Differet Types of Educational Institutions | Number of Students | | Number of Institute |
|----------------------------------------------------------------------------------|--------------------|---------------|---------------------|
| | Male | Female | |
| Recognized Primary Schools | 228146 | 225156 | 3731 |
| Recognized Middle Schools | 935 | 750 | 267 |
| Recognized High Schools | 6016 | 9348 | 337 |
| Recognized Higher Secondary | 11348 | 17634 | 431 |
| General Degree Colleges | 45926 | 52857 | 38 |
| Technical Schools | 945 | 339 | 6 |
| Technical Colleges | 6472 | 2579 | 16 |
| Sishu Siksha Kendras | 61338 | 62354 | 1213 |
| Madhyamik Siksha Kendras | 7897 | 10823 | 80 |
| Adult High Schools | 34 | - | 1 |
| Centres of Rabindra Mukta Vidyalaya | 3559 | 1892 | 11 |
| Sanskrit Tols | 217 | 114 | 13 |
| Educational Institutions for the Blind & Other Physically & Mentally Handicapped | 470 | 262 | 5 |
| Non-formal Education Centres | 290 | 162 | 15 |
| Anganwadi (Education) Centres under I.C.D.S. | 184397 | 182551 | 10560 |
| Social Welfare Homes under M.E.E. Deptt. | 248 | 829 | 7 |
| TOTAL | 558238 | 567650 | 16731 |

Source: (Bureau of Applied Economics & Statistics, 2013)

**TABLE 1.25: DETAILS OF PERSONS WITH DISABILITY IN SOUTH 24
PARGANAS DISTRICT**

| (Number) | | | |
|------------------------------|---------------|---------------|---------------|
| Disability | Male | Female | Total |
| Visual | 31163 | 29451 | 60614 |
| Speech | 7557 | 6006 | 13563 |
| Hearing | 17198 | 15767 | 32965 |
| Locomotor | 18661 | 11046 | 29707 |
| Mental Illness | 3661 | 2863 | 6524 |
| Mental Retardation | 7992 | 6218 | 14210 |
| Other Disability | 27577 | 21693 | 49270 |
| Multiple Disabilities | 10694 | 9582 | 20276 |
| District Total | 124503 | 102626 | 227129 |

Source: (Bureau of Applied Economics & Statistics, 2013)

1.14.2.23: Reasons for Choosing This Area

- Geographical location of South 24 Parganas district is unique. Four districts (Kolkata, North 24 Parganas, Howrah and East Midnapur) and one country (Bangladesh) surround South 24 Parganas district. The extreme south ends to the Bay of Bengal and the river Ganga covers the west boundary. So it has the potentiality of marketing extension.
- Administrative set up is very much sound. Its head quarters are situated at Alipur, which is within the state capital, the city Kolkata.
- Among the districts of the state 'West Bengal' area of South 24 Parganas district is the biggest and the climate is pleasant with temperate weather. Total reporting area is 948710 hectares out of which 44.93% are forest area and 38.01 % are cropped area. These situations support to produce various types of flowers, vegetables, fruits, cereals and trees etc. The littoral and swamp forests, the mangroves are situated in this area called Sunderbans. It is found from the above details that the South 24 Parganas district is rich in sources of raw material, nectar.
- Most of the populations are non-workers, which is 63.68% of total population. Among workers 11.99% workers are cultivator, 27.21% workers are agricultural workers and other Workers constitute the main work force i.e. 52.7 % of Total Workers. In South 24 Parganas around 605375 are "marginal and small farmers". Total number of bargadars and patta holders in the districts is 325459. In addition, Total houseless people are 5436 and partially disables (speech & hearing) are 46528 in this district. Beekeeping can give them alternative source of income so that they can empower.
- This district is densely populated. Language and culture of the people are almost similar. There are total 2,042 villages and 111 Census Towns in the District. Most of the people live in rural area. South 24 Parganas District ranks 4th in decadal population growth rate among the Districts with 18.2%. South 24 Parganas District has highest Scheduled Caste Population in the State. This District 2nd most populated District and has the highest Child (0-6 year's) Population in the State. Literacy Rate of the District is 77.5% (higher than the State average of 76.3%) thereby making its rank 8th in the State. 31.38% of total populations are schedule caste and schedule tribe. Total minority population is 36.52% of total population of South 24 Parganas District. This

background helps to create facility of obtaining labours, entrepreneurs, human resources, creditors, investor as well as large market.

- Not only this district has frequent transport facilities, but also has a considerable portion of electrified area, huge number of commercial banks, which can help to run the apiculture industry smoothly.
- In spite of a few popular markets of its own for marketing the apiculture products, the South 24 Parganas district is situated near the mega city 'kolkata'. Therefore it has a huge scope to market the product of this industry. This market can also be expanded upto international level by utilizing neighbouring port and airport.
- Since most of the places of South 24 Parganas district have tourist importance, there remains a great scope of popularizing the apiculture products through the tourism industry.
- The district has strong means of communication and also few popular newspapers and journals, which can help to develop marketing activities of the apiculture product as a whole.
- This district has a remarkable experience of co-operative society activities.
- Total number of educational institutes of this district is 16731 in which 1125888 students are studying. If special awareness and motivating camp, beekeeping training programme and bee-keeping project will be introduced at school level, the district can improve the bee-keeping activities.
- The only district in the state that has two active beekeepers' cooperative societies and these societies are formed and registered before 2000. Hence, this district also has a remarkable experience of bee-keepers' cooperative society activities.

1.14.3: North Dinajpur

On 15th of August 1947 India got freedom at the cost of partition. Bengal was divided giving birth to a new country named erstwhile East Pakistan (presently Bangladesh) and so was the district Dinajpur. Approximately two third of the Dinajpur district was included in East Pakistan and one third was within India and was named West Dinajpur (Census of India, 2011, pp. 7-12). The history of Dinajpur starts some 2000 years back. Dinajpur is rich in

mythological, historical, archaeological, religious, cultural and natural heritages. The glory of Buddhism and Jainism, the shining history of the rule of The Mauryas, The Guptas, The Palas, The Senas, the reign of the Muslim invaders, the active participations of the local people in the national movement and the struggle for freedom made the history of the district very prosperous. The name of the District originated from the name of king 'Danuj' and thereby 'Danaj' and ultimately converted to Dinaj. In the British period the district was declared as disturbed area during the khilafat Movement. The name of the place like Karnajora, Karandighi stems from the mythological character Karna. Today a Dinajpur district also exists in Bangladesh across the border as a proof of the historical links between the two countries. On 1st April, 1992, North Dinajpur (Bureau of Applied Economics and Statistics, 2012) (Census of India, 2011) was granted the status of a separated district of North Bengal by dividing West Dinajpur district. This is a multi-lingual district dominated by Bengali speaking and there are urdu and Hindi speaking population in the Islampur area. (Calcutta High Court, 2016) (Travell to North Bengal, 2016)

1.14.3.1: Geographical location

North Dinajpur district lays between latitude 25°11' north to 26°49' north and longitude 87°49' east to 90°00' east, enclosed by Panchagarh, Thakurgaon and Dinajpur districts of Bangladesh on the east, Kishanganj, Purnia and Katihar districts of Bihar on the west, Darjeeling district and Jalpaiguri district on the north and Malda district and Dakshin Dinajpur district on the south. (North Bengal Development Department, 2016).

1.14.3.2: Climate

Normal Annual rainfall is 1163 mm.

Average annual Range of Temperature is

Maximum - 41° Celsius

Minimum - 9° Celsius

1.14.3.3: Area

Total area of this district is 3140 square Km. North Dinajpur district stands 15th in terms of area in the State.

1.14.3.4: Administrative set up

District Head Quarters: Raiganj

Sub division: This district consists of two sub divisions. Those are Islampur and Raiganj.

Number of police station: 9

Number of Inhabited villages: 1475

Number of Mouza: 1504

Number of Municipality: 4

Number of Block: 9

Number of Panchayat Samity: 9

Number of Gram Panchayat: 98

Number of Gram Sansad: 950

1.14.3.5: Population

Total number of population is 3007134 out of which 1551066 are male and 1456068 are female (Table 1.26). In percentage 51.58% are male and 48.42% are female. Numbers of females per 1000 males are 939; Density of population per square km is 958. Most of the people live in rural area. 87.95% people live in rural area where as only 12.05% people are lived in urban area. According to the census report in last four consecutive years 1981, 1991, 2001 and 2011 the population of this district are 2404947, 1897045, 2441794 and 3007134. According to the density of population of the district rank is 10th in the State. This district has the highest decadal population growth rate in the State with a figure of 23.2% and much higher than the State average (13.8%). NorthDinajpur district has maximum proportion of child population (0-6 years) among all the districts in the State i.e. 16.1% of total population are children. The district has experienced sharp decline in child sex ratio (CSR) from 965 in 2001 Census to 953 in 2011 Census vis-à-vis state decline from 960 in 2001 Census to 956 in 2011 Census has been noticed. North Dinajpur district occupies 15th position in terms of population and 11th position in terms of 0-6 year's population in the state.

1.14.3.6: Religion and Caste

Hindu population and Muslim population are almost same in this district. Schedule caste and schedule tribe populations are 970766 in total. 32.28% of total populations are schedule caste and schedule tribe (Table 1.27).

1.14.3.7: Literacy

Total Literates is 49.42% of total population. Male literacy rate (% of male literates out of male population) is 55.03% and that of Female is 43.69% (Table 1.26). The district North

Dinajpur has the lowest rank in the State when literacy rate (59.1) of the district is considered (much lower than the State average of 76.3).

1.14.3.8: Land Utilization

Total reporting area is 312470 hectares out of which 580 hectares is forest area, 31120 hectares is area under non-agricultural use, 100 hectares is barren & unculturable land, 60 hectares is permanent pastures & other grazing land, 3730 hectares is land under miscellaneous tree groves not included in cropped land, 80 hectares is culturable waste land, 140 hectares is fallow land other than current fallow, 200 hectares is current fallow and 276460 hectares is cropped area (Table 1.28).

1.14.3.9: Agriculture

The rivers of Kulik, Nagar and Mahananda flow through the district and provide great fertility to the soil; paddy, jute, sugarcane, mustard and corn are grown in large numbers here. The name of the district head quarter Raiganj comes from Rai crop. Total cropped area is 276460 hectares and total cultivators are 257377, out of which 225240 are male and 32137 are female. Area utilized for agriculture and the agriculture production in the district of North Dinajpur are shown in the following Table 1.30. Persons engaged in agriculture directly or indirectly in this district are shown in the following Table 1.29.

1.14.3.10: Electricity

Out of 1504 Mouzas 1492 Mouzas are electrified.

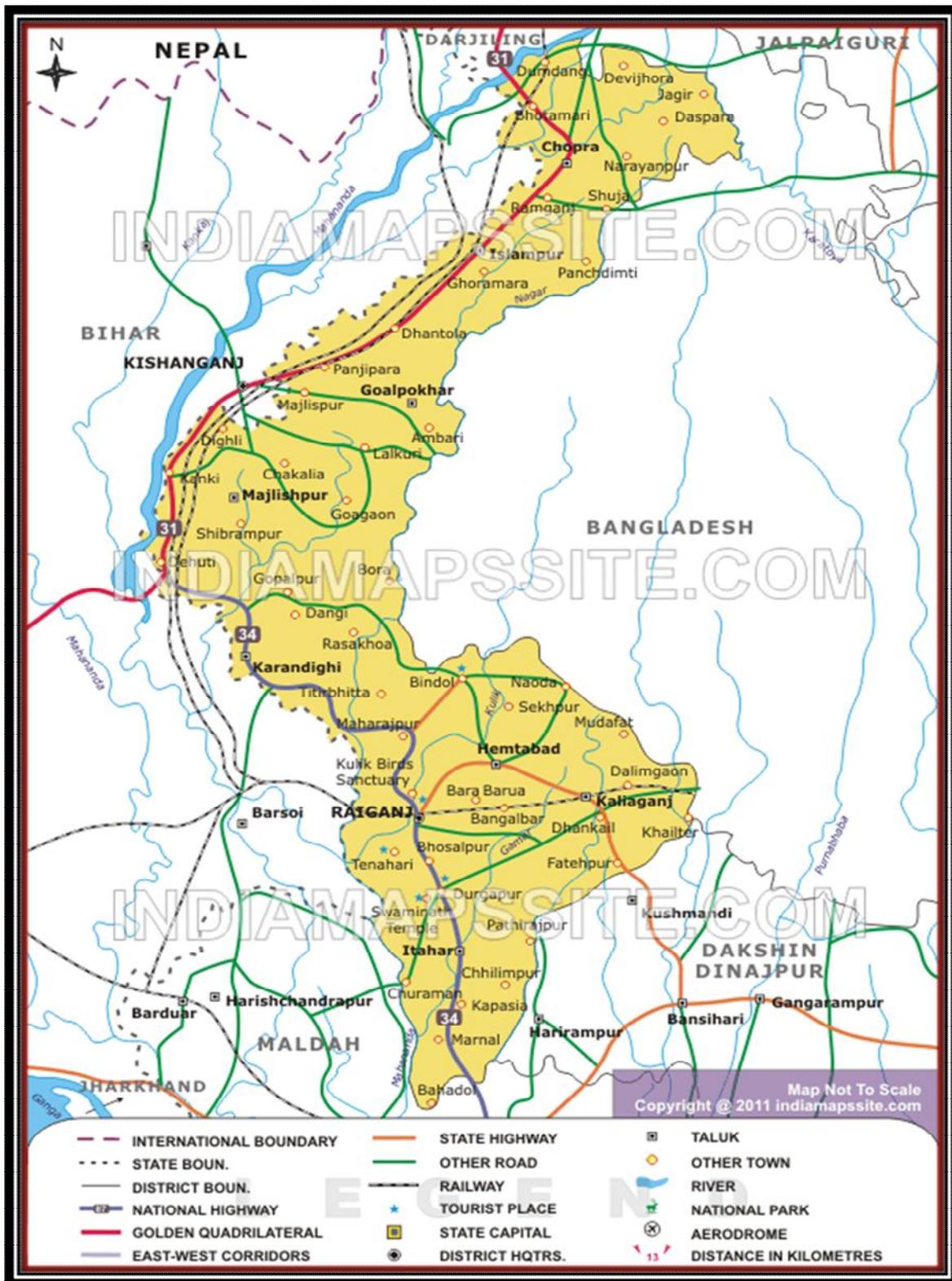
1.14.3.11: Market

Few popular markets in this district are Chopra, Islampur, Karandighi, Tungidighi, Hanskunda, Dalkhola, Kanki, Nachhratpur-Katabari, Raiganj, Kaliyaganj, Hemtabad, Kasba and Itahar etc. Though Siliguri, Katihar (Bihar) and Malda are not within this district but they takes a biggest share of market both directly and indirectly.

1.14.3.12: Transport

1.14.3.12.1: Road - in this district surfaced road length is 2719.56 km and unsurfaced road length is 5168.81 km. This road includes National highways, State highways, District roads and Village roads. Number of originating/terminating bus routes are 92.

MAP 1.3: NORTH DINAJPUR DISTRICT MAP



Source: (INDIAMAPSSITE, 2011)

TABLE 1.26: POPULATION PROFILE OF NORTH DINAJPUR DISTRICT

(in number)

| Event | Males | Females | Total |
|-----------------------------|---------|---------|---------|
| Population | 1551066 | 1456068 | 3007134 |
| Urban Population | 188597 | 173631 | 362228 |
| Rural Population | 1362469 | 1282437 | 2644906 |
| Urban Sex Ratio | 1,000 | 921 | |
| Rural Sex Ratio | 1,000 | 941 | |
| Population Sex Ratio | 1,000 | 939 | |
| Literates | 853495 | 636172 | 1485997 |
| Schedule Caste | 418288 | 389662 | 807950 |
| Schedule Tribe | 81831 | 80985 | 162816 |

Source: (Census of India, 2011, pp. 16-17)

**TABLE 1.27: DETAILS OF POPULATION OF NORTH DINAJPUR DISTRICT
ACCORDING TO RELIGION AND CASTE**

| Description | Number of people | % |
|----------------|------------------|-------|
| Hindu | 1,482,943 | 49.31 |
| Muslims | 1,501,170 | 49.92 |
| Christian | 16,702 | 0.56 |
| Sikh | 477 | 0.02 |
| Buddhist | 432 | 0.01 |
| Jain | 1,324 | 0.04 |
| Others | 1,622 | 0.05 |
| Not Stated | 2,464 | 0.08 |
| Schedule Caste | 807950 | 26.87 |
| Schedule Tribe | 162816 | 5.41 |

Source: (Census of India, 2011)

**TABLE 1.28: LAND UTILIZATION PATTERN IN THE DISTRICT OF NORTH
DINAJPUR**

| Sl. No. | Land Utilization Pattern | Area (In Hectares) |
|----------------|----------------------------------------------------------------------|-------------------------------|
| 1 | Forest Area | 580 |
| 2 | Non-Agricultural Use | 31120 |
| 3 | Barren & Unculturable Land, | 100 |
| 4 | Permanent Pastures & Other Grazing Land | 60 |
| 5 | Land Under Miscellaneous Tree Groves Not Included In Cropped Land | 3730 |
| 6 | Culturable Waste Land, | 80 |
| 7 | Fallow Land Other Than Current Fallow | 140 |
| 8 | Current Fallow | 200 |
| 9 | Cropped Area | 276460 |

Source: (Bureau of Applied Economics and Statistics, 2012)

**TABLE 1.29: DETAILS OF PERSONS ENGAGED IN AGRICULTURE DIRECTLY
OR INDIRECTLY IN NORTH DINAJPUR**

| Sl. No. | Different Persons | Number |
|----------------|--------------------------|---------------|
| 1 | Cultivators | 257377 |
| 2 | Bargadars | 31232 |
| 3 | Patta Holders | 158669 |
| 4 | Small Farmers | 49163 |
| 5 | Marginal Farmers | 221027 |
| 6 | Agricultural Labourers | 442328 |

Source: (Bureau of Applied Economics and Statistics, 2012) (Census of India, 2011, p. 17)

Note: Marginal farmer possesses agriculture land measuring upto 1 hectare; Small farmer possesses agriculture land measuring more than 1 hectare and upto 2 hectares.

TABLE 1.30: AREA UTILIZED FOR AGRICULTURE AND THE AGRICULTURE PRODUCTION IN THE DISTRICT OF NORTH DINAJPUR

| Sl. No. | Crops | Area (thousand hectares) | Production (thousand tones) | No. of Cut Flowers (crore) |
|---------|-----------------|--------------------------|-----------------------------|----------------------------|
| 1 | Cereals | 302.5 | 892.1 | |
| 2 | Pulses | 2.5 | 1.4 | |
| 3 | Oil Seeds | 44.9 | 34.9 | |
| 4 | Fibers | 46.0 | 611.7 | |
| 5 | Miscellaneous | 20.2 | 437.7 | |
| 6 | Fruits | 9.33 | 154.78 | |
| 7 | Vegetable | 35.75 | 482.16 | |
| 8 | Rose | 0.024 | | 0.324 |
| 9 | Chrysanthemum | - | | - |
| 10 | Gladiolus | 0.028 | | 0.150 |
| 11 | Tuberose | 0.020 | | 0.493 |
| 12 | Marigold | 0.089 | 0.697 | |
| 13 | Seasonal Flower | 0.003 | 0.005 | |
| 14 | Misc. Flower | 0.026 | 0.040 | |

Source: (Bureau of Applied Economics and Statistics, 2012)

1.14.3.12.2: Rail – From Kolkata and Siliguri frequent train services are available to communicate with different places of this district such as Kaliyaganj, Raiganj, Dalkhola, Islampur. Trial is going on to make a freight corridor with Bangladesh through Radhikapur Boarder. All block head quarters are not so distance from rail station. Average distance between railway station and respective block head quarter is almost 10kms with minimum distance of 1km and maximum distance of 22 kms.

1.14.3.12.3: River – This district has also water transport facilities. The rivers - Kulik, Nagar, Mahananda, Sui, Gamari and Sudhani has the capability of inland transporting. Facilities of 23 number of ferry services are available in the rivers of this district.

1.14.3.13: Workers

Percentage of total workers to total population is 35.77%. That means most of the population are non-workers, which is 64.23% of total population (Table 1.32). Among workers 23.93% workers are cultivator, 41.12% workers are agricultural workers. The Work Participation Rate has fallen from 38.3 % (in 2001 Census) to 35.8 % (in 2011 Census) and in this case it ranks 16th in the state. Cultivators and Agricultural labourers constitute the main work force of the district.

**TABLE 1.31: DETAILS OF ROADS IN NORTH DINAJPUR DISTRICT DURING
2011-12**

| Lengths of Roads maintained by different agencies in the Blocks of Uttar Dinajpur for the year 2011-12 | | | | | | | | | |
|--------------------------------------------------------------------------------------------------------|---------------|----------|------------|----------------|------------|-----------------------------------|------------|----------------------------------|------------|
| Sl.No. | Name of Block | P.W.D. | | Zilla Parishad | | Gram Panchayat & Panchayat Samity | | Pradhan Mantri Gram Sadak Yojana | |
| | | Surfaced | Unsurfaced | Surfaced | Unsurfaced | Surfaced | Unsurfaced | Surfaced | Unsurfaced |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| 1 | Chopra | 85.50 | - | 60.67 | 35.47 | 14.25 | 725.00 | 89.16 | - |
| 2 | Islampur | 66.10 | - | 59.82 | 60.67 | 131.50 | 823.00 | 68.62 | - |
| 3 | Goalpokhar-I | 24.30 | - | 71.10 | 52.20 | 65.05 | 562.00 | 83.95 | - |
| 4 | Goalpokhar-II | 80.30 | - | 93.40 | 62.98 | 59.00 | 200.00 | 92.45 | - |
| 5 | Karandighi | 73.45 | - | 70.67 | 52.46 | 114.05 | 352.40 | 69.11 | - |
| 6 | Raiganj | 56.55 | - | 114.45 | 59.99 | 25.00 | 252.00 | 66.81 | - |
| 7 | Hentabad | 38.70 | - | 34.05 | 37.74 | 35.00 | 270.00 | 73.76 | - |
| 8 | Kaliaganj | 26.00 | - | 82.50 | 35.50 | 169.00 | 1316.00 | 91.85 | - |
| 9 | Itahar | 56.66 | - | 94.87 | 46.40 | 27.00 | 225.00 | 85.47 | - |

Sources : 1) Exe. Engr., PWD (Roads), Uttar Dinajpur
2) Exe. Engr., Zilla Parishad, Uttar Dinajpur
3) All Gram Panchayat & Panchayat Samity, Uttar Dinajpur

**TABLE 1.32: WORKERS' PARTICIPATION OF NORTH DINAJPUR DISTRICT
(in number)**

| | Event | Males | Females | Total |
|-------------------------------|--------------------------------------|--------|---------|---------|
| Population =3007134 | Workers | 799627 | 275999 | 1075626 |
| | Non- Workers | 751439 | 1180069 | 1931508 |
| Workers = 1075626 | Main Workers | 688769 | 135573 | 824342 |
| | Marginal Workers | 110858 | 140426 | 251284 |
| Workers = 1075626 | Cultivator | 225240 | 32137 | 257377 |
| | Agricultural Labourers | 305965 | 136363 | 442328 |
| | Workers in Household Industry | 12699 | 25279 | 37978 |
| | Others Workers | 255723 | 82220 | 337943 |

Source: (Census of India, 2011, pp. 16-17)

1.14.3.14: Communication

Total numbers of post offices in this district are 373. Most of all network systems are available through mobile phone and Internet in this district.

1.14.3.15: Commercial Bank

Total number of banks is 61 out of which number of Commercial Banks is 33 and number of Gamin Banks is 28.

1.14.3.16: Cooperative societies

This district has 306 numbers of co-operative societies in which 120700 members are registered. Total working capitals are running for these societies are Rs. 4320117. (Table 1.33)

1.14.3.17: Newspapers and periodicals

Total number of Newspapers and periodicals are published in the district of North Dinajpur are 22 out of which 10 are weekly, 8 fortnightly, 2 monthly and 2 others. As per language version all are Bengali. In addition to these newspapers and periodicals, many newspapers and periodicals of national and international level are also available with their agents' offices within the district.

TABLE 1.33: DETAILS INFORMATION OF COOPERATIVE SOCIETIES IN NORTH DINAJPUR DISTRICT

| Co-operative Societies in the Blocks of Uttar Dinajpur for the year 2011-12 | | | | |
|------------------------------------------------------------------------------------|---------------|-------------------------------|----------------|------------------------------|
| Sl.No. | Name of Block | No. of Co-operative Societies | No. of Members | Working Capital (' 000 Rs.) |
| (1) | (2) | (3) | (4) | (5) |
| 1 | Chopra | 23 | 9804 | 573759 |
| 2 | Islampur | 19 | 9438 | 175275 |
| 3 | Goalpokhar-I | 39 | 11478 | 668532 |
| 4 | Goalpokhar-II | 32 | 11213 | 635106 |
| 5 | Karandighi | 38 | 17525 | 858119 |
| 6 | Raiganj | 60 | 26618 | 409909 |
| 7 | Hemtabad | 21 | 9350 | 53325 |
| 8 | Kaliaganj | 19 | 12842 | 170765 |
| 9 | Itahar | 55 | 12432 | 775327 |

Source : Asstt. Registrar of Co-operative Societies, Uttar Dinajpur

1.14.3.18: Places for tourist Importance

Islampur; Karnajora Raiganj, Burhan, Kaliyaganj, Malegaon, Kunoir, Bindole, Barduari, Hemtabad have tourist importance. A large number of tourists have been coming, visiting and spending money for their enjoyment and collecting few things as a memento of their tour.

1.14.3.19: Forest Area

Total Forest area of this district is 1493.42 hectares (extended by forest department in non-agricultural area) consisting of 512.71 hectares of reserved forests, 312.29 hectares of protected forests and 668.42 hectares of unclassified state forest.

1.14.3.20: Educational Institutes

Total number of educational institutes of this district is 7137 in which 1151445 students are studying. Out of these students 49.49% students are male and 50.51% students are female. Total number of general schools is 2258 out of which 1839 primary schools, 148 middle schools, 52 high schools and 219 secondary schools. Total number of students of these general schools is 396022. There is also a number of degree colleges, technical schools and colleges, SSKs, MSKs and non-formal education centres etc. Details of educational institutions of this district are given in the following table 1.34.

1.14.3.21: Houseless

In 2011, total 2,004 families live on footpath or without any roof cover in NorthDinajpur district of West Bengal. This population is 8,251. This is approximately 0.27% of total population of North Dinajpur district (Census of India, 2011).

1.14.3.22: Disability

Total number of disable in this district is 51237, out of which disable in speech are 3877 and disable in hearing are 7147 (Table 1.35).

TABLE 1.34: THE DETAILS OF EDUCATIONAL INSTITUTIONS IN NORTHDINAJPUR

| Differet Types of Educational Institutions | Number of Students | | Number of Institute |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|---------------------|
| | Male | Female | |
| Recognized Primary Schools | 224557 | 231455 | 1839 |
| Recognized Middle Schools | 8958 | 14740 | 148 |
| Recognized High Schools | 15536 | 20097 | 52 |
| Recognized Higher Secondary | 131240 | 129730 | 219 |
| General Degree Colleges | 14518 | 10041 | 6 |
| Technical Schools | 268 | 56 | 4 |
| Technical Colleges | 280 | 101 | 3 |
| Sishu Siksha Kendras | 59042 | 61131 | 1013 |
| Madhyamik Siksha Kendras | 14872 | 19662 | 109 |
| Centres of Rabindra Mukta Vidyalaya | 20 | 23 | 1 |
| Sanskrit Tols | 22 | 18 | 1 |
| Educational Institutions for the Blind & Other Physically & Mentally Handicapped | 193 | 87 | 3 |
| Anganwadi (Education) Centres under I.C.D.S. | 100116 | 94440 | 3737 |
| Social Welfare Homes under M.E.E. Deptt. | 121 | - | 1 |
| Reformatory or certified Institutions or Welfare Homes under Social Welfare Deptt. for the Juveniles or destitute children or the children of red-light areas | 121 | - | 1 |
| TOTAL | 569864 | 581581 | 7137 |

Source: (Bureau of Applied Economics and Statistics, 2012)

TABLE 1.35: DETAILS OF PERSONS WITH DISABILITY IN NORTH DINAJPUR DISTRICT

| Disability | (Number) | | |
|----------------------------|--------------|--------------|--------------|
| | Male | Female | Total |
| In Seeing | 5785 | 4960 | 10745 |
| In Speech | 2219 | 1658 | 3877 |
| In Hearing | 3881 | 3266 | 7147 |
| In Movement | 5199 | 3032 | 8231 |
| Mental Illness | 1011 | 748 | 1759 |
| Mental Retardation | 1929 | 1528 | 3457 |
| Other Disability | 6078 | 4702 | 10780 |
| Multiple Disability | 2956 | 2285 | 5241 |
| Total | 29058 | 22179 | 51237 |

Source: (Bureau of Applied Economics and Statistics, 2012)

1.14.3.23: Reasons for Choosing This Area

- Four districts (Darjeeling, Jalpaiguri, Malda and Dakshin Dinajpur), one state (Bihar) and one country (Bangladesh) surround North Dinajpur district. Administrative set up is very much sound. Its head quarters are situated at Raiganj, which is connected by train and national highway. The benefit of such location can facilitate marketing of apiculture product.
- Most of the people live in rural area. There are total 1494 villages and 5 Census Towns in the district. The percentage of urban share of population of North Dinajpur district has almost remained same for the last decade (2001 Census to 2011 Census) i.e. 12.1% in 2001 Census and 12.0% in 2011 Census. This district has the highest decadal population growth rate in the State with a figure of 23.2% and much higher than the State average (13.8%). North Dinajpur district has maximum proportion of child population (0-6 years) among all the districts in the State i.e. 16.1% of total population are children. The district North Dinajpur has the lowest rank in the State when literacy rate (59.1) of the district is considered (much lower than the State average of 76.3). Beekeeping can provide opportunity for 'self-employment' for them.
- North Dinajpur district stands 15th in terms of area (3140.00 sq km) in the State. But 88.48% of which are cropped area. Paddy, jute, sugarcane, mustard and corn are grown in large numbers here. This district is very rich in sources of raw material, nectar. Around 60% honey of the state is collected from North Dinajpur, South Dinajpur and Malda districts.
- Most of the populations are non-workers, which is 64.23% of total population. The Work Participation Rate has fallen from 38.3% (in 2001 Census) to 35.8% (in 2011 Census). In North Dinajpur district the percentage of main workers to total workers remains same over the decade at 76.6% for both 2001 Census and 2011 Census. Cultivators and Agricultural labourers constitute the main work force of the district. Hindu population and Minority population are almost same in this district. Schedule caste and schedule tribe populations 32.28% of total populations. This background helps to create facility of obtaining labours, entrepreneurs, human resources, creditors, investor as well as large market.

- In North Dinajpur 257377 are cultivators, 270190 are “marginal and small farmers”. Total number of bargadars and patta holders in the districts is 189901. In addition, Total houseless people are 8251 and partially disables (speech & hearing) are 11024 in this district. Beekeeping can give them alternative source of income
- Frequent transport facilities even in the rural areas, a considerable portion of electrified area, huge number of commercial banks, and strong means of communication in the district can help to run the apiculture industry smoothly.
- This district has a remarkable experience of co-operative society activities but does not have any bee-keepers’ cooperative society.
- Total number of educational institutes of this district is 7137 in which 1151445 students are studying. If special awareness and motivating camp, beekeeping training programme and bee-keeping project are introduced at school level, the district can improve the bee-keeping activities.

1.14.4: Cooperative Society

The term co-operation is derived from the Latin word “co-operari”, where the word “co” means ‘with’ and “operari” means ‘to work’. Thus, co-operation means working together. So those who want to work together with some common economic objective can form a society which is termed as “cooperative society”. It is a voluntary association of persons who work together to promote their economic interest. It works on the principle of self-help as well as mutual help. The main objective is to provide support to the members. Nobody joins a cooperative society to earn profit. People come forward as a group, pool their individual resources, utilise them in the best possible manner, and derive some common benefit out of it (NIOS, 2013, p. 94).

Cooperative movement in our country shall not only stay but also grow in times to come. In spite of the drawbacks experienced in the working and administration of the cooperative societies, they have positively contributed to the growth and development of the national economy. Promotion of thrift, self-help and mutual aid are the fundamental principles of co-operation. The orientations of commercial organization and cooperative organizations are basically different. In a commercial organization, earning and maximizing the profits is the sole motive; whereas in a cooperative organization profit cannot be the sole motive. The

prime objectives, in addition to the three fundamentals of co-operation mentioned above are to make available goods and services in required quantity, of better quality and at a reasonable price to its members. It does not mean that a Cooperative Society is a charitable organization. It should, therefore, conduct itself in a businesslike manner in attaining its objectives efficiently (ICAI, 2013, p. 1).

A cooperative society is a voluntary association started with the aim of service of its members. It is a form of business where individuals belonging to the same class join their hands for the promotion of their common goals. These are generally formed by the poor people or weaker section people in the society. It reflects the desire of the poor people to stand on their own legs or own merit. The philosophy of the formation of co-operative society is "all for each and each for all" (Dilipkumar, 2015, p. 8).

1.14.4.1: Definition

According to Herrik, "Cooperation is an action of persons voluntarily united for utilizing reciprocally their own forces, resources or both under mutual management for their common profit or loss" (Dilipkumar, Financial Analysis of Cooperative Society, 2015, p. 1). According to Mr. Plunket, "The cooperation is self help made effective by organization" (Dilipkumar, Financial Analysis of Cooperative Society, 2015, p. 1). Section 4, of the Indian Cooperative Societies Act, 1912 defines a cooperative "as a society which has its objective the promotion of economic interest of its members in accordance with cooperative principles" (The Institute of Chartered Accountants of India, 2013, p. 10).

There are various types of cooperative societies. They are-

Producers' Cooperative Society, Consumers' Cooperative Society, Cooperative Marketing Society, Cooperative Credit Society, General Society, Crop Protection Society, Crop Protection Society, Agricultural Marketing Society, Co-operative Farming Society, Housing Co-operative Society, Irrigation Society and Process Society etc.

1.14.4.2: Cooperative Marketing Society

These societies are formed and registered by small farmers, producers or manufacturers who think it is difficult to sell their products to the market separately and feel cooperation can make it easy. Cooperative society collects the products from the individual producer

members and takes the responsibility of all marketing activities to sell their products in the market jointly.

1.14.4.3: Reasons for Choosing Cooperative

Cooperative societies have some good characteristics, like – easy registration, open membership, voluntary joining, state assistance, democracy in management, limited liability, perpetual succession, provide services to the members, controlled by state and self-help through mutual cooperation etc. In West Bengal there are seven beekeepers' cooperative societies. They are cooperative marketing society in nature. Major problem of beekeepers is to market their products. Mainly, price of the raw product is controlled by international market. Hence MNCs, bulk users and exporters are exploited through middlemen. These products have been increasing its internal market also. Retailing of Dabur brand honey has get popularity in international as well as internal market. Few new brands are coming to catch the market in recent decade. But, in spite of having a good and pure quality product, the cooperative societies' honey is less popular to the general people. Moreover, Apiculture industry in the state has to suffer various problems. The beekeepers' cooperative society are trying their best to contribute towards production and marketing activities for apiculture products of the poor producer in this state. The apiculture developmental activities can be carried on successfully by the cooperative societies in West Bengal in order to develop the economic condition in this area.

1.14.5: Marketing

Generally marketing means all activities done by the human being which are taking place relating to markets. A number of functions are related with these marketing activities like selling, buying, transporting, storing, standardising, labelling, packaging, financing, advertising and insuring etc.

1.14.5.1: Definition

Marketing means working with markets to actualize potential exchanges for the purpose of satisfying human needs and wants. Marketing is a social and managerial process by which individuals and groups obtain what they need and want through creating, offering and exchanging products of value with others. Definition of marketing (management) approved in 1985 by American Marketing Association: Marketing (management) is the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods

and services to create exchanges that satisfy individual and organizational objectives. (Kotler, 1991, p. 10)

“Marketing management is that area of management that is concerned with decisions and policies relating to the marketing activities of the firm”. In other word, marketing management is the application of management principles in the marketing activities. (Nakkiran, 2006, p. 544)

Hence it can be said marketing management is the essential division of management in different marketing cooperative societies. But others cooperative societies like Process Society, industrial cooperative, Consumers’ Co-operative Society, Producers’ Cooperative Society, Cooperative Credit Society, Cooperative Farming Society and Crop Protection Society etc should exercise marketing management for the purpose of development of their products, distribution channels and markets. Marketing management functions are dynamic and multifarious. The main functions of marketing management are product planning, Branding, Product development, pricing, product promotion, selecting product distribution channels, sales promotion and research on marketing.

Cooperatives engaged in production, distribution and processing activities have to adopt marketing management techniques to promote their products and activities. As Cooperatives are functioning in a cooperative set up, they have to undertake promotional activities to increase their sales and to create goodwill for their products and society in the market. The finest example is the marketing activities undertaken by Kaira district dairy cooperatives whose “Amul” brand dairy products occupied an important place among Indian consumers (Nakkiran, 2006, p. 562).

1.14.5.2: Reasons for Choosing Marketing

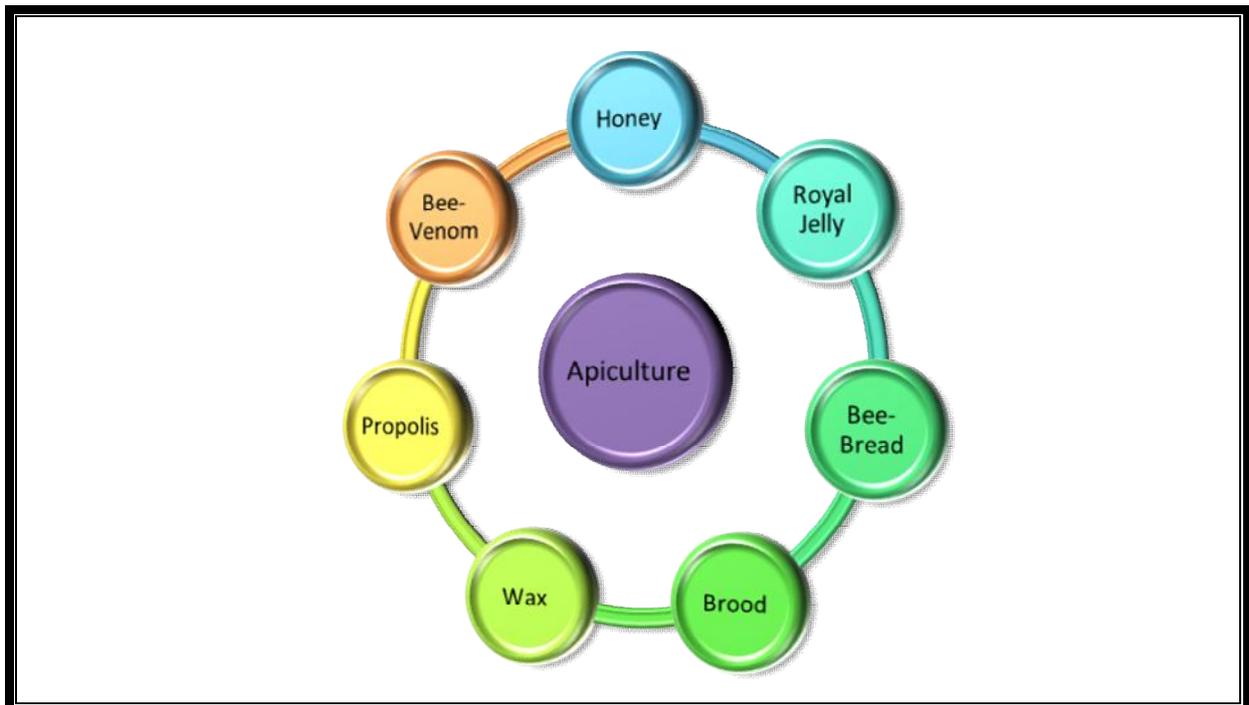
Management has different domains, like materials, inventory, production, finance, human resources, marketing etc. Every aspect is very much important to an organization. Failure of any one can hamper the development of the organization. So, perfect concentration is required in every field of management. In West Bengal almost all bee-keepers’ cooperative societies are doing their bee-keeping activities for long time. They are giving training to their beekeeper members and developing the apiculture industry in this state by their best effort. Till today their product do not get any branding. The middlemen are exploiting cooperative societies every day for ignorance of proper market information. The societies do not have any

pricing policies. The honey of the cooperative societies cannot compete with honey of others organizations/ companies. Shortage of finance is one of the major problems. No proper marketing strategies are adopted by the bee-keepers' cooperative societies of the state. Distribution channels, product quality, product labeling, packaging are not so good and for these reasons they do not grab domestic as well as international market. To remove these hindrances special emphasis has to be given to marketing aspects of the societies. It is needed to analyze the marketing aspect of these cooperative societies for the development of apiculture industry as a whole. Though finance, production and human resource aspects have come in the analysis but special importance has to be given to the marketing aspects of the cooperative societies.

1.15: PRODUCTS PROFILE

Apiculture industry gives us various benefits (Diagram 1.4). This industry not only gives honey but also gives various other things that are depicted below:

DIAGRAM 1.4: DIFFERENT PRODUCTS OF APICULTURE INDUSTRY



1.15.1: Honey

The word “honey” is derived from the Arabic “han”. This became honing in German and huning in old English. The word honey is used in English as a term of endearment (Sharma, 2006, p. 1). Honey has been valued as a sweetener since early times. In the Bible (Proverbs

24:13) Solomon exhorts: “My son, eat thou honey, because it is good; and the honeycomb, which is sweet to the taste” (Jones & Sweeney-Lynch, 2011, p. 268). Honey was the sweet food most universally available. Honey retained its primary position until it was superseded by sugar obtained from the sugarcane which was originated in India. Nearchus, Alexander the Great’s admiral, brought news of the reed which gives “honey without bees” when he returned from India in 326-325 BC (Crane, 1999, pp. 492-493). Bees derived their energy mainly from the rich energy source, the floral nectar. Nectar is full of radiant energy in the form of sugar molecules. When secreted by nectarines, (the nectar producing glands of flowers,) the liquid generally contains 80% water and 20% sugar along with minute quantities of minerals, proteins, vitamins, acids, colouring matter and flavour. When the nectar is processed by bees to convert it into honey, complex sugars are converted into simple sugars and water content is greatly reduced. This makes the proportion in the reverse order. Ripe honey contains 20% water and 80% sugars. The sugars include 40% fruit sugars (fructose), 35% glucose and 4% sucrose. The rest of the solids amount is to 1% (Kshirsagar, 1998, p. 76).

Honey contains more than 80 chemical substances, but mainly consists of simple sugar: Glucose and Fructose. Average chemical composition of honey is given in the following table 1.36:

TABLE 1.36: AVERAGE CHEMEICAL COMPOSITION OF HONEY

| Characteristics | Average |
|------------------------|----------------|
| Moisture % | 17.20 |
| Leavulose (fructose) % | 38.19 |
| Dextrose (glucose) % | 31.28 |
| Sucrose % | 1.31 |
| Maltose % | 7.31 |
| Undetermined sugar % | 3.10 |
| PH | 3.91 |
| Free acid, meq/kg | 22.03 |
| Lactose meq/kg | 7.11 |
| Total acid, meq/kg | 29.12 |
| Lactose / free acid | 0.355 |
| Ash % | 0.169 |
| Nitrogen | 0.041 |
| Diastase value | 21.80 |
| Lipids mg/kg | 360 |

Source: (Sharma, 2006, p. 17)

Glucose and fructose are monosaccharides that are very easily assimilated by the organism. The Saccharine or inverts convert disaccharides like cane or beet sugar into monosaccharide in the small intestine before entering the blood. The glucose and fructose are absorbed through the portal vein, from which the glucose enters the liver and is stored there being returned to the blood when the blood sugar level of the latter falls. Monosaccharide pass directly into the blood from the intestine without transformation, and glucose can also be injected directly into the blood. In addition to simple sugars, honey contains a number of enzymes and other substances. Honey contains diastase, invertase, saccharine, catalyse peroxides and lipase. Other constituents of honey are salts of calcium, sodium, potassium, magnesium, iron, chlorine, phosphorus, sulphur and iodine (Table 1.37). Some varieties even contain radium. The ash contain in honey varies from 0.02 to 1.03%. Mineral salts have its' own importance for the human organisms. Microelements (cobalt, copper, manganese, nickel, zinc) and minerals have most important biological role in the human organism because of their interaction with a number of enzymes, vitamins and hormones, which affect the irritability of the nervous system tissue respiration, circulation, so on. Honey also contains organic acids, like formic acid, malic acid, tartaric and oxalic acids etc. The PH of honey ranges from 3.42 to 6.10 with an average value of 3.91. This PH value of honey contributes to its self life. The principal acid of honey i.e. gluconic acid is produced by an enzyme glucose oxidase on glucose (Sharma, 2006, pp. 17-19). Various uses of honey are-

TABLE 1.37: FEW SALTS / ELEMENTS FOUND IN HONEY

| Salts /Elements | % |
|------------------------|----------|
| Magnesium | 0.018 |
| Sulphur | 0.001 |
| Phosphorus | 0.091 |
| Iron | 0.307 |
| Calcium | 0.029 |
| Potassium | 0.386 |
| Iodine | Traces |
| Sodium | 0.001 |

Source: (Sharma, 2006, p. 18).

1.15.1.1: Healthy Food

- Honey is a highly caloric food. One kilogram of honey contains 3150 calories. One pound of honey = 30 eggs = 6 pints of milk = 8 lbs. of plums = 10 lbs of green peas = 10 lbs of apples = 20 lbs of carrots (Yoirish, 1959, p. 50).
- Due to presence of various enzymes like diastase and invertase, it acts upon the food in stomach changing it to an assembling condition and thus serves as a mild laxative. The presence of the sugars and various mineral salts and vitamins in natural proportion honey is a perfect food and one can live on honey alone without taking anything else (Ghosh & Ghosh, 1999, p. 86).
- Honey offers two types of energy: **Glucose** is absorbed by our body quickly and we get an immediate energy boost, while **fructose** is absorbed much more slowly providing a longer lasting energy. Honey can help prevent fatigue and boost athletic performance. (Tolga) (Sharma, 2006, p. 17)
- Honey is definitely helpful in maintaining proper alkalinity of the blood. That is so necessary for good health (Singh, 1958, p. 12)
- Sugars of honey are pre-digested sugars therefore as a food that supplies to the body a quickly available energy. Honey puts no tax upon the digestive system. (Singh, 1958, p. 9)
- The acids in honey appear to be largely malic (found in apples and other fruits) and citric (in all citrus fruits). The quantity of amino-acids (proteins) is usually quite small (0.3%) but assimilated directly without having to undergo any digestive process (Singh, 1958, p. 11).
- Honey is also one of nature's powerful germ-killers. Germs simply cannot survive in honey (Singh, 1958, p. 13). Hence, it can be said that honey is **one of the safest foods**.
- There are more than 200 people in the Soviet Union who claim to be over 100 years old. An investigation was made. There got 150 replies. The answers showed that a large number of them are bee keepers. But all of them said their principal food had been honey (Singh, 1958, p. 55).

- Pinocembrin antioxidant which has antimicrobial, anti-inflammatory, antioxidant, anticancer and neuro-protective activities only in honey (West Bengal Beekeepers' Association, 2010)
- Honey gives energy to all vital organs in our body (Midnapore Bee-keepers KVI Co-operative Society Limited, 2015).
- Honey is one of the best nutritious foods for the children (Midnapore Bee-keepers KVI Co-operative Society Limited, 2015).

1.15.1.2: Used in Medicine

Honey can be an excellent weapon to combat various diseases (Sharma, 2006, pp. 37-39) (Ghosh & Ghosh, 1999, pp. 137-147) or disorders either used alone or with various combinations (Ghosh & Ghosh, 1999, p. 86). Few of those are -

- People suffering from nervous system due to exhaustion, are advised to take a glass of honey-water-lemon juice (7% honey, 0.2% acidity and water is 73%). Bran soaked in water and mixed with honey is considered an excellent remedy for strengthening the nerves. In place of bran vitamin B1 can also be taken with honey.
- A lotion of honey and onion juice, clover or wheat grass is good for the eyes. It is an excellent cure for inflammation of eye and good remedy for burns affecting the eyes. Eucalyptus honey as an ointment is good for treating the swollen eyelids and other complaints.
- Fasting on honey-lemon-water beverage (ready-to-serve) is highly beneficial in the treatment of obesity without loss of energy and appetite.
- A mixture of honey and alcohol is believed to promote growth of all hair.
- Honey has a great effect in building haemoglobin in the body. This is largely due to the presence of iron, copper and manganese in it. It is beneficial in the treatment of anaemia as it helps in maintaining the appropriate balance of haemoglobin and red blood corpuscles.
- Karpoor (cinnamomum camphora), flour of lentils, ghee and honey mixture is used externally to dress sinus, chronic sinus, fistulae, piles tumours etc, not only to give soothing affect but also ultimately to cure.
- Hing (narthex asphoetida), mercury and honey mixture in appropriate proportion is used to cure impotency and increase sex vitality.

- Onions, fennel seeds (foeniculam vulgare), seedless rasins (kissmiss), anjor (fiscus carica), and honey and water mixture is used for relieving from asthma and it cures asthma depending on the intensity. There may be nausea or vomiting during initial period which should be ignored.
- Yellow bees wax, soap, the root of the castor plant (ricinus communis linn) and honey mixture of equal quantity be mixed well to make an uniform paste. It is to be applied externally on the ulcers.
- Ispaghula (plantago ispagula), almond oil (prunus amygdalus par), honey and silver paper mixer is a wonder remedy for spermatorrhoey and tones up the heart and brain.
- Mixture of honey, vinegar, roasted alum and black shall prevent loosening teeth, dental carries, inflammation of gums and pyorrhoea etc.
- Many physicians prescribe honey with different things in different proportions for various kinds of diseases. It is a vehicle for ayurvedic formulation. Table 1.38 is given in this regard.

TABLE 1.38: USES OF HONEY IN AYURVEDIC MEDICINES

| PHYSICIAN | COMBINATION | DISEASES |
|-----------|------------------|------------------------------------------|
| Ayur Veda | With milk | Cachexia. Consumption |
| Avicenna | Rose petals | At the initial stages of Tuberculosis |
| Ayur Veda | Carrot or turnip | Haemoptysis |

Source: (Ghosh & Ghosh, 1999)

- It heals burns and wounds quickly. Dr. Krinitsky (a soviet surgeon) considers (in Table 1.39) that honey, when applied to wound, sharply increases the glutathione content in the wound secretion. Glutathione plays a very important role in the oxidation - reduction processes of the body and thus stimulates the growth and division of cells and in this way heals wounds.

TABLE 1.39: INCREASE OF GLUTATHIONE CONTENT IN WOUND SECRETIONS WITH APPLICATION OF DIFFERENT DRESSINGS (AFTER Y. KRINITSKY)

| MEDIUM (DRESSING) | GLUTATHIONE CONTENT IN % | |
|--------------------------|---------------------------------|--------------------------------|
| | Before applying Dressing | After applying Dressing |
| Cod-liver oil | 45 | 47 |
| Honey | 42 | 68 |
| Honey & Cod-liver oil | 39 | 62 |

Source: (Yoirish, 1959, p. 72)

1.15.1.3: Used as Preservative

Honey being hygroscopic in nature, the presence of formic acid (HCOOH) imparts to it the properties of being both a disinfectant and antiseptic. This renders the media unsuitable and the microbial germs of infectious diseases cannot survive in the presence of honey (Ghosh & Ghosh, 1999, p. 86) . it helps to preserve anything for long time.

- Honey is preservative of other medicines (Molan, 1998).
- Used for preserving meat (Bodenheimer, 1951, p. 245)
- Used for preserving a corpse (Crane, 1999, p. 509)
- It is a preservative of fresh fruits, vegetables (Hatayama, 2006).

1.15.1.4: Food Recipes from Honey

Honey itself is a complete food. It certainly adds to taste and flavour to final recipes The names of some recipes are given below (Ghosh & Ghosh, 1999, pp. 34-55) (Jones & Sweeney-Lynch, 2011, pp. 305-397) (Sharma, 2006, pp. 67-84)

- Honey Vinegar.
- Honey biscuits (for breakfast).
- Vinegar with honey base (used with fruits, vegetables and salads).
- Pickles.

- Honey jamun chutney (popular recipes in cow belt in India)
- Honey candy (child food).
- Honey chocolate.
- Honey jelly.
- Honey jam.
- Honey ice cream.
- Armenian arista.
- Bulgarian honey cake.
- Honey coconut ladu.
- Honey with kalakand.
- Honey mudki.
- Honey with bread
- Honey with fruit juices.
- Curried honey sweet potato soup
- Honey and orange roast duck
- Lemon and honey – glazed chicken breasts
- Honey roast squash with wild rice stuffing etc.

1.15.1.5: Honey as Soft drinks

Some of the soft drinks which are prepared by honey are given below (Ghosh & Ghosh, 1999, pp. 56-60) (Sharma, 2006, pp. 67-73) (Jones & Sweeney-Lynch, 2011, pp. 361-364)

- Honey lemon squash.
- Honey mango squash.
- Honey and red berry smoothie
- Honey mint julep
- Honey eggnog
- Honey boll of Middle East.
- Honey table drinks.
- Honey milkshake.
- Honey tea.
- Rose lip syrup.
- Russian honey k'vash.

- Strawberry milk.
- Honey lossy etc.

1.15.1.6: Alcoholic Drink or Mead

Wine is also prepared by honey, like (Ghosh & Ghosh, 1999, pp. 61-64) (Sharma, 2006, pp. 77-78)

- Latavia mead.
- Tatar mead.
- Lemon honey mead.
- Red honey mead.
- White honey mead.
- Russian honey mead.
- Duma of Sudan. etc.

1.15.1.7: Specially Prepared Honey

Beekeepers also produce various types of honey specially prepared by using syrups in the place of nectar. This honey generally has all virtues of natural honey with added useful properties and may be used for either medicinal or nutritional purpose (Ghosh & Ghosh, 1999, pp. 65-68) (Sharma, 2006, pp. 24-29).

- Milk honey.
- Apple honey
- Barberry honey
- Buck wheat honey
- Chestnut honey
- Coriander honey
- Calcium honey.
- Carrot honey.
- Cabbage honey.
- Penicillium- multivitamin honey.
- Egg multivitamin honey.
- Pine honey.
- Eucalyptus honey etc.

1.15.1.8: Honey as Cosmetics

Honey is not only a good food for internal consumption but equally good for external application also, like (Ghosh & Ghosh, 1999, pp. 69-71) (Jones & Sweeney-Lynch, 2011, pp. 369-376)

- Honey cucumber lotion.
- Honey spirit lotion.
- Creamy hair conditioner.
- Honey cold cream.
- Lemon and honey face pack.
- Honey - flour lotion.
- Honey glycerine lotion.
- Wrinkle prevention cream.
- Honey/ wax lotion.
- Honey soap etc.

1.15.1.9: Honey with Herbs

Herbal treatment (Jones & Sweeney-Lynch, 2011, pp. 370-374) can also be made with honey. Like

- Milk and Honey bath.
- Honey water cleanser.
- Honey and cucumber eye treatment. etc.

1.15.1.10: Used as Media

In laboratory it is used as media for culture of chemical solutions (Hall & Lothrop, 1934).

1.15.1.11: Others

- Used as a stimulant of plant (Phipps, 2016).
- Used in synthetic essence (EIRI Consultants and Engineers, pp. 97-103).
- Used for preserving meat (Bodenheimer, 1951, p. 245) etc.

1.15.2: Bee Wax

Beeswax (Nicola, 2003, pp. 21-24)(Ahnert, 2015) (Jones & Sweeney-Lynch, 2011, pp. 374-394) is the material that bees use to build their nests. It is produced by young honeybees that

secrete it as a liquid from special wax glands. On contact with air, the wax hardens and forms scales, which appear as small flakes of wax on the underside of the bee. About one million wax scales make 1 kg of wax. Bees use the wax to build the well-known hexagonal cells that make their comb, a very strong and efficient structure. Beeswax is valued according to its purity and colour. Light-coloured wax is more highly valued than dark-coloured wax, because dark wax is likely to have been contaminated or overheated. The finest beeswax is from wax cappings, which are the wax seals with which bees cover ripe honeycombs. This new wax is pure and white. The presence of pollen turns it yellow (Nicola, 2003, pp. 21-24).

We get many valuable things from wax such as--

- Waxes are flammable; hence these are used as candle of removing darkness (Crane, 1999, p. 524).
- Wax is used in creating batik fabrics
- Used in the lost-wax method of casting small metal objects.
- Beeswax is widely used as a waterproofing agent for wood and leather,
- Used for strengthening threads;
- Wax is used in village industries such as candle-making
- It is as an ingredient in ointments, medicines, soaps, polishes, medicinal creams and salves, lipstick, cream, massage cream, bleaching creams and saving cream
- There are more than 300 industrial uses of beeswax. Cosmetics and pharmaceutical industries are the major users, accounting for 70 percent of the world trade, and require first-class beeswax that has not been overheated.
- Beeswax is used in the manufacture of photographs, electronic components and CDs
- Used also in Crayons, modelling and casting, art, preparation of different dyes
- Used in polishes for shoes, furniture and floors
- Used in grafting waxes and in specialized industrial lubricants
- Wax is used in rust preventative for tools, wood filter and glass etching
- Sealing on jams and jelly
- Candy ingredient
- Raw material of paper industries.
- Preparation of detergent and facemasks.
- Used in plasters, paint, brush, glass and musk industries etc.

1.15.3: Royal Jelly

Royal jelly is the food that worker bees give to freshly hatched larvae. It contains many insect growth hormones and is valued as a medicine, tonic or aphrodisiac in various parts of the world. Royal jelly has many different components including proteins, sugars, fats, minerals and vitamins (Nicola, 2003, pp. 26-27). It has been shown to contain 66% water, 12.5% proteins, 11% sugars, 5% fatty acids and 1% ash, leaving 3.5% undetermined, with traces of vitamins and enzymes (Jones & Sweeney-Lynch, 2011, p. 303). Under natural conditions, a larva destined to become a queen bee develops in a special large wax cell, inside which worker bees place large amounts of royal jelly. The main countries harvesting royal jelly commercially are China, Taiwan and Thailand. The main market for royal jelly is Japan; relatively small amounts are imported by other industrialized countries (Nicola, 2003, pp. 26-27). It is very highly caloric and nutritious food. Royal jelly is also used for medicinal purposes.

1.15.4: Bee Bread

The hundreds or sometimes millions of pollen grains per flower are collected by the honey bees and packed into pollen pellets on their hind legs with the help of special combs and hairs. The pollen pellet has typical colour- yellow, red, purple, orange, gray, and pale white etc. The partially fermented pollen mixture stored in the honey bee combs, also referred to as “Bee-Bread” has a different composition and nutritional value than the field collected pollen pellets and is the food given to honey bee larvae and eaten by young worker bees to produce royal jelly. Pollen (Table 1.41) is the perfect food because it is the only food sources for honey bees other than honey. The beebread (Table 1.40) is processed food by the bees for storage with the addition of various enzymes and honey, which subsequently ferments. This type of lactic acid fermentation is similar to that in yoghurts and renders the end product more resistible and enriched with new nutrients. The major components are protein and amino acid, lipids and sugars. The minor components are more diverse. All amino acids, essential to human beings, can be found in pollen. Many enzymes are also present but glucose oxidase has been added by the bees. This enzyme is therefore more abundant in beebread than in fresh pollen pellet (Khadi and Village Industries Commission, 2015). It is used today in the treatment of a wide range of ailments including anxiety, arterio-sclerosis, asthma, depression, fatigue, hair loss, impotence, insomnia, stomach ulcers, high and low blood pressure and several skin conditions. Royal jelly is widely used as an ingredient in

moisturizers and skins creams and as a supplement in health foods (Jones & Sweeney-Lynch, 2011, p. 303).

TABLE 1.40: COMPONENT OF BEE-BREAD

| Minor Component | Content |
|-----------------|---------|
| Carbohydrates | 13-55% |
| Protein | 10-40% |
| Fat | 1-10% |
| Ash | 0.5-3% |

Source: (Khadi and Village Industries Commission, 2015)

TABLE 1.41: MINOR COMPONENTS OF BEE COLLECTED POLLEN

| | |
|-------------------------------|------------------------------------------------------------------------------------------------------|
| Flavonoids | At least 8 (flavonoid pattern is characteristic for each pollen type) |
| Carotenoids | At least 11 |
| Vitamins | C, E, B complex (including, niacin, biotin, pantothenic acid, riboflavin (B2), and pyridoxine (B6)). |
| Minerals | Principal minerals: K, Na, Ca, Mg, P, S. Trace elements: A1,B,C1,Cu,I,Fe,Mn,Ni,Si, Ti andZn. |
| Free amino acids | All |
| Nucleic acids and nucleosides | DNA, RNA and others |
| Enzymes | More than hundred |
| Growth regulators | Auxins, brassins, gibberellines, kinins and growth inhibitors |

Source: (Khadi and Village Industries Commission, 2015)

1.15.5: Bee Venom

Bee venom is the natural product of the honey bee, the liquid poison which the bee injects into the skin when it is angry or disturbed to create a combination of physical and chemical injury (Broadman, 1962, p. 28). It is 88% water, with glucose, fructose and phospholipids (fats) as the other main components. Venom also contains pharmacologically active elements, enzymes, peptides and amines (Jones & Sweeney-Lynch, 2011, p. 302). Bee venom has been ascribed to patients with rheumatoid and rheumatic arthritis, bronchial asthma, neuritis etc. The longer duration of the venom effects on the chronic inflammatory disease in comparison with other anti inflammatory drugs (Sharma, 2006, p. 93). Bee venom is applied in two different ways one is therapeutic which is directly used and other is toxin, through injection, ointment or tablets (Broadman, 1962, pp. 28-50).

1.15.6: Bee-Glue / Propolis

Honeybees collect resins and gums from buds or injured areas of plants. This glue-like substance, usually dark brown in colour, is called propolis. As with honey, propolis differs in composition according to the plants from which bees have been collecting. Honeybees use propolis to keep their homes dry, draught proof, secure and hygienic. Propolis is used to seal up any cracks where micro-organisms could flourish; its volatile oils must serve as a kind of antiseptic air-freshener. Propolis has long been used as a medicine; it has been proved scientifically that propolis kills bacteria. It is a common ingredient in toothpaste, lipsticks, skin lotions, shampoos, soaps, mouthwashes, chewing gum and ointments. Dissolving propolis in alcohol makes a tincture with many claimed medicinal properties. Propolis can be a useful income source (Nicola, 2003, pp. 25-26) (Jones & Sweeney-Lynch, 2011, pp. 297-298).

1.15.7: Fresh Brood

Fresh brood can be kept for only one day and must therefore be immediately consumed, dried, salted, smoked or roasted. It can also be stored in the freezer or mixed with honey (Gupta, 2014, p. 643).

1.16: CHAPTER SCHEME

This study attempts to make an appraisal of the role of apiculture specially the marketing of apiculture industry through the co-operative societies with a view to reviewing and

examining critically the efficiency and degree of achievement of the marketing of apiculture industry through the co-operative societies as well as overall position of the apiculture of West Bengal and also assessing the impact of the apiculture activities on the economic development of the state for the period 1998-99 to 2015-16.

The present study is divided into following chapters:

Chapter 1: Introduction

Chapter 2: Measures Adopted for Apiculture Development in West Bengal

Chapter 3: Trends and Consistency of Honey Production, Export and Import

Chapter 4: Marketing of Apiculture Industry in West Bengal

Chapter 5: Test of Unique Strength and Comparative Profitability of Co-Operative Societies in West Bengal

Chapter 6: Social and Economic Lessons from the Market

Chapter 7: Sustainable Development and Apiculture Industry

Chapter 8: Conclusion and Suggestions

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