A STUDY OF THE INDUSTRIAL DEVELOPMENT PATTERN OF KERALA IN THE CONTEXT OF INFORMATION TECHNOLOGY REVOLUTION AND THE EMERGING CYBER SOCIETY

Thesis submitted to the University of Calicut
for the award of the Degree of
DOCTOR OF PHILOSOPHY IN LIBRARY AND INFORMATION SCIENCE

By

A.C.RAJAN

Under the Supervision of

Dr. RAJU M. MATHEW
Former Head
Department of Library and Information Science
University of Calicut

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
UNIVERSITY OF CALICUT
APRIL 2006

Dr. RAJU M.MATHEW
Former Head
Department of Library and Information Science
University of Calicut

Munjanad, Kohinoor
Thenjipalam, Pin 673636
Phone: 0494 2400859
Mobile: 9847411945

CERTIFICATE

This is to certify that this thesis entitled "**A study of the Industrial Development Pattern of Kerala in the Context of Information Technology Revolution and the Emerging Cyber Society**" submitted for the award of the Degree of Doctor of Philosophy in **Library and Information Science** of the University of Calicut by **Shri A.C.Rajan** is a record of bonafide research carried out by him under my guidance and supervision. No part of the thesis has been submitted for any Degree before.

University of Calicut
10-04-2006

Dr.Raju M.Mathew
(Supervising Teacher)

DECLARATION

I, A.C.Rajan, do hereby declare that this thesis, **"A study of the Industrial Development Pattern of Kerala in the Context of Information Technology Revolution and the Emerging Cyber Society"**, has not been submitted before, for the award of any Degree, Diploma, Associate, Fellowship or other similar title or recognition.

Calicut University Campus
10..04..2006

A.C.RAJAN

ACKNOWLEDGEMENTS

I am deeply indebted and sincerely grateful to ***Dr.Raju M.Mathew****, Dept. of Library and Information Science, University of Calicut for suggesting the topic and for his valuable guidance and encouragement. It is with his strong support and inspiration only that this thesis came to a reality.*

I express my sincere thanks to ***Dr.V.Jalaja****, Reader & Head of the Dept. of Library and Information Science* ***Sri.Vasudevan****, Lecturer and other teachers of the Dept. for their timely and valuable support. I also owe a lot to* ***Prof. (Dr.) M.Bavakutty*** *and* ***Sri M.Parameswaran****, former Heads of the Dept. of Library and Information Science, University of Calicut.*

I am very much thankful to ***Sri P.H.Kurian****, IT Secretary & MD of KSIDC and to* ***Sri. James K.Joseph****, former Managing Director of KSIDC for granting me permission to undertake this study. Thanks are also due to* ***Sri. A.J.Pai, Sri. V.Shanmughan Asari,*** *my former bosses,* ***Sri. K.G. Ajith Kumar, Sri. G.Asoklal, Sri. A.B.Raghunathan Nair,*** *and to all my colleagues who inspired me to continue my studies, especially to* ***Smt.B.Vanajakumari****,* ***Smt.A.Sheeja*** *and to* ***Sri. S.Rajan*** *of the Statistics and Planning Division of KSIDC.*

I record my sincere gratitude to (Late) ***Prof. K.A.Isaac****,* ***Prof.C.A.Augustine****,* ***Prof (Dr.) G.Devarajan*** *and* ***Smt.K.K.Lalitha Lenin*** *of the Dept. of Library and Information Science, University of Kerala for their relentless support in carrying out this research study.*

Sri Subramony*, Manager of the British Library,* ***Sri. Anil Kumar****, Centre for Development Studies Library, the Librarian and staff of the Calicut and Kerala University Libraries deserve my special thanks for their continuous support over the years in completing the work.*

I express my gratitude to the librarians and staff of the Dept. of Library and Information Science of the Calicut and Kerala Universities, ***Sri Abdul Salam, Sri.K.N. Soman, Sri. Muraleedharan*** *and* ***Sri. Parameswaran Potti*** *of the Calicut University Library, and to the librarian of Technopark Library, Trivandrum for their help in carrying out my research.*

I would also like to express my deep felt gratitude to all industrialists, scholars, politicians and govt. officials for co-operating with me to complete the study, especially to ***Sri KG.Gireesh Babu****, CEO of Infopark;* ***Sri K.C.Sanjeev****, MD of Impel Machines ;* ***Dr.B.Chandrachoodan Nair****, Chief, State Planning Board,* ***Sri P.T.Thomas****, MLA,* ***Sri. T.K.Devakumar****, MLA,* ***Sri.K.Mohanan****, Ex.MP,* ***Sri.P.Chandrasekharan Nair*** *and to* ***Sri. Ramesh Kumar****, Director of Software Technology Park for their help, co-operation in conducting interview and other support for this research work.*

On a personal note, I express my unbounded love and obligations to my parents ***Sri A.C.Nadar*** *and* ***Smt. A.Lavithal*** *and father-in-law* ***Sri N.Selvamuthu Nadar*** *and mother-in-law* ***Smt.Bhama Selvam*** *for their enduring affection, blessings and moral support.*

My wife, ***Smt. B.Reetha Rani****, has been a source of relentless inspiration and support for me, who shared all my pains in doing this study. Special thanks to her and to our sons Master* ***Regal Sarath*** *and* ***Rinu Vasanth*** *for foregoing their vacations and co-operating with me in undertaking this work.*

I express my sincere thanks to ***Sri.K.Balu*** *and all the staff of Bina Photostat, Villunniyal, Calicut University for their patient and painstaking effort to type, layout and bringing out this thesis neatly and efficiently.*

Above all, I am grateful to ***God Almighty*** *for the divine providence and blessing showered upon me in every now and then, even among heavy odds and made me able to complete this work successfully and I bow my head before Him.*

A.C.RAJAN

10..04..2006.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

" The second vision of our nation is to transform it from the present developing status to a developed nation by integrated actions simultaneously in the areas of agriculture and food processing, education and healthcare, infrastructure development including power, information and communication technologies, and critical technologies. This greater vision will alleviate poverty, illiteracy, and unemployment. When the minds of the people of our country are unified and fused towards this vision, the dormant potential will manifest as a mammoth power leading to a happy and prosperous life of a billion people. This vision of the nation will also remove conflicts arising out of differences and small thinking."

Dr. A.P.J. Abdul Kalam
President of India
(Address to the Nation on the eve of Independence Day, 2002)

DETAILED CONTENTS

INTRODUCTION

A.C.Rajan “A study of the Industrial Development Pattern of Kerala in the Context of Information Technology Revolution and the Emerging Cyber Society” Thesis. Department of Library and Information Science , University of Calicut, 2006

Chapter I

INTRODUCTION

- Background of the Study
- Industrial Development in Kerala
- Information Societies
- Kerala as an Emerging Cyber Society
- Need and Significance of the Study
- Statement of the Problem
- Definition of Key Terms
- Objectives
- Hypotheses
- Methodology in Brief
- Methodological Problems
- Scope and Limitations of the Study
- Organization of the Thesis

CHAPTER - I

INTRODUCTION

1.1 Background of the Study

Modern science and technology, especially Information Technology have a direct bearing on the designing and provisioning of modern Library and Information Systems. The traditional Library and Information Science has become highly complex and multi disciplinary. The greatest challenge of modern Library and Information Scientists is to meet the information and knowledge needs of the modern hi-tech based cyber society.

The modern librarians have to work not only in traditional libraries but also in digital and virtual libraries, and even in software and communication industries. IT has been a core area of study of Library and Information Sciences, over and above library automation and use of library software packages. Consequently, library and information science researchers have started to study the theoretical foundation as well as social application of information technology for development.

International agencies like Intergovernmental Bureau for Informatics (IBI) Rome and Federation Internationale de Documentation (FID), The Hague have conducted several studies on the theoretical foundation of informatics as well as its social application for development. Besides, the

UNESCO have set up the Intergovernmental Informatics Programme to conduct such kinds of studies in a major way, instead of the PGI. The present study is an attempt to examine the social application of Information Technology for development in the specific context of Kerala.

Since the investigator of the present study has been associated with the Kerala State Industrial Development Corporation Limited for the last twenty two years, as an information professional and also in charge of industrial and investment promotion, as part of the work, he has been studying the industrial development of Kerala including the IT. In this background, the present Study- the industrial development pattern of Kerala in the context of the IT revolution and the emerging cyber society - has been carried out.

1.2 Industrial Development of Kerala

Kerala, a beautiful strip of land at the southern tip of Indian subcontinent, had well-established trade contacts with all continents since ancient times. Kerala became a trade destination of the Arabs and other foreign countries. Alappuzha came to be known as the Venice of the East and Kochi, as the Queen of Arabian Sea. Even though this State has a rich tradition and international contacts, it was not embraced by the industrial revolution. It remained an agrarian society. Immense development of foreign trade led to the cultivation and production of spices and commercial crops in Kerala. With the advent of foreigners, cottage industries sprang up in different

parts of the State. Coir, Cashew, Handloom, Tile industry etc. started flourishing because of the abundant supply of raw material and possibility of high value addition, especially for exports.

The leadership of the Late Sir C.P. Ramaswamy Iyer gave some impetus to the industrial development of the State. It led to the establishment of some medium and large-scale industries in Travancore (Nair, 1968). But this tempo could not be maintained for long. Manufacturing concerns did not flourish as desired (Albin, 1988). High literacy and modern outlook did not initiate an entrepreneurial class. Thus, comparing to other parts of the country, Kerala remained industrially backward. (Adiseshaiah, 1987)

The industrial sector was once dominated by the agro and food based units and the chemical and allied industries (Mahadevan, 1988). The proportion of services and knowledge based industries was very low. Information and Entrepreneurship were not given their proper consideration till the emergence of the electronics sector (Arun, 1991).

The industrial sector has failed to absorb the educated masses of the State. This state of industries was due to the socio – political opposition to the industrialists and the over anxiety of the people to the industrial pollution. This trend found some change since the dawn of Electronics with the establishment of the first Electronics Development Corporation in India

(Keltron) and the subsequent growth of electronics units in the State. (Parayil,1998).

The Great Industrial Revolution didn't touch Kerala. The subsequent revolution-Information Technology Revolution–is now embracing all developed and developing countries including India. Kerala is now waking up to this new revolution that has the potential to create significant social transformation in which every citizen becomes part of the States' governance and at the same time builds his own business enterprises at home (Mathew, 1997).

Industry plays a key role in an economy. Next to agriculture, the mankind round the world depends on industry for their livelihood and prosperity. India has been striving to transform its agrarian economy into an industrial economy since 1950s. However, Kerala has been lagging behind other Indian states with regard to industrialization, though it developed its service sector.

Since the formation of Kerala in 1956, several steps have been taken for industrial development in Kerala including setting up of agencies like Directorate of Industries and Commerce (DIC), Kerala Financial Corporation (KFC), Kerala State Industrial Development Corporation Ltd (KSIDC), Kerala State Industrial Enterprises Ltd.(KSIE) and Kerala State Infrastructure Development Corporation Ltd (KINFRA), besides setting up several

industrial undertakings such as Kerala Soaps and Oils Ltd., Kerala Automobiles, Kerala Agro Machinery Corporation Ltd. and Kerala Minerals and Metals Ltd. for the manufacture of consumer as well as durable products. Still, due to technological obsolescence and various socio-political and environmental factors, industrial development, especially in the manufacturing sector, has gone to the backyard.

Kerala in actual practice, missed the bus for industrial revolution owing to social, political, economic, technological and financial reasons. This may be due to lack of a technological base, absence of a developed capital market and professional management.

To address the issue of industrialization, not much studies have been undertaken till date. An in-depth study on industries in the State and on the pattern of industrial development is very much required especially in the context of the Information Technology (IT) revolution and the emerging cyber society in the State.

IT has come to the centre stage, setting the milieu for a peaceful social revolution directed at the realization of social equity and citizen centric government, (Castells, 1996). To cope up with the emerging cyber society in the State, the decision makers have to plan ahead to expand the nature and scope of developmental activities.

An analysis of the growth pattern of industries in the state since independence would reveal a transition in the nature of industrial activity of Kerala.

1.3 Informational Societies

A growing body of theoretical and empirical work in all areas of the social sciences argues that sometime in the 1970s a fundamental shift in the nature of society was initiated. At its simplest, this is portrayed as the third great shift in human society, from agricultural to industrial and now to informational societies. The unifying thought behind all the various theories of this change is that a move began in the 1970s that took globe's socio-economies away from industrial forms that emerged in the nineteenth century and towards socio-economies in which information plays a central role. It is claimed that the key resource at the beginning of the twenty-first century will be knowledge and universities and research facilities will play the role that mines and foundries did in industrial times. It seems highly likely that cyberspace, a place made of information, will be important to societies based on information. To understand the shifts of power between online and offline life, it is important to define the relationship between cyberspace and informational socio-economies. By focusing on this relationship, certain factors can be drawn out from theories that posit the dawn of an information age (Jordan,1999).

One indication of a socio-economy becoming informational is often thought to be the decline of manufacturing industries and the rise of service and information-based industries.

The term informational Society indicates the attribute of a specific form of social organisation in which information generation, processing and transmission become the fundamental sources of productivity and power, because of new technological conditions emerging in this historical period.

Information society is where generation and dissemination of ideas and information is as important as goods and services. Such a knowledge-based society is one where highly educated personnel are engaged for putting knowledge to work (Castells, 1989).

The information society concept has close affinities with the theory of Post-Industrial Society. In propounding his thesis on the Post Industrial Society in the context of the development of western societies, Daniel Bell, the well known American sociologist discussed the emergence of a new social frame work based on information technologies, which may be decisive for the way in which economic and social exchanges are conducted, the way information and knowledge is created, processed and retrieved and character of occupations and work in which people will engage. In the information society, economic sector represent a change from a goods producing to a service economy (Jordan, 1999).

The society is becoming increasingly centred on information handling, processing, storage and dissemination using microelectronics-based technologies and the information technology. The shift to information society is reflected in an emerging occupational structure in which the category of information workers has become predominant. The information society appears as an outcome of technological and economic changes.

Thus the study of industrial development pattern of Kerala is of high relevance now for the financing institutions, the Govt. and for the society at large. The core competence of Kerala is well known. It is the home of country's space venture, the most literate state with less governmental thrust. Kerala is endowed with indomitable, dedicated and educated women force. Keralites are global, as most of them are spread over all parts of the world. Kerala is also well-known for the revolution it has done in the profession of nursing. Keralites, when they give hardwork and value system to other countries, they have to contribute to rural development based on the best, from what they have learned. As e-education is the most important content of knowledge super power, Kerala should enter in business mission mode. Since India's business will be 50 to 80 billion dollars of IT market in a decade, Kerala has an opportunity in progressing in this field (Kalam, 2000).

1.4 Kerala as an Emerging Cyber Society

The idea of cyber society is comparatively of recent origin. It is actually an emerging society or a future society dominated by high level digital communication and net working. The earlier concept of cyber society, though a bit crude, was formulated by Daniel Bell (1973) in his `Coming of the post-industrial society'. Alvin Toffler (1980) in his `The Third Wave' also provides an unrefined form of the cyber society. Pipe and Brown (1985), in their International `Information Economy Handbook', an edited work consisting of views of forty five experts from fourteen countries examines the emerging global information economy. In this work Mathew (1985) also projected the international information economy in the specific context of third world countries. Several authors have put forward the ideas like `network societies', `global villages', virtual communities 'etc. Cyber society is a highly networked knowledge based digital society where the most important resource is knowledge or intellectual capital (Arifa, 1999)

Coming through the ages, it can be seen that the primitive age was dominated by muscle power of man alone while in the agrarian society, the muscle power of both men and animal were in command. Mankind started using technology even from their initial ages. Human beings used stone, bone, metals, bows and arrows, ploughs etc. through the ages to find out their livelihood. Mechanical power was in the forefront in the industrial society

whereas the post–industrial society was dominated by scientific and technological knowledge. The present IT age is basically dominated by information. In the cyber age, the most important resources are knowledge and wisdom. The cyber society is basically a networked or interconnected knowledge and wisdom - based society.

1.5 Need and Significance of the Study

The Revolution in Information Technology has already made a sweeping change in the style of living of mankind. From the advanced countries of the world, it slowly creeps into the developing countries like India (Pitroda, 1999). With the advancement of Information Technology, the tertiary or services sector began to outshine other traditional sectors. The trend clearly shows that the world will soon be transformed into a Cyber Society where information communication technology will be the major player (Mathew, 1985).

In the 21st century, a new society is emerging where knowledge is the primary production resource instead of capital and labour. Ability to create and maintain the knowledge infrastructure, develop knowledge workers and enhance productivity through creation, growth and exploitation of new knowledge will be the key factors in developing the prosperity of this knowledge society (Sahani . 2003)

In this context, Kerala, which has vast potential in Information Technology has to plan ahead to reap the maximum benefits and keep it ahead of others.

Since Keralites have comparatively strong base in Information Technology, the State can transform easily into a Cyber Society by developing and utilising their skills and expertise for its own development.

No systematic study has been conducted so far in the industrial development pattern of Kerala and new trends of development, especially in the context of Information Technology revolution and globalisation. It may be noted that Kerala has been fast emerging as a cyber society. Hence there is a need to conduct an in-depth study of the industrial development pattern of Kerala in the context of IT revolution and the emerging cyber society. The present Study is a pioneering attempt in this regard.

The present study is unique and quite different from that of the historians, economists, industrialists, statisticians or engineers. It is hoped that the present Study would enlighten all concerned and enable the Government to canalise its resources to develop Kerala into a major player in the Information Technology Revolution. The Study has special relevance now as the new government has to come out with new industrial policy, information technology policy and other related policies.

1.6 Statement of the problem

The problem is stated as "A Study of the Industrial Development Pattern of Kerala in the context of Information Technology Revolution and the Emerging Cyber Society".

1.7 Definition of Key Terms

The term 'Study' means 'the effort to learn by reading or thinking' (World Book Dictionary) or "devotion of time and thought to getting knowledge of or to a close examination of a subject, especially from books (Oxford Advanced Learner's Dictionary).

The term "Industrial" is meant 'of or resulting from industry' (World Book Dictionary).

The term 'industry' is defined as a group of productive enterprises or organizations that produce or supply goods, services, or sources of income (The New Encyclopaedia Britannica).

The meaning of "development" is taken as 'stage of advancement' (World Book Dictionary).

'Pattern' means "form; shape; configuration" (World Book Dictionary)

A working definition for the "industrial development pattern" means identification of the growth or development of industries for understanding its

order or form or relationship so that a meaningful projection can be made for the future.

The term 'Kerala' denotes a geographical area, which is one of the smaller States of India, with a mere 1.3% of the total area of India, i.e., 38863 sq.K.Ms. Its population is about 3% of the total population of India. The State is a 600 KM long strip of land along the South West coast of India, between the Arabian Sea to its West and the Western Ghats in the East. Karnataka lies to its North and North East and to its East and South is the State of Tamil Nadu (The Encyclopaedia District Gazetteers of India, 1997).

The term "Context" means 'background' 'attendant circumstances' or conditions (World Book Dictionary).

The term Information means "Knowledge communicated or received concerning a particular fact or circumstances; any knowledge gained through communication, research, instruction" is called information. (Randam House Dictionary). It is also defined as "intelligence, notice, news or advice communicated by word of writing; knowledge derived from reading or instruction, and knowledge derived from the senses or the operations of the intellectual faculties (The New Websters' Dictionary).

'Information Technology' means " the application of computers and techniques of using computers to the handling of masses of data" (World Book Dictionary).

The British Department of Industry considers Information Technology as the science of Information handling, particularly by computers, used to support the communication of knowledge in technical, economic and social fields. It defines Information Technology as the "acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a micro electronics based combination of computing and telecommunication".

UNESCO defines Information Technology as "Scientific, technological and engineering disciplines and the management techniques used in information handling and processing; their applications; computers and their interaction with men and machines; and associated social, economic and cultural matters".

The IT Policy announced by the Govt. of Kerala covered the following definitions:

a) `IT' includes IT and Telecommunications

b) `IT' Industry' includes IT hardware and software industries ; IT software industry includes IT software, IT service and IT enabled service. However, it excludes IT training institutions that provide training to the public at large.

c) `IT infrastructure ' refers to the physical infrastructure built by a firm or built up and sold to an IT industry for its own use; or infrastructure built by an IT industry for its own use.

d) `IT Software' is defined as any representation of instruction, data, sound, image including source code, object code recoded in a machine, readable form and capable of being manipulated or providing interactivity to use by means of automatic data processing machine falling under the head `IT Products'. IT Software includes Operating System, Application Software, Middleware and Firmware.

e) `IT Service is defined as any service which results from the use of any IT software over a system of IT products for realizing value addition.

f) `IT' Enabled Service ' is defined as any product or service that is provided or delivered using the resources of Information and Communication Technology.

g) `IT Products' is defined as computer, digital-data communication and digital data broadcasting products as notified by the Ministry of Finance, Government of India or the Central Board of Excise & Customs.

'Revolution' means 'a complete change' (World Book Dictionary).

'IT revolution in the context of Kerala' means the rapid development of IT infrastructure such as high level digital connectivity not only in cities but also in the remotest villages in Kerala, the passing of the international communication cable through Kochi, availability of personal computers in almost all offices, educational institutions and in a large number of households, IT has become an integral part of the school syllabus. Kerala has attained high IT literacy besides setting up several Internet centres and producing large number of well-qualified IT professionals. E-governance has fastly entering in almost all government offices, besides setting up several IT companies. All these developments have been taken place during the last fifteen years.

'Emerging' means "rising" or 'coming forth' (World Book Dictionary).

The term 'Cyber' means "created by or existing only on computer, virtual, involved with or using computers" (World Book Dictionary).

The term 'Society' means "all the people; human beings living together as a group", "those people thought of as a group because of common economic position, similar interest or vocation, or other form of similarity in identification" (World Book Dictionary).

1.8 Objectives

The major objectives of the Study are the following:

1. To study the pattern of industrial development of Kerala since 1956.

2. To examine the role of Information Technology in the industrial development of Kerala.

3. To formulate alternative strategies and policies for the industrial development of Kerala in the context of I T revolution and the emerging cyber society.

1.9 Hypotheses

i) There is a set pattern for industrial development of Kerala.

ii) Information Technology has a significant impact on the industrial development of Kerala.

iii) Kerala is fastly emerging as a cyber society.

1.10 Methodology in Brief

The methodology of the present Study comprises of a combination of different approaches, such as historical, state of the art, and projection of the future.

For data collection, various tools and techniques such as search of historical documents, questionnaire and interview techniques have been employed. Data has also been generated from a field study.

The primary data has been collected from the small, medium and large-scale industrial units working in Kerala. Name and addresses of the industrial units are collected from various Government departments, agencies and from their websites. Secondary data has been collected from books and reports published by the government departments and agencies like State Planning Board, Directorate of Economics and Statistics, IT Mission-Kerala, KSIDC and Websites of various departments.

Questionnaires have been sent to selected 200 industries - 50 units from each type of industries – traditional, manufacturing, service and IT. Out of the responses received, 25 numbers from each type of industries were taken for further study. From the 100 industrial units so segregated, industrialists of selected units in 7 districts out of the 14 districts in Kerala - Trivandrum, Kollam, Alappuzha, Ernakulam, Palakkad, Kozhikode and Kannur were contacted to canvass the required data or information.

The present Study is an attempt to find out the nature of industrial development after the formation of the Kerala State in 1956. Interview has been conducted with the help of a schedule to draw out views and ideas of Govt. officials, policy makers, industrialists, and political leaders, including

legislators and from the academicians. Documentary sources such as Annual reports, brochures, house journals and other relevant literature have also been used for collecting the data.

Data so collected has been separately analysed using appropriate statistical techniques. Observations made during the field study were also interpreted with the help of relevant studies.

1.10.1 Methodological Problems

The fundamental methodological problem of the present Study is the categorisation of industries in Kerala into traditional, manufacturing, service, IT on the one hand and the division of the economy into primary, secondary and tertiary sector. IT units produce hardware and software products and services. The hardware comes under manufacturing industry whereas the software and IT Enabled Services (ITES) come under the services industry or in the tertiary sector.

1.11 Scope and Limitations of the Study

The scope of the Study is confined to the industrial development of Kerala since its formation in 1956 and upto 2005 and the role of information technology for the development of Kerala. The sample population is limited to one hundred. An information scientist, working in an industrial

promotional institution of the Government of Kerala has undertaken the study.

1.12 Organisation of the Thesis

The Thesis is organised into six Chapters as detailed below

Chapter I : Introduction

This Chapter contains the need and significance of the Study, statement of the problem, and definition of key terms, objectives and hypothesis tested. The methodology used is also discussed in brief.

Chapter II : Industrial Development and the Emerging Cyber society in Kerala - An Overview

This includes a review of the development of industries in various sectors - traditional, manufacturing, service and IT and the transition of Kerala into a cyber society.

Chapter III : Review of Related Literature

Brief reviews of related studies on the development of industries and information technology in the State are given in this Chapter.

Chapter IV : Methodology

This chapter consists of the detailed description of the characteristics of the population of the Study, the criteria adopted for selection of sectors for

Study and description about the procedures followed for selection of samples, as well as personalities for interviewing. A brief account of the statistical tools and techniques used for analysis and interpretation are also included.

Chapter V : Analysis and interpretations

This Chapter covers the detailed analysis of the data collected from the field. The primary data collected through questionnaire and by interview are analysed with the help of relevant secondary data and other related studies. The interpretations and derivations from the analysis are also given in this Chapter.

Chapter VI : Summary, Conclusions, Policy Implication and Suggestions

This Chapter contains the summary and conclusions made from the analysis of the data, policy implications of the Study and strategies and policy formulations for the development of industries in Kerala.

INDUSTRIAL DEVELOPMENT AND THE EMERGING CYBER SOCIETY IN KERALA : AN OVERVIEW

A.C.Rajan “A study of the Industrial Development Pattern of Kerala in the Context of Information Technology Revolution and the Emerging Cyber Society” Thesis. Department of Library and Information Science , University of Calicut, 2006

Chapter II

INDUSTRIAL DEVELOPMENT AND THE EMERGING CYBER SOCIETY IN KERALA: AN OVERVIEW

- Development of Kerala Economy
- Development Pattern of Kerala
- Industrial Development in Kerala
- History of Industries in Kerala
- Growth Trends in Manufacturing
- Industrial Policies of Kerala
- Information Technology
- Cyber Society
- Development of IT in Kerala
- Advantages of Kerala in the IT Sector
- Promoting IT in Kerala
- Achievements of Kerala under IT
- IT Policies of Kerala
- IT Sector: Status and Projection

CHAPTER- II

INDUSTRIAL DEVELOPMENT AND THE EMERGING CYBER SOCIETY IN KERALA : AN OVERVIEW

Industrial development forms part of the overall performance of an economy. So, in this Chapter it is attempted to give a brief description of Kerala economy, industrial development and IT and cyber society.

2.1 Development of Kerala Economy

2.1.1 Introduction

Economy of a state consists of three sectors, viz., primary, secondary and tertiary sectors. The primary sector includes agriculture, forestry and logging, fishing, mining and quarrying. The secondary sector includes manufacturing, electricity, gas, water supply and construction. The tertiary sector includes transport, storage and communication, trade, hotel and restaurants, banking and insurance, real estate ownership, business, legal, public administration, other services, etc.

During 2004 – 05, the State economy exhibited a high time growth rate of 9.2 percent. This was possible by targeting a growth rate of 13.8 percent in the service sector. The contribution from primary sector to the State income has been decreasing since 1950. During 2004 – 05, at current prices, the primary, secondary and tertiary sectors contribute 16.8%, 22.2% and 61%

respectively to the net state domestic product (NSDP) (Govt. of Kerala / SPB, 2006). A discussion on the all India situation is essential here to know the comparative position of Kerala.

2.1.2 Sectoral distribution of GDP – All India

During 1970s, the contribution from agricultural sector to the GDP was 42.8%, industry sector 22.7% and service sector 34.5%. The analysis of the sectoral growth during the last three decades reveals that the contribution of primary sector in India is decreasing and that of tertiary sector is increasing. The contribution of secondary sector has only nominal variation. During 2003 - 04, at constant prices, the primary, secondary and tertiary sector of India contributed 24%, 25% and 51% respectively to the GDP.

2.1.3 Development Pattern of Kerala

One of the features of Kerala's development pattern is the vast differences in growth of commodity producing sectors and tertiary sector. The only sector which witnessed higher growth rates during the 1975 –76 to 1985 –86 periods than the 1962-63 to 1974–5 period was the tertiary sector. In fact, the primary sector showed a negative growth during the second period. The growth rate in the secondary sector during the second period was less than half of the first period. This near stagnancy in per capita income and the sectoral growth pattern have been affecting Kerala's finances in a big way.

Kerala which accounts for 3.06 per cent of the total population, produces only 2.5 percent of the national industrial output from factories and ranked 12th among Indian states in 1994-95. Kerala's performance has been poor throughout in terms of industrial development, as reflected in per capita value added, Kerala remained below the national average in the 1960s and is so even today.

The major factors that influenced Kerala's economy during the 1990's were economic policy reforms, increase in migration to the Middle East, increase in exports and favourable climatic conditions. Though the State did not make major policy changes in market intervention, the policy changes at the national level, especially the external sector policies, had generated favourable conditions for the promotion of foreign migration and exports.

As a result of the structural changes that have occurred in the economy during the post-reform (1991) period have resulted in a decline in the share of the primary sector has declined in the secondary sector met with marginal increase and registered a higher increase in the tertiary sector as given in Table 2.1. The marginal increase in the share of the secondary sector was mainly due to the growth of construction. A higher increase in the share of the tertiary sector could be attributed to the growth of transport, storage, communications, banking and insurance.

Table 2.1:State Income of Kerala at Current Prices

(Rs.in Crs.)

Sl.No	Item	1956-57	1961-67	1971-72	1981-82	1982-83	1983-84	1984-85
1	Net state Domestic product	350	467	1276	3705	4422	5203	5965
2	Sectoral distribution							
	a) Primary sector	180	251	585	1413	1719	2105	2396
	percent	51.43	53.75	45.85	38.14	38.87	40.46	40.17
	b) Secondary sector	61	75	234	836	958	1056	1168
	percent							
	c) Tertiary sector	17.43	16.06	18.94	22.56	21.67	20.29	19.58
		109	141	457	1456	1745	2042	2401
	percent							
		31.14	30.19	35.81	39.30	39.46	39.25	40.25
3.	Per capita Income (Rs.)	228	223	592	1441	168.9	1951	2196

(Source: Govt. of Kerala, 1986)

2.1.4 Growth behaviour of NSDP by economic activity

For the purpose of analysis, the State economy was divided into three sectors, viz, (1) agriculture (2) industry and (3) services, including construction activity and estimated the annual growth rates recorded by each as shown in Table 2.2.

Table: 2.2: Annual Growth rates in Net Domestic Product by Economic Activity

Period	Kerala			All India		
	Agriculture & allied	Industry	Service	Agriculture & allied	Industry	Service
1981-2 to 1990-1	3.67	4.55	4.35	3.21	6.71	6.38
1991-2 to 1996-7	5.86	5.04	7.91	3.17	6.85	6.47
1981-2 to 1996-7	4.45	4.52	5.53	3.29	6.77	6.64

The service sector has recorded the highest average annual growth rate during 1991-92 to 1996 - 97. It stands to reason that the revival in economic growth in the nineties, as reflected in the growth rate of NSDP, is largely accounted by the service sector.

The contribution of the service sector to total growth has increased significantly in the nineties. The contribution of industry is relatively marginal. The tertiary sector even when defined in the conventional way (i.e. excluding construction) had the largest share (45 per cent) in net domestic product in 1997-98 in Kerala. This is higher than the average (42 per cent) at all-India. In variance with the conventional growth theory, the tertiary (service) sector is expanding fast without the secondary sector (industry) achieving remarkable improvement in growth and size in Kerala (Mathew, 1999).

2.2 Industrial Development in Kerala

2.2.1 History of industries in Kerala

Kerala has been a major international trading center for hundreds-possibly thousands of years. The region's cardamom and cinnamon were once exchanged with ancient Babylonia (Sumer) as early as 3000 B.C. Ancient Egypt and Israel also may have traded with Kerala via the Phoenicians who brought gold, ivory, apes, peacocks and possibly, wood or other materials for

the famous temple of King Solomon about 1000 B.C. In 45 A.D. a Greek-Egyptian navigator named Hippalus discovered regular monsoon winds across the Indian Ocean. Kerala became an important centrespot connecting Europe, the Middle East, South Asia and China. Chinese trade grew through the fifth to fifteenth centuries. It left its mark on the city of Cochin, which still uses Chinese style fishing crane and net assemblies.

Kerala has been exposed over and over to fairly favourable contacts from outside. Greeks, Egyptians, Romans, Jews, Christians and Muslims all came mostly without conquest or bloodshed and this long history of peaceful and prosperous relations with the outside world may have helped conditioning Kerala's people to respond easily to outside influences.

In the late nineteenth century, outside forces began to have their greatest effects on Kerala's people. The opening of the Suez Canal in 1869 stimulated British investment in India. This was the time of deep penetration of the local Kerala economy by British plantations and rural industrial enterprises.

In the late nineteenth century British investors took their primary interest in Kerala's mountains. Cool, well watered and close to ocean transport lanes the Western Ghats were ideal for tea and rubber plantations. These were followed in the early twentieth century by small-scale coir mat weaving factories in the low land coastal areas. Then came cashew nut processing,

cigarette production, tile factories and saw mills. And of course, the extensive infrastructure to support these activities included roads, railways, water drainage systems and posts.

The history of industrial development in Kerala dates back to the year 1881 when the first manufacturing unit on a factory basis was started at Quilon by an American to make clothes. Shortly after that, a coir factory was started at Alleppey. Palghat and Calicut also witnessed the emergence of some industrial units by the end of the 19th Century (Prakash, 1994).

The British attitude to indigenous industry was hostile and it aimed at the destruction of existing manufacturing industries. Various cottage industries had for centuries been flourishing in the State. Cotton weaving, coir making, wood and ivory carving and carpentry were the most important of such industries. The textile industry was one of the most popular and it included weaving, lace making, knitting and embroidery. But Britain's technical progress had enslaved and then destroyed the traditional cotton manufacturing industry in Kerala (Ramachandran, 1998).

Historians unanimously record that the "golden era" of Kerala's industrial development was the ten year period ending 1947 when Sir. C.P. Ramaswamy Iyer ruled the State of Travancore as its Diwan. Of the nearly 40 industrial units established before 1947, most of them were planned and implemented during his Diwanship. . FACT, IRE, TTP, Punalur Paper Mills,

Travancore Sugars and Chemicals, Kerala Ceramics, Forest Industries, TECIL, Travancore Rayons, Indian Aluminum Co., Laxmi Starch, Travancore cements and Western India Plywoods were some of the major units started during his time.

Kerala, one of the smallest states in India has rich resources to develop itself into a strong industrialised state with its well educated manpower, rare minerals, cheap-power (hydro-electric), transport and communication facilities. Still, even after 50 years of independence, the State remains industrially backward (Nayar, 1972). The reasons for the situation are given in Table 2.3.

Table 2.3: Gradation of the Causes for Industrial Backwardness of Kerala

Important Causes		Percentage of respondents indicating for each cause		
		I preference	II preference	III preference
1.	Lack of Capital	34.28	10.00	--
2.	Militant labour	25.71	12.85	10.00
3.	Low productivity of labour	24.28	5.71	4.28
4.	Competition	2.85	4.28	4.28
5.	High cost of raw material	4.28	21.42	28.57
6.	Lack of power	2.85	5.71	11.42
7.	State interference	1.42	10.00	7.14
8.	Shortage of entrepreneurs	1.42	8.57	5.71
9.	Unhealthy industrial milieu	1.42	1.42	1.42
10.	Lack of skilled labour	--	1.42	--
11.	Lack of technical knowhow	--	2.85	10.00
12.	Limited market	--	7.14	7.14
13.	Slow growth of technical education	--	--	4.28
14.	Others	--	--	--
15.	Those who did not express any opinion	1.42	2.25	5.70
	Total	100.00	100.00	100.00

(Source: Joseph, 1996)

The estimated share of industries sector in the SDP in 1950 – 51 was 16.17 percent and the workers in the sector formed 21.53 percent of the total workforce. The total number of factories in the Travancore area in the early fifties was reported as 992. (200 coir, 190 cashew, 100 tea factories, 100 bricks and tile, 90 cotton, 50 rubber, 40 printing and book, 222 other factories). Kerala had a relatively better developed infrastructure by 1950s.

Though the coverage of railways was rather limited, Kerala had a wide network of roads (Pillai, 1994).

The Planning Commission in its report of the working group on identification of backward areas stated that " Kerala is not an industrially backward state in India, but on the contrary, one of the developed states ". The B.D.Pande Committee Report is a fabulous mistake and completely devoid of any scientific basis. The report selected, in a completely arbitrary manner, certain criteria of industrial backwardness, omitting many equally valid criteria. In fact, Kerala is declared as an industrially advanced state simply because Kerala has more roads per square Kilometre than many other states. And on this basis, the rightful claims of Kerala for special assistance are being denied (Mathew, 1972).

There is a misinformation about the lack of entrepreneurial talent and labour unrest in Kerala. Actually, these are not supported by any facts. On the other hand Kerala has produced sufficiently large number of top entrepreneurs. Any inventory of top level executives in public and private sector companies in India will bear this out. A comparison of labour statistics between Kerala and other states clearly indicates that the labour unrest in Kerala is very low.

Kerala remains an industrially backward state in India. Though, Kerala's industrial sector employs a higher proportion of the total working

force compared to the all India figure, large numbers of workers are, in fact, linked up with low-productivity, agro-based, traditional and backward industries such as coir, cashew, handlooms and beedi. According the 1972 statistics, while an average factory worker in India got Rs.6.10 as daily earnings, an average factory worker's daily earnings in Kerala was as low as Rs.3.50. The backward character of the industrial sector in Kerala generally can be seen from the fact that the capital investment per worker in the industrial sector of Kerala was only Rs.3737/- whereas the figure for all India was Rs.5830/- (Mathew, 1972).

Ernakulam had secured the first place in the overall industrial development during 1973-74. Quilon District comes next to Ernakulam. The order of the districts in the general scale of industrial development is given in the Table 2.4.

Table 2.4: District-wise ranking of Industrial Development

District	Rank	District	Rank
Ernakulam	1	Kottayam	7
Quilon	2	Alleppey	8
Trichur	3	Palakkad	9
Kozhikode	4	Idukki	10
Cannanore	5	Malappuram	11
Trivandrum	6		

Among the districts of Kerala, Ernakulam is the most industrially developed district while Malappuram is the least developed in the State. Industrially, Trivandrum, Kottayam, Alleppey and Palghat are more or less of the same standard. Next to Malappuram, Idukki is the most backward district of Kerala in 1974 (Govt. of Kerala, 1977).

The Kerala State, which was formed on 1st November 1956, as part of the State's reorganisation exercise integrating Malabar from Tamil Nadu with the princely states of Cochin and Travancore, has made significant progress in several areas of human attainments and is now widely known and well documented. The United Nations and most of its affiliates acclaimed this development as a 'model' for the less developed world. But along with high social development, Kerala is beset with several problems like a very high rate of educated unemployment, lack of excellence in education, low level of investment and productivity in productive sectors. Given the dismal performance by the productive sectors of the economy and the financial crisis facing the State, scholars have been deeply concerned about the sustainability of Kerala's pattern of development experience (Oommen, 1999).

According to Narayanankutty (1972), Kerala's stagnation was more pronounced as she could not boast of having a bourgeoisie in its special set up. In the historical background of Kerala's social life, there never existed a Vysia or Bania counter part. The original tradesmen were all outsiders like

the migrated non-Kerala "Pandi" traders and Arabs from across the seas. Through their influence and inspiration in later periods, the void was filled partially by certain sections of Muslims and Christians who took to trading as a source of existence as their faiths stood as a bar in possessing land and status from the original Hindu feudalists.

The alternate source of power and position was by getting into seats of state services. The prospects of academic qualifications during the British and Princely regimes for climbing to vantage positions in services drove such prospective bourgeoisie communities of Kerala towards starting and trading on educational institutions instead of industrial enterprises, keeping however, one eye always on land and feudal pomp. Thus while a Marwari or Gujarati, Bania or a Chettiar or Vysia opened the sluice gates of new industrial productive forces by starting small scale industries and in gradual process, big textile mills or engineering industrial complexes in their region, their counterparts in Kerala took to building primary school, high schools and colleges according to the latter's capacity and mite.

Kerala did not produce entrepreneurs with the steadiness, consistency, shrewdness and tenacity that constitute the characteristics of entrepreneurs elsewhere, to influence and to utilise the benefits of planning launched in the country by starting ancillary and subsidiary industries of profit and gain and

by jockeying to secure more economic advantages for their respective region (Narayankutty, 1972).

Among the major States in India, Kerala ranks only tenth in the composite index of industrial development. This information is furnished in Table 2.5.

Table 2.5: Ranking of States on the Basis of Composite Index of Industrial Development

	1993-94	1999-2000
Maharashtra	1	1
Tamilnadu	2	2
Andrapradesh	3	4
Gujarat	4	3
Uttar Pradesh	5	5
West Bengal	6	7
Karnataka	7	6
Madhya Pradesh	8	11
Rajasthan	9	8
Bihar	10	15
Kerala	11	10
Haryana	12	9
Delhi	13	12
Orissa	14	13
Assam	15	14

(Source: Government of Kerala, 2003.)

2.2.2 Scenario of Industrial Production

Kerala's Industrial sector has been undergoing stagnation since the mid 1960s. The share of the manufacturing sector in the State's SDP is relatively small and the growth rate recorded has been marginal compared to All-India

and neighbouring States. The industrial growth performance in India since the second plan has witnessed three phases: a high growth rate since the mid-1960s and recovery since the mid 1970s. However, there were variations in inter-temporal growth patterns across states. But among the major states of India, only Kerala witnessed an unhealthy trend of continuing deceleration in the rate of industrial growth since the second half of the 1960s.

Further disaggregation of sectoral growth shows that crop production, fisheries, forestry and logging had shown negative growth. Only the livestock sector shows some growth. In the secondary sector, unregistered manufacturing units showed an absolute decline in income generated. Registered manufacturing sector grew only by 5.2 percent. The fastest growing sub sector in secondary sector was electricity and water supply. In tertiary sector, the fastest growing sub-sectors were public administration, banking and insurance and communications. Sub sectors like trade, hotels and restaurants and real estate ownership of dwellings showed low growth rates. The transport sub sector registered more than average growth rate (George, 1990).

The number of working factories in Kerala was only 12448 in 1990. The employment that was generated during 1990 was 355559. The number of working factories recorded a marginal increase of 0.62 percent from 18262 in 2002 to 18376 in 2003. The total number of workers employed in the

working factories increased from 408813 in 2002 to 411749 in 2003. Of the total 411749 workers, 316169 workers are in private and only 95580 workers are in public companies.

As on 31.3.2004, 12965 joint stock companies consisting of 1437 public limited and 11528 private limited companies existed in the State. During 2003-04, 944 companies comprising 909 private and 35 public limited companies were newly registered. 65 joint stock companies were wound up /dissolved / amalgamated and ten companies were transferred to other states in the year. The total number of govt. companies registered remained at 111, comprising 60 private and 51 public limited companies.

The total number of SSI units registered in Kerala as on 31.03.2004 was 2.75 lakhs with an investment of Rs. 4031 crores providing employment to 12.37 lakh persons.

Since 1980-81, the share of secondary sector was around 24% and remained static for the entire period. The performance of factory sector was totally disappointing. It exhibited a downward trend from 7.58% in 1980-81 to 7.14% in 1996-97. The state of electricity posed a serious concern and it declined from 1.32% in 1980-81 to 0.78% in 1996-97. (Surendran, 2002)

Since 1980-81, a boom has occurred in the construction sub-sector which is mainly due to the gulf remittances that lifted the share of secondary

sector from 17% to 24%. The share of construction remained at a fairly high rate of 9% for the whole period. But it declined to 6.95% in 1998-99.

The share of tertiary sector which comprises transport and communication, storage, trade, hotels and restaurants, banking and insurance, real estates and ownership of dwellings, public administration and other services went up from 29.32% in 1950-51 to 36.40% in 1980-81. It further rose to 52.05% in 1996-97. The share of trade, storage and communications improved from 18.56% in 1980-81 to 21.76% in 1996-97. The share of banking and insurance made a glaring stride from 2.93% to 8.16%. The share of public administration was significant with an increase from 3.95 to 5.57%.

Kerala registered an uptrend in the number of workforce from 43.60 lakhs to 93.01 lakhs(113.42%) during 1951 to 1991 and of population from 1.35 crore to 2.90 crore (114.82%). There is a close proximity in the growth rate of both population and workforce. It underlines the fact that the growth of employment is revolving around zero rate of growth for the entire period which led to the alarming situation of unemployment.

Occupational composition or distribution of work force by industry origin implies the distribution of work force among the different sectors of the economy viz., primary, secondary and tertiary. The share of the secondary sector to total employment was very discouraging viz.21.54% in 1951. It also came down to 18.34% in 1991. Work participation in household industry

declined substantially from 10.80% to 3.92%. The construction of sub-sector improved its position from 1.35% to 3.63%.

The tertiary sector widened its orbit and absorbed more work force and emerged as a potential sector. Work participation ratio of this sector increased from 23.62% in 1951 to 34.42% in 1991. The proportion of work force in trade and commerce went up form 6.61% to 11.47%. The other services like education and administration. Improved their absorption of workers from 13.81% to 17.52% and female participation jumped from 13.06% to 24.88% (Surendran, 2002).

The development of capitalism in Kerala industry is in its very rudimentary stage. Nearly 75 percent of the industrial firms may be classified in the category of petty marketing type. Kerala has been able to avert extreme crisis situations due to state intervention, perusal of welfare-oriented polices, external migration etc. The study concludes that contrary to past experience, the efficacy of cushions to lubricate the crisis are limited at present due to the structural changes taking place in the economy weakening the production base and production of commodity producing sectors (Mathew, 1999).

2.2.3 Growth trends in Manufacturing

Against the backdrop of the foregoing growth trends in the overall economy, the growth behaviour of Kerala's manufacturing sector was analysed. There are many ways of looking at growth trends in income generation by manufacturing in an Indian state. The easiest one is to look into the data on the manufacturing component of the net state domestic product.

The annual growth rates were recorded in net domestic product by manufacture at 1980-81 prices in Table 2.6. The emerging picture is one of stagnation in growth rate of the manufacturing sector in Kerala in the seventies. The growth performance has improved overtime though the nineties has not seen the growth rate significantly higher than what it was in the eighties. The strikingly disappointing trend is due to the fact that the growth rates have been below the all-India averages for all the period under review.

Table 2.6: Annual growth rates in Net Domestic Product by Manufacture

Period	Kerala	Karnataka	Tamilnadu	All India
1971-2 to 1980-1	2.77	--	--	4.37*
1981-2 to 1990-1	4.25*	15.1*	3.78*	6.52*
1991-2 to 1996-7	4.91*	12.31*	5.34*	7.15*
1981-2 to 1996-7	4.42*	14.4*	4.21*	6.50*
1971-2 to 1996-7	3.78*	--	--	5.91*

Note: * indicates significance at 5 percent level

The table also gives a comparative picture of the growth trends in Kerala in relation to Karnataka and Tamilnadu since 1981-82. It is observed that the secular growth trend of income generation in Kerala does not compare well with Karnataka though it matches with Tamilnadu. And, the growth rate recorded in the nineties is far behind that of Karnataka and all-India. This is not a promising sign of the growth performance of the manufacturing industry in Kerala.

Here, it may be relevant to note that the CSO has computed a new series of net domestic product (with 1993-94 as base). And, the growth rates (in terms of the mean of year-to-year percentage changes) calculated from the data in the new series shown in Table 2.6 are higher in magnitude than the figures based on the old series (with 1980-81 as base) during the later part of the nineties.

2.2.3.1 Factories

The number of working factories in Kerala has been increasing upto 2000-01 along with the resultant number of employment. Since then there is a study decline as shown in Table 2.7.

Table 2.7: Growth of Working Factories and Average Daily Employment in Kerala - 1995-2004

Year	No.of Factories			No. of Employment		
	Private	*Public*	*Total*	*Private*	*Public*	*Total*
1	2	3	4	5	6	7
1991	12800	455	13255	243211	125527	368738
1992	14113	495	14608	248198	127538	375736
1993	14646	486	15132	277266	111492	388758
1994	14824	481	15305	281669	108591	390260
1995	14840	491	15331	263878	111270	375148
1996	15906	528	16434	293923	111144	405067
1997	16803	533	17336	317592	111248	428840
1998	17177	542	17719	334143	109698	443841
1999	17955	549	18504	318729	117747	436474
2000	17956	558	18544	336895	101855	438750
2001	18001	553	18554	329230	107180	436410
2002	17727	535	18262	313260	95553	408813
2003*	17711	528	18239	309938	94319	404257
2004(p)	17742	529	18271	310884	94367	405251

(Source: Government of Kerala, 2005) * Revised (p) provisional

The number of factories came down to 18271 in 2004 from 18554 in 2001. This may be due to a crisis that affected the traditional industries, especially cashew industry in Kerala.

2.2.3.2 Small Scale Industries

The small scale units registered in Kerala as on 31.3.2005 was 280584 with an investment of Rs.4230.03 crores and an employment to 12.60 lakhs

persons. During 2004-05, 4395 units with an investment of Rs.198.63 crores and employment potential of 22585 persons were registered.

The 3rd All India Census of SSIs was conducted during 2002-03 which revealed that only 146988 units are actually working as on 31.03.2001 by creating an investment of Rs.4943 crores and employment to 5 .4 lakh persons. But as on 31.3.2005, the actual number of working SSI units increased to 187676 with an investment of Rs.570 crores and employment for 6.82 lakh persons.

2.2.3.3 Medium and Large Industries

Industrial units with a fixed capital investment of more than Rs. 100 lakhs falls under this category. The number of large and medium units in the State increased from 389 units in March 1996 to 567 in March 2000. As on 31.03.2005 there were 720 units in Kerala. The district –wise distribution of these units is given in Table 2.8.

Table 2.8: District-wise list of Medium and Large Scale Industries in Kerala as on 31.03.2005

Sl. No.	Districts	Central Sector	State Sector	Co-operative Sector	Joint Sector	Private Sector	Total
1	Thiruvananthapuram	2	14	2	4	67	89
2	Kollam	2	7	2	--	20	31
3	Alappuzha	--	7	--	3	27	37
6	Kottayam	1	2	2	--	28	33
4	Pathanamthitta	--	1	1	1	5	8
5	Idukki	--	--	1	1	15	17
7	Ernakulam	12	8	2	4	228	254
8	Thrissur	2	8	1	7	48	66
9	Palakkad	2	2	2	6	74	86
10	Malappuram	--	5	1	2	22	30
11	Kozhikode	--	3	1	1	24	29
12	Wayanad	--	--	--	--	7	7
13	Kannur	1	7	5	--	16	29
14	Kasargod	--	1	1	--	2	4
	Total	**22**	**65**	**21**	**29**	**583**	**720**

(Source: Government of Kerala, 2006)

2.2.4 Industrial Policies of Kerala

Since its formation, the Kerala State has been ruled by Congress led or Communist led ministries. Their industrial policies gave thrust to different areas altogether. The following section lists the objectives of different industrial policies. A study of those policies will help to formulate alternate development policies for the emerging cyber society.

2.2.4.1 Industrial Policy 1983

The main components of the Policy announced by the Left Democratic Front (LDF) Government are:

i) To rehabilitate the traditional industries based on local raw materials by adopting protective and promotional measures in the short-term and to revitalise them in the long term by adopting improved methods and upgraded technology on a gradual basis;

ii) To help in establishing an inter-linked system of large, medium, small-scale co-operative and home units in the modern sector to make optimum use of the State's natural and man-power resources and to increase employment and income all round:

iii) To improve significantly the working of public sector enterprises so that they achieve economically and efficiently the basic goals of the respective enterprises and general surpluses for future growth and expansion;

iv) To provide infrastructure facilities and other support necessary for starting new ventures and for expanding or diversifying the exiting units, and to give other general help and support through an Industrial Guidance and Assistance Bureau.

v) To help revive sick, industrial units which are capable of being revived so that scarce capital already invested can become productive ;

vi) To play a positive role in creating healthy management-labour relationship to ensure fair profit to the entrepreneurs and fair wages to the workers and to create a positively favourable industrial climate to attract new industries and help the growth of existing industries;

vii) To establish institutional frame-work wherever and whenever needed, to have effective communication between Government and industry ; and

viii) To continue to press with the Central Government for allocation of its due share in the Central Sector investments and sanctioning of licences in the industrial sector in the state.

2.2.4.2 Industrial Policy 1991

On the basis of a detailed review of the status of industries in Kerala, the United Democratic Front (UDF) Government laid down the following objectives to be achieved through the new Industrial Policy.

a) To substantially step up the rate of growth of industry through a higher level of investment.

b) To provide massive employment opportunities.

c) To ensure that there is steady growth of investment in Kerala.

d) To create an industrial environment that will lead to sustained growth.

e) To establish infrastructural facilities which will stimulate faster growth of industry.

f) To initiate a process of continuous interaction between Government and industry to remove possible adverse factors which can inhibit industrial growth.

g) To ensure industrial utilisation of raw materials available in Kerala, and

h) To ensure rapid development of high-tech industries.

The strategy for industrial growth, is to use its own limited budgetary allocation to attract as much investible resources as possible from within the State as well as outside.

2.2.4.3 Industrial Policy 1998

The industrial policy announced by the LDF Govt. in 1998, has the following main features :

- Target for average annual industrial growth rate set at 9%;
- All 100% EoUs and units in the sectors of IT, Tourism, Agro & Food Processing; Readymade garments, Ayurvedic medicines, mining,

Marine products, Light engineering, Biotechnology & Rubber based industries have been accorded the status of thrust sector industries;

- Promotion of non-polluting machinery & technology and use of renewable sources of energy;
- the right of management to choose and deploy their employees as per laws, will be protected through creation of a management culture and promotion of cordial industrial and labour relations.

2.2.4.4 Industrial Policy 2003

The ultimate goals of the Industrial Policy announced by the UDF ministry in 2003 are indicated below:

a) Enhanced and sustained industrial growth rate and generation of higher employment in industry.

b) Creation and maintenance of an investment friendly climate and facilitation of measures to maximise global and local investment in industry.

c) Maximisation of private investment in infrastructure development, with Government investment only in areas/functions where private investment cannot be attracted.

d) Elimination of all restrictive labour practices, ensuring cordial industrial relations and establishment of a new work culture, with productivity orientation and productivity - linked wages.

e) Special legal dispensation enabling a more liberalised environment within notified industrial zones, parks and estates.

f) Nurturing the scarce entrepreneurial talent for the sustainable creating of industrial wealth with special emphasis on technically qualified persons those from the business community, women and disadvantaged sections.

g) Co-ordination of industry with the educational system in order to produce and update the particular knowledge and skills required by industry from time to time.

h) Re-engineering the Government's delivery mechanism (departments and agencies as well as systems and procedures) to make them responsive result-oriented and transparent.

i) Special development of sunrise sectors including information technology, biotechnology, food and agro processing, infrastructure and service with high growth potential.

j) Maximisation of value addition within the state for indigenous produce and minerals and intensive growth (particularly export-oriented) of Kerala's products and services.

k) Industrial development in a manner compatible with energy conservations and environmental concerns.

l) Ensuring cost effectiveness and accountability by restructuring public enterprises.

m) Providing a social safety net for those adversely affected by industrial restructuring.

n) Reducing Government involvement in commercial activities and industrial production gradually.

o) Empowerment of the traditional sector to face up to global challenges by appropriate technology, productivity improvement, design / development and marketing.

2.3 Information Technologies and Cyber Society

2.3.1 Information Technology

Information technology and the ability to use it is increasingly being considered as the critical factor in generating and accessing wealth, power and knowledge and, therefore, societal welfare. Information technology, in all its various incarnations and with all its sophisticated apparatus, has become so pervasive, and so all - encompassing, that it has truly become the fourth critical resources required to create a product or service - joining capital, labour and raw material.

Information Technology, spreading throughout the globe in a lightning speed, has revolutionized each and every sphere of human activity. The emergence of a new electronic communication system characterized by its global reach, is integration of all communication media and its practical interactivity is changing and will change for ever our culture, creating a new era of 'cyber societies'. In fact, the twenty first century is being characterized by the emerging cyber society.

The cyber society, which marks the culmination of IT revolution, can be taken to be the new social formations and the new community brought about by Computer Mediated Communication (CMC). It is the future society characterized by the computer network structures providing a sense of

mobility - the ability to share thoughts and information instantaneously across vast distances and the mobility of status, class, social role and character (Jones, 1998).

The recent advances in Information Science is very much dependant on the recent advancement in science and technology, especially computer and communication technology. IT has been made use of much efficiently and effectively in storage, dissemination, transmission and retrieval of information and also in information networks, without which international communication of information could not have been possible. Thus IT has played a very important role in the multidimensional growth of Information Science.

Information Technology has its impact on the librarians and information scientists as well. Modern IT is providing a basis for library without walls. In this age and time, information will and can be retrieved from one's desktop with just a PC and a modem. The librarians' and information scientists' role should be to respond to that challenge, to bring the world of information to one's fingertips by being a participant in this 'wired' environment through 'virtual libraries' or 'digital libraries'.

The society is currently experiencing a revolutionary change or transformation on a global scale. The complex and rapid changes in the processes of information handling, transmission, storage and retrieval of information have paved the way for the new era of Information Technology

revolution. Today, success in just about any field has become impossible without Information Technology. In farming, manufacture, education, policing, medicine, entertainment, banking or whatever, Information Technology is apparently set to change everything that human beings do in advanced societies.

Information Technology is an amalgamation of electronics, computing and communication technology. These three technologies are converging and becoming closely related. Computers are becoming integral parts of communication system and many computer applications depend on computers communicating with each other. As the technology develops, the distinctions between these systems have become more blurred. The terms Information Communication Technology (ICT) and Computer Mediated Communication (CMC) in use today indicate this fact.

The developments in microelectronics along with computer technology including computer software and hardware are setting the pace for Information Technology revolution. The race is still on between Japan and the US in building supercomputers - the fifth generation computes that exhibit 'artificial intelligence'. The new revolution in telecommunication and microelectronics has made possible the 'intelligent network'.

To advance in microelectronics and software, one has to add major leaps in networking capabilities. Since mid 1980s, microcomputers cannot be

conceived of in isolation: they perform in networks, with increasing mobility, on the basis of portable computers. This extraordinary versatility and the capacity to add memory and processing capacity by sharing computing power in an electronic network, decisively shifted the computer age in 1990s from centralized data storage and processing to networked, interactive computer power - sharing. Not only had the whole technological system changed, but its social and organizational interaction as well.

Telecommunications have been revolutionized also by the combination of 'node' technologies (electronic switches and routers) and new linkages (transmission technology). The progress in integrated circuit technologies had made possible the digital switch, increasing speed, power and flexibility while saving space, energy and labour vis-à-vis analog devices.

Major advances in opto elecronics (fibre optics and laser transmission) and digital packet transmission technology dramatically broadened the capacity of transmission lines. The Integrated Broadband Networks (IBN) envisioned in 1990s could surpass, Integrated Services Digital Network (ISDN). While the carrying capacity of ISDN on copper wire was estimated at 144,000 bits, the 1990's Integrated Broadband Network on optic fibres, could carry a quadrillion bits. This optoelectronics - based transmission capacity together with advanced switching and routing architectures such as the Asynchronous Transmission Mode (ATM) and Transmission Connection

Protocol / Inter Connection Protocol (TCP / IP) are the basis of the so - called 1990's Information Superhighway (Castells, 1998).

It was in 1969 that the US Defense Departments Advanced Research Projects Agency (ARPA) set up a new, revolutionary electronic communication network that grew to become the current Internet. The Internet is a global information highway, which has evolved into one of technology's greatest democracies permitting the passage of all kinds of information with full freedom. It is a platform for sharing and providing information, and through this channel, millions of scholars, scientists, businessmen, librarians, journalists, artists and software developers are woven into a 'global village'.

Information and Communication Technologies (ICT) became the drivers of present day Knowledge Societies. They are providing newer and faster ways of delivering and accessing information, innovative ways for real - time communication and new ways to do business and create livelihood opportunities. ICT offers vast potentials including Internet, e-mail, e-commerce, groupware, bulletin boards, newsgroups, video conferencing and many more, with its far - reaching impacts.

2.3.2 Cyber Society

Information Technology is the single biggest shaper of contemporary society, and it will no doubt abide as a powerful catalyst of change in the

future. All the developments in Information Technology and their impact on the society have given way to the new concept of 'Cyber society'. Cyber society is an emerging concept - it is taken to be the society of the future. The succession of transformations in the societies through the history of mankind since late 1950's were identified by terms like post capitalist society (1958), industrial society (1961), global village (Mc Luhn, 1964), the post - industrial society (Bell, 1971), super - industrial society (Toffler, 1971), information society (Toffler, 1980) and many more. These concepts in crude or unrefined form have laid the foundations for the new idea of cybersociety. Authors like Jones (1998), Rheingold (1998) Gibson (1985), Connery (1997), Stevale 1997), Castells (1998) and many others have put forward newer ideas to denote the contemporary societies as well as the societies of the future. These new concepts include cyber society, virtual communities, network societies, cyberspace etc. Cyber society is the future society dominated by highly digital communication and networking.

The many - to- many electronic communication modes represented by Computer Mediated Communication have been used in different ways and for different purpose, reinforcing the pre - existing social patterns. Beyond the performance of professional tasks, the uses of CMC reach the whole realm of social activities. Besides Internet, which is the backbone of global CMC, teleshopping, telebanking, e-mail, e-commerce, tele-education or virtual university have all become parts of the formation of 'virtual communities',

which is generally understood as self defined electronic network of interactive communication organized around a shared interest or purpose. Thus dominant functions and processes in the cyber society are increasingly organized around networks. These networks constitute the new social morphology of our societies and the diffusion of networking logic substantially modified the operation and outcomes in processes of production, experience, power and culture.

Jones, (1998), who has given the term 'cyber society', uses this term to indicate the new forms of community brought about by the Computer Mediated Communication (CMC) and the social formations. This notion depends on the ability to share thoughts and information instantaneously across vast distances in the new environment. Cyber societies rely on the forms of Computer Mediated Communication allowed by current computer network structures. Through communication services like America Online, MCI Mai, the Internet, Usenet and numerous other mail, messaging and Bulletin Board services (BBSs) electronically distributed, and most instantaneous, written communication has for many people supplanted the postal services, telephone, and even fax machine.

Virtual community is a group of people who may or may not meet one another face to face, and who exchange word and ideas through the mediation of computer bulletin boards and networks. When these exchanges began to

involve inter woven friendships and rivalries and give rise to the real - life marriages, births and deaths that bond people in any other kind of community, they begin to affect these people's lives in the real world. Like any other community, a virtual community is also a collection of people who adhere to a certain (loose) social contract and who share certain (electric) interests. It usually has a geographically local focus and often has a connection to a much wider domain.

The Indian export - oriented software industry, one of the most successful sectors of the country's economy, could achieve what it did because it has been exploiting the global imbalances in the availability of knowledge workers around the world. That India could emerge as a world leader in the business of outsourcing is essentially because India could leverage its greatest resource, a vast pool of English - speaking, talented Science and Engineering graduates (Govt. of Kerala, 2006)

2.3.3 Development of IT in Kerala

Few regions in the developing world are as ready to embrace IT technology at the grass - root level as in Kerala.

- Highest literacy and highest exposure to the different media; what the industry needs most is what the State has the most of, namely educated men and women seeking white collar jobs.

- Highest proportion of citizens living outside the State and being exposed to the best from the latest in terms of products, services, technologies and life styles leading to strong 'demonstration effect' on those living in the State.

- High degree of awareness of, and willingness to adopt the latest; high tolerance for cultural diversities.

- A society which gives the highest premium to education and is willing to invest heavily for acquiring marketable skills.

Most of the infrastructural requirements for the proliferation of Internet, the next frontier of growth in the IT sector, are already in place. No other major State in the country has such an extensive fibre optic network as does Kerala. This network which reaches right down to the block level, along with the digital exchanges most of which have ISDN capability represent a formidable backbone for the making of a fully networked intelligent State. With the commissioning of the two submarine cable landings at Cochin, Kerala has emerged as a major telecom gateway for the country.

2.3.3.1 Advantages of Kerala in the IT sector

One of the major landmarks in the development of electronics and later IT industry are the establishment of Kerala State Electronics Development Corporation Limited under initiative of C. Achutha Menon with K.P.P. Nambiar as its Chief Executive. The next was the establishment of technopark in Trivandrum, a brain child of K.P.P. Nambiar under the Chief Ministership of E.K. Nayanar of the LDF Ministry.

The advantages of Kerala in this sector can be summarized as under.

a) The technology advantage

- 100% of 988 telephone exchanges are digital
- 98% of telephone exchanges connected by OFC to the National Internet Backbone (NIB)
- Reliance, Bharati, Asianet laying own OFC backbones
- Highest telephone density - 7 per 100 - India's 2005 target
- `SEA-ME-WE-3' and `SAFE' submarine cable landings (1 of the 2 states in India to have two submarine cable landings)
- 15 GBPs bandwidth supported
- VSNL's primary international gateway in India is in Kochi, Kerala

b) The Human Resources Advantage

- Highest density of science and technology personnel in India
- Lowest employee attrition rate in the country - <5%
- 82 engineering colleges in the state
- Database of readily employable graduates enabling interested ITES companies to access the best of professional talent.
- Training centres for ITES manpower pool

c) The cost advantage

- A fully burdened cost of just US $8 per hour when compared to the global average of $15.
- Salaries - 1/5th of the international average
- Operational costs less than 50% when compared to the other Indian cities
- Rentals lower by more than 60% in comparison to other Indian cities
- Power and water tariff among the lowest in the country

Due to the availability of the Internet and other means of high speed communication in India, a tremendous number of in-house and off shore tasks are now being outsourced to India, where costs are far lower, as a strategic

initiative to cut costs and to gain access to intellectual capital not available in-house. Since there is a large market of the English speaking and highly educated workforce, India is vendor's No.1 choice for offshore outsourcing, according to a World Bank- funded study, Costs are anywhere form 50% to 75% less than what one would pay in the West while quality is equal. This helps companies achieve their objective quickly, in addition to drastically cutting costs.

- Highest density of science and Technology personnel;
- Abundance of highly productive, low-cost, skilled manpower;
- High literacy and phenomenal growth in education, health and other services
- Ease of geographical access in extent and stretch both longitudinal and lateral
- Power and water tariff are among the lowest in India
- Large migrant population with extensive demands for connectivity
- Extensive telecom network, reaching all towns and villages
- Export based trade and commerce

- Potential for tourism industry. Kerala is one of only 50 lifetime –must see destinations of the world, and one of only 10 Natural paradises on earth.

- The State has crossed the Indian target for 2010 in rural telephone density: 5.1 per 100,the highest in the country.

- India's highest mobile phone density is also claimed by Kerala. State wide it is 1% plus. Cochin alone taken, it stands at 6%plus.

- VSNL's primary gateway of 15 Gbps bandwidth is also based in Kochi.

Bold and imaginative policy initiatives are a pre-condition for exploiting the emerging possibilities. The Government of Kerala has already taken several steps in this direction: Technopark - Thiruvananthapuram India's first world-class, world- scale IT campus, IT park of KINFRA at Cochin, Akshaya programme of Kerala IT Mission, E - governance initiatives of the State Government like FRIENDS.

2.3.3.2 Promoting IT in Kerala: Key Considerations

The ICT policy needs to distinguish between ICT as a production sector and ICT as an enabler of socio - economic development.

The service sector and, within it, e - governance offers the immediate and largest growth opportunity. Stimulating this market should be the first action point in the State's IT strategy.

For successful e - Governance implementation the preconditions to be fulfilled include creation of applications and content; availability of adequate access to Internet by the population; having minimal IT literacy; and, above all, ensuring Government's commitment to the success of the programme.

The strategy for promoting ICT as a production sector - comprising ITS, ITES and Hardware sectors - involves creating infrastructure, human capacity and urban amenities, including life style options.

The opportunity for training people for ITES businesses, especially Call Centers has attracted many training companies into the market. Establishing standardization and evolving guidelines for such training activities based on worldwide standards need to be facilitated. Schemes may be formalized for certification of personnel at agent - level as well as at the supervisory - level so that skilled manpower is available to the industry.

The kinds of skills, mostly behavioral, to be developed are communication, team building, leadership, personality development etc. The Government has only to play the role of a facilitator for private initiatives to enter this field.

The year 2004 - 05 has been a period where Kerala's position in the IT sector was promising and now this is on a steady growth path. In the e - governance front, achievements include India's first fully computerized Panchayath, India's first fully computerized Collectorate, FRIENDS initiative to serve 35 lakh families, significant development in local language computing etc.

Kochi is one of India's second- tier cosmopolitan cities and is fast emerging as a unique IT destination. Kochi was ranked number two in a report by NASSCOM on the country's Super ITES destinations and number three in a study of cities ideal to do business (Govt.of Kerala, 2006).

The state has made substantial progress in ICT for Development sector in terms of investments, infrastructure development and employment generated in the sector through focused initiatives. The major initiative in this sector is 'Akshaya', which is set to be rolled - out to reach all 64 lakh families of the State (presently being rolled - out in seven districts), first Citizen's call Centre in the country etc., are glowing examples.

Another point worth noting in this context is the spurt in the use of computers and Internet in the State. There has been a surge in the sale of PCs and accessories in the State (Assembled PC segment / Indian brands / MNC brands) with the increased emphasis given to the e-governance sector and also to the fact that the PC is now being considered as an aid for education and

entertainment by household users. As per the findings of a recent survey by MAIT (Manufacturer's Association in IT), the sale of hardware is growing in the State. It will also be worthwhile to note that at present there are about seven Internet Service Providers in the State, which is double that was available about four year's back.

The exports of IT units in Kerala upto 2004-05 are indicated in Table 2.9 below.

Table 2.9: Exports of IT Units in Kerala

Year	No. of Units	Total (Rs.in crores)
Upto – 1996	9	8.79
1996 – 1997	17	8.01
1997 – 1998	19	26.41
1998 – 1999	30	53.00
1999 – 2000	59	67.00
2000 – 2001	72	109.80
2001 – 2002	86	147.00
2002 – 2003	101	165.00
2003 – 2004	116	229.09
2004 – 2005	120	300.00

(Source : STPI, Thiruvananthapuram)

The figures reveal the increasing trend in exports by IT units. Most of the IT units in Technopark have started performing well since the recent past. Their turnover for 2004-05 is shown in Table 2.10.

Table 2.10: Turnover of the Companies in Technopark in the Year 2004 - 2005

(Rs. crores)

Particulars	Foreign	NRI	Domestic	Total
Software	338.93	140.25	103.07	582.25
Hardware	12.00	0.00	0.00	12.00
Others	0.00	0.00	40.00	40.00
Total	350.93	140.25	143.07	634.25

(Source : Technopark, Thiruvananthapuram)

2.3.3.3 Achievements of Kerala under IT

- Malappuram - India's first e : literate district
- Chamravattom India's first e : literate village
- Vellanad and Talikkulam : India's first and second fully computerized Grama Panchayaths.
- Akshaya wireless network in Malappuram : World's biggest IP based network
- Palakkad : India's first fully computerized District Collectorate
- State with 99% of its high schools has modern Computer Labs.

- First state to use 'Edusat' for on - line learning solutions.
- Information Kerala Mission - Single largest computerisation programme for Local Bodies and deployment of software developed in an Indian language in the country.
- First state to have Citizen's Call Centre on Government related details.
- First Technology Park in India to achieve CMMI Level 4.

2.3.4 Information Technology (IT) Policies of Kerala

Kerala is the first State in India to come out with an IT Policy in 1998, when Mr. E.K. Nayanar was the Chief Minister of the LDF Government. The policy announcements helped the growth of this sector to a great extent.

2.3.4.1 IT Policy 1998

The Policy Statement addressed the following components.

a. Increased application of Information Technology in all walks of life.

b. Enhancing the IT industry base so as to make Kerala a fertile location for ventures in Information Technology.

c. Creating a robust State Information Infrastructure

d. Human Resource Development in Information Technology.

To promote the use of Information Technology, the following mission targets have been spelt out.

- PC penetration of 10 per 1000 of the population by the year 2001.
- All colleges to be hooked to Internet by the year 2000 and all the schools by 2002.
- Internet kiosks in every panchayat ward, and
- Modernisation and integration of Government functions using Information Technology.

A High Power Committee has been proposed, chaired by the Chief Minister, to co-ordinate and direct strategies to achieve rapid penetration and use of IT in all sectors.

2.3.4.2 IT Policy 2001

The Policy initiatives delineated in the document comprise a three prolonged strategy aimed at:

- Creating an appropriate pro-business, pro-enterprise, legal, regulatory and commercial framework to facilitate the rapid growth of the IT industry in the state.

- Establishing Kerala as a global centre for excellence in Human Resources, through the creation of a large pool of diverse, multi-skilled, technically competent manpower in the State and

- Establishing an internationally competitive business infrastructure and environment for the IT industry in the State, on par with the best facilities and practices worldwide.

In line with this broad strategy, the Government have set the following immediate objectives for the promotion of the IT industry in the State.

- To establish Kerala as a leading IT destination in the country within the next five years.

- To provide a nurturing and enabling environment conducive to the vigorous growth of the local IT industry in the State.

- To significantly enhance direct and indirect employment creation in the IT sector.

- To attain a minimum growth level of 100% every year in IT.

- To significantly accelerate the levels of investment inflows including foreign capital into the hardware, software and ITES sectors.

- To aggressively promote the state as the destination of choice for emerging IT business opportunities including IT enabled services, new

media products and E-services. To establish ITES as the definitive core competence of he state.

- To develop Kochi as an international media and ICT hub.
- To consolidate and expand the Technopark, Trivandrum as a leading software and HR centre in the region.
- To provide the physical and institutional environment for the growth of SOHO and decentralized IT businesses.

2.3.5 IT Sector status and Projection

On the basis of an extensive all-Kerala study covering over 800 representative enterprises across the different sectors conducted for the IT mission in the year 2002, the size of the IT industry in the State has been assessed as shown in Table 2.11.

Table 2.11: Size of the IT Industry in Kerala

	No. of Entities	AnnualTurnover (Rs. Crores)	Direct Employment
Distributors, Vendors & Assemblers	2,450	490	15,000
Small and micro software enterprises	300	30	3,600
Training Institutes	2,000	40	8,000
Internet Cafes and DTP Centres	2,500	35	4,000
Medium and Large software cos.	50	170	6,000
Hardware manufactures	20	420	3,800
Total	**7,320**	**1,185**	**40,400**

Apart from the distributors, vendors and assemblers indicated above there are a large number of one-man operations (estimated to be around 4000) involved in the assembly of computers, each one doing 2-3 computers in a month.

Given the major initiatives being planned by the Government in the areas of e-governance, the proposed large scale introduction of computers in schools and the unique programmes like `Akshaya; the Kerala market for computers is poised for a major expansion. Further, computer penetrations in homes are also on the rise.

Nasscom, the apex organization of the software industry in the country, has already rated Cochin as the second best destination in India for setting up IT enabled services and Business process outsourcing ventures. It is estimated that the sub-total of OFC infrastructure investment in the state at Rs.2240 crores and the investment in the hardware / software facility by VSNL for making use of SAE-ME-WE-3/FLAG connecting the band width availability is estimated at Rs.200 crores.

The NASSCOM – Mc Kinsey study report 1999 suggests that India can aim to achieve an annual revenue of US $87 billion in the IT, Software and services sector by 2008. The report which articulates IT strategies for India further points out that by 2008, exports from this sector would contribute 35% of India's total exports and provide employment to 2.2 million

people and would have a total market capitalisation of US $225 billion and thus contribute towards 7.5% of growth of national GDP (Mehta, 2000).

REVIEW OF RELATED LITERATURE

A.C.Rajan "A study of the Industrial Development Pattern of Kerala in the Context of Information Technology Revolution and the Emerging Cyber Society" Thesis. Department of Library and Information Science , University of Calicut, 2006

Chapter III

REVIEW OF RELATED LITERATURE

- Industrial Development
- Information Technology

CHAPTER- III

REVIEW OF RELATED LITERATURE

The study of industrial development of Kerala in the context of IT revolution is an entirely newly emerging field of study. As such, no literature has been published so far in this field. However, quite a large number of studies have been made on industrial development of Kerala-history, problems and backwardness on the one hand and the IT industries on the other. So this may be a pioneering study on the advent of IT and its impact on future industrial development of Kerala. A review of the available literature has been made under two headings-Industrial Development and Information Technology.

3.1 Industrial Development

Isaac and Tharakan (1986) in their working paper on an Enquiry into the Historical roots of Industrial Backwardness of Kerala - A study of Travancore Region, open with a brief description of the economic consequences of colonial domination in Travancore's agricultural and commercial sectors. The development of the agro processing industries which constituted the first phase of industrial development in Travancore and their characteristic features have been discussed in this paper. The development of modern industries from the late thirties underlining the

pivotal role played by the Travancorean govt. and the industrial stagnation in the immediate post independent period have also been described in it. Their analysis brings out the limitations of the industrial development in the pre-independence period, the conservative nature and agrarian bias of Travancorean entrepreneurial class as well as the ineffectiveness of the post-independent govt. to intervene in the industrial development.

Ramachandran (1988) in his report on Measures to Step up Industrial Investment in Kerala described the development path of the State since its formation, sector wise growth and the needed rate of industrial growth so as to enable the state's per capita income to reach the national average by 1995. The order of industrial investment necessary in the State was examined through a SCOT analysis of Kerala based on a general study of the experience of Public, Joint and Private industrial undertakings in the State and outside.

Albin (1990), in the study on Manufacturing Sector in Kerala examined the role of structural and regional factors in explaining the observed trend and pattern of Kerala's industrial growth experience. The category of structural factors included household industries, organised industries and size of factories. The author contented that regional factors have retarded industrialization in the State.

Nandamohan (1994) attempted to make explicit the persistently decelerating industrial trends in Kerala. He presented the trends of

manufacturing industries of the state as well as the industrial performance of large, medium and small scale industries.

Sankaranarayanan and Meera Bhai (1994) in their study on industrial development of Kerala enquired the reasons for the tardy and halting industrial growth of Kerala. They elaborated the history of industrial development and reviewed the financial performance of public sector units, private sector units, Joint stock companies and traditional industries. They explained the problems and prospects of industrialization in Kerala.

Kurien (1994) in his paper on Kerala's Development Experience described the development policies of the state. There has been a movement of people from agriculture to service sector mainly due to a phase of commercialization of the economy. He examined the contemporary economic problems and made some speculation about the possibilities and prospects for the future.

Parayil (1996) in his paper, the Kerala Model of Development: development and sustainability in the Third World, offers an alternative examination of the concept of `sustainable development ' by arguing that it is better to follow a practically reflexive approach of looking for a paradigmatic case of a state or society that has some characteristic features of what might be deemed sustainable development. He argues that, despite limitations, the

Kerala model of development should be counted as a possible idealization of a sustainable development paradigm.

Joseph (1996) in his study on the Role of Cultural Tradition and Environmental Factors in industrial development: a case study of Kerala has focused mainly from the angle of culture, to uncover the question why the cultural base needed for industrial development has not been evolved in Kerala in spite of the existence of certain favourable conditions. It also discussed the physical environmental conditions which have been operating as constraints to the growth of industry. It explored the ideological orientation that retarded the growth of the industry, especially since independence.

Thampi (1999) in his study on Economic Liberalization and Industrial Development in Kerala, analysed the major challenges faced by the manufacturing sector of Kerala in the face of economic reforms which was generally interpreted as proactive to investment opportunities. The focus was on analysing the growth performance of the industrial sector in the post-reform period including the constraints to new investments in Kerala.

Mathew (1999) in his study on Industrial Stagnation of Kerala: some alternative explanation explained the complementary character of micro as well as macro level factors of industrial stagnation which were overlooked by

most studies. The entrepreneurial characteristics, investment climate and specificities of the labour market have been discussed in this study.

Subrahmanian and Azeez (2000) in their study on Industrial Growth in Kerala : Trends and Explanations, presented the industrial growth against the backdrop of the overall economic growth in Kerala under the influence of the ongoing economic reforms and evaluates it against the performance of Karnataka, Tamilnadu and all India. The analysis revealed that a phase of growth revival has set in the overall economy since the late eighties, It is argued that inadequate growth of investment has constrained the pace of modernisation of old units and establishment of new units based on state-of-art technology needed for the survival and growth of industries in a globally competitive environment. The study suggests that the lack of a clear and pragmatic approach of the state in its response to the reform process and a positive attitude in its own policies for encouraging private investment makes Kerala a less investor- friendly location for manufacturing industry. It underlines the need for a new vision and strategy, which could fully utilise Kerala's comparative advantage in human resources, and place greater emphasis on developing knowledge-based and service industries, for accelerating the growth of income and employment in industry.

Eapen (2001) in her study on Mural Industrialisation in Kerala examined the role of rural linkages in sustaining a process of rural

industrialisation and to what extent can the rural industrial sector contribute to the process of industrialisation in an industrially backward state. The survey was designed to generate data on the socio-economic characteristics of the entrepreneurs, linkages of the small scale enterprises with the rural economy in terms of labour employed and initial source of start-up funds; production and consumption linkages; and wage earnings of hired labour, earning of the household or family enterprises and of the small scale undertakings.

Thomas (2003) in his study examines the association between labour and industrialisation in Kerala. Labour absorption by modern industries has been low in Kerala, which has a bearing on the features that emerged in Kerala's labour market after 1950, including low rates of work participation, high levels of educated unemployment and underemployment. Kerala has had strong worker organizations and high degree of labour disputes. Traditional industries like cashew processing migrated out of Kerala to take advantage of lower wage rates in neighbouring states. However, in the factory sector of Kerala, econometric evidence finds that labour disputes and growth performance have been exogenous to each other, wage increases have been commensurate with productivity growth, and wage increases have had little association with labour disputes. All these dispel the general notion that Kerala's industrial backwardness is caused by labour problems.

Thomas (2005), in his paper Kerala's Industrial Backwardness: A Case of Path Dependence in Iindustrialisation observes that Kerala's industrial backwardness is due to a path-dependent process of industrialisation. A policy decision in the 1930s, marked by a priority for investments in chemical based industries and the identification of hyrdoelectricity as a potential basis for industrialisation, continue to have implications for industrial growth in Kerala today. He argues that the industrial structure in Kerala came to be locked into a pattern that offered very little potential for intermediary interlinkages and industrial growth.

Subrahmanian (2005) in the paper Kerala's Recent Development Experience: Lopsided Structural Change and sceptical sustainability of Growth made an assessment of economic growth and the constraints it faces for acceleration, matching with human development. An analysis was done on the growth trajectories during the post-liberalisation era from 1993-94 to 2001-02. He presented a comparison of the trends in sectoral growth rates between Kerala and all-India and gave a synthesized summary of the major issues emerging from the overview of Kerala's recent development experience and suggested some pragmatic approaches in a development agenda for accelerating the rate of growth of the economy.

3.2 Information Technology

Joseph (1999) in his paper on Software Development: some Reflections presented certain basic economic characteristics of that industry and the different processes involved in the production of software. He described the overall policy framework and the growth of the industry in India and in Kerala.

Yechury (2000) in his paper on Economy in the Knowledge Society presented the role of IT revolution in industry, on society and on the quality of life. He described the prospects of IT industry, e-governance and various impacts of government policies on IT.

Rao (2000) in his paper on the Emerging Knowledge Society described the advent of ICT, spearheading the growth of knowledge societies breaking all geographical boundaries and barriers and bringing even remote areas into the mainstream, connecting them to information superhighways. He explained the challenges of the 21st century, promise of the information age, IT and ITES in India. He concluded with a vision for India to become a Global IT superpower by creating a strong knowledge society which can leverage its knowledge to quickly strengthen the nations socio-economic base.

Kalam (2000) in his paper on Knowledge Society and National Development discussed the core competence of knowledge society, its

components, knowledge super power profile, and how to progress rural development devoid of digital divide. He pointed out that for a knowledge society, the most important IT related service is e-Education, for which Kerala is endowed and has high competence. The state is ideally suited for wireless connectivity trials because of low pollution.

Joseph and Harilal (2001) in their working paper on India's IT Export Boom; challenges Ahead, critically analyzed the recent trends in India's software exports in terms of its structure and growth and highlights some of the disquieting aspects of India's IT export boom. It highlighted some of the emerging challenges in the IT exports and underlined the need for a structural transformation of the India's IT export sector so as to achieve a target $50 million exports by the year 2008.

Kiran (2002) in his dissertation on Software and IT Enabled Services Industry in Kerala explores the problems and prospects of the software industry in the state with special emphasis on understanding the regional limiting factors or constraints which have a bearing on the structure, labour force and firms' strategies. He has studied the regional characteristics that have contributed to the performance of these firms. The study analysed the firm specific strategies of software companies in the state. The marketing, human resource development and technology by strategies adopted by these firms are examined.

Joseph (2002) in the paper on Growth of ICT and ICT for Development: Realities of the Myths of the Indian Experience, highlights the perils of the strategy followed by India and underline the need to focus on development through ICT. The study shows that the unprecedented export performance of India's software has to be seen in the context of the national system of innovation that evolved during the last five decades when the state played a proactive role. The findings of the paper tend to underscore the need to recognize the complementary role of the domestic market in promoting innovation and exports on the one hand and IT induced productivity, competitiveness and growth on the other. He presented the data of IT use in India's industrial sector. Evidence suggested that Indian firms in the current era of globalisation are harnessing new technology in order to enhance their productivity and competitiveness.

Krishnamoorthy, et.al., (2004), in their Sectoral Study Report on Electronics and IT Industry in Kerala explored the problems and prospects of electronics and IT sectors in the state for understanding the limiting factors and constraints for the further development of that sector. It examined the state policy in order to draw-up an action plan for government. It presented the status of electronics and IT industry in India and in Kerala and the initiatives required from the government and KSIDC for the development of those sectors.

Mathew (2005) in his paper on Knowledge Industries Offer Multimillion Dollar Business Opportunities in Kerala presented the potentialities of knowledge industry and the suitability of Kerala for the development of such industries. He gave a brief account of knowmatics, knowledge products and services.

Thus the present Study is the first of its kind and it is hoped that this will be very much useful in the field of industry and information science.

METHODOLOGY

A.C.Rajan "A study of the Industrial Development Pattern of Kerala in the Context of Information Technology Revolution and the Emerging Cyber Society" Thesis. Department of Library and Information Science , University of Calicut, 2006

Chapter IV

METHODOLOGY

- Research Design
- Sampling
- Data Collection
- Documentary Sources
- Questionnaire
- Interview
- Interview Schedule
- Variables
- Analysis of Data
- Statistical Techniques
- Mann-Whitney Test
- Wilcoxon Text
- Chi-square
- Kruskal Wallis Test
- Spearman's Rho Correlation

CHAPTER- IV
METHODOLOGY

4.1 Introduction

Research is defined as a scientific and systematic search for pertinent information on a specific topic. It comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data, making deductions and reaching conclusions; formulating suggestions on plans for improvement. Research Methodology is a way to systematically solve the research problem (Kothari, 1997). The nature of the problem and the kind of data needed for its solution determine the method of the study.

The present Study has been conducted by assessing the past performance, examining the present status and by giving a projection of the future of the development scenario of the diverse sectors of the Kerala economy. Therefore, the methodology of the present Study is a combination of different approaches to study the past, present and the future. Historical method and descriptive method are employed for the present Study.

Descriptive study is a fact-finding investigation with adequate interpretation. It is designed to gather descriptive information and provides

information for formulating more sophisticated studies. Data are collected by using one or more appropriate methods: observation, interviewing and mailing questionnaire. Descriptive method would be useful for explanation, prediction and awareness.

Historical study is a study of past records and other information sources with a view to reconstructing the origin and development of an institution or a movement or a system and discovering the trends in the past. (Krishnaswami, 1999). It is descriptive in nature and depend upon inferences and logical analysis of recorded data and indirect evidences rather than upon direct observation (Wilkinson, 1996).

The objective is to draw explanations and generalizations from the past trends in order to understand the present and to anticipate the future. Historical study helps us in visualising the society as a dynamic organism and its structures and functions as evolving, steadily growing and undergoing change and transformation (Sjoberg, 1997).

For deriving the industrial development pattern of Kerala since its formation required a thorough and systematic historical study. Books, reports and different types of literature available on industries in various libraries and government departments were referred to find out the facts on industrial development till date in the State.

4.2 Research Design

A research design is a logical and systematic plan prepared for directing a research study. It specifies the objectives of the study, the methodology and techniques to be adopted for achieving the objectives. It constitutes the blueprint for the collection, measurement and analysis of data. A research design is the programme that guides the investigator in the process of collecting, analyzing and interpreting observations (Krishnaswami, 1999)

4.3 Sampling

Empirical field studies require collection of first-hand information or data pertaining to the units of study from the field. The units of study may include geographical areas like districts or industries or households about which information is required, or persons from whom information is available. The aggregate of all the units pertaining to a study is called the population or the universe. A part of the population is known as a sample and the process of drawing a sample is called sampling. In the present study, the population consists of all types of industries situated in the 14 districts of Kerala State.

4.3.1 Sampling Techniques

Sampling techniques or methods may be classified into two generic types: (a) Probability or random sampling, and (b) non-probability or non-

random sampling. Probability sampling is of different types like simple random sampling, stratified random sampling, systematic random sampling, cluster sampling, area sampling etc. The non-probability sampling is classified as convenience or accidental sampling, purposive sampling, quota sampling, snow-ball sampling etc. For the present Study, the stratified random sampling has been used.

4.3.1.1 Stratified Random Sampling

In this method, the population is sub-divided into homogenous groups or strata, and from each stratum, random sample is drawn. Stratification ensures representation to all relevant subgroups of the population. It is useful when different methods of data collection etc. are used for different parts of the population.

4.3.2 Size of the Sample

Kerala State is divided into 14 districts. For the present study, stratified samples were taken from all the districts at an average of 7 industrial units from each district. Samples are taken from small, medium and large industrial units. Government of India has classified the industrial units, based on their level of investment as small (upto Rs. 1 crore), medium (Rs. 1 to 10 crores) and large (above Rs. 10 crores). In the present study, both medium and large scale units are put-together, since the basic characteristics of both

medium and large are the same with regard to management, technology, production, marketing and performance.

The samples are taken from the traditional, manufacturing, service and IT units covering the small, medium and large-scale sector from all the fourteen districts of the State. Break-up of the final sample of the industries is given in the Tables 4.1 and 4.2.

Table 4.1: Break-up of the Final Sample of Industries (Line of Production)

Types of Industry	Line of production	No. of units	Percentage
a) Traditional	Coir	5	20
	Cashew	13	52
	Handloom	3	12
	Handicrafts	3	12
	Beedi	1	4
	Total	**25**	**100**
b) Manufacturing	Chemicals	1	4
	Rubber	2	8
	Drugs & Pharmaceuticals	4	16
	Plastics	5	20
	Food Processing	7	28
	Minerals & Metals	6	24
	Total	**25**	**100**
c) Services	Hotels	9	36
	Finance	2	8
	Hospital	6	24
	Consultancy	2	8
	Printing	1	4
	Transport	3	12
	Entertainment	2	8
	Total	**25**	**100**
d) Information Technology	Software	21	84
	Hardware	2	8
	ITES	2	8
	Total	**25**	**100**
	Grand Total	**100**	**100**

Table 4.2: Break-up of the Final Sample of Industries (Size-wise)

Type of Industries	Size of Unit	No. of units	Percentage
a) Traditional	Small	8	32
	Medium/large	17	68
	Total	**25**	**100**
b)Manufacturing	Small	7	28
	Medium/large	18	72
	Total	**25**	**100**
c) Services	Small	4	16
	Medium/large	21	84
	Total	**25**	**100**
d)Information Technology	Small	18	72
	Medium/large	7	28
	Total	**25**	**100**
	Grand Total	**100**	**100**

4.4 Data Collection

Following Data has been collected from the industrial units, like investment particulars, line of production, modernisation, IT usage, diversification, impact of globalisation, awareness of cyber society, and benefits of modernization by IT application. Data were collected by literature search, through questionnaire and by interview with a schedule.

4.4.1 Data Collection Tools

4.4.1.1 Documentary Sources

Govt. publications like the Economic Review of the State Planning Board, Statistics for Planning by the Directorate of Economics and Statistics, Reports of Taskforces on industry, Annual Reports, Brochures, Websites of government institutions etc. are referred.

4.4.1.2 Questionnaire

The mail survey or mail questionnaire is a method of collecting primary data. Questionnaires were sent to the respondents with a request to complete them and return them by post (Krishnaswami, 1999).

In the present Study, the following questionnaires were used for data collection.

1. Questionnaire for traditional industries
2. Questionnaire for manufacturing industries
3. Questionnaire for service industries
4. Questionnaire for IT industries.

Questionnaires were sent to 200 industrialists by selecting 50 units from each of the above four categories. Out of the responses received, a total of 100 samples were selected by taking 25 units from each type of industry.

4.4.1.2.1 Traditional Industries

The traditional industries include mainly the cashew, coir, beedi, artisanal industries, handicrafts, handlooms, tiles etc. Most of these units are of very tiny types which come under the Khadi and Village industries. Most of the owners are less educated and economically poor. They are afraid of, or reluctant to fill up the questionnaire. So, in most cases, details were collected by personal meeting.

4.4.1.2.2 Manufacturing Industries

The manufacturing industries include all goods producing industries other than the traditional types. They are also called modern industries. This category consists of food processing units, chemicals, minerals and metals, rubber processing, wood industries, automobiles etc. Promoters of these units are relatively well educated and willing to provide replies to the questionnaires.

4.4.1.2.3 Service Industries

The service sector consists of Hotels, Hospitals, Printing, Transport, Entertainment (theatres, theme parks etc.), Consultants and Information industries. Most of the industrialists of these units are well educated and aware of the modern trends in their field. Services were included under industries only very recently.

4.4.1.2.4 IT Industries

Information Technology industry includes the information communication technology and IT enabled services (ITES) industries. Hardware and software of computers, call centres, telecom service providers etc. come under this category.

4.4.1.3 Interview

Interviewing may be defined as a two-way systematic conversation between an investigator and an informant, initiated for obtaining information relevant to a specific study (Krishnaswami, 1999)

Interview is often superior to other data gathering methods. People are usually more willing to talk than to write. Interview can add flesh to statistical information. The greatest value of this method is the depth and detail of information that can be secured. Here, the interviewer can improve

the quality of information received. The accuracy and dependability of the answers given by the respondents can be checked by observation and probing.

4.4.1.3.1 Interview Schedule

In order to get further data, with the documentary sources, an interview has been also conducted among the (1) top executives of industries (2) politicians, and (3) bureaucrats of the State Government. The interview schedule has been designed to collect information on the impact of IT on industry, awareness of the emergence of cyber society, nature of industries in cyber society, impact of globalisation and liberalisation, role of service and IT sectors, policy initiatives for service industries etc.

For the present Study, interview with schedule was used to draw out views and ideas from Govt. officials, Bureaucrats, Policy makers, executives, Politicians and from the academicians. Break-up of the personalities are given in the following table.

Table 4 .3: Break-up of the personalities interviewed

Field of Activity / vocation	No. of persons	Percentage
Politicians	6	30
Govt. Officials	6	30
Academicians	2	10
Executives	6	30
Total	**20**	**100**

A field study has also been conducted to get a clear picture of the industrial development of Kerala by visiting a number of units in different parts of the State.

4.5 Variables

On the basis of the data collected using various tools, the following variables were identified for the study.

(i) Size of the industry – investment

(ii) Nature of the industry – line of production

(iii) Present condition of the industry

(iv) Performance of the units

(v) Industrial relations / work culture

(vi) The level of using IT in the units

(vii) The level of modernisation / automation of the units.

(viii) Expected future trend of the units in capacity expansion / diversification / modernisation

(ix) Future trend of an industry by 2010

(x) Future trend of an industry by 2020

(xi) Impact of globalisation and liberalisation

(xii) Impact of ICT on different types of industries

(xiii) Benefits of modernising the line of production using IT

(xiv) Awareness of the emergence of a cyber society

4.6 Analysis of Data

The collected data were analyzed under different tables and by using appropriate statistical tools, like percentage, annual growth rate, compound growth rate, mean rank etc. The data has been analyzed so as to identify major findings and arrive at conclusions, in order to formulate alternate strategies and policies.

4.7 Statistical Techniques

The statistical analysis of data was done with the help of computer with the statistical package for social sciences (SPSS). The following statistical techniques were used for analysis of data.

4.7.1 Percentage analysis

4.7.2 The Z-test

The z-test for significance was used to find out whether significant difference exists among the different types of industries, like traditional

manufacturing , service and IT/ITES industries and between small units and large / medium units.

The z-test was applied using the formula

$$Z = \frac{P_1 - P_2}{\sqrt{P(1-P)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where,

P1 = proportion of the first sample

P2 = Proportion of the second sample

n_1 = number of the first proportion

n_2 = number of the second proportion

$$P = \frac{n_1 P_1 + n_2 P_2}{n_1 + n_2}$$

4.7.3 Mann - Whitney Test

The Mann-Whitney test is used for testing differences between means when there are two conditions and different subjects have been used in each condition (Field, 2000). This non-parametric test works on the principle of ranking the data by finding the lowest score and giving it a rank of 1, then finding the next highest score and giving it a rank of 2 and so on. This

process results in high scores being represented by large ranks and low scores being represented by small ranks.

The analysis is then carried out on the ranks rather than the actual data.

The Mann-Whitney test works by looking at differences in the ranked positions of scores in different groups. Therefore, the first part of the output summarises the data after it has been ranked. Specifically, SPSS gives the average and total ranks in each condition

4.7.4 Wilcoxon Test

For the Mann-Whitney test, Wilcoxon developed a different procedure, which can be converted into a Z-Score and, therefore can be compared against critical values of the normal distribution. SPSS provides both statistics and the Z-Score for the Wilcoxon statistic .

4.7.5 Chi-square

The basic Pearson chi-square test detects whether there is a significant association between two categorical variables. Its formula is as follows :

$$\chi^2 = \frac{\Sigma(O_i - E_i)^2}{E_i}$$

O_i is the i^{th} observed frequency, where $i = 1, 2, \ldots, k$;

E_i is the i^{th} expected frequency, where E_i must be > 5

4.7.6 Kruskal - Wallis Test

This test is used to test the null hypothesis that ` k' independent random samples come from identical universes against the alternative hypothesis that the means of these universes are not equal (Kothari, 2000). In this test, the data are ranked jointly from low to high or high to low as if they constituted a single sample. The test statistic is H for this test which is worked out as under.

$$H = \frac{12}{n(n+1)} \sum_{i=1}^{k} \frac{R_i^2}{n_i} - 3(n+1)$$

here, $n = n_1 + n_2 + \ldots + n_k$ and

Ri being the sum of the ranks assigned to ni observations in the i^{th} sample.

4.7.7 Spearman's Rho Correlation

Spearman's correlation coefficient is a non-parametric statistic and so can be used when the data have violated parametric assumptions and /or the distributional assumptions. Spearman's tests work by first ranking the data, and then applying Pearson's equation to these ranks. Pearson's formula for rho (ρ) is

$$\rho = 1 - \frac{6\Sigma d_i^2}{n(n^2-1)}$$

Where d_i is the difference between the ranks in the i^{th} observation and n, the total number of observations.

ANALYSIS AND INTERPRETATIONS

A.C.Rajan “A study of the Industrial Development Pattern of Kerala in the Context of Information Technology Revolution and the Emerging Cyber Society” Thesis. Department of Library and Information Science , University of Calicut, 2006

Chapter V

ANALYSIS AND INTERPRETATIONS

- Growth of Different Sectors of the Economy
- Out lay of Funds During the Plans
- Expenditure During the Plans
- Industrial Development of Kerala
- Present Condition of Industrial Sectors
- Performance of Industrial Units
- Industrial Relations in the Industries
- Level of Modernisation of Industries
- Impact of Globalisation and Liberalisation
- Future Trends of Industries in Kerala
- Growth of Industrial Sectors in Kerala
- IT Revolution and the Emergence of Cyber Society in Kerala
- Impact of ICT in the Performance of Industries
- Transition of Kerala into a Cyber Society
- Nature of Industries in the Cyber Society
- Suitability of IT Industries for Kerala

CHAPTER-V

ANALYSIS AND INTERPRETATIONS

In the present Study, the statistical analysis of the data has been done to trace out the development pattern of the Kerala economy, the IT revolution and IT industry, the industrial development pattern of Kerala and Kerala as an emerging cyber society. The analysis are presented in three major headings:-

5.1 Growth of Different Sectors of the Economy.

5.2 Industrial Development of Kerala.

5.3 IT Revolution and the Emergence of Cyber Society in Kerala.

5.1 Growth of Different Sectors of the Economy of Kerala

The state economy is classified into three sectors: primary, secondary and tertiary. For the study of the industrial development pattern, industries have been dealt with under traditional sector, manufacturing sector, services sector and the IT industry. IT has an independent status, quiet distinct from the services sector. In order to find out the contribution of the primary, secondary and tertiary sectors of the economy, investigation has made the estimation has been made based on the net state domestic product at current prices prepared by the Department of Economics and Statistics, Govt. of

Kerala. The study has also made use of the data prepared by KSIDC on its assisted units in the secondary and tertiary sectors.

Kerala State Industrial Development Corporation came into existence in 1961 for promoting and financing medium and large industries in the state as part of a national policy. KSIDC also acts as an agency of the Government to formulate industrial policies and advise the State Government on development measure.

5.1.1 Sector- wise Comparison of the NSDP

A comparison of three sectors of the economy during 1950 - 1991 period and 1991 - 2005 has been made with help of Table 5.1and 5.2 and Figures 5.1 to 5.4.

The Table 5.1 shows the percentage share of the three sectors of the economy during 1950-1991.

Table 5.1: Comparison of Sector-wise Percentage Share of Domestic Product in Primary, Secondary and Tertiary Sectors Based on SDP (at Current Prices) During 1950 – 1991

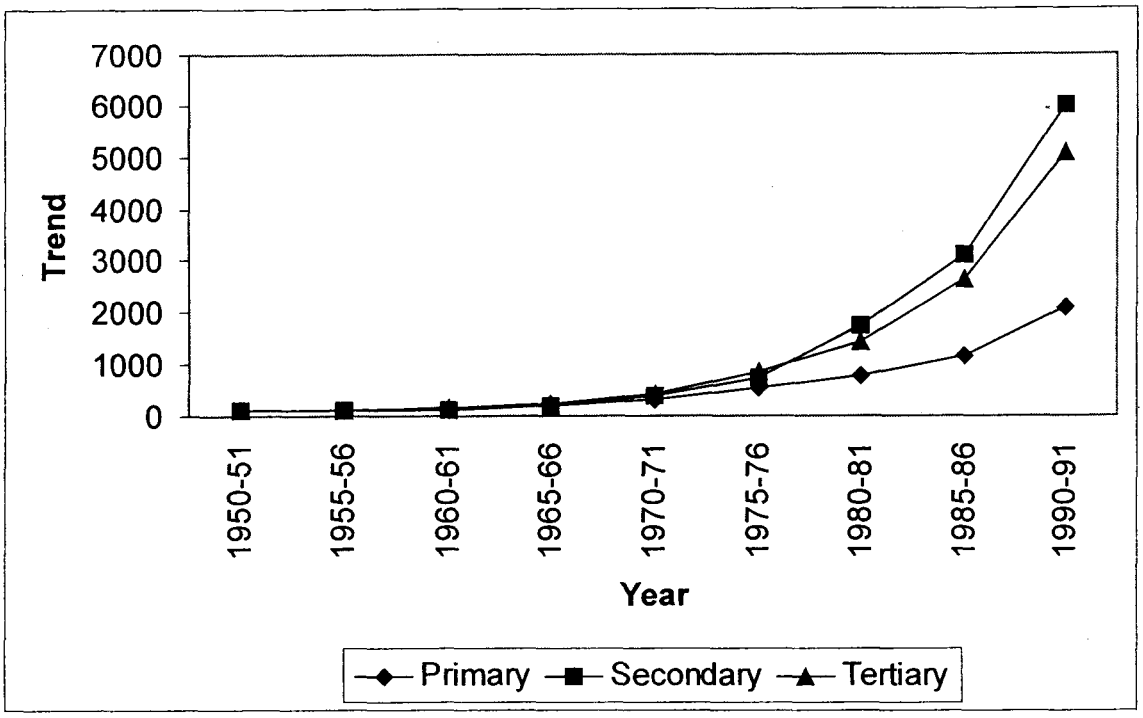
(Amount, Rs. in crores)

Year	Primary		Secondary		Tertiary		SDP
	Amt.	% share	Amt.	% share	Amt.	% share	Amt.
1950-51	191.3	55.8	53.6	15.6	98.0	28.6	342.9
1955-56	224.9	55.6	60.2	14.9	119.8	29.6	404.8
1960-61	253.7	53.5	67.6	14.2	152.9	32.2	474.1
1965-66	397.4	55.9	102.9	14.5	210.5	29.6	710.7
1970-71	620.3	49.4	204.8	16.3	429.5	34.2	1254.6
1975-76	1014.9	45.5	391.6	17.6	821.7	36.9	2228.2
1980-81	1499.7	39.2	931.6	24.4	1391.5	36.4	3822.7
1985-86	2252.5	34.6	1661.3	25.5	2589.6	39.8	6503.4
1990-91	4006.0	32.9	3207.9	26.4	4959.6	40.7	12173.5

The share of the primary sector in the SDP is 55.8% in 1950-.51, while that of the secondary sector is 15.6% and of tertiary sector 28.6%. The share of primary sectors moved downwards and reached a level of 32.9% in 1990.91. The secondary sector moved upwards from 15.6% in 1950-51 to 26.4% in 1990-91. The percentage share of the tertiary sector moved up from 28.6% in 1950-51 to 40.7% in 1990-91. This shows that there is a clear shift of the operations of the economy from primary to tertiary sector, while the secondary sector also improved considerably during the 1950- 1991 period.

All these facts are presented graphically as given below.

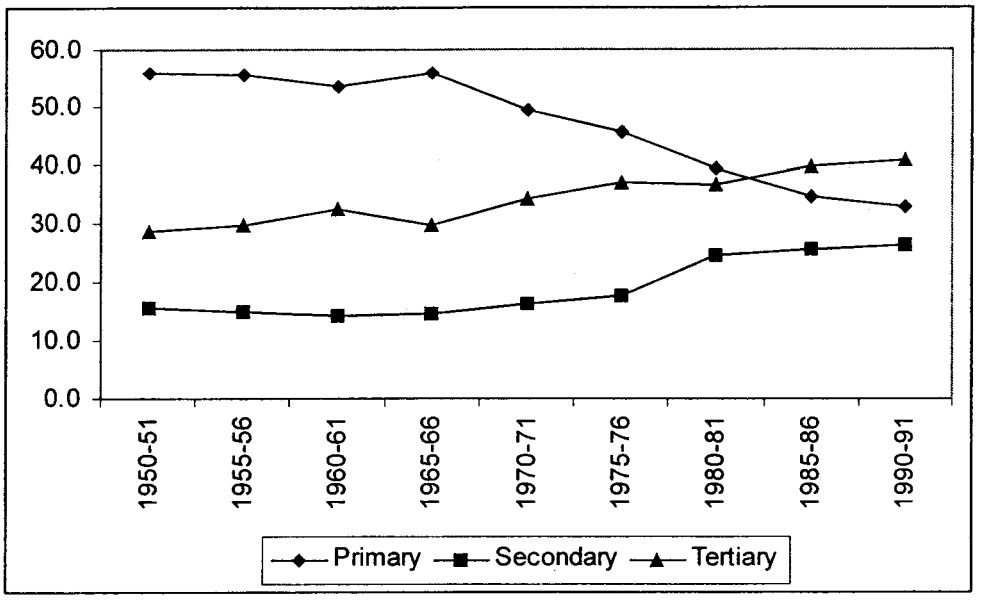
Fig. 5.1:Trend of Sectoral Share of Net State Domestic Product at Current Prices



In preparing the trend graph, the year 1980-81 is taken as the base period with a value of 100. The following trends can be observed from the Figure 5.1 regarding the growth of primary, secondary and tertiary sectors. From 1950-51 to 1970-71 the pattern of growth of the three sectors is almost identical. From 1970-71, a shift has taken place in favour of the secondary and tertiary sectors. However, the primary sector also shows an upward trend, but at a lower rate. From 1980-81 onwards, a major shift has occurred in favour of tertiary sector.

A graphical representation of the sectoral contribution to the state domestic product (SDP) is given below.

Fig. 5.2: Comparison of Sector wise Percentage Share of Net State Domestic Product at Current Prices



The trend graph starts with base 100 (Fig. 5.1) whereas the percentage graph (Fig. 5.2) begins at the actual percentage value. That is why the visual effects of the two graphs are different in the Figure 5.2.

Table 5.2 gives sector-wise comparison of the percentage share of NSDP during 1990-05.

Table 5.2: Comparison of Percentage Share of Domestic Product in Primary, Secondary and Tertiary Sectors based on SDP (Current Prices) During 1990 - 2005

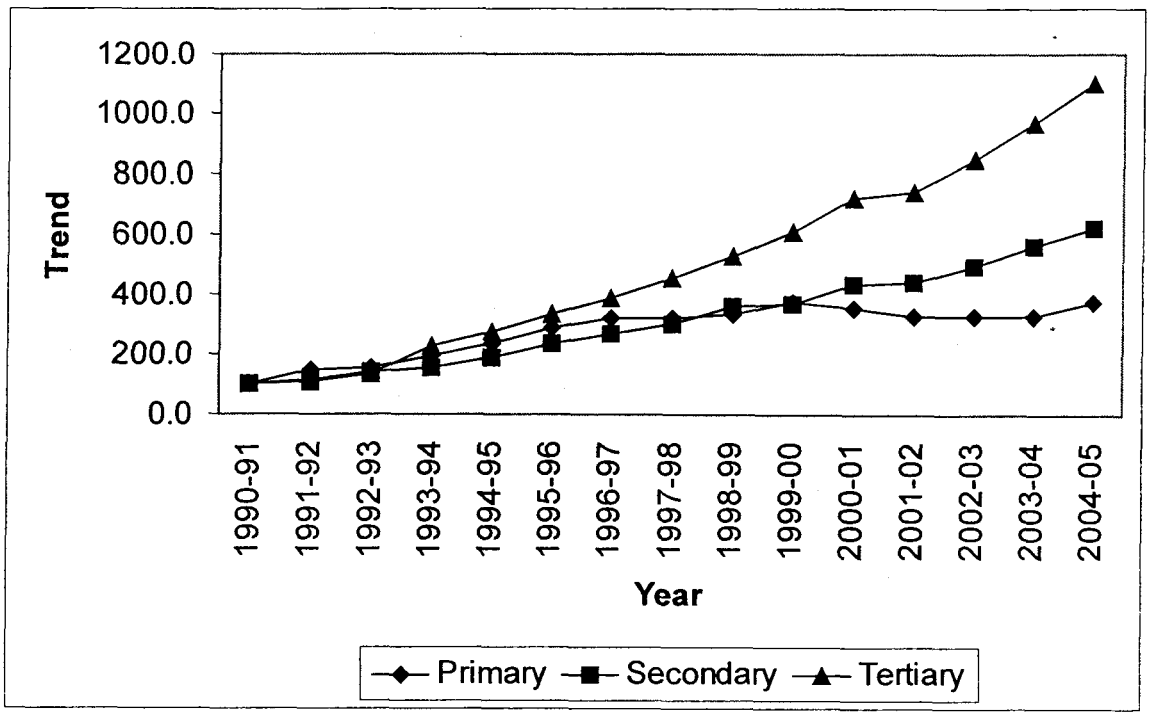
(Amount: Rs. in crores)

Year	Primary		Secondary		Tertiary		SDP
	Amount	% share	Amount	% share	Amount	% share	Amount
1990-91	4006.0	32.9	3207.9	26.4	4959.6	40.7	12173.5
1991-92	5940.8	39.3	3739.7	24.8	5421.2	35.9	15101.7
1992-93	6188.0	36.0	4488.5	26.1	6498.8	37.8	17175.2
1993-94	7688.0	32.2	4845.4	20.3	11317.7	47.5	23851.1
1994-95	9385.3	32.3	6091.0	21.0	13546.1	46.7	29022.4
1995-96	11419.1	32.3	7486.4	21.2	16424.8	46.5	35330.3
1996-97	12886.3	31.7	8488.2	20.9	19324.2	47.5	40698.7
1997-98	12779.8	28.5	9694.2	21.6	22409.5	49.9	44883.5
1998-99	13391.3	26.2	11503.5	22.5	26166.1	51.2	51061.0
1999-00	14901.9	26.2	11804.0	20.7	30220.1	53.1	56926.0
2000-01	14154.3	22.2	13925.8	21.9	35635.0	55.9	63715.1
2001-02	12988.6	20.4	14036.6	22.0	36792.0	57.7	63817.3
2002-03	13136.7	18.5	15891.8	22.4	42035.2	59.2	71063.7
2003-04	13186.7	16.7	17865.4	22.6	47881.1	60.7	78933.1
2004-05	15066.2	16.8	19836.7	22.2	54549.1	61.0	89452.0

The share of the primary sector has come down from 32.9% in 1990-91 to 16.8% in 2004-05. During this period, the percentage share of the secondary sector has also come down from 26.4% to 22.2%. But the percentage of the tertiary sector increased from 40.7% in 1990-91 to 61.0% in 2004-05.

These facts are depicted graphically as given in the Figures 5.3and 5.4

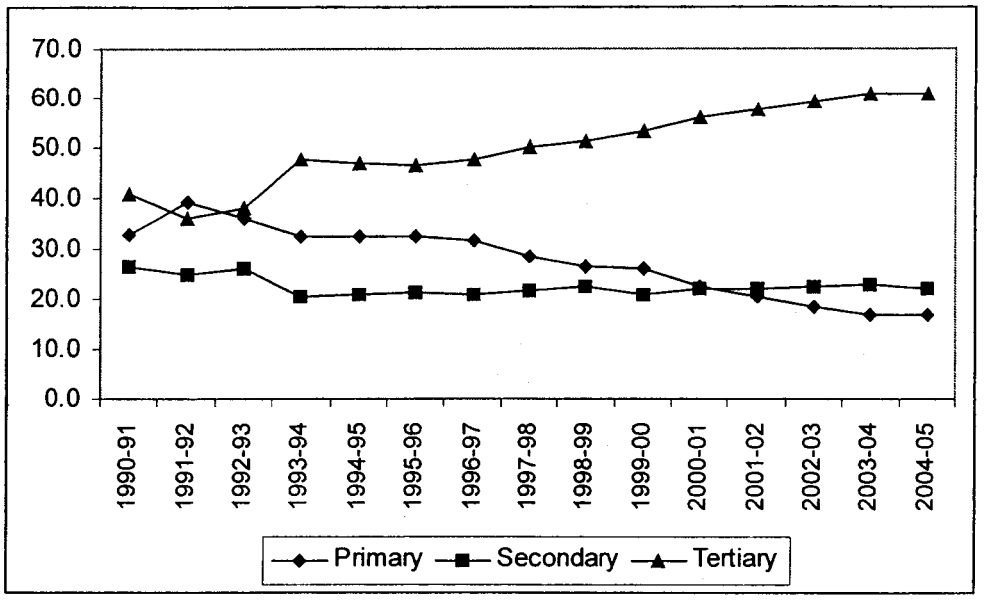
Fig. 5.3: Trend of Sectoral Share of Net State Domestic Product at Current Prices



The comparison clearly shows that there is a sharp trend in favour of the tertiary sector in Kerala.

In Figure 5.4 the comparison of the sector-wise percentage share of NSDP at current prices is given.

Fig. 5.4:Comparison of Sector Wise Percentage Share of Net State Domestic Product at Current Prices



5.1.2 Annual Growth Rate and Trend of NSDP

The Table 5.3 indicates the annual growth rate and trend of different sectors of the economy during 1950-1991 period.

Table 5.3: Comparison of Growth and Trend of Domestic Product in Primary, Secondary and Tertiary Sector During 1950 - 1991

Year	Primary		Secondary		Tertiary		SDP	
	AGR	Trend	AGR	Trend	AGR	Trend	AGR	Trend
1950-51	-	100	-	100	-	100	-	100
1955-56	17.6	118	12.2	112	22.2	122	18.1	118
1960-61	12.8	133	12.2	126	27.7	156	17.1	138
1965-66	56.6	208	52.3	192	37.7	215	49.9	207
1970-71	56.1	324	99.1	382	104.1	438	76.5	366
1975-76	63.6	531	91.2	730	91.3	839	77.6	650
1980-81	47.8	784	137.9	1737	69.3	1420	71.6	1115
1985-86	50.2	1178	78.3	3097	86.1	2643	70.1	1897
1990-91	77.8	2095	93.1	5980	91.5	5063	87.2	3551

The annual growth rate of the primary sector during that period increased from 17.6% in 1955-56 to 77.8% in 1990-91. During this 40 year period, the growth rate fluctuated from 12.8% to 63.6% at various intervals. The trend of the primary sector shows increasing trend from 100 to 2095. In the case of secondary sector, the annual growth rate in 1955-56 is 12.2% which reaches 93.1% in 1990-91. In between the growth rate fluctuated from 12.2% to 137.9%. Its trend shows a very high increase from 100 in 1950-51 to 5980. In the tertiary sector, the annual growth rate increased from 22.2% in 1955-56 to 91.5% in 1990-91. The trend also shows an increase from 100 in 1950-51 to 5063 in 1990-91. This comparison clearly shows that there is a sharp shift in the economy from primary sector to tertiary sector. However, during this period, the secondary sector also improved its performance to a greater extent. The annual growth rate and trend indicate the position of secondary sector against the other two sectors in 1990-91. The growth and trend of secondary and tertiary sectors are higher than the growth rate and trend of the State domestic product.

The sector wise comparison of annual growth rate (AGR) and trend the NSDP during 1990-2005 is given in Table 5.4.

Table 5.4: Comparison of Growth and Trend of Domestic Product in Primary, Secondary and Tertiary Sector During 1990 - 2005

Year	Primary		Secondary		Tertiary		SDP	
	AGR	Trend	AGR	Trend	AGR	Trend	AGR	Trend
1990-91	--	100.0	--	100.0	--	100.0	--	100.0
1991-92	48.3	148.3	16.6	116.6	9.3	109.3	24.1	124.1
1992-93	4.2	154.5	20.0	139.9	19.9	131.0	13.7	141.1
1993-94	24.2	191.9	8.0	151.0	74.2	228.2	38.9	195.9
1994-95	22.1	234.3	25.7	189.9	19.7	273.1	21.7	238.4
1995-96	21.7	285.0	22.9	233.4	21.3	331.2	21.7	290.2
1996-97	12.8	321.7	13.4	264.6	17.7	389.6	15.2	334.3
1997-98	-0.8	319.0	14.2	302.2	16.0	451.8	10.3	368.7
1998-99	4.8	334.3	18.7	358.6	16.8	527.6	13.8	419.4
1999-00	11.3	372.0	2.6	368.0	15.5	609.3	11.5	467.6
2000-01	-5.0	353.3	18.0	434.1	17.9	718.5	11.9	523.4
2001-02	-8.2	324.2	0.8	437.6	3.2	741.8	0.2	524.2
2002-03	1.1	327.9	13.2	495.4	14.3	847.6	11.4	583.8
2003-04	0.4	329.2	12.4	556.9	13.9	965.4	11.1	648.4
2004-05	14.3	376.1	11.0	618.4	13.9	1099.9	13.3	734.8

The annual growth rate of the primary sector has declined from 48.3% in 1991-92 to 14.3% in 2004-05. In the middle years the growth rate fluctuated between -8.2% to 24.2%. The trend in the primary sector shows an increase from 100 to 376.1 only. In the case of secondary sector the annual growth rate decreased from 16.6% in 1991-92 to 11% in 2004-05. In between the AGR fluctuated from 0.8% to 25.7%. The trend of the secondary sector during that period shows an increase from 100 to 618.4, which is almost double compared to the primary sector. In the case of tertiary sector the

annual growth rate increased from 9.3% in 1991-92 to 13.9% in 2004-05. In the midway the growth rate fluctuated from 3.2% to 74.2%. The trend also shows a very high increase from 100 in 1990-91 to 1099.9 in 2004-05. During this period the tertiary sector outshined other sectors in the growth and trend. The tertiary sector out-reached the growth and trend of NSDP also.

5.1.3. Compound Growth Rate of NSDP

Table 5.5 gives the sector wise comparison of CGR of NSDP during the four decades from 1950-1990.

Table 5.5: Comparison of the Compound Growth Rate of Domestic Product in Primary, Secondary, Tertiary Sectors During the Four Decades from 1950 to 1990

Year	Primary	Secondary	Tertiary	SDP
1950-60	2.6	2.12	4.13	2.99
1960-70	8.47	10.61	9.85	9.25
1970-80	8.36	14.76	11.28	10.66
1980-90	9.34	11.90	12.25	11.1
1950-90	**7.7**	**10.49**	**10.05**	**9.1**

All the sectors have improved their CGR during this period. The CGR of the primary sector during 190-60 is 2.6, moved to 9.34% during 1980-90. The CGR during the 1950-1990 period is 77. The secondary sector also increased its CGR from 2.12% in 1950-160 to 11.9% in 1980-90. The CGR of 1950-90 is 10.49. In the case of tertiary sector, the CGR during 1950-60 is 4.13 which moved to 12.25% in 1980-90 period. Its CGR during 1950-90

period is 10.05. From this Table it is clear that in the initial 40 years the growth of the secondary and tertiary sector are more than the growth of primary sector and of the NSDP.

The sector wise comparison of CGR during 1990-94 is given in Table 5.6

Table 5.6:Comparison of the Compound Growth Rate of Domestic Product in Primary, Secondary, Tertiary Sectors and SDP During the Period from 1990 to 2003

Year	Primary	Secondary	Tertiary	SDP
1990-99	9.23	12.91	17.33	14.22
2000-03	-1.75	6.43	7.66	5.5
1990-03	8.88	13.05	17.58	14.28

The CGR of the primary sector moved from 9.23% during the 1990-99 period to 1.75% during the 2000-03 period. In this period the CGR of secondary sector also moved downwards from 12.91% during 1990-99 to 6.43% during 2000-03. The CGR of the tertiary sector also came down from 17.33% during 1990-99 to 7.66% during 2000-03

5.1.4 Sector wise Outlay of Funds During the Five Year Plans

The Study revealed that there is a close relation between the Plan expenditure and the performance of the economy. The performance of various sectors of the economy can be effectively controlled by the Plan funds.

The sector-wise comparison of percentage share of outlay in primary, secondary and tertiary sectors is given in Table 5.7.

Table 5.7: Comparison of Percentage Share of Outlay in Primary, Secondary and Tertiary Sectors During the Plan Periods

Year	Primary		Secondary		Tertiary		Total
	Outlay	% share	Outlay	% share	Outlay	% share	Outlay
1st Plan (1951-56)	11.5	38.2	13.0	43.2	5.6	18.6	30.0
2nd Plan (1956-61)	26.3	30.2	30.3	34.8	30.4	35.0	87.0
3rd Plan (1951-56)	58.6	34.5	60.8	35.7	50.7	29.8	170.0
Annual Plan (1966 to 1968-69)	50.3	35.3	57.1	40.0	35.2	24.7	142.5
4th Plan (1969-74)	89.4	33.3	98.3	36.6	80.7	30.1	268.4
5th Plan (1974-78)	207.1	36.4	191.4	33.6	170.4	29.9	569.0
Annual Plan (1978-79 to 1979-80)	158.6	39.3	126.1	31.3	118.5	29.4	403.2
6th Plan (1980-85)	631.1	41.2	444.7	29.0	455.0	29.7	1530.7
7th Plan (1985-90)	808.8	35.3	655.9	28.6	825.3	36.0	2289.9
Annual Plans (1990-91 to 1991-92)	538.3	36.3	451.4	30.5	492.6	33.2	1482.3
8th Plan (1992-97)	1687.7	30.9	2110.0	38.6	1662.3	30.4	5460.0
9th Plan (1997-02)	2507.4	24.8	3796.9	37.6	3795.7	37.6	10100.0
10th plan (2002-07)	2724.8	17.0	4828.8	30.2	8446.5	52.8	16000.0

The share of primary sector is 38.2% in the First Plan while it is 643.2% for the secondary sector and only 18.6% in the tertiary sector. The share of primary sector declined from 38.2% to 24.8% in the 9th Plan and to 17% in the 10th Plan. In the case of tertiary sector, the share increased from 18.6% to 52.8% in the 10th Plan.

A comparison of annual growth rate and trend in outlay in the primary, secondary and traditional sectors during the Five Year Plan period is shown in Table 5.8.

Table 5.8: Comparison of Growth and Trend in Outlay in Primary, Secondary and Tertiary Sectors During the Plan Periods

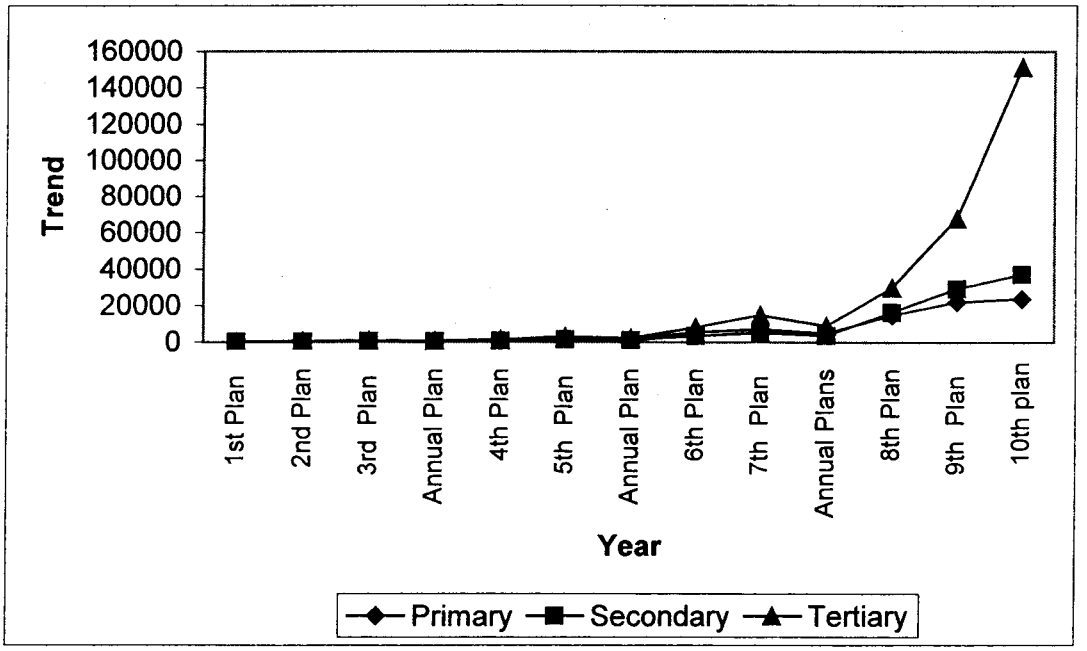
Year	Primary		Secondary		Tertiary		Total	
	AGR	Trend	AGR	Trend	AGR	Trend	AGR	Trend
Ist Plan (1951-56)	--	100	--	100	--	100	--	100
2nd Plan (1956-61)	128.9	229	133.5	234	445.5	546	189.7	290
3rd Plan (1951-56)	122.9	510	100.6	468	66.5	908	95.4	566
Annual Plan (1966 to 1968-69)	-14.1	439	-6.1	440	-30.6	630	-16.2	475
4th Plan (1969-74)	77.6	779	72.4	758	129.5	1446	88.3	894
5th Plan (1974-78)	131.7	1804	94.7	1476	111.2	3053	112.0	1895
Annual Plan (1978-79 to 1979-80)	-23.4	1381	-34.2	972	-30.4	2124	-29.1	1343
6th Plan (1980-85)	297.9	5497	252.8	3428	283.9	8153	279.7	5097
7th Plan (1985-90)	28.2	7045	47.5	5057	81.4	14791	49.6	7626
Annual Plans (1990-91 to 1991-92)	-33.4	4689	-31.2	3480	-40.3	8827	-35.3	4936
8th Plan (1992-97)	213.5	14701	367.4	16268	237.5	29790	268.4	18182
9th Plan (1997-02)	48.6	21841	79.9	29274	128.3	68024	85.0	33633
10th plan (2002-07)	8.7	23735	27.2	37230	122.5	151371	58.4	53280

The annual growth rate shows highly fluctuating trends during the plan periods. The trend of primary sector rose from 100 to 23735 while that of the secondary sector went up to 37230. At the same time the tertiary sector achieved a fabulous figure of 151371 over the plan period. This indicates the

general attitude of the policy makers and of planners in the Govt., towards tertiary sector.

The graphical representation of the five year plan outlays are given in figure 5.5

Fig. 5.5: Trend of Sector Wise Outlay During Five Year Plans



5.1.5 Sector-wise expenditure During Five Year Plans

The sector-wise analysis of expenditure during the plan periods is presented in Table 5.9.

Table 5.9: Comparison of Percentage Share of Expenditure in Primary, Secondary and Tertiary Sectors During the Plan Periods

(Expenditure: Rs. In crores)

Year	Primary		Secondary		Tertiary		Total
	Expenditure	% share	Expenditure	% share	Expenditure	% share	Expenditure
1st Plan (1951-56)	7.6	29.3	11.1	42.9	7.2	27.8	25.9
2nd Plan (1956-61)	24.18	30.1	28.0	34.9	28.1	35.0	80.2
3rd Plan (1951-56)	52.34	28.7	75.2	41.3	54.8	30.0	182.3
Annual Plan (1966 to 1968-69)	51.39	34.2	55.3	36.8	43.7	29.1	150.4
4th Plan (1969-74)	96.61	27.9	140.3	40.6	108.9	31.5	345.8
5th Plan (1974-78)	175.04	35.1	165.4	33.2	158.2	31.7	498.6
Annual Plan (1978-79 to 1979-80)	159.27	36.2	137.7	31.3	142.9	32.5	439.8
6th Plan (1980-85)	685.14	38.0	488.3	27.1	628.2	34.9	1801.6
7th Plan (1985-90)	855.54	33.6	691.7	27.2	999.6	39.2	2546.9
Annual Plans (1990-91 to 1991-92)	506.46	35.5	436.1	30.6	482.5	33.9	1425.1
8th Plan (1992-97)	2355.62	31.9	2746.4	37.2	2271.9	30.8	7373.9
9th Plan (1997-02)	3209.72	25.6	3978.0	31.7	5360.6	42.7	12548.3

Here also the percentage share of the primary sector which is 29.3% in the First Five Year Plan has come down to 25.6% in the ninth Plan. The percentage share of secondary sector during the Plan period declined from 42.9 % in the First Plan to 31.7 % in the Ninth Plan. In the case of tertiary sector, the percentage share went up from 27.8% in the First Plan to 42.7% in the Ninth Plan. The total expenditure during the 9th Plan excludes an amount

of Rs.3911.3 cores which has been spent for local bodies. The sector- wise details of this expenditure are not readily available.

Table 5.10.provides a sector wise comparison of growth and trend in expenditure during the Plan periods.

Table 5.10: Comparison of Growth and Trend of Expenditure in Primary, Secondary and Tertiary Sector During Plan Periods

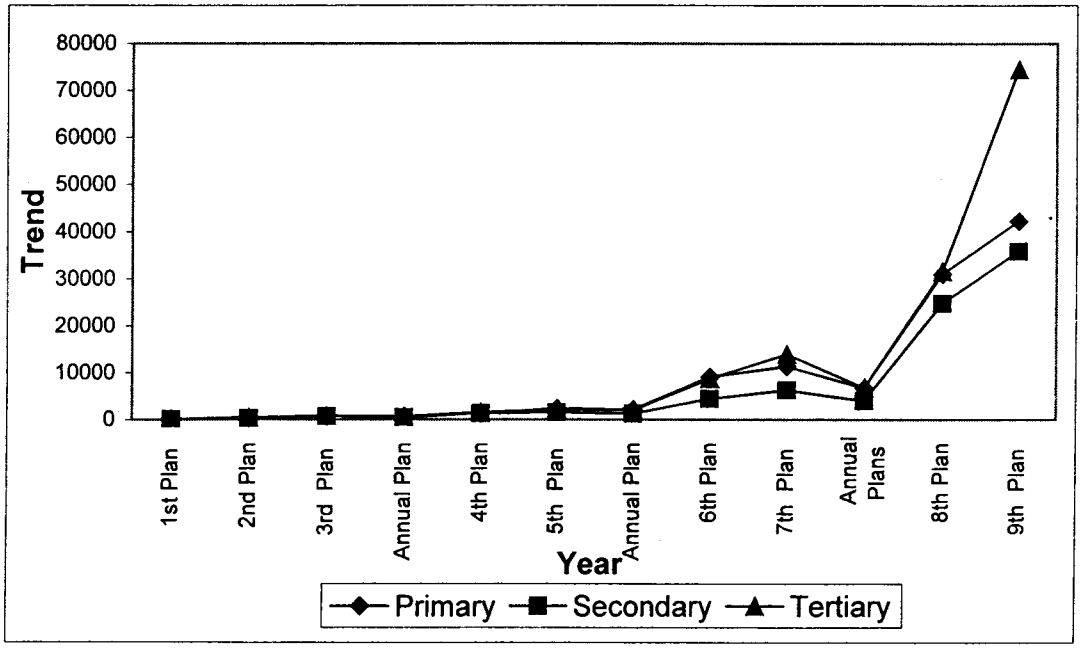
Year	Primary		Secondary		Tertiary		Total	
	AGR	Trend	AGR	Trend	AGR	Trend	AGR	Trend
Ist Plan (1951-56)	--	100	--	100	--	100	--	100
2nd Plan (1956-61)	218.2	318	151.9	252	290.0	390	209.7	310
3rd Plan (1951-56)	116.5	689	169.0	678	95.0	761	127.3	704
Annual Plan (1966 to 1968-69)	-1.8	676	-26.5	498	-20.2	607	-17.5	581
4th Plan (1969-74)	88.0	1271	153.8	1264	149.0	1512	129.9	1335
5th Plan (1974-78)	81.2	2303	17.9	1490	45.4	2198	44.2	1925
Annual Plan (1978-79 to 1979-80)	-9.0	2096	-16.7	1240	-9.7	1985	-11.8	1698
6th Plan (1980-85)	330.2	9015	254.7	4399	339.6	8725	309.6	6956
7th Plan (1985-90)	24.9	11257	41.7	6232	59.1	13884	41.4	9834
Annual Plans (1990-91 to 1991-92)	-40.8	6664	-36.9	3929	-51.7	6701	-44.0	5502
8th Plan (1992-97)	365.1	30995	529.7	24743	370.9	31554	417.4	28471
9th Plan (1997-02)	36.3	42233	44.8	35838	136.0	74453	70.2	48449

As in the case of outlay, the annual growth rate of expenditure also fluctuates widely. The trend in expenditure in the primary sector increased from 100 in the First Plan to 42233 in the 9th Plan. The trend in expenditure in the secondary sector increased from 100 in the First Plan to 35838 in the 9th Plan. The trend in tertiary sector indicates a high growth from 100 in the

First Plan to 74453 in the 9th Plan. This shows that the higher growth rate and performance of the tertiary sector in Kerala is mainly due to the progressively increasing share of expenditure in the tertiary sector.

The graphical representation of the sector-wise expenditure trend is given in Figure 5.6.

Fig. 5.6: Sector Wise Expenditure Trend During Five Year Plans



A slight increase in expenditure on tertiary sector can be seen from the sixth five-year plan onwards. However, the sharp hike in its share started since the eighth plan. This has an impact on the rapid growth of the tertiary sector of the Kerala economy during this period.

5.2 Industrial Development of Kerala

5.2.1 Present condition of Industrial Sectors in Kerala

Data on the present condition of different sectors of the industry in Kerala has been collected in four levels according to their present status namely, declining, stagnant, progressing, prosperous. Their comparative status is as follows.

5.2.1.1 Traditional Industry

The distribution of the traditional industries in Kerala according to their present condition is given in Table 5.11.

Table 5.11: Percentage Distribution of Industries in Kerala

Present condition	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Prosperous	0	0.00	2	11.76	2	8.0
Progressing	4	50.00	3	17.65	7	28.0
Stagnant	3	37.50	5	29.41	8	32.0
Declining	1	12.50	7	41.18	8	32.0

The percentage distribution of the traditional industries shows that 50% of the small units are either stagnant or in the declining stage. In the case of medium / large units, 70.59% are in such a condition.

An analysis of the present status of the traditional industries according to their size is attempted in Table 5.12.

Table 5.12: Comparison of Present Condition Score of Traditional Industries According to Size of Units

Size	Count	Mean Score	Mean Rank	Sum of Ranks
Small	8	2.38	15.25	122.00
Medium/Large	17	2.00	11.94	203.00
Mann-Whitney U	50			
Wilcoxon W	203			
Z	1.097			
Sig.	0.273			

The mean rank of small units is higher than the large units. However, when their ranks are compared, using the Mann-Whitney U test, their difference is not at a significant level. This means that the condition of small, medium or large units in the traditional sector are the same. Most of the units are in the stagnant or declining condition as given in the Tables 5.11 and 5.12

5.2.1.2 Manufacturing Industry

An analysis of the distribution of the manufacturing industries in Kerala according to their present condition is indicated in Table 5.13.

Table 5.13: Percentage Distribution of Manufacturing Industries According to their Present Condition

Present condition	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Prosperous	0	0.00	1	5.56	1	4.0
Progressing	3	42.86	5	27.78	8	32.0
Stagnant	3	42.86	8	44.44	11	44.0
Declining	1	14.29	4	22.22	5	20.0

While analyzing the percentage distribution of the present condition of manufacturing industry, it is seen that there is no significant difference between the small or large units where most of them are in the stagnant or progressing stage, as derived from Tables 5.13 and 5.14. However, 64.66%of the industrialists opine that the manufacturing industry is in a declining or stagnant state.

An analysis of the present score of manufacturing industries according to the size of units in Kerala is presented in Table 5.14.

Table 5.14: Comparison of Present Condition Score of Manufacturing Industry According to Size of Units

Size	Count	Mean score	Mean Rank	Sum of Ranks
Small	7	2.29	13.93	97.50
Medium/Large	18	2.17	12.64	227.50
Mann-Whitney U	56.5			
Wilcoxon W	227.5			
Z	0.420			
Sig.	0.674			

Even though the mean rank is higher for small units, the difference is not significant at 0.05 level or at 5% level of probability.

5.2.1.3 Service Industry

The pattern of distribution of the service industry according to their present condition is given in Table 5.15

Table 5.15: Percentage Distribution of the Present Condition of the Service Industry

Present condition	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Prosperous	1	25.00	4	19.05	5	20.0
Progressing	3	75.00	16	76.19	19	76.0
Stagnant	0	0.00	0	0.00	0	0.0
Declining	0	0.00	1	4.76	1	4.0

In the case of service units, 100% of the small scale units and 85.24% of the large units are either progressing or prosperous.

A comparison of the present condition-score of service industry according to size of units is shown in Table 5.16 below.

Table 5.16: Comparison of Present Condition- Score of Service Industry According to Size of Units

Size	Count	Mean Score	Mean Rank	Sum of Ranks
Small	4	3.25	14.00	56.00
Medium/Large	21	3.10	12.81	269.00
Mann-Whitney U	38			
Wilcoxon W	269			
Z	0.3984			
Sig.	0.6903			

Considering the mean rank, no significant difference exist between them. This indicates that all service sector units, irrespective of their size of operation, are doing fairly well.

5.2.1.4 IT Industry

Table 5.17: Percentage Distribution According to the Present Condition of the IT Industry

Present condition	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Prosperous	2	11.11	1	14.29	3	12.0
Progressing	16	88.89	5	71.43	21	84.0
Stagnant	0	0.00	1	14.29	1	4.0
Declining	0	0.00	0	0.00	0	0.0

In the case of IT units 100% of the small units and 85.72% of the medium and large units are at present prosperous or progressing as given in Table 5.17.

The present condition-score of the IT industry according to the size of units is compared in Table 5.18.

Table 5.18: Comparison of Present Condition Score of IT Industry According to Size of the Units

Size	Count	Mean Score	Mean Rank	Sum of Ranks
Small	18	3.11	13.33	240.00
Medium/Large	7	3.00	12.14	85.00
Mann-Whitney U	57			
Wilcoxon W	85			
Z	0.570			
Sig.	0.569			

As per the mean rank there is no significant difference between the small or medium units. It means that in the case of IT units, irrespective of the size of investment or operation, all units are working well. 96% of the industrialists state that the present condition of the IT industry is progressing or prosperous.

5.2.1.5 Comparison of the Present Condition of Industrial Sectors

Table 5.19 presents the present status of the different industrial sectors in the state.

Table 5.19: Percentage Distribution According to Present Condition of Different Industrial Sectors

Present condition	Traditional		Manufacturing		Service		IT	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Prosperous	2	8.00	1	4.00	5	20.0	3	12.00
Progressing	7	28.00	8	32.00	19	76.0	21	84.00
Stagnant	8	32.00	11	44.00	0	0.0	1	4.00
Declining	8	32.00	5	20.00	1	4.0	0	0.00

The analysis of the present condition of industrial units in the traditional, manufacturing, service and IT sectors shows that there is substantial difference between the four types of industries.

The present status by score of different industrial sectors is compared below in Table 5.20.

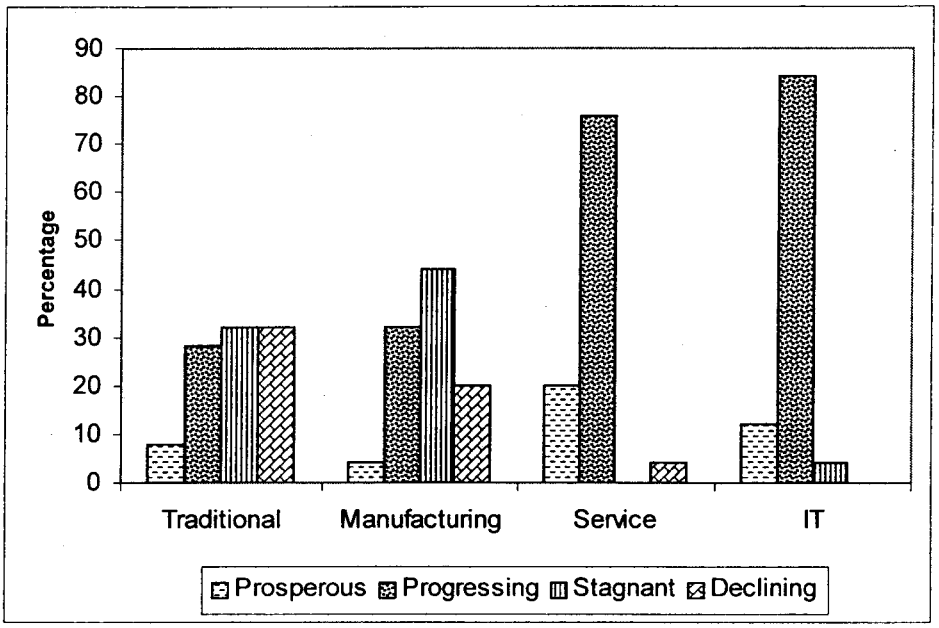
Table 5.20: Comparison of Present Condition- Score of Different Industrial Sectors

Size	Count	Mean score	Mean Rank
Traditional	25	2.12	35.20
Manufacturing	25	2.20	35.92
Service	25	3.12	66.42
IT	25	3.08	64.46
Kruskal Wallis Test	Chi-Square	32.4	
	df	3	
	Sig.	0.000	

Considering their mean ranks, the traditional and manufacturing industries have a rank of around 35, while the service and IT units have a rank of around 65. As per the Kruskal Wallis Test, their difference is significant at 1% level. This clearly shows that the present condition of service and IT units in Kerala is very promising as against the traditional or manufacturing units

The present condition of the different sectors of industry in Kerala is graphically represented in Fig. 5.7.

Fig.5.7: Present Condition of Different Type of Industries



The graph reveals the progressing nature of the IT sector

5.2.2 Performance of Industrial Units in Kerala

5.2.2.1 Traditional Units

The distribution of traditional industrial units according to their performance is given in Table 5.21.

Table 5.21: Percentage Distribution According to Performance of Units in the Traditional Sector

Performance	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Prosperous	0	0.00	2	11.76	2	8.0
Progressing	6	75.00	12	70.59	18	72.0
Stagnant	2	25.00	1	5.88	3	12.0
Declining	0	0.00	2	11.76	2	8.0

In the case of traditional industries, 75% of the small units have a progressing performance, while 82.35% of medium and large scale units are either prosperous or progressing.

Table 5.22 presents the performance score of units in the traditional sector according to their size.

Table 5.22: Comparison of Performance Score of Units in the Traditional Sector According to Size of the Units

Size	Number	Mean Score	Mean Rank	Sum of Ranks
Small	8	2.75	11.88	95
Medium/Large	17	2.82	13.53	230
Mann-Whitney U	59			
Wilcoxon W	95			
Z	0.66			
Sig.	0.507			

Considering their mean ranks, the difference is not significant. This shows that, irrespective of their scale of operation, the performance of units in the traditional sector is more or less stagnant or progressing level.

5.2.2.2 Manufacturing Units

The distribution of manufacturing units according to their performance is shown in Table 5.23.

Table 5.23: Percentage Distribution by Performance of the Manufacturing Units

Performance	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Prosperous	3	42.86	0	0.00	3	12.0
Progressing	2	28.57	13	72.22	15	60.0
Stagnant	2	28.57	2	11.11	4	16.0
Declining	0	0.00	3	16.67	3	12.0

In the case of manufacturing units, 71.43% of the small units have a prosperous or progressing performance which is slightly less than that for the medium and large units with 72.22% of the units having a progressive performance.

Table 5.24: Comparison of Performance Score of Manufacturing Units According to Size of the Industry

Size	Count	Mean score	Mean Rank	Sum of Ranks
Small	7	3.14	16.14	113
Medium/Large	18	2.56	11.78	212
Mann-Whitney U	41			
Wilcoxon W	212			
Z	1.51			
Sig.	0.131			

When their mean ranks are taken into account, even though small units have a higher rank, their difference is not at a significant level as per the Mann-Whitney U value

5.2.2.3 Service Units

The percentage distribution of the performance of service units shows that 100% of the small units have a progressing performance which is equal to the performance of medium and large scale units with a percentage of 14.29 in the prosperous level and 85.71% at progressing stage. The relevant details are furnished in Table 5.25.

Table 5.25: Percentage Distribution by Performance of the Service Units

Performance	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Prosperous	0	0.00	3	14.29	3	12.0
Progressing	4	100.00	18	85.71	22	88.0
Stagnant	0	0.00	0	0.00	0	0.00
Declining	0	0.00	0	0.00	0	0.00

The mean ranks also shows that the difference between small and medium/large industries is not significant at 5% level. All the units in the service sector in Kerala are performing fairly well as given in Table 5. 26 below:

Table 5.26: Comparison of Performance Score of Service Units According to the Size of the Industry

Size	Count	Mean score	Mean Rank	Sum of Ranks
Small	4	3.00	11.50	46
Medium/Large	21	3.14	13.29	279
Mann-Whitney U	36			
Wilcoxon W	46			
Z	0.79			
Sig.	0.430			

5.2.2.4 IT Units

In the case of IT units all small-scale units have a prosperous or progressing performance same as that of the medium and large scale units. Table 5.27 gives the details.

Table 5.27: Percentage Distribution by Performance of the IT Units

Performance	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Prosperous	5	27.78	3	42.86	8	32.0
Progressing	13	72.22	4	57.14	17	68.0
Stagnant	0	0.00	0	0.00	0	0.00
Declining	0	0.00	0	0.00	0	0.00

Table 5.28 indicates that there is no significant difference between the performance of small and medium/large units as per their mean rank and Mann-Whitney U-value.

Table 5.28: Comparison of Performance Score of IT Industry According to the Size of the Units

Size	Count	Mean score	Mean Rank	Sum of Ranks
Small	18	3.28	12.47	224.5
Medium/Large	7	3.43	14.36	100.5
Mann-Whitney U	54			
Wilcoxon W	225			
Z	0.71			
Sig.	0.477			

5.2.2.5 Comparison of the Performance of Industrial Units

Performance-wise, a higher percentage of 88 service units have registered a progressing trend, followed by the traditional sector (72%) and IT Sector (68%). Details are given in Table 5.29 below:

Table 5.29: Distribution of Different Industrial Units Based on their Performance

Performance	Traditional		Manufacturing		Service		IT	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Prosperous	2	8.0	3	12.0	3	12.0	8	32.0
Progressing	18	72.0	15	60.0	22	88.0	17	68.0
Stagnant	3	12.0	4	16.0	0	0.00	0	0.00
Declining	2	8.0	3	12.0	0	0.00	0	0.00

The performance score of industrial units, when compared the IT units ranked one with 62.58% followed by service units with 53.78 and the traditional and manufacturing industries with a rank of around 43. Kruskal

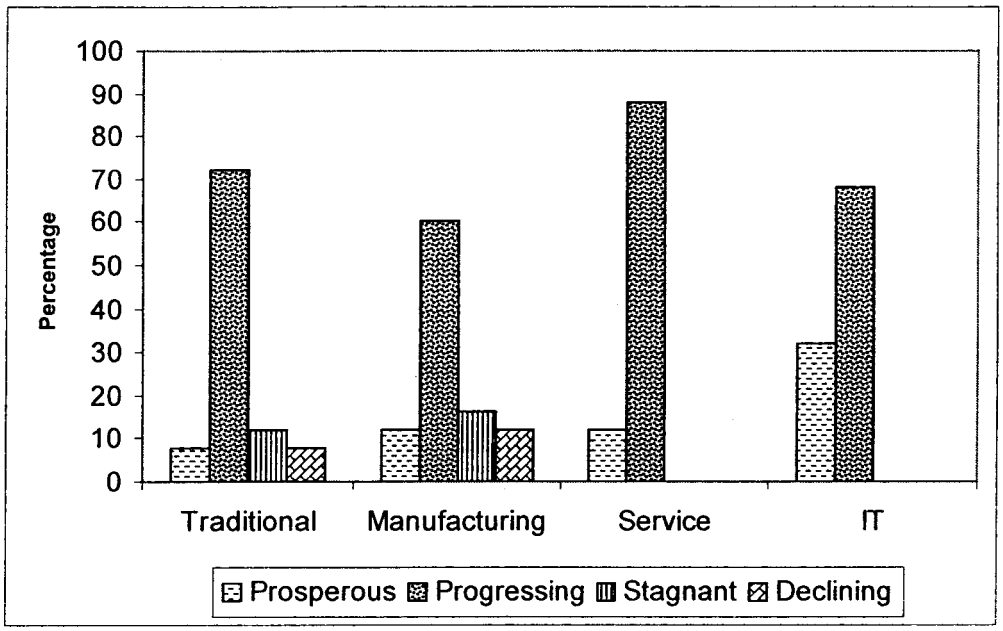
Wallis Test shows that the difference between the units are significant at 1% level. This indicates that the service and IT units are performing very well compared to the traditional and manufacturing units in Kerala. The details are given in Table 5.30.

Table 5.30: Comparison of Performance- Score of Different Industrial Sectors

Size	Number of Units	Mean score	Mean Rank
Traditional	25	2.8	43.64
Manufacturing	25	2.72	42
Service	25	3.12	53.78
IT	25	3.32	62.58
Kruskal Wallis Test	Chi-Square		13.17
	df		3
	sig.		0.004

The graphical representation of the sector-wise performance of units is given in Fig.5.8.

Fig. 5.8: Performance of Units in Different Industrial Sectors



The figure shows that in the service and IT sector, all units are either prosperous or progressive in their performance. None of them are in the declining or stagnant position.

5.2.3 Industrial Relations in the Industries in Kerala

5.2.3.1 Traditional Industries

As per the percentage distribution, 75% of the small scale units have only a satisfactory or not- so- healthy industrial relations, almost same as their counterparts in the medium and large scale sector (76.47%). This information is provided in Table 5.31.

Table 5.31: Distribution of Units According to Nature of Industrial Relations

Industrial relations	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Cordial and healthy	2	25.00	4	23.53	6	24.0
Satisfactory	3	37.50	9	52.94	12	48.0
Not so Healthy	3	37.50	4	23.53	7	28.0

The mean ranks of the units are the same which indicates that there is no significant difference between the small and large traditional units as far as their industrial relations are concerned. The industrial relations is not so healthy, or it is at satisfactory level only. Table 5.32 gives the details.

Table 5.32: Comparison of Industrial Relations Score of Traditional Industries According to the Size of Units

Size	Count	Mean Score	Mean Rank	Sum of Ranks
Small	8	2.88	12.19	97.50
Medium/Large	17	3.00	13.38	227.50
Mann-Whitney U	61.5			
Wilcoxon W	97.5			
Z	0.410			
Sig.	0.682			

5.2.3.2 Manufacturing Industries

The percentage distribution of the industrial relations in the medium and large units in Kerala show that their exists almost the same type of industrial relations with co-cordial and healthy or satisfactory at a percentage

of 8.72% for small and 83.34% for medium / large units. Table 5.33 gives these details.

Table 5.33: Distribution of Manufacturing Units According to Industrial Relations

Industrial relations	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Cordial and healthy	1	14.29	5	27.78	6	24.0
Satisfactory	5	71.43	10	55.56	15	60.0
Not so Healthy	1	14.29	3	16.67	4	16.0

When their mean ranks are taken it shows that their difference is not at a significant level. This means that in the manufacturing sector, irrespective of the level of operations, the units are having only a satisfactory level. The relevant figures are given in Table 5.34.

Table 5.34: Comparison of Industrial Relations-Score of Manufacturing Units According to Size of the Units

Size	Number	Mean Score	Mean Rank	Sum of Ranks
Small	7	3.00	12.14	85.00
Medium/Large	18	3.11	13.33	240.00
Mann-Whitney U	57			
Wilcoxon W	85			
Z	0.415			
Sig.	0.678			

5.2.3.3 Service Industries

The percentage distribution of the small units shows that all of them (100%) are having satisfactory and none of them has cordial and healthy industrial relations. Whereas 47.62 % the medium and large units have a cordial and healthy industrial relations and all the rest have satisfactory relations as given in Table 5.35.

Table 5.35: Percentage Distribution of the Industrial Relations of the Service Units

Industrial relations	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Cordial and healthy	0	0.00	10	47.62	10	40.0
Satisfactory	4	100.00	11	52.38	15	60.0

The mean rank as shown in Table 5.36 gives a high rank for large scale units at 13.95 as against 8.00 for small units. But, there difference is not at a significant level. The analysis in Table 5.35 indicates that the industrial relations of the service units in the State are very good, no unit in that sector has reported unhealthy industrial relations.

Table 5.36: Comparison of Industrial Relations -Score of Service Units According to the Size of the Units

Size	Number of units	Mean Score	Mean Rank	Sum of Ranks
Small	4	3.00	8.00	32.00
Medium/Large	21	3.48	13.95	293.00
Mann-Whitney U	22			
Wilcoxon W	32			
Z	1.746			
Sig.	0.081			

5.2.3.4 IT Industries

In the case of IT units 77.78% of the small units are having cordial and healthy industrial relations as against 42.86% medium and large units. All IT units are having satisfactory or cordial industrial relations. Table 5.37 gives the figures.

Table 5.37: Percentage Distribution of the Industrial Relations of the IT Units

Industrial relations	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Cordial and healthy	14	77.78	3	42.86	17	68.0
Satisfactory	4	22.22	4	57.14	8	32.0

When the mean ranks are considered the small units have a high rank with 14.22 as against 9.86 in the case of medium and large units. Yet their difference is not significant. Table 5.38 presents the details.

Table 5.38: Comparison of Industrial Relations Score of IT Units According to the Size of the Industry

Size	N	Mean score	Mean Rank	Sum of Ranks
Small	18	3.78	14.22	256.00
Medium/Large	7	3.43	9.86	69.00
Mann-Whitney U	41			
Wilcoxon W	69			
Z	1.647			
Sig.	0.100			

5.2.3.5 Comparison of Industrial Relations in Different Sectors

The percentage distribution of the industrial relations between various sectors of industries in Kerala shows that the IT industries have a co-ordial and healthy relationship in 68% units, while it is 40% in service, and 24% each in traditional and manufacturing units. Manufacturing and service sectors have satisfactory industrial relation in 60% of the units. Table 5.39 provides the details.

Table 5.39: Distribution of Different Industrial Units According to Nature of Industrial Relations

Industrial relations	Traditional		Manufacturing		Service		IT	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Cordial and healthy	6	24.00	6	24.00	10	40.0	17	68.00
Satisfactory	12	48.00	15	60.00	15	60.0	8	32.00
Not so Healthy	7	28.00	4	16.00	0	0.0	0	0.00

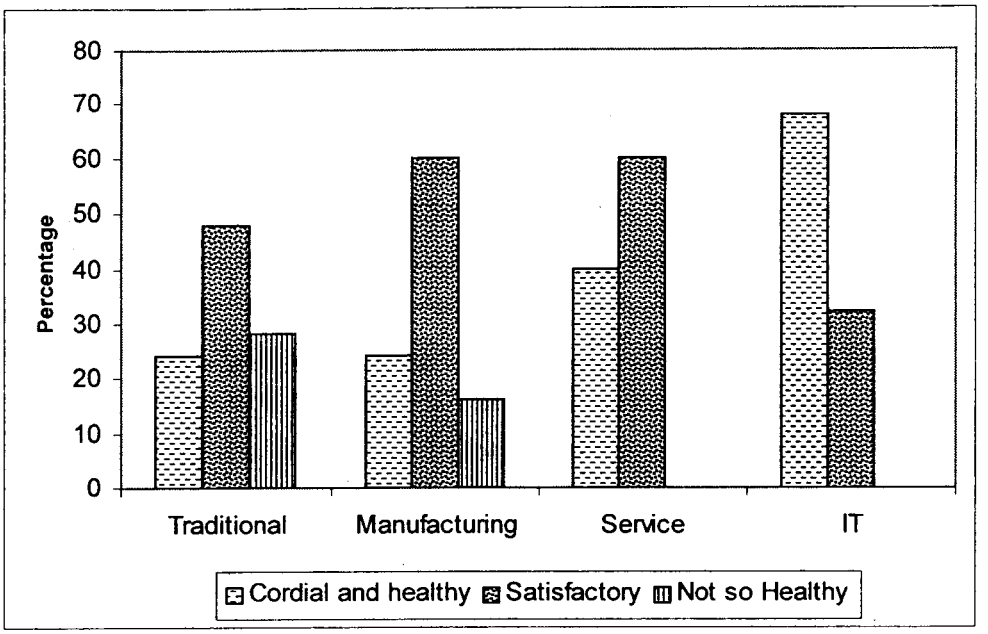
When the mean rank of the sectors is taken, the IT sector has a rank of 66.76 as against 54.30 in service sector and around 40 in traditional and manufacturing sectors. The result of Kruskal Wallis Test shows that there exists a significant level of difference at 1%. This indicates that the IT and service sector units have a distinctively high rate of good industrial relations which clearly shows a conducive atmosphere for these types of industries in Kerala. Table 5.40 furnishes these figures.

Table 5.40: Comparison of Industrial Relations-Score of Different Industrial Units

Size	Number	Mean Score	Mean Rank
Traditional	25	2.96	38.64
Manufacturing	25	3.08	42.30
Service	25	3.40	54.30
IT	25	3.68	66.76
Kruskal Wallis Test	Chi-Square		17.8
	df		3.0
	Sig.		0.000

The nature of industrial relations existing in different sectors of industry is graphically represented in Fig.5.9 below.

Fig. 5.9: Industrial Relations in Different Type of Industries



The figure also shows that all units in IT and service sector have satisfactory or cordial and healthy industrial relations. None of them have unhealthy industrial relations in Kerala.

5.2.4 Present Level of Modernization of Industries in Kerala

5.2.4.1 Traditional Industries

The percentage distribution of the level of modernisation in the small scale units is less than the desirable level in majority of the cases(62.5 %). In the case of medium and large units it is 58.82%. Table 5.41 gives these figures.

Table 5.41:Distribution of the Present Level of Modernization of the Traditional Industries

Level of Modernisation	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Less than the desirable level	5	62.50	10	58.82	15	60.0
Adequate	2	25.00	4	23.53	6	24.0
Above the desirable level	1	12.50	3	17.65	4	16.0

The rating of mean rank shows that the difference between small and medium units in the present level of their modernisation is not at a significant level. It is clear that irrespective of the scale of operation, the level of modernization is less than the desirable level in the traditional industry in the State. The details are given in Table 5.42.

Table 5.42: Comparison of Present Level of Modernization- Score of Traditional Industries According to Size of the Industry

Size	Number	Mean Score	Mean Rank	Sum of Ranks
Small	8	1.50	12.56	100.50
Medium/Large	17	1.59	13.21	224.50
Mann-Whitney U	64.5			
Wilcoxon W	100.5			
Z	0.233			
Sig.	0.816			

5.2.4.2 Manufacturing Industries

The percentage distribution of the small scale units in the manufacturing sector shows that 57.14% of them have achieved an adequate

level of modernisation which is more or less at par with medium and large units with 66.67%. The relevant details are given in Table 5.43 below.

Table 5.43: Percentage Distribution of the Present Level of Modernization of the Manufacturing Units

Level of modernisation	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Less than the desirable level	3	42.86	5	27.78	8	32.0
Adequate	4	57.14	12	66.67	16	64.0
Above the desirable level	0	0.00	1	5.56	1	4.0

Their mean rank shows that the difference between the small and medium units in the manufacturing sector in the case of modernization is not at a significant level. Most of them are in the adequate or less than the desirable level. Details are given in Table 5.44.

Table 5.44: Comparison of Present Level of Modernization- Score of Manufacturing Units According to Size of the Industry

Size	Number	Mean Score	Mean Rank	Sum of Ranks
Small	7	1.57	11.36	79.50
Medium/Large	18	1.78	13.64	245.50
Mann-Whitney U	51.5			
Wilcoxon W	79.5			
Z	0.828			
Sig.	0.408			

5.2.4.3 Service Industries

In the case of service sector units, 100% of the small units are at an adequate level of modernization and 75.72% of the medium and large units have achieved an adequate or above the desirable level of modernisation. Table 5.45 provides the details.

Table 5.45: Distribution of Present Level of Modernization of the Service Units

Level of modernisation	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Less than the desirable level	0	0.00	3	14.29	3	12.0
Adequate	4	100.00	10	47.62	14	56.0
Above the desirable level	0	0.00	8	38.10	8	32.0

But considering the mean rank and the Mann-Whitney U value, it is seen that the difference between the small and the medium units in the level of modernization is not a significant level. It indicates that, the irrespective of the scale of operation, almost all the service sector units have achieved adequate or higher level of modernization. The analysis is given in Table 5.46.

Table 5.46: Comparison of Present Level of Modernization- Score of Service Units According to the Size of the Industry

Size	Count	Mean score	Mean Rank	Sum of Ranks
Small	4	2.00	10.50	42.00
Medium/Large	21	2.24	13.48	283.00
Mann-Whitney U	32			
Wilcoxon W	42			
Z	0.833			
Sig.	0.405			

5.2.4.4 Comparison in the Level of Modernisation of Industries in Kerala

The percentage distribution of various sectors of industry shows that 40% of the traditional industries, 68% of the manufacturing industries and 88% of the service sector units have achieved an adequate or above the desirable level of modernisation in their units. Table 5.47 provides the details.

Table 5.47: Distribution of Different Industrial Units According to their Level of Modernisation

Level of modernisation	Traditional		Manufacturing		Service	
	Count	Percent	Count	Percent	Count	Percent
Less than the desirable level	15	60.00	8	32.00	3	12.0
Adequate	6	24.00	16	64.00	14	56.0
Above the desirable level	4	16.00	1	4.00	8	32.0

The mean rank is 48.62 for the service sector, 35.56 for the manufacturing units and 29.82 for the traditional units. The results of

Kruskal Wallis Test shows that the difference between these sectors is significant at 1% level. This analysis indicates that service sector units are at a high level of modernisation which ensures their higher level of performance now and in future. The analysis is given in Table 5.48.

Table 5.48: Comparison of Present Level of Modernization Score of Different Industrial Units

Size	Number	Mean score	Mean Rank
Traditional	25	1.24	29.82
Manufacturing	25	1.28	35.56
Service	25	2.00	48.62
Kruskal Wallis Test	Chi-Square		11.6
	df		2.0
	Sig.		0.003

5.2.5 Future Trends of Different Types of Industries

5.2.5.1 Plans for Capacity Expansion

Table 5.49 provides a comparison of the plans for capacity expansion among different units in the four sectors of industry in Kerala. The Z-test for proportion is done to know the level of difference between small units and the medium / large scale units in each sector. It is seen that there is no significant difference between the small units and medium / large units in regard to their future plans for capacity expansion. The analysis is presented in Table 5.49.

Table 5.49: Capacity Expansion Plans of Different Types of Industry According to Size of Units

Type of unit	Plans for capacity expansion	Small		Medium/Large		Z	Sig.
		Count	Percent	Count	Percent		
Traditional	Yes	5	62.5	8	47.1	0.721	0.472
	No / Can't say	3	37.5	9	52.9		
Manufacturing	Yes	5	71.4	14	77.8	0.334	0.741
	No / Can't say	2	28.6	4	22.2		
Service	Yes	2	50.0	17	81.0	1.328	0.187
	No / Can't say	2	50.0	4	19.0		
IT	Yes	17	94.4	7	100.0	0.636	0.529
	No / Can't say	1	5.6	0	0.0		

However, the difference between various sectors of industry regarding their plans for capacity expansion is significant at 1% level. While 96% of the IT units have such plans, only 76% of the manufacturing and service sectors and 52% of the traditional sector units have plans for capacity expansion. This is an indication of a bright future for IT units in Kerala. The details are given in Table 5.50.

Table 5.50: Capacity Expansion Plans Among Different Types of Industry

Type of unit	Yes		No		χ^2	Sig.
	Count	Percent	Count	Percent		
Traditional	13	52.0	12	48.0	12.96*	0.005
Manufacturing	19	76.0	6	24.0		
Service	19	76.0	6	24.0		
IT	24	96.0	1	4.0		

* : Significant at 1% level

5.2.5.2 Programme for Diversification

Table 5.51 and 5.52 provide a comparison of programmes for diversification among units of various sectors of industry in the State.

Table 5.51: Programmes for Diversification Among Different Types of Industry According to Size of Units

Type of unit	Programmes for diversification	Small		Medium/Large		Z	Sig.
		Count	Percent	Count	Percent		
Traditional	Yes	5	62.5	7	41.2	0.995	0.322
	No / Can't say	3	37.5	10	58.8		
Manufacturing	Yes	4	57.1	10	55.6	0.072	0.944
	No / Can't say	3	42.9	8	44.4		
Service	Yes	3	75.0	10	47.6	1.005	0.317
	No / Can't say	1	25.0	11	52.4		
IT	Yes	13	72.2	7	100.0	1.559	0.121
	No / Can't say	5	27.8	0	0.0		

100% of the large IT units and 72.2% of the small IT units have such programmes for diversification. Only 41.2% of the large and 62.5% of the small traditional units have such programmes.

Table 5.52: Programmes for Diversification Among Different Types of Industry

Type of unit	Yes		No		χ^2	Sig.
	Count	Percent	Count	Percent		
Traditional	12	48.0	13	52.0	6.41	0.093
Manufacturing	14	56.0	11	44.0		
Service	13	52.0	12	48.0		
IT	20	80.0	5	20.0		

On comparison of the different sectors, it is seen that the difference is not significant at 5% level.

5.2.5.3 Schemes for Modernisation

A comparison of the schemes for modernisation among different types of industry is given in Tables 5.53 and in table 5.54.

Table 5.53: Schemes for Modernisation by Different Type of Industry According to Size of Units

Type of unit	Scheme for Modernization	Small		Medium/Large		Z	Sig.
		Count	Percent	Count	Percent		
Traditional	Yes	7	87.5	13	76.5	0.643	0.522
	No / Can't say	1	12.5	4	23.5		
Manufacturing	Yes	5	71.4	14	77.8	0.334	0.741
	No / Can't say	2	28.6	4	22.2		
Service	Yes	1	25.0	16	76.2	2.01 *	0.044
	No / Can't say	3	75.0	5	23.8		

* : Significant at 5% level

On a percentage analysis, while only 25% of small service units have schemes for modernisation, 87.5% of traditional small units have such schemes. The low level of future schemes for modernization among service units may be due to their high level of automation / modernisation that exist now.

Table 5. 54: Comparison of Scheme for Modernization Among Different Types of Industry

Type of unit	Yes		No		χ^2	Sig.
	Count	Percent	Count	Percent		
Traditional	20	80.0	5	20.0	0.99	0.611
Manufacturing	19	76.0	6	24.0		
Service	17	68.0	8	32.0		

However, the difference between the various sectors of industry on future schemes for modernisation is not significant at 5% level.

5.2.6 Impact of Globalisation and Liberalisation

Table 5.55 and 5.56 provide a comparison of the influence of globalisation and liberalisation between the small and large units among various sectors of industry.

Table 5.55: Comparison of the Impact of Globalisation and Liberalisation Factors on the Performance of Different Types of Industry According to Size of Units

Type of unit		Small		Medium/Large		Z	Sig.
		Count	Percent	Count	Percent		
Traditional	Yes	6	75.0	13	76.5	0.08	0.936
	No / Can't say	2	25.0	4	23.5		
Manufacturing	Yes	4	57.1	9	50.0	0.321	0.749
	No / Can't say	3	42.9	9	50.0		
Service	Yes	4	100.0	16	76.2	1.091	0.322
	No / Can't say	0	0.0	5	23.8		

Service sector units have the highest percentage while the manufacturing units have the lowest percentage, which explains the influence of globalisation and liberalisation on the performance of their respective units.

But on testing, it was found that the difference is not significant at 5% level. This means that globalisation and liberalisation have affected the performance of the units almost at the same level. The details are given in Table 5.56.

Table 5.56: Comparison of the Impact of Globalisation and Liberalisation Factors on the Performance of Different Types of Industry

Type of unit	Yes		No		χ^2	Sig.
	Count	Percent	Count	Percent		
Traditional	19	76.0	6	24.0	5.39	0.067
Manufacturing	13	52.0	12	48.0		
Service	20	80.0	5	20.0		

5.2.7 Future Trend of Industries in Kerala

In order to give a clear picture of the future trend of industries in Kerala, this study has made use of forecasting techniques and the views or projections made by industrialists in Kerala. Table 5.57 gives the views of industrialists in different sectors regarding the future trend of industries in the State.

Table 5. 57: Future Trend of Industries According to Industrialists in Different Sectors

Future trend of industries	Type of Industry	No response	Decline	Progress with Govt. support	Flourish	Total
A. In the next 5 year period (2010)	Traditional	4 (16)	8 (32)	5 (20)	8 (32)	25 (100)
	Manufacturing	1 (4)	6 (24)	14 (56)	4 (16)	25 (100)
	Service	3 (12)	0 (0)	2 (8)	20 (80)	25 (100)
	IT	5 (20)	0 (0)	3 (12)	17 (68)	25 (100)
B. In the coming decade (2020)	Traditional	5 (20)	7 (28)	4 (16)	9 (36)	25 (100)
	Manufacturing	4 (16)	4 (16)	7 (28)	10 (40)	25 (100)
	Service	4 (16)	0 (0)	2 (8)	19 (76)	25 (100)
	IT	6 (24)	0 (0)	2 (8)	17 (68)	25 (100)

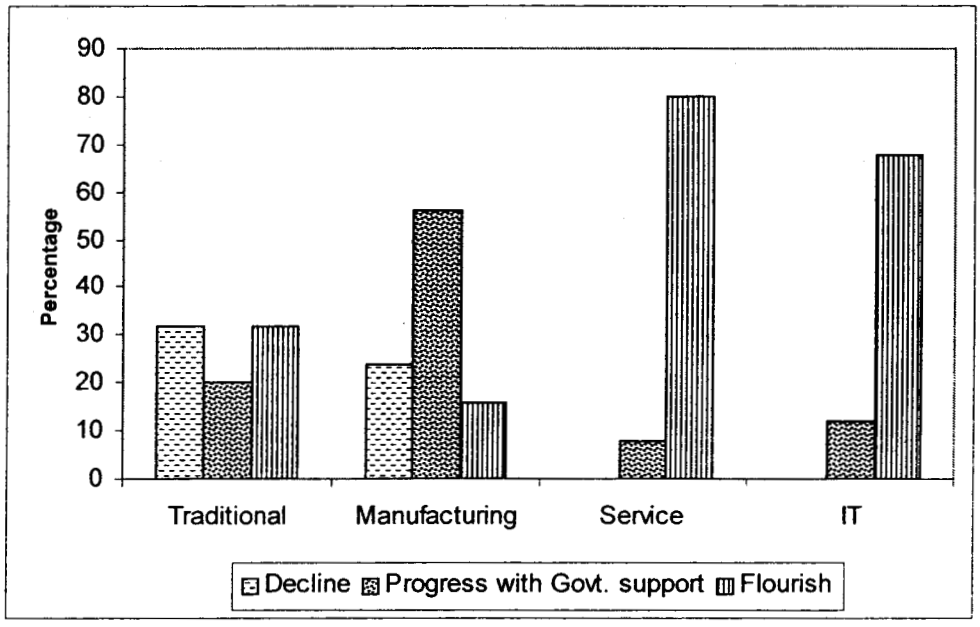
(Percentage given in parenthesis)

The Part A of Table 5.57 shows the trend of industries in the next 5 year- period, say, by 2010 AD. Part B shows the position of industries in the coming decade, or by 2020. In Part A, in the case of traditional industries only 32% opined that it will flourish while 32% predict that it will decline. 16% have no comments to offer, whereas 20% stated that it will progress; if requisite assistance from Govt. and its agencies are provided.

In the case of manufacturing industries, only 16% foresee that it will flourish while 56% opine that the sector can progress with adequate support

from Govt. and related institutions. 24% of them indicated a decline of the sector. These details are graphically represented in Fig.5.10 below.

Fig. 5.10: Future trend of Industries in Next Five Years

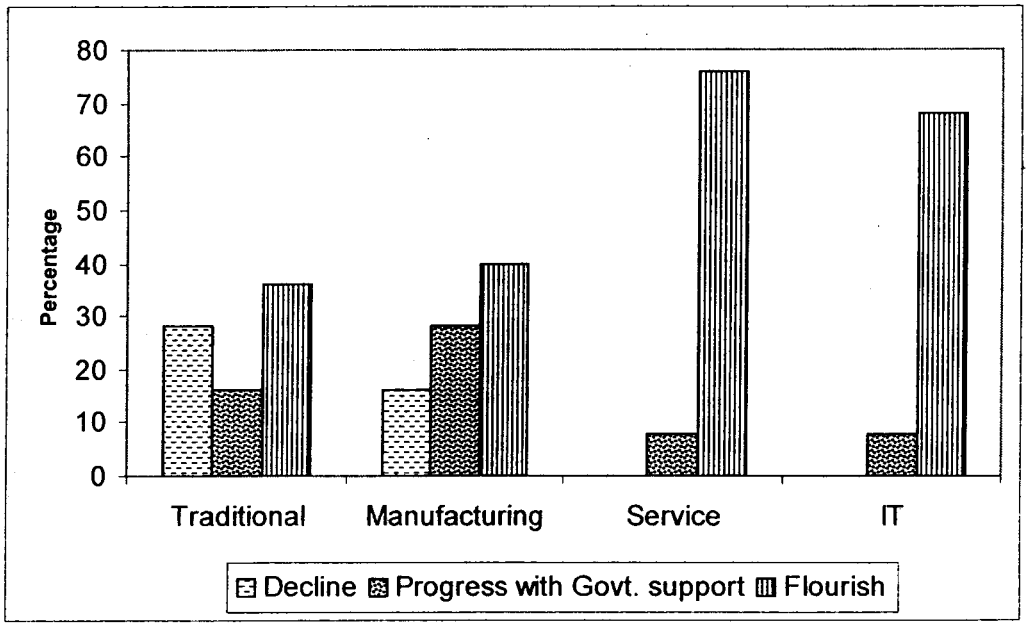


80% of the industrialists from the service sector noted that the sector will flourish by 2010. In the case of IT, 68% of them foresee that it will flourish during the five year period. No person in the service and IT sectors reported a decline in these sectors.

The future trend of industries in the next decade (by 2020) is given in Part B of Table 5.57. In the traditional sector, only 36% could foresee a steady growth , while 28% indicated a declining trend. In the manufacturing sector also, only 40% could see a clear growth of those industries by 2020, while 16% indicated a decline in that sector .

The above details are graphically presented in Fig.5.11 below:

Fig.5.11: Future Trend of Industries in Next Ten Years



76% of the industrialists in the service sector and 68% in the IT sector indicated a flourishing situation for their sectors by 2020 AD. None of them have reported a decline to those sectors. Therefore, in the emerging cyber society, the service and IT industries will dominate in Kerala. The manufacturing and traditional industries can survive only with governmental support, or else they may go down.

5.2.8 Growth of Three Industrial Sectors in Kerala

It is possible to identify a common pattern for industrial growth with the growth of the Kerala economy and the KSIDC's performance. KSIDC, being a Government policy formulating body and a major financial institution, its performance has an impact on the economy too.

5.2.8.1 Growth of Industrial Units

An industry wise comparison of the percentage share of the number of units under the ambit of KSIDC is given in Table 5.58

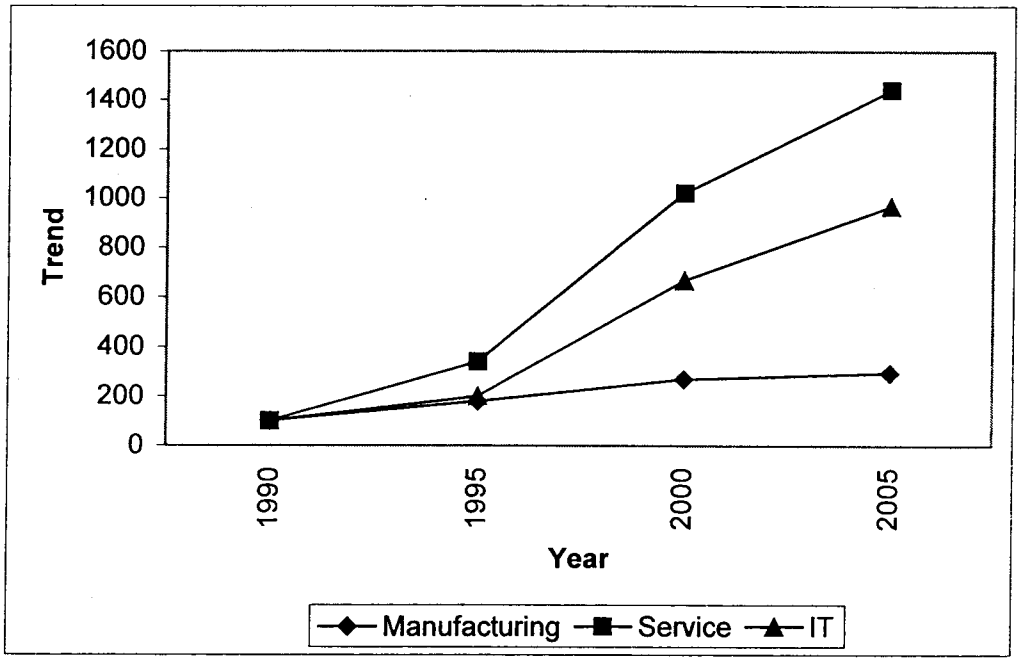
Table 5.58: Comparison of Percentage Share of Industrial Units under Different Sector

Year	Manufacturing		Service		IT		Total
	Number	% share	Number	% share	Number	% share	Number
1965	8	100.0	0	0.0	0	0.0	8
1970	27	100.0	0	0.0	0	0.0	27
1975	52	100.0	0	0.0	0	0.0	52
1980	60	100.0	0	0.0	0	0.0	60
1985	84	97.7	2	2.3	0	0.0	86
1990	127	94.1	5	3.7	3	2.2	135
1995	227	90.8	17	6.8	6	2.4	250
2000	341	82.8	51	12.4	20	4.9	412
2005	374	78.7	72	15.2	29	6.1	475

The share of manufacturing sector over the years 1965-2005 came down from 100% in 1965 to 78.7% in 2005. The percentage of the number of

units in the service sector increased from 0% in 1965 to 15.2% in 2005. The share of the IT sector also shows an increase from 0% to 6.1%.

Fig. 5.12: Trend of Number of Industrial Units Assisted by KSIDC under Different Sectors



In the Figure 5.12 a steady growth can be noted in the case of IT sector upto 2000 and thereafter it marks a slow growth. It is due to the IT crisis that took place in 2001 May in which a good number of IT companies have been wiped out. Thereafter new entrepreneurs entered the field and some of the companies started to grow in a cautious manner.

The comparison of growth and trend of KSIDC assisted units in different sectors since 1990 to 2005 is given in Table 5.59.

Table 5.59: Comparison of Growth and Trend of Industrial Units Under Different Sectors

Year	Manufacturing		Service		IT		Total	
	AGR	Trend	AGR	Trend	AGR	Trend	AGR	Trend
1990	--	100	--	100	--	100	--	100
1995	78.7	179	240.0	340	100.0	200	85.2	185
2000	50.2	269	200.0	1020	233.3	667	64.8	305
2005	9.7	294	41.2	1440	45.0	967	15.3	352
CGR	7.0		18.1		15.2		8.2	

It shows that the service and IT sectors have outpaced the annual growth rate and trend of manufacturing sector since 1990. When the trend of manufacturing sector increased from 100 to 294, its counterpart in service industry reached a level of 1440 while the IT recorded a position at 967. This indicates that the future belongs to service and IT sectors of the industry in Kerala.

5.2.8.2 Growth of Industries in Terms of Investment

Table 5.60 below indicates the sector-wise comparison of percentage share of investment in the KSIDC assisted units.

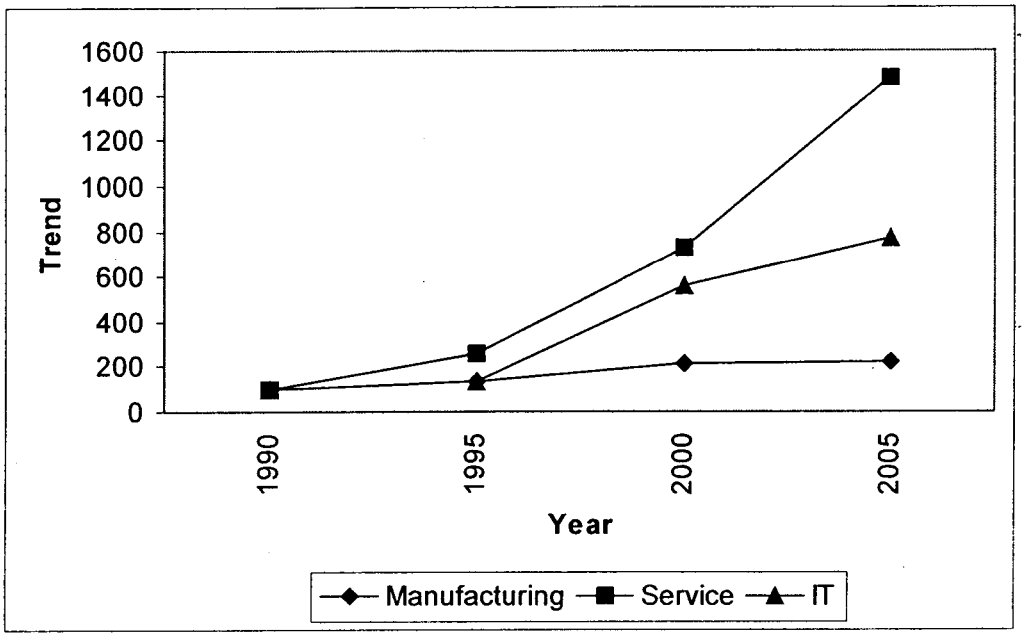
Table 5.60: Comparison of Percentage Share of Investment in Different Industrial Sectors

(Amount: Rs. in crores)

Year	Manufacturing		Service		IT		Total
	Amount	% share	Amount	% share	Amount	% share	Amount
1965	405.2	100.0	0.0	0.0	0.0	0.0	405.2
1970	1033.6	100.0	0.0	0.0	0.0	0.0	1033.6
1975	1295.4	100.0	0.0	0.0	0.0	0.0	1295.4
1980	1481.2	100.0	0.0	0.0	0.0	0.0	1481.2
1985	1706.0	98.1	33.4	1.9	0.0	0.0	1739.4
1990	1940.3	97.7	39.4	2.0	6.7	0.3	1986.4
1995	2595.5	95.9	101.6	3.8	9.1	0.3	2706.2
2000	4088.4	92.7	283.9	6.4	37.1	0.8	4409.4
2005	4251.6	87.0	582.0	11.9	51.5	1.1	4885.1

The percentage share of investment in the units under manufacturing sector went down from 100% in 1965 to 87% in 2005. While the service sector gone up from 0% to 11.9% in 2005 the IT sector reached 1.1% share from a zero percent level in 1965.

Fig.5.13: Trend of Investment in Industrial Units Assisted by KSIDC in Different Sectors



The sectoral comparison of annual growth rate of and investment trend in industrial growth is presented in Table 5.61. These facts are also presented in figure 5.13.

Table 5.61: Comparison of Annual Growth Rate and Investment Trend in Industrial Units in Different Sectors

Year	Manufacturing		Service		IT		Total	
	AGR	Trend	AGR	Trend	AGR	Trend	AGR	Trend
1990	--	100	--	100	--	100	--	100
1995	33.8	134	158.1	258	36.7	137	36.2	136
2000	57.5	211	179.3	721	306.9	556	62.9	222
2005	4.0	219	105.0	1478	38.9	773	10.8	246
CGR	5.0		18.3		13.6		5.8	

The annual growth rate of manufacturing sector is only 33.8% in 1995 as against 159.1% for service and 36.7% for IT. The growth rate has gone up

in 2000. The manufacturing sector has a growth rate of 57.5% while service recorded a rate of 179.3% while the IT achieved a top position with 306.9%. In the year 2005 manufacturing sector registered a growth rate of only 4.0% whereas service sector scored 105% and IT 38,.9% growth. The compound growth rate during 1990-2005 shows that while the manufacturing sector has a meagre growth of 5%, the service sector achieved 18.3% and the IT sector has 13.6% growth. From the Table, it is clear that the service sector maintains a steady growth rate during the last fifteen years, from 1990. The trend indicates that it will continue in the future too.

5.2.8.3 Growth of Employment in Various Sectors

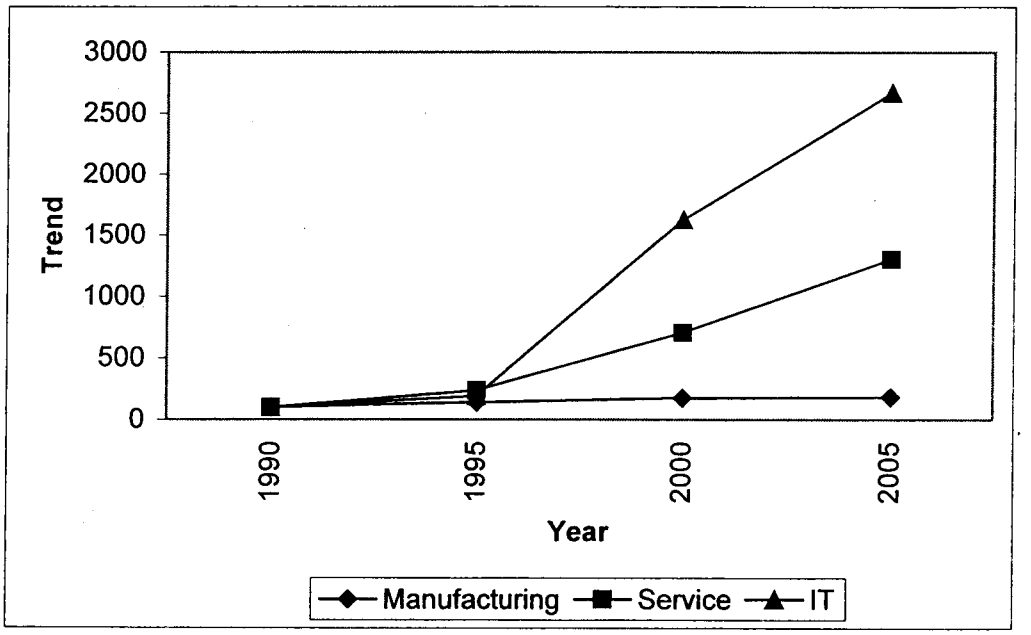
The industry-wise comparison of the percentage share of employment in KSIDC assisted units is given in Table 5.62

Table 5.62: Comparison of Percentage Share of Employment in Industrial Units Under Different Sectors

Year	Manufacturing		Service		IT		Total
	Number	% share	Number	% share	Number	% share	Number
1965	3898	100.0	0	0.0	0	0.0	3898
1970	13094	100.0	0	0.0	0	0.0	13094
1975	22500	100.0	0	0.0	0	0.0	22500
1980	23569	100.0	0	0.0	0	0.0	23569
1985	27326	99.2	210	0.8	0	0.0	27536
1990	33712	98.2	524	1.5	89	0.3	34325
1995	46417	97.1	1230	2.6	167	0.3	47814
2000	58825	92.0	3696	5.8	1445	2.3	63966
2005	61520	87.0	6816	9.6	2372	3.4	70708

The percentage share of employment in the manufacturing sector has come down from 100% in 1965 to 87% in 2005 while the percentage share of service sector increased from 0% in 1965 to 9.6% in 2005. The IT sector also shows an increase in employment from 0% in 1965 to 3.4% in 2005.

Fig. 5.14: Employment Trend of in Industrial Units Assisted by KSIDC in Different Sectors



A comparison of growth and employment trend in industrial units during 1990-2005 is given in Table 5.63 which is clearly depicted in figure 5.14.

Table 5.63: Comparison of Growth and Employment Trend in Industrial Units Different Sectors

Year	Manufacturing		Service		IT		Total	
	AGR	Trend	AGR	Trend	AGR	Trend	AGR	Trend
1990	--	100	--	100	--	100	--	100
1995	37.7	138	134.7	235	87.6	188	39.3	139
2000	26.7	174	200.5	705	765.3	1624	33.8	186
2005	4.6	182	84.4	1301	64.2	2665	10.5	206
CGR	3.8		17.4		22.8		4.6	

The trend shows that the employment rate of the manufacturing sector increased form 100 in 1990 to 182 in 2005. The service sector recorded an increase from 100 in 1990 to 1301 in 2005 while the IT achieved a rise from 100 in 1990 to 2665 in 2005. The compound growth rate of these sectors also shows that while the manufacturing sector recorded a meagre growth of 3.8%, the service sector achieved 17.4% and the IT recorded 22.8% growth in employment. This means that in the case of employment generation also IT and service sectors outpaced the manufacturing sector as far as the KSIDC assisted units are concerned. Therefore, requisite policy decisions have to be taken for the development of each sector by the Corporation.

5.3 IT Revolution and the Emergence of Cyber Society in Kerala

5.3.1 Present use of IT in the Industries in Kerala

5.3.1.1 Traditional Industries

The use of IT in the small units of the traditional sector is less than the desirable level among 85.7 % of the units as against 70.59% for the medium / large scale units. Both these sectors of industry are yet to enhance use of IT. Table 5.64 gives the information.

Table 5.64: Percentage Distribution of the Use of IT in Traditional Industries

Use of IT	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Less than the desirable level	7	87.50	12	70.59	19	76.0
Adequate	1	12.50	5	29.41	6	24.0

Considering the mean rank and the Mann-Whitney U value, the difference between small and large units is not significant. Most of the units are using IT at a less than desirable level. The analysis is given in Table 5.65.

Table 5.65: Comparison of the Use of IT Score in Traditional Industries According to the Size of the Industry

Size	Count	Mean score	Mean Rank	Sum of Ranks
Small	8	1.13	11.56	92.50
Medium/Large	17	1.29	13.68	232.50
Mann-Whitney U	56.5			
Wilcoxon W	92.5			
Z	0.905			
Sig.	0.366			

5.3.1.2 Manufacturing Units

The percentage distribution of the use of IT in manufacturing industries shows that 85.71% of the small units are in the less than desirable level and 14.29 in the just adequate level. In the case of medium and large units 72.22% are in the less than desirable level and 27.78% are in the adequate or above the desirable level. Table 5.66 gives such details.

Table 5.66: Percentage Distribution of the Use of IT by Manufacturing Units

Use of IT	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Less than the desirable level	6	85.71	13	72.22	19	76.0
Adequate	1	14.29	4	22.22	5	20.0
above the desirable level	0	0.00	1	5.56	1	4.0

When the mean rank and Mann-Whitney U value are considered it is seen that the difference between the two segments is not at a significant level.

This indicates that, irrespective of the scale of operation, the manufacturing units in Kerala are using IT at a less than the desirable level. There is enough scope for IT application in this sector. Table 5.67 gives the analysis.

Table 5.67: Comparison of Use of IT Score of Manufacturing Units According to the Size of the Industry

Size	Count	Mean Score	Mean Rank	Sum of Ranks
Small	7	1.14	11.71	82.00
Medium/Large	18	1.33	13.50	243.00
Mann-Whitney U	54			
Wilcoxon W	82			
Z	0.732			
Sig.	0.464			

5.3.1.3 Service Industries

75% of the small scale service units, are found to use IT at an adequate level while 25% of them use it in less than the desirable level. In the case of medium and large units, 71.43% of the units are using IT at an adequate level or above the desirable level. This information is furnished in Table 5.68.

Table 5.68: Distribution of the Service Units According to Use of IT

Use of IT	Small		Medium/Large		Total	
	Count	Percent	Count	Percent	Count	Percent
Less than the desirable level	1	25.00	6	28.57	7	28.0
Adequate	3	75.00	8	38.10	11	44.0
Above the desirable level	0	0.00	7	33.33	7	28.0

When the mean rank is considered, there is no significant difference between the small and large units with regard to use of IT. This shows that the use of IT in service units is almost at an equal level between small and large units, with more than 70% of them using IT at an adequate or more than the desirable level. This may be the reason for high performance in that sector. Table 5.69 provides the details.

Table 5.69: Comparison of Use of IT Score of Service Units According to the Size of the Industry

Size	Count	Mean score	Mean Rank	Sum of Ranks
Small	4	1.75	10.75	43.00
Medium/Large	21	2.05	13.43	282.00
Mann-Whitney U	33			
Wilcoxon W	43			
Z	0.714			
Sig.	0.475			

5.3.1.4 Comparison of the Use of IT in Various Industrial Sectors

The percentage distribution of units shows that there is not much difference in the use of IT between traditional and manufacturing industries in Kerala. 7.6% of the units are using IT at less than the desirable level. But in the case of the service sector only 28% are using IT at less than the desirable level and 72% are in the higher level of IT use. Table 5.70 presents the details.

Table 5.70: Distribution of Different Industrial Units According to Use of IT

Use of IT	Traditional		Manufacturing		Service	
	Count	Percent	Count	Percent	Count	Percent
Less than the desirable level	19	76.00	19	76.00	7	28.0
Adequate	6	24.00	5	20.00	11	44.0
Above the desirable level	0	0.00	1	4.00	7	28.0

Considering the mean rank, the service sector has 51.32 rating as against the other two sectors viz. traditional and manufacturing with have around 31.04 and 31.64 respectively. The result of Kruskal Wallis Test shows that the difference between the sectors is at a significant level of 1%. This indicates that in the emerging cyber society and in the context of IT revolution service industry will flourish in Kerala making use of the IT capabilities in a big way. Table 5.71 gives the details.

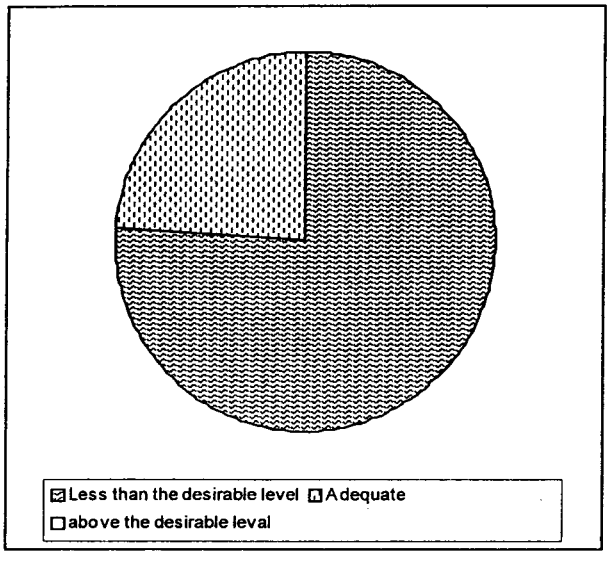
Table 5.71: Comparison of Use of IT Score by Different Industrial Units

Size	Count	Mean Score	Mean Rank
Traditional	25	1.24	31.04
Manufacturing	25	1.28	31.64
Service	25	2.00	51.32
Kruskal Wallis Test	Chi-Square		18.5
	df		2.0
	Sig.		0.000

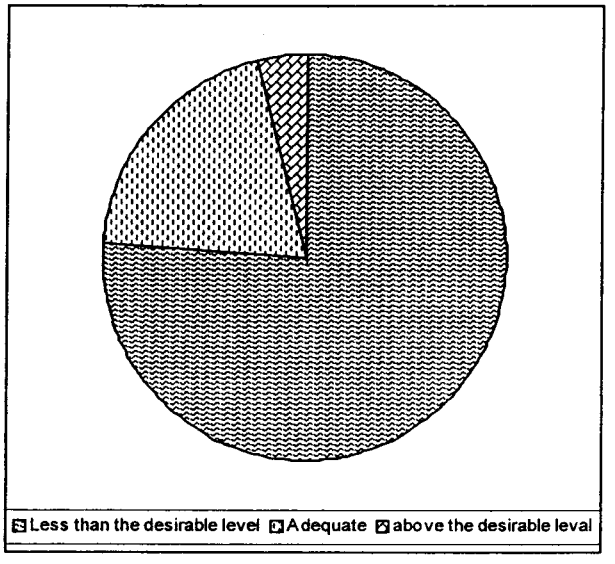
A graphical representation of IT use by the three sectors of industry is provided in Fig.5.15.

Fig.5.15: Use of IT in different type of industries

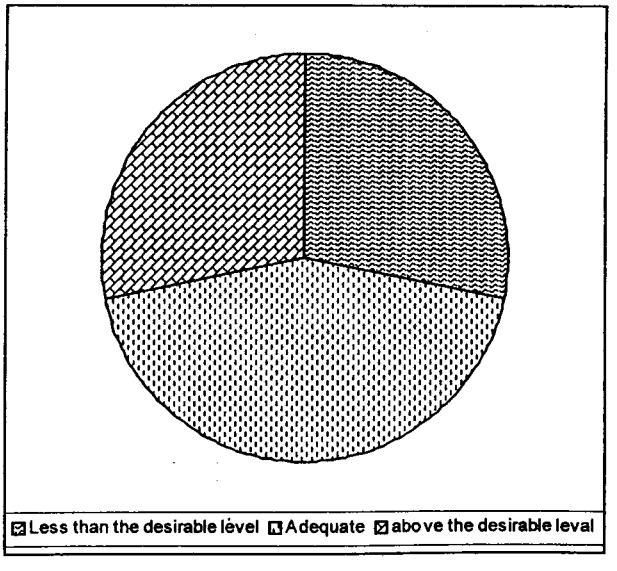
Traditional



Manufacturing



Service



None of the industrial units in the traditional sector is using IT above the desirable level. Whereas 28% of the service sector units are in that category. In the case of low IT usage, 76% of the traditional and manufacturing units come under that fold, as against only 28% of the service units fall in that stratum.

5.3.2 Impact of ICT on the Performance of Industries

The percentage analysis and the result of Chi-square test as shown in Tables 5.72 and 5.73 reveals that 100% of the small scale traditional industries feel that their performance can be improved by using the ICT as against 94.1% among the large scale units in the traditional sector.

Table 5. 72: Comparison of the Impact of ICT on the Performance Improvement Among Different Types of Industry According to Size of Units

Type of unit		Small		Medium/Large		Z	Sig.
		Count	Percent	Count	Percent		
Traditional	Yes	8	100.0	16	94.1	0.7	0.484
	No / Can't say	0	0.0	1	5.9		
Manufacturing	Yes	6	85.7	15	83.3	0.146	0.889
	No / Can't say	1	14.3	3	16.7		
Service	Yes	3	75.0	20	95.2	1.367	0.174
	No / Can't say	1	25.0	1	4.8		

Table: 5. 73: Comparison of Impact of ICT on Performance Improvement Among Different Types of Industry

Type of unit	Yes		No		χ^2	Sig.
	Count	Percent	Count	Percent		
Traditional	24	96.0	1	4.0	2.21	0.332
Manufacturing	21	84.0	4	16.0		
Service	23	92.0	2	8.0		

Similar ratings are seen in manufacturing and service sectors also. But on testing, the difference between small and large scale units as also between traditional, manufacturing and service units, is not significant at 5% level, as shown in Table 5.73.

5.3.3 Awareness of the Emergence of a Cyber Society

Table 5. 74 gives a comparison among small units and the medium/ large units regarding the awareness of the emergence of a cyber society. On percentage analysis, the difference between small and large units in the case of such an awareness is not at a significant level.

Table 5.74: Comparison of Awareness of Emergence of Cyber Society Among Different Types of Industry According to Size of Units

Type of unit	Programmes for diversification	Small		Medium/Large		Z	Sig.
		Count	Percent	Count	Percent		
Traditional	Yes	4	50.0	11	64.7	0.7	0.484
	No	4	50.0	6	35.3		
Manufacturing	Yes	6	85.7	13	72.2	0.709	0.484
	No	1	14.3	5	27.8		
Service	Yes	2	50.0	18	85.7	1.637	0.103
	No	2	50.0	3	14.3		
IT	Yes	11	61.1	3	42.9	0.826	0.412
	No	7	38.9	4	57.1		

The comparison of different types of industry shows that 80% of the units in the service sector have this awareness. The low awareness of this development may be due to various synonyms of cyber society that prevail among the people, like knowledge society and information society. Even though there is difference in percentage of awareness between industrial sectors, that difference, when tested, is not at a significant level as given in the Table 5.75.

Table 5.75: Comparison of Awareness of Emergence of Cyber Society Among Different Type of Industry

Type of unit	Yes		No		χ^2	Sig.
	Count	Percent	Count	Percent		
Traditional	15	60.0	10	40.0	4.78	0.189
Manufacturing	19	76.0	6	24.0		
Service	20	80.0	5	20.0		
IT	14	56.0	11	44.0		

5. 3.4 Benefits from Modernising the Line of Production

In Table 5.76, the benefits ranked by small and large units in traditional industries are given. A comparison of them is made by mean rank and using the Mann-Whitney U test. The ranking given by small units is almost the reverse in the case of medium / large units. Still, their difference is not at a significant level as per the Spearman's Rho correlation.

Table 5.76:Benefits from Modernisation Using IT in Traditional Units According to the Size of Units

Benefits from modernisation	Small		Medium/large		Mann-Whitney U	Sig.
	Number	Mean Rank	Number	Mean Rank		
Increase productivity	8	13.6	17	12.7	63.5	0.79
Reduce maintenance costs	8	12.3	17	13.3	62.5	0.74
Increase Exports	8	11.6	17	13.6	57	0.52
Higher Profits	8	13.6	17	12.7	63	0.77
Increase the volume of Production	8	10.8	17	14.0	50.5	0.30
Improve labour welfare	8	9.6	17	14.6	41	0.10
Enable the industry to use latest technology	8	13.1	17	12.9	67	0.95
Improve quality	8	14.7	17	12.2	54.5	0.42
Make the industry globally competitive	8	15.2	17	12.0	50.5	0.30
Spearman's rho correlation	-0.366^{ns}					

The benefits ranked by small units and the large units in the manufacturing industry are given in Table 5.77. When the small units give a

high mean rank to the benefit of "increasing exports", their counterparts in medium/large sector have given it the lowest ranking.

Table 5.77: Benefits of Modernisation Using IT in Manufacturing Units According to the Size of Units

Benefits of modernization	Small		Medium/large		Mann-Whitney U	Sig.
	Count	Mean Rank	Count	Mean Rank		
Increase productivity	7	11.3	18	13.7	51	0.46
Reduce maintenance costs	7	10.6	18	13.9	46	0.30
Increase Exports	7	17.3	18	11.3	33	0.07
Higher Profits	7	14.1	18	12.6	55	0.62
Increase the volume of Production	7	16.9	18	11.5	36	0.10
Improve labour welfare	7	13.1	18	12.9	62	0.95
Enable the industry to use latest technology	7	9.4	18	14.4	38	0.13
Improve quality	7	11.2	18	13.7	50.5	0.43
Make the industry globally competitive	7	14.7	18	12.3	51	0.46
Spearman's rho correlation	-1.00**					

** : Significant at 1% level

However, this ranking in the case of benefits shows that their difference between the small and large units is not significant at 5% level. But the difference in ranking of benefits among themselves is significant at 1% level. The manufacturing units have a highly varying rank as far as the benefits from modernising the line of production is concerned.

The ranking of benefits in modernizing the service industries using IT is given in Table 5.78.

Table 5.78: Benefits of Modernisation Using IT in Service Units According to the Size of Units

Benefits of modernisation	Small		Medium/large		Mann-Whitney U	Sig.
	Count	Mean Rank	Count	Mean Rank		
Increase productivity	4	16.0	21	12.4	30	0.37
Reduce maintenance costs	4	18.6	21	11.9	19.5	0.08
Increase Exports	4	9.9	21	13.6	29.5	0.35
Higher Profits	4	11.1	21	13.4	34.5	0.58
Increase the volume of Production	4	15.4	21	12.5	32.5	0.47
Improve labour welfare	4	18.8	21	11.9	19	0.08
Enable the industry to use latest technology	4	11.8	21	13.2	37	0.71
Improve quality	4	12.1	21	13.2	38.5	0.78
Make the industry globally competitive	4	8.5	21	13.9	24	0.18
Spearman's rho correlation	-1.00*					

* : Significant at 1% level

Similar to the manufacturing industry, the comparison of ranks between small and large scale units in the service sector also shows that the difference is not at a significant level. But the difference in ranking of the benefits among themselves is significant at 1% level.

5.3.5 Comparison of ranked positions of the benefits from modernisation using IT in different type of industries

The Table 5.79 shows the mean rank of benefits from modernization using IT as noted by the traditional, manufacturing and service sector units

Table 5. 79: Comparison of Ranked Positions of the Benefits from Modernisation Using IT According to Different Industrial Units

Benefits of modernisation	Mean Rank			Kruskal Wallis Test	Sig
	Traditional	Manufacturing	Service		
Increase productivity	36.98	45.38	31.64	5.18	0.075
Reduce maintenance costs	36.3	45.48	32.22	5.00	0.082
Increase Exports	45.78	36.12	32.1	5.27	0.072
Higher Profits	34.1	36.22	43.68	2.72	0.256
Increase the volume of Production	32.18	38.26	43.56	3.49	0.174
Improve labour welfare	35.18	34.7	44.12	3.17	0.205
Enable the industry to use latest technology	40.74	39.66	33.6	1.59	0.452
Improve quality	27.86	41.66	44.48	8.72*	0.013
Make the industry globally competitive	44.44	34.34	35.22	3.35	0.188

When the ranks are tested by Kruskal Wallis test, it is seen that the difference is not at a significant level except in the case of "improve quality". There exists a difference between traditional and service industries that is significant at 5% level.

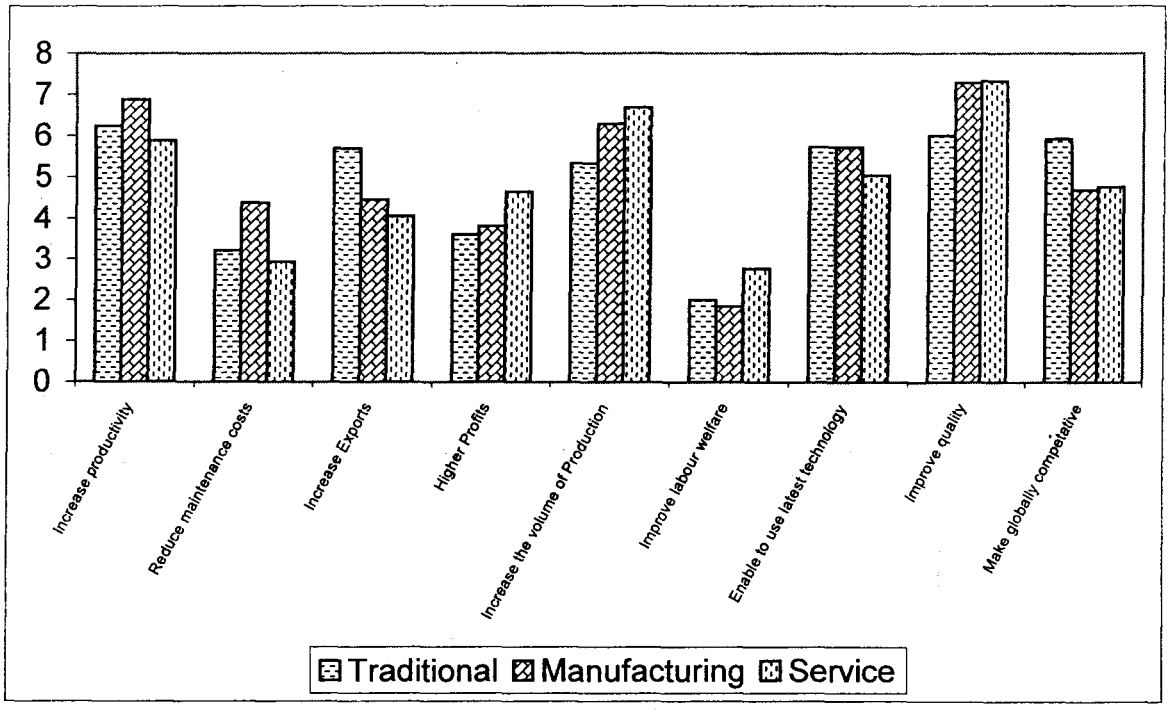
Table 5.80:Spearman's Rho Correlation for the Ranked Positions

Sector	Traditional	Manufacturing	Service
Traditional	1		
Manufacturing	-0.3 ^{ns}	1	
Service	-0.733*	-0.3 ^{ns}	1

*: Significant at 5% level

Also, Spearman's rho correlation coefficient for the ranked positions of traditional and service sector is 0.7333 which is significant at 5% level. This is illustrated in Table 5.80.

Fig.5.16: Average Score for Benefits of Modernisation Using IT in Different Types of Industry



The facts illustrated in the above paragraphs on the benefits of modernization in various types of industry are graphically presented in Fig.5.16.

5.3.6 Transition of Kerala into a Cyber Society

Based on the responses of the sample population and also the sector wise growth of the economy, Kerala is fast emerging as a cyber society. Out of the 20 persons, majority (45%) expressed the view that within 5-10 years Kerala could turn into a cyber society. 25% of them are uncertain about the period, 20% of the population expressed the view that the cyber society will be a reality between 11-15 years period. The rest of the population are uncertain of Kerala emerging as a cyber society as shown inTable 5.81..

Table 5.81: Period of Transition of Kerala into a Cyber Society

	Period		Can't Say the period	No	Total
	5-10 Yrs.	11-15 Yrs.			
No. of responses (percent)	9 (45)	4 (20)	5 (25)	2 (10)	20 (100)

5.3.7 Nature of Industries in the Cyber Society

(i) IT products and services and BPOs will go ahead.

(ii) Hardware industry will get focus at a low pace of growth

(iii) Conventional industries will improve through IT based modernisation

(iv) IT will get infused into all types of industries

(v) Industries which are highly agile, alone, will survive

(vi) People will be willing to change business activities frequently

(vii) Knowledge and IT industries will get prominence

5.3.8 Role of IT and Service Industries in the Coming Years in Kerala

(i) The percentage of service industries will grow

(ii) There will be growth in IT products and services

(iii) ITES will mark the highest growth rate

(iv) IT should be used for improving the manufacturing and agriculture sectors

(v) IT policies should consider the development of language, culture and the society at large

(vi) Trivandrum and Kochi will develop as hubs of IT development

(vii) Since majority of Keralites working abroad or outside the state are in the IT sector, it will prosper in the state also.

(viii) IT sector should move to village and farmers aiming at their development.

5.3.9 Suitability of IT Industry for Kerala

The answers to the question "Is IT industry the best suited for Kerala?" elicited from interaction with the subjects under study, as listed in Table 5.82

shows that 40% (out of 20) held the view that IT is the best suited industry. Only 10% held a different view.

Table 5.82: Suitability of IT Industry for Kerala

	Best suited	One of the Best	Can't Say	Not the best	Total
No. of responses (percentage)	8 (40)	7 (35)	3 (15)	2 (10)	20 (100)

5.3.10 Measures to be taken up for the development of IT industry in Kerala

(i) Govt. shall make robust infrastructure and leave the role of development to the private sector

(ii) Provide support systems like urban amenities, housing, education, health care, etc.

(iii) Proficiency of youth in English language has to be improved

(iv) Encourage the private sector for manpower development

(v) Simplify all procedures for starting IT industries, eliminating all hurdles and hassles

(vi) Equip the professional edges and technical institutes to provide quality education

(vii) Steps should be taken to prevent exploitation of IT professionals

(viii) More centres like Technopark and Infopark have to be set up

(ix) IT should be developed in association with other core industries

(x) Better air connectivity to Indian cities

(xi) Provide support for e-governance

5.3.11 Policy Initiatives to be Taken up for the Development of Service Industry

(i) Improve the facilities and services of Public Health Centres

(ii) Alternate system of social security instead of EPF may be devised as existing in developed countries.

(iii) encourage use of IT in the service industries

(iv) Govt. should act as a facilitator and encourage private participation

(v) Taxation policy should be framed to suit the development of service industry

(vi) Service sector should be tuned for the development of rural population

(vii) Promotional assistance should be given to domestic entrepreneurs rather than to the foreigners

(viii) Evolve and announce an IT policy for the service sector

(ix) Remove statutory hassles relating to labour, tax administration, licencing and regulations etc.

SUMMARY, CONCLUSIONS, POLICY IMPLICATIONS AND SUGGESTIONS

A.C.Rajan "A study of the Industrial Development Pattern of Kerala in the Context of Information Technology Revolution and the Emerging Cyber Society" Thesis. Department of Library and Information Science , University of Calicut, 2006

Chapter VI

SUMMARY, CONCLUSION, POLICY IMPLICATION AND SUGGESTIONS

- Statement of the Problem
- Objectives of the Study
- Hypotheses
- Methodology in Brief
- Inferences
- Major Findings
- Implications
- Testing the Hypotheses
- Conclusion
- Future Trend
- Suggestions for Further Research
- Strategies and Policy Formulations

CHAPTER - VI

SUMMARY, CONCLUSIONS, POLICY IMPLICATIONS AND SUGGESTIONS

6.1 Statement of the Problem

The problem is stated as "A Study of the Industrial Development Pattern of Kerala in the context of Information Technology Revolution and the Emerging Cyber Society".

6.2 Objectives of the Study

The major objectives of the Study are the following:

1. To study the pattern of industrial development of Kerala since 1956.
2. To examine the role of Information Technology in the industrial development pattern of Kerala.
3. To formulate alternative strategies and policies for the industrial development of Kerala in the context of IT revolution and the emerging cyber society.

6.3 Hypotheses

i) There is a set pattern for industrial development of Kerala.

ii) Information Technology has a significant impact on the industrial development of Kerala.

ii) Kerala is fastly emerging as a cyber society.

6.4 Methodology in Brief

The methodology of the present Study comprises of a combination of different approaches, such as historical, state of the art, and projection of the future.

For data collection, various tools and techniques such as search of historical documents, questionnaire and interview techniques have been employed. Data has also been generated from a field study.

The primary data has been collected from the small, medium and large scale industrial units working in Kerala. Name and addresses of the industrial units are collected from various Government departments, agencies and from their websites. Secondary data has been collected from books and reports published by the government departments and agencies like State Planning Board, Directorate of Economics and Statistics, IT Mission-Kerala, KSIDC and Websites of various departments.

Questionnaires have been sent to selected 200 industries - 50 units from each type of industries – traditional, manufacturing, service and IT. Out of the responses received, 25 numbers from each type of industries were taken

for further study. From the 100 industrial units so segregated, industrialists of selected units in 7 districts out of the 14 districts in Kerala - Trivandrum, Kollam, Alappuzha, Ernakulam, Palakkad, Kozhikode and Kannur were contacted to canvass the required data or information.

The present Study is an attempt to find out the nature of industrial development after the formation of the Kerala State in 1956. Interview has been conducted with the help of a schedule to draw out views and ideas of Govt. officials, policy makers, industrialists, and political leaders, including legislators and from the academicians. Documentary sources such as Annual reports, brochures, house journals and other relevant literature have also been consulted.

The data collected has been separately analysed using appropriate statistical techniques. Observations made during the field study are also interpreted with the help of relevant studies. The inferences drawn from the analysis are listed below:

6.5 Inferences

1. The present condition of the service and IT sector in Kerala is prosperous or progressing.

2. There is not much difference between small or medium and large units with regard to industrial relations. It is satisfactory and cordial in

service and IT sector units and unhealthy in most of the units in the case of traditional and manufacturing sector in Kerala.

3. There is a general agreement that there is enough scope for IT to be used in the traditional and manufacturing industries. But almost all traditional units are not applying IT in their plant and operations, marketing, administration etc.

4. Since most of the service and IT units have plans for capacity expansion, these industries expect a bright future.

5. Industrialists in all sectors view that the ICT will have a positive impact on their respective units.

6. Most of the industrialists in Kerala are aware of the emergence of a cyber society

7. There is a marked difference in the thinking of units in traditional and service sectors regarding the benefits that they get from modernisation by using IT.

8. The IT and service sectors will flourish in the present decade and thereafter.

9. The share of primary and secondary sectors in the state economy is declining or increasing only at a lesser rate while the share of tertiary sector continues to go upward.

10. Of the units assisted by KSIDC, the percentage share of service and IT units is increasing at a phenomenal rate outpacing the manufacturing sector.

11. Among the KSIDC assisted units, the employment potential of IT units is now more than that in the service sector units.

12. The outlay and expenditure of funds by the State Government for the five year plans have tended to increase in favour of the service sector.

13. Kerala will emerge as a cyber society within 15 years.

14. Knowledge and IT products and services will get prominence in the cyber society.

15. ITES and service industries will flourish in the State.

16. Keralites are considering IT as the best, or one of the best suited, industries for the State.

6.6 Major Findings

From the analysis of data and further interpretations, the following findings have emerged:

6.6.1 A steady decline in the share of the primary sector can be noted in the Kerala economy since 1950 to the extent of 17% in 2005 from its original share of 56% in 1950.

6.6.2 The secondary sector could not play a major role in the economy during the last 50 years. This sector registered a very slow growth. In 1950 its share is 16% whereas it is only 22% in 2005.

6.6.3 The tertiary sector has recorded an impressive growth since 1950. The percentage share went up from 28.6% in 1950 to a remarkable level of 61% in 2005.

6.6.4 The Compound Growth Rate (CGR) of service sector is 18.3% during 1990-2005; the CGR of Information Technology sector is 13.6% and for the manufacturing sector it is only 5% during this period.

6.6.5 From the study of the plan outlay, during the 1st to 10th plans, the following trends are identified.

(i) A steady decline of the primary sector

(ii) A slow and steady growth of the secondary sector

(ii) A steady and fast growth of the tertiary sector

6.6.6 The small, medium and large-scale units in the traditional sector have a common pattern of performance, industrial relations, IT usage, etc.

Likewise, units in the manufacturing sector also have a common pattern in their performance, industrial relations, IT usage, modernization etc., irrespective of their size of investment.

A common pattern exists in the small, medium and large scale units in the service sector also regarding their performance, industrial relations, IT usage, modernization etc.

The small, medium and large IT units also have a same pattern in their performance, industrial relations, programmes for capacity expansion/ diversification etc.

But, there exists a clear difference between the traditional and manufacturing sector or the traditional and service sector or the traditional and IT sector.

6.6.7 Within different categories of industries, both the traditional and manufacturing industries have recorded a declining growth trend. The service and IT sectors recorded an upward growth trend.

6.6.8 Unhealthy industrial relations exist in the traditional and manufacturing industries in Kerala. On the other hand, the service and IT industries maintain a healthy and cordial industrial relations. In the traditional industries, personnel management lacks professionalism. Employees are also mostly less educated or non-

professional. Mobility of labour lacks in traditional sector. In the IT sector, employees are committed to work and not to the institution. But in the traditional and manufacturing industry, employees are committed to their institution.

6.6.9 The application of IT in the traditional and manufacturing sector are almost insignificant.

6.6.10 Almost all IT units have future expansion / diversification / modernization plans. Over 76 percent of the units in the service and manufacturing industries have expansion/ diversification plans. But only 46% of the traditional industries have future expansion /diversification / modernisation plans.

6.6.11 Globalisation and liberalisation have a positive impact on traditional sector, service and IT industries. On the other hand, about 50% of the manufacturing industries have been adversely affected by globalisation and liberalisation.

6.6.12 It is held that the performance of the industrial units in the traditional, manufacturing and service sectors can be improved substantially by the application of information communication technology.

6.6.13 Industrialists in Kerala are aware of the emerging cyber society in Kerala.

6.6.14 With out governmental support, traditional and manufacturing industries could not survive, especially in the wake of globalisation.

6.6.15 Almost all industrialists in IT and service industry expect that their businesses would flourish in the next five year period and thereafter.

6.6.16 Kerala will transform into a cyber society within the next fifteen years.

6.6.17 Information technology and services industry will have a major stake in the cyber society.

6.6.18 Information Technology is the best, or one of the best, suited industries for Kerala.

6.7 Implications

1. The Study reveals that the service and IT industries are more suitable to Kerala compared to traditional and manufacturing industries, on the basis of their growth trend and industrial relations.

2. In order to revive the manufacturing and traditional industries, steps must be taken to modernise them, especially with the application of Information Technology, and with Governmental assistance so as to make them globally competitive.

3. The Study reveals that IT industries will attain a major growth. Next come, the service and manufacturing industries. Most of the traditional industries would be wiped out unless they are modernized and made competitive.

4. In order to make the entrepreneurs and professionals aware of the new areas; in-service courses, training programmes, seminars, workshops and symposia have to be organised on a regular basis, even by inviting international experts. Theoretical, applied and policy studies must be encouraged.

5. Since large scale cultivation in Kerala is not possible due to small land holdings and that the traditional industries have lost their charm due to low wages and the affinity of Keralites for white collar jobs, the solution for the economic ills of the State of Kerala is to become part of the Global economy. The State has a competitive edge in the services sector. So, long-term strategy may be drawn for sectors such as Health, Tourism, Education, etc. and for the development of Human resources. Requisite policies should be framed and implemented like Technology Policy, Tourism Policy, Trade Policy and Education Policy.

6. Necessary facilities must be set up to ensure global marketing. The whole society must be made aware of the challenges and opportunities of the service sector.

7. Since Kerala is enriched with brain power and knowledge bases, it is more suitable for knowledge industries and provision of knowledge products and services globally.

6.8 Testing the Hypotheses

6.8.1. Hypothesis 1

THERE IS A SET PATTERN FOR INDUSTRIAL DEVELOPMENT IN KERALA.

The findings presented at section 6.6.5 and 6.6.6 based on the analysis in section 5.1 and 5.2 in Chapter V supports this hypothesis.

6.8.2. Hypothesis 2

INFORMATION TECHNOLOGY REVOLUTION HAS A SIGNIFICANT IMPACT ON THE INDUSTRIAL DEVELOPMENT OF KERALA

The findings presented at section 6.6.12 and 6.6.15 based on the analysis in section 5.2.8 and 5.3.2 establishes this hypothesis.

6.8.3 Hypothesis 3

KERALA IS FASTLY EMERGING AS A CYBER SOCIETY

Findings presented in section 6.6.13 and 6.6.16 based on the analysis in section 5.3 in Chapter V lead to the acceptance of this hypothesis.

6.9 Conclusion

The Study reveals that the contribution of the primary sector to income and employment generation has been declining steadily. The secondary sector has continued to remain almost static without much change during the last 55 years. The tertiary sector shows a steady upward trend of growth. Within the services sector, IT registered a phenomenal growth.

Industry-wise, the traditional and manufacturing industries in Kerala do not have a bright future whereas, service industries, especially ICT, will register a substantial growth in the future.

In the conventional view, Kerala is a sick or weak economy because of stagnant or slow growth in primary and secondary sectors. Kerala cannot improve in those sectors because of the limiting factors like small land holdings, environmental pollution factors, physiographic conditions of the land, locational disadvantages of the State in the country etc. However, this

can be compensated by opening new avenues through globalization and liberalization, exports of IT products and services, development and marketing of manpower resources, tourism, health etc.

6.9.1 Future Trend

Based on the present trend one is forced to reach the conclusion that the role of primary sector including agriculture in the Kerala Economy would be reduced considerably with regard to income and employment, say, to a level of less than 10%.

6.10 Suggestions for Further Research

On the basis of the study, the following suggestions are made for further research.

1. A study on the role of Information Technology in the service sector may be undertaken in Kerala.

2. A very detailed study on the impact of five year plans on various sectors of the economy, especially on IT sector in Kerala may be studied.

3. A study of the changes in industrial and IT policies of the Left Democratic Front and the United Democratic Front in the State and

their impact on the growth of various areas of industry may be undertaken.

4. A detailed study on the application and impact of IT on Agriculture, traditional industries and manufacturing industries in Kerala may be carried out.

6.11 Strategies and Policy Formulations

- Since the primary and secondary sectors of Kerala do not prosper, the only alternative for the State is development of the tertiary sector, especially IT, which has a competitive edge over others. To develop the service sector, it must be modernised and made competitive in the global context. Therefore, requisite Government policy should be framed. Infrastructure for the service sector should be built up. More investments and latest technologies should be acquired or developed. Entrepreneurship has to be developed. To develop the required manpower, world-class educational institutions and training programmes should be launched, for which excellent educational institutions should be set up.
- Since Kerala has high level digital connectivity and highly educated manpower, service sector and IT development should not be limited to one or two points like Technopark in Trivandrum or Infopark (Smart City) in Ernakulam. The development should be spread to all cities

and towns of Kerala so that Kerala can be developed as a single township without any regional imbalances.

- The rapid transition of the economy requires a massive investment. This can be mobilized by setting up a Global Company, say; the Kerala Growth Fund Ltd. Funds from Keralites in and outside the State and Non-Resident Indians (NRIs) can be attracted. The State should promote foreign direct investment (FDI) and Technology transfer. Government should offer a fair return and employment to Non-Resident Keralites for their investment in the Growth Fund. An Employment Guarantee Scheme in the IT and Service sectors for the unemployed youth will attract more funds from their parents in Kerala.
- By considering all the above noted suggestions, both the State and Central Government must formulate suitable policies and implement them.
- Since the very peculiarity of the IT sector is that most of its products will become outdated in every five years, there is a need for formulating and implementing strategies and policies for them in a rapid way, and that too have to be reviewed on a regular basis. Kerala must undertake world-class research and development activities in Information Technology and knowledge industries.
- Since the traditional and manufacturing sectors are not equipped to meet the challenges of IT revolution and globalisation, there is an

urgent need to make them competitive by applying modern technology, marketing techniques etc. and they may be brought under various industrial clusters with common brand names and maintaining standardization and quality control.

- Kerala need not bother much about manufacturing industries. This beautiful strip of land can be transformed into a pollution free area with organic farming and knowledge industries. Service industries including tourism, healthcare etc. will prosper in this State.

BIBLIOGRAPHY

BIBLIOGRAPHY

Adiseshaiah, Malcolm. (1987). "Priorities in Kerala's industrialisation", Bulletin of Madras Institute of Development Studies, Seminar Series, December.

AKG Studies and Research Centre. (2005). The Manufacturing sector, strategy paper presented in the International Congress on Kerala Studies; 9-11 Dec.2005, Volume 2, AKG Centre, Trivandrum, pp56-59.

Albin, A. (1990). Manufacturing Sector in Kerala: Comparative study of its growth and structure, "Economic and Political Weekly", Vol.XXV, No.37, Sept. 15.

Albin, Alice. (1988). "Manufacturing sector in Kerala: A study of scale structure and growth, M.Phil Dissertation, Centre for Development Studies, Trivandrum,

Arifa K. (1999). A comparative study of the treatment of information, knowledge, wisdom in the Bible and Quran within the context of the emerging cyber society, preliminary report for the Ph.D qualifying examination, University of Calicut, Kozhikode.

Arun, T. G.(1991). "Growth and Structural changes in the manufacturing industries in Kerala 1976-87: A comparative study viz a viz South India M.Phil Dissertation, Centre for Development Studies, Trivandrum.

Asha, B. (2002). A study of the application of information technology in tribal medicine in Kerala with regard to forest medicianal plants, Ph.D Thesis, University of Calicut, Kozhikode.

Barnhart, Robert K, ed. (1996). The World Book Dictionary Vol.1:A-K., World Book Inc., Chicago.

Barnhart, Robert K, ed. (1996). The World Book Dictionary Vol.2:L-Z., World Book Inc., Chicago.

Bell, Daniel. (1973). Coming of a post-industrial society, Basic Books, New York.

Brown, Andrew and Dowling, Paul. (1998). Doing Research / Reading Research: A mode of interrogation for education; The Falmer Press, London.

Busha, Charles H and Harter, Stepen P.(1980). Research Methods in Librarianship: Techniques and Interpretation, Academic Press, NewYork.

Castells, M, and Hall, P. (1991). Technopoles of the world: the making of 21st century industrial complexes, Routledge, London.

Castells, M. (1989). The Informational City: Information Technology, Economic restructuring and the urban-regional process; Blackwell, Oxford.

Castells, M. (1996). The rise of the network society: The information age, Vol.1, Blackwell, Oxford.

Castells, M. (1997). The power of identity: The information age, Vol.2, Blackwell, Oxford.

Central Statistical Organization. (1976). Statistical Pocket Book: India 1975; The Controller of Publications, Delhi.

Chartrand and Murentz, Ed. (1979). Information Technology servicing society, Pergamon, New York,

Cherian, P.J ed. (1999). Perspectives on Kerala History: The Second Millennium,

Confederation of Indian Industry. (2000). Advantage Kerala; CII (SR); Cochin.

Divatia, P.J. (1996). Indian Industries in the Twenty-first century; Vikas Publishing House Pvt. Ltd., New Delhi.

Eapen, Mridul. (2001). Rural industrialization in Kerala . Its dynamics and local linkages, Manohar Publishers and distributors , New Delhi.

Elamkulam P.N.Kunjan Pillai. (1970). Studies in Kerala History, National Book Stall, Kottayam

Feather, John. (1998). The information society: A study of continuity and change, 2nd Ed. Library Association Publishing, London.

Field, Andy. (2000). Discovering statistics using SPSS for windows; Sage Publications, New Delhi PP.49-57.

Franke, Richard, W. and Chasin, Barbara H. (1994). Kerala: Development through radical reforms; Promilla and Co., Publishers, New Delhi.

Gangadharan Pillai, V. (1970). State Enterprises in Kerala, Kerala Academy of Political Science, Trivandrum.

Gangadharan Pillai, V. (1980). The public Sector in Kerala: Administrative problems; The Kerala Academy of Political Science, Trivandrum.

Gates, Bill. (1999).Business @ the speed of thought: using a digital nervous system; Warner Books, New York.

Geogre, K.K. (1996). whether Kerala model? In the souvenir of International conference on Kerala's development experience; National and Global dimensions; 8-11 Dec.1996, Institute of Social Sciences, New Delhi.

George, K.K. (1990). Limits of Kerala model of development: Analysis of fiscal crisis and its implications, Centre for Development Studies, Trivandrum.

Government of Kerala, Bureau of Economics and Statistics; Keralathile Karshikethara Mekhala (Mal.). (1978). Govt. Press, Trivandrum.

Govt of Kerala, Bureau of Economics and Statistics. (1977). Annual Survey of industries: Kerala State, 1973-74, Trivandrum.

Govt. of Kerala, Bureau of Economics and Statistics. (1963). Kerala: A statistical profile, govt. press, Trivandrum

Govt. of Kerala, Bureau of Economics and Statistics.(1965). An economic review: Kerala, 1964, Govt. Press, Trivandrum.

Govt. of Kerala, Department of Economics and Statistics. (2001). Statistics since independence, Govt. Press, Trivandrum.

Govt. of Kerala, Directorate of Economics and Statistics. (1980). Kerala Economic progress in figures, 1980; Directorate of Economics and Statistics, Trivandrum..

Govt. of Kerala, Directorate of Economics and Statistics. (2002). Statistics for planning 2001, Govt. Press, Trivandrum, pp 176-185

Govt. of Kerala, Directorate of Economics and Statistics. (2005). Statistics for planning 2005, in CD, Trivandrum

Govt. of Kerala, Industries (J) Department. (2003). Industrial Policy 2003; GO (P) No.1215/2003/ID dated 30.09.2003, Thiruvananthapuram.

Govt. of Kerala, Industries Department. (1998). Information technology policy document, GO(MS) No.83/98/ID dated 28.5.98, Trivandrum.

Govt. of Kerala, State Planning Board. (1984). Report of the High Level Committee on Industry, Trade and Power Vol.II: Report on large and Medium and traditional industries; State Planning Board, Trivandrum.

Govt. of Kerala, State Planning Board. (2006). Economic Review Kerala: 1972, 1974, 1980, 1985, 1991, 1996, 2001, 2002, 2003,2004,2005 Govt. Press, Trivandrum

Govt. of Kerala. (1961). Kerala 1960 : An economic review, Govt. Press, Trivandrum.

Hanna, Nagy; Boyson, Sandor and Gunaratne, Shakuntala. (1996). the East Asian miracle and Information Technology : Strategic management of technological learning, the World Bank, Washington.

Haravu L.J. ed. (2002). Lectures on knowledge management: Paradigms, challenges and opportunities; Sarada Ranganathan endowment for library science, Bangalore.

Harilal K.N and Joseph K.J. (2000). Stagnation an revival of Kerala Economy: An open economy perspective; Working Paper No.305, Centre for Development Studies, Trivandrum.

Hornby, A.S. (1988). Oxford advanced learners' dictionary of current English, Oxford University Press. Delhi .

Isaac, Thomas and Tharakan, P.K.M. (1984). "An enquiry into the historical roots of Industrial backwardness in Kerala: A study of Travancore Region", Working paper No.215, Centre for Development Studies, Trivandrum.

Javri, B.S. (1991). Information Technology: The changing horizons, CSI Communications, New Delhi.

Jones, S., ed. (1995). Cyber society: Computer-mediated communication and community, Sage; London.

Jones, Steven G. (1998). Cyber society - Revisiting computer mediated communication and community, Sage publishing, London, PP12-63.

Jordan, Tim. (1999). Cyber power: The culture and politics of cyberspace and the internet; Routledge, London..

Joseph, K.J and Harilal K.N. (2001). India's Texport boom: Challenges ahead, working paper 317, Centre for Development Studies, Trivandrum

Joseph, K.J. (2002). Growth of ICT and ICT for development; realities of the myths of the Indian experience, World Institute for Development Economic Research, Finland, pp6-8.

Joseph, K.V. (2004). Culture and Industrial Development: The Indian Experience, Anmol Publication Pvt. Ltd. New Delhi.

Joseph, K.V. (2004). Culture and Industrial Development; Anmol Publications Pvt. Ltd. New Delhi.

Kalam, Abdul, A.P.J and Rajan Y.S. (1988). India 2020: A vision for the new millennium; Viking Penguin Books, New Delhi.

Kalam, Abdul, APJ and SivathanuPillai A. (2004). Envisioning an empowered nation: Technology for societal transformation, Tata Mc Graw-Hill Publishing Company Ltd. New Delhi, pp.72.

Kalam, Abdul, APJ. (2000). Knowledge society and national development, paper presented in the International IT conference, Trivandrum 23 Nov.

Kalam, Abdul, APJ. (2002). Ignited minds: unleashing the power within India, Viking Penguin Books India Pvt. Ltd. New Delhi.

Kannan, K.P. (1990). Kerala Economy at the cross roads? Economic and Political Weekly, Vol.XXV, Nos.35 & 36, September 1-8,

Kaur.N and Singh.J. (1998). Digital multimedia: Impact on society: Technological developments and applications, University News, Vol.36(47), Nov.23,

Kiran, GR. (2002). Software and IT enables services industry in Kerala ; M.Phil. Thesis, Centre for Development Studies, Trivandrum.

Kothari, C.R. (1997). Research Methodology: Methods & Techniques, Ed.2, Vishwa Prakasha, New Delhi.

Krishnaiyer, S. (1975). Keralathinte Sambad - Vyavastha, Kerala Bhasha Institute, Thiruvananthapuram.

Krishnamoorthy, TA *et. al.* (2004). Sectoral study report on Electronics & IT Industry in Kerala, Main report, KSIDC, Trivandrum.

Krishnaswami, O.R. (1999). Methodology of research in Social Sciences, Himalaya Publishing House, Bombay.

Kurian, Mathew, K. (1972). Kerala's industrial backwardness : A way-out; In development of Kerala's Problems and promises, ed. by Dr.PKB Nayar, University of Kerala, Trivandrum.

Kurien, C.T. (1994). Kerala's development experience: Random comments about the past and some considerations for the future,. In AKG Centre for Research and Studies, International Congress on Kerala Studies, Abstracts Vol.1, Trivandrum,.

Laudon, Kenneth C, *et.al* (1994). Information Technology and Society; Wadsworth publishing, Belmont,

Machlup, Fritz. (1962). The production and distribution of knowledge in the United States; Princeton University Press, New Jersey.

Mahadevan, Raman. (1991). "Industrial entrepreneurship in Princely Travancore" in S.Bhattacharya (ed.), The South Indian Economy : Agrarian change, Industrial structure and State Policy C.1914-47, Oxford University Press, Delhi.

Mahadevan, Raman. (1988). Some aspects of pattern of industrial investment and entrepreneurship in Travancore during the 1930s and 1940s; Seminar on South Indian Economy (1919-45), Centre for Development Studies, Trivandrum.

Martinussen, John Degnbol. (2000). Politics, institutions and industrial development: India before and after 1991; project paper no.3; International development studies, Roskilde University, Denmark.

Mathew, E.T. (1997). Employment and unemployment in Kerala: Some neglected aspects; Sage Publications, New Delhi.

Mathew, K.M. (1972). Are we on the rightlines in serving the country, in development of Kerala: Problems and promises; ed. by Dr.PKB Nayar, University of Kerala, Trivandrum .

Mathew, Raju M. (2000). Information Technology for empowering the common man; text of the presidential address for the launching of the Kerala chapter of Netizen 2010: Calicut, November 19.

Mathew, Raju. M. (2005). Presidential Address of One Day Seminar on Twenty Years of Mathews Theories in Knowledge, Informatics and Information Technology. Feb 9 2005, University of Calicut. (Unpublished).

Mathew, Raju M. (2005). Knowledge Industries Offer multi-million dollar business opportunities in Kerala; In Volume 3, Abstracts of papers, International Congress on Kerala Studies, December 9-11 pp55-57.

Mathew, Raju.M. (1985). "India and the International Information Economy", International Information Economy Handbook; G.Russel Pipe and Chris Brown, Transnational Data Reporting Service Inc., Springfield, USA.

Mathew, Raju. M. (1998). Role of Information Technology for the Sustained Development of Kerala: Strategies and Policies, Kelpro Bulletin, 2 (1), pp.3-8.

Mathew, Raju.M. (1985). Social analysis of the Information production and consumption : The new challenges and tasks of third world countries, Theoretical Problems of Informatics FID 649, VINITI, Moscow.

Mehta, Dewang, ed. (2000). The IT Software and services industry in India: Strategic Review 2000; NASSCOM, New Delhi,

Mohan, Ram K.T. (1988). The Industrial evolution of Travancore: Certain issues in Historiography; Paper presented at the ICSSR Research Scholars Seminar; ICSSR Western Regional Centre, Bombay.

Mohanan Pillai P. and Shantha N. (1997). Industrialisation in Kerala: Status of current research and future issues ; Centre for Development studies, Thiruvananthapuram

Murthy, CSV *et. al.* (1999). Fundamentals of Information Technology, Himalaya Publishing House, Mumbai.

Nagaraj, R. (2003). Industrial Policy and Performance since 1980 : Which way now ? Economic and Political Weekly, Vol.37, No.35, August 30, pp3707-3715.

Nair, P.V. (1968). Industrial Progress in Kerala since Independence, Kerala Labour and Industries Review Vol.6, No.2, April.

Nandamohan V. (1994). Recent trends in the industrial growth of Kerala, in Kerala's economy, edited by Prakash B.A., Sage Publications, New Delhi, PP217-236.

Narayankutty Menon, Vallathol. (1972). A new perspective in planning the development of Kerala ; In development of Kerala : Problems and Promises ; ed. by Dr.PKB Nayar, University of Kerala, Trivandrum

NASSCOM. (1999). E-biz India'99 ; Conference featuring E-Commerce, E-Business and Web Technologies; 20 July, Hotel Oberoi Towers, Mumbai; organised by NASSCOM, New Delhi.

National Council of Applied Economic Research. (1962). Report on Techno Economic survey of Kerala ; NCAER, Delhi.

Nayar, PKB, ed. (1972). Development of Kerala: Problems and promises; University of Kerala; Trivandrum.

Norris, Pippa. (2004). Building knowledge societies: The renewal of democratic practices in knowledge societies, Unesco World Report, Harvard

Nossitter, T.J. (1982). Communism in Kerala: A study in political adaptation; Oxford University Press, Delhi,.

Oommen, M.A, ed. (1999). Rethinking Development: Keralas' development experience, 2 Vols; Concept publishing Company, New Delhi..

Oommen, M.A. (1993). Essays on Kerala Economy; Oxford & IBH Publishing Co.Pvt Ltd, New Delhi

Parayil, Govindan, ed. (1998). Kerala: The development experience: Reflections on sustainability and replicability; Zed Books, London.

Parayil, Govindan. (1996). The Kerala model of development: development and sustainability in the third world, Third world quarterly, Vol.17, No.5, pp941-957.

Parikh, Kirit, S. ed. (1999). India Development report: 1999-2000, Oxford University Press, New Delhi.

Pillai, P.P. (1994). Kerala Economy: Four decades of Development; Institute of Planning and Applied Economic Research, John Mathai Foundation, Thrissur.

Pitroda, Sam. (1999). 21st Century : Grab it, its' ours; The Sunday Times, Special Report, 31 Oct., Bombay.

Prakash, B.A, ed. (1994). Kerala's economy: Performance, problems, prospects; Sage Publications, New Delhi.

Prakash, B.A., ed. (1999). Kerala's economic development: Issues and Problems, Sage Publications, New Delhi.

Ramachandran Nair K. (1973). Industrial Relations in Kerala, Sterling Publishers Pvt. Ltd. New Delhi.

Ramachandran Nair, S. (1998). The State and economy in colonial British Kerala ; Lipi Publications, Thiruvananthapuram.

Ramachandran, V. (1989). Industrialisation of Kerala: A perspective; Costford, Trichur

Ramachandran.V. (1988). Measures to step up industrial investment in Kerala; KSIDC, Trivandrum.

Rao, UR. (2000). The emerging knowledge Society; In the International IT Conference on crafting a knowledge Society in the 21st Century, 23-25 November, Technopark, Trivandrum pp1-12

Rao, VKRV. (1961). Industrialisation; a case of Kerala's economic salvation, In Pillai (ed) Planning for prosperity in Kerala, Malayali Association, Delhi.

Ravi, N, ed. (1993). The Hindu speaks on information technology, Kasturi & Sons Ltd., Madras.

Rheingold, Howard. (1985). The virtual community: Finding connection in a computerized World; Minerva , London.

Roy, T. (1984). Interstate variations in industrial growth in India, 1960-80, M.Phil thesis, Centre for Development studies, Thiruvananthapuram.

Sahani, Chandru.(2003).Vision to Mission, Healthcare Communications, Chennai

Saji T.D. (2005). Knowledge economy and strategies to harness potentialities of Kerala, paper presented in the two day seminar on knowledge technology and knowledge industry : Kerala's development potentialities , 27-28 May 2005 , Calicut University, Kozhikode.

Sankaranarayanan KC and Meera Bhai M. (1994). Industrial development of Kerala, in Kerala's economy ed. by B.A Prakash, Sage Publications, New Delhi, PP298-335

Satyanarayana, R. (1996). Information Technology and its facets; Manak Publishers, NewDelhi.

Sen, Amartya. (1999). Development as Freedom; Oxford University Press, New Delhi.

Shungoonny Menon. (1978). A History of Travancore from the earliest times , Higginbotham & Co., Madras.

Singh, V.B, ed. (1965). Economic history of India 1857-1956, Allied publishers Pvt. Ltd., Bombay.

Sjoberg, Gideon and Nett, Roger. (1997). A methodology for social research; Rawatt Publications, New Delhi.

Small Industries Service Institute. (1962). Report on the intensive campaign for the development of small industries in the Districts of Cannanore, Palghat, Quilon & Alleppey; SISI, Trichur.

Smith, R.I., and Camball, B. (1982). Information Technology Revolution; Longman, NewYork.

Sommerville, Ian; Information unlimited: The application and implications of Information Technology; Addison Wesley, London.

Sreedhara Menon, A. (1985). Keralacharithram (Mal,), National Book Stall, Kottayam.

Sreedhara Menon, A. (1994). A survey of Kerala History, S.Viswanathan Printers & Publishers,Madras.

Subrahmanian K.K. (2005). Kerala's recent development expereince : Lopsided structural change and sceptical sustainability of growth, abstracts of symposium paper presented on the International Congress on Kerala Studies, 9-11, Dec.2005, Volume 3, AKG Studies and Research Centre Trivandrum pp177-195.

Subrahmanian, K.K and Azees, Abdul, E. (2000). Industrial Growth in Kerala : Trends and Explanations ; Working Paper No.310, Centre for Development Studies, Thiruvananthapuram .

Subrahmanian, K.K and Mohanan Pillai. (1986). Kerala's industrial backwardness : Exploration of alternative hypothesis, Economic and Political weekly, April 5

Subrahmanian, K.K and Mohanan Pillai. (1994). Modern small industries in Kerala - A review of structural change and growth performance ; working paper no.254, Centre for development studies, Thiruvananthapuram.

Subrahmanian, K.K. (1990). Development paradox in Kerala: Analysis of industrial stagnation, Economic and Political Weekly, Vol.XXV, No.37, September 15.

Subrahmanian, K.K. (1994). Industrial strategy for Kerala: A perspective; International Conference on Kerala Research; Vol.2, Trivandrum.

Subrahmanian, KK. (1990). Development Paradox in Kerala: An analysis of industrial stagnation; Economic and political weekly, Volume 25, No.37 , Sept.15.

Surendran P. (2002). The Kerala Economy : Growth and Survival, Vrinda Publications, Delhi.

The new encyclopaedia Britannica. (1985). ed.15; Vol.28: Macropaedia: Knowledge in depth; Encyclopaedia Britannica Inc., Chicago,. P464.

The new encyclopaedia Britannica. (1985). ed.15; vol.6: Micropaedia: Ready reference; Encyclopaedia Britannica Inc., Chicago,. P.306

Thomas, Jayan Jose. (2003). Labour and industrialization in Kerala, the Indian Journal of Labour Economics, Vol.46, No.4, pp575-592.

Thomas, Jayan Jose. (2005). Kerala's industrial backwardness: A case of path dependence in industrialisation, World Development, Elsevier Ltd, London Vol.33, No.5, pp.763-783

Toffler, Alvin. (1980). The third wave; WilliamCollins Sons, London,.

Ulloor S.Paremswara Aiyer. (1998). Progress of Travancore under H.H.Sree Moolam Thirunal, Dept. of Cultural Publications, Trivandrum.

Velu Pillai T.K. (1996). The Travancore State Manual, Vol.III, Economic affairs, Kerala Gazetteers Dept, Trivandrum pp 505 -578

Vijayachandran, K. (1994). "Industrial development of Kerala: Infrastructural and institutional resources", International Conference on Kerala Research, Vol.2, Trivandrum.

Vijayakumar, K.P. (1994). Impact of Information Technology on Indian Society: An overview; Herald of Library Science, Vol.33 (1-2), Jan.-April.

Vijayashankar, Na. (1999). Cyber laws: For every netizen in India by Ujvala Consultants Pvt. Ltd., Bangalore,.

Walsekar, *et. al.* (2002). Rethinking India's future: prosperity of the periphery ; International Centre for peace initiatives, Strategic foresight group, Mumbai, PP14-49.

Wilkinson.T.S. and Bhandarkar P.L. (1996). Methodology and techniques of social research, Himalaya Publishing House, Bombay.

Yechury, Sitaram. (2000). Economy in the Knowledge Society; In the International IT Conference on Crafting a knowledge Society in the 21st Century, 23-25 November, Technopark, Trivandrum pp13-20

Zorkoczy, Peter and Heap, Nicholas (1995) ; Information Technology: An introduction, Ed.4, Pitman Publishing, London.

Websites Visited

<http:///www.it.kerala.com>

<http: ///www. keralaitmission .org>

<http: ///www.keralagov.com>

<http: ///www.keralaindustry.org>

<http: ///www.keralagovt.com/ITpolicy.html>

<http: ///www.ksidc.org>

<http: ///www.technopark.org>

<http: ///www.infopark.org>

<http: ///www.indiastat.com>

APPENDICES

Thiruvanathapuram
28.03.2005.

Dear Sir/Madam,

I have taken up a study of the "Industrial Development Pattern of Kerala in the context of IT Revolution and the emerging Cyber Society" for my Ph. D. Programme under the guidance of Dr. Raju M Mathew, University of Calicut. The aim of the study is to find out the role of IT and service sector industries in the present and future industrial development of the State and evolve basis for formulating strategies and policies for the rapid growth of industries in Kerala. With this purpose in view, I have to draw the requisite details from the industrialists, scholars and politicians in our State.

I shall be deeply obliged if you will kindly fill up the questionnaire and return the same at the earliest. I hereby assure you that the data collected will be treated as confidential and it will be used only for the purpose of this study.

May I emphasize that your whole hearted co-operation is very essential for the success of this survey.

Thanking you,

Yours Sincerely

(A.C. RAJAN)
Dy.. General Manager (S&P),
KSIDC, Keston Road, Kawdiar,
Thiruvananthapuram – 695 003.
Phone: 2318922, Fax : 2315893
E-mail : acrajan@ksidcmail.org.

APPENDIX - I

A

QUESTIONNAIRE
(For the use of Traditional Industries)

(Please put a tick mark (✓) in the appropriate columns.)

1. Name of Unit :
   (a) Location of the Unit/district :
   (b) Products Manufactured :
   (c) Services Offered :

2. Investment /Gross Block of the Unit (Rs. lakhs) (Please tick)

   Below 50 ☐ 50-100 ☐ 100-500 ☐ Above 500 ☐

3. Name of Chief Promoter/Chief Executive: Mr. / Ms.:.....

4. Educational Qualification of the respondent:

   Under Graduate ☐ Graduate ☐ Post Graduate ☐

5. Technical/Professional Qualifications

   Certificate ☐ Diploma ☐ Degree ☐ Post graduate ☐

6. Designation/Job of the respondent: (who provides the reply/information)

   Promoter/Owner ☐ Chief Executive ☐ Others :.....☐
   (Please specify)

7. Interested areas in the industry:

   a. Production ☐ b. Marketing ☐ c. Finance ☐

   d. Diversification ☐ e. Administration ☐ f.Others.....☐
   (Please specify)

8. Do you know the status and trends of Traditional Industries in Kerala.

   Yes ☐ No ☐

9. If Yes, Please provide the present condition of Traditional industries as a whole.

   Prosperous ☐ Progressing ☐ Stagnant ☐ Declining ☐

10. Performance of your unit.

    Prosperous ☐ Progressing ☐ Stagnant ☐ Declining ☐

11. Industrial relations/work culture in the traditional industries.

Cordial & Healthy ☐ Satisfactory ☐ Not so Healthy ☐ Unhealthy ☐

12.How far the traditional industries in the State are using information Technology (IT) in their line of production.

Less than the desirable level ☐ Adequate ☐ Above the desirable level ☐

13.Present status of the level of modernization/automation of your unit.

Less than the desirable level ☐ Adequate ☐ Above the desirable level ☐

14.Expected future trends of your unit (Please tick ✔)

a) Plans for capacity expansion : Yes ☐ No ☐

b) Programmes for diversification : Yes ☐ No ☐

c) Schemes for modernization : Yes ☐ No ☐

15. Future trends of traditional industries in the State (*Please give your views briefly*)

a) In the next 5 year period: (By2010)

.....
.....
.....
.....
.....

b) In the coming decade: (By 2020)

.....
.....
.....
.....
.....

16.What are the impact of globalization and liberalization on traditional industries.

.....
.....
.....
.....

17.Do you think that the globalization and liberalization factors have affected the performance of your unit:

Yes ☐ No ☐ Can't say ☐

18. Do you think that the performance of traditional sector can be improved by using Information Communication Technology (ICT) :

Yes ☐ No ☐

19. Do you wish to start any new unit /diversify in to the IT sector

Yes ☐ No ☐

20. What will be the benefits of modernizing the line of production using IT in the traditional industries. (Please rank them in the order 1,2,3,.....)

Increase productivity ☐ Reduce maintenance costs ☐

Increase Exports ☐ Higher Profits ☐

Increase the volume of Production ☐ Improve labour welfare ☐

Enable the industry to use latest technology ☐ Improve quality ☐

Make the industry globally competitive ☐ Others.....☐

(Please specify))

21. Are you aware of the emergence of a Cyber society in the world.

Yes ☐ No ☐

Thank you very much for your hearty co-operation and timely response

Please send this to: A.C Rajan,Dy. General Manager (S&P), KSIDC, Keston Road, Kawdiar, Trivandrum – 695 033.

APPENDIX - II

B

QUESTIONNAIRE
(For the use of Manufacturing Industries)

(Please put a tick mark (✔) in the appropriate columns)

1. Name of Unit :
   a) Location of the Unit/District :
   b) Products Manufactured :
   c) Services Offered :

2. Investment /Gross Block of the Unit (Rs. lakhs)

   Below 50 ☐ 50-100 ☐ 100-500 ☐ Above 500 ☐

3. Name of Chief Promoter/Chief Executive : Mr. /Ms.:.....

4. Educational Qualification:

   Under Graduate ☐ Graduate ☐ Post Graduate ☐

5. Technical/Professional Qualifications:

   Certificate ☐ Diploma ☐ Degree ☐ Post graduate ☐

6. Designation/Job of the respondent: (who provides the information)

   Promoter/Owner ☐ Chief Executive ☐ Others.....☐
   (Please specify)

7. Interested areas in the industry:

   a. Production ☐ b. Marketing ☐ c. Finance ☐

   d. Diversification ☐ e. Administration ☐ f.Others.....☐
   (Please specify)

8. Do you know the status and trends of manufacturing industries in Kerala.

   Yes ☐ No ☐

9. If Yes, Please provide the present condition of manufacturing industries as a whole.

   Prosperous ☐ Progressing ☐ Stagnant ☐ Declining ☐

10. Performance of your unit.

Prosperous ☐ Progressing ☐ Stagnant ☐ Declining ☐

11. Industrial relations/work culture in the Manufacturing industries.

Cordial & Healthy ☐ Satisfactory ☐ Not so Healthy ☐ Unhealthy ☐

12. How far the manufacturing industries in the State are using IT in their line of production/Services.

Less than the desirable level ☐ Adequate ☐ Above the desirable level ☐

13. Present status of the level of modernization/automation of your unit.

Less than the desirable level ☐ Adequate ☐ Above the desirable level ☐

14. Expected future trends of your unit (Please tick ✔)

a) Plans for capacity expansion : Yes ☐ No ☐ Can't say ☐

b) Programmes for diversification : Yes ☐ No ☐ Can't say ☐

c) Schemes for modernization : Yes ☐ No ☐ Can't say ☐

15.Future trends of the manufacturing industries in the State (*Please give your views briefly*)

a) In the next 5 year period: (By2010)

.....
.....
.....
.....
.....

b) In the coming decade: (By 2020)

.....
.....
.....
.....

16.What are the sectors to which you propose to diversify/start new units ?

Services sector ☐ Traditional Sector ☐ IT Sector ☐ No Proposal ☐

17. Do you have any proposal to start IT industries in the near future. ?

Yes ☐ No ☐

18. What are the impact of globalization and liberalization on manufacturing industries.

.....
.....
.....

19..Do you think that the Globalization and liberalization factors have affected the performance of your unit:

Yes ☐ No ☐

20. Do you think that the performance of manufacturing industries sector can be improved by using the Information Communication Technology (ICT)

Yes ☐ No ☐ Can't Say ☐

21. What will be the benefits of modernizing the line of production using IT in the traditional industries. (Please rank them in the order 1,2,3,.....)

Increase productivity	☐	Reduce maintenance costs	☐
Increase Exports	☐	Higher Profits	☐
Increase the volume of Production	☐	Improve labour welfare	☐
Enable the industry to use latest technology	☐	Improve quality	☐
Make the industry globally competitive	☐	Others: ..... (Pl. specify)	☐

22. Are you aware of the emergence of a Cyber Society in the world.

Yes ☐ No ☐

Thank you very much for your hearty co-operation and timely response

Please send this to: A.C Rajan,Dy. General Manager (S&P), KSIDC, Kesto̲n Road, Kawdiar, Trivandrum – 695 033.

APPENDIX - III

C

QUESTIONNAIRE
(For the use of Service Industries)

(Please put a tick mark (✔) in the appropriate columns)

1. Name of Unit :

   a) Location of the Unit/District :
   b) Products Manufactured :
   c) Services Offered :

2. Investment /Gross Block of the Unit (Rs. lakhs)

   Below 50 ☐ 50-100 ☐ 100-500 ☐ Above 500 ☐

3. Name of the Chief Promoter/Chief Executive: Mr. /Ms.....

4. Educational Qualification :

   Under Graduate ☐ Graduate ☐ Post Graduate ☐

5. Technical/Professional Qualifications:

   Certificate ☐ Diploma ☐ Degree ☐ Post graduate ☐

6. Designation/Job of the respondent (who provides the information):

   Promoter/Owner ☐ Chief Executive ☐ Others .....☐
   (Please specify)

7. Interested areas in the industry:

   a. Production ☐ b. Marketing ☐ c. Finance ☐

   d. Diversification ☐ e. Administration ☐ f.Others.....☐
   (Please specify)

8. Do you know the status and trends of service units in Kerala.

   Yes ☐ No ☐

9. If Yes, Please provide the present condition of such industries as a whole.

   Prosperous ☐ Progressing ☐ Stagnant ☐ Declining ☐

10. Performance of your unit.

    Prosperous ☐ Progressing ☐ Stagnant ☐ Declining ☐

11. Industrial relations/work culture in the Service industries.

Cordial & Healthy ☐ Satisfactory ☐ Not so Healthy ☐ Unhealthy ☐

12.How far the Service industries in the State are using Information Technology in their line of production/Services:

Less than the desirable level ☐ Adequate ☐ Above the desirable level ☐

13.Present status of the level of modernization/automation of your unit.

Less than the desirable level ☐ Adequate ☐ Above the desirable level ☐

14. Expected future trends of your unit (Please tick ✔)

a) Plans for capacity expansion : Yes ☐ No ☐ Can't say ☐

b) Programmes for diversification : Yes ☐ No ☐ Can't say ☐

c) Schemes for modernization : Yes ☐ No ☐ Can't say ☐

15.Future trends of the Service industries in the State (*Please give your views briefly*)

a) In the next 5 year period: (By2010)

.....
.....
.....
.....
.....

b) In the coming decade: (By 2020)

.....
.....
.....
.....

16. Do you have any proposal to start IT industries in the near future. ?

Yes ☐ No ☐

17. What are the areas/sectors to which you propose to diversify. ?

Manufacturing Sector ☐ Traditional Sector ☐ No Proposals ☐

18.What are the impact of globalization and liberalization on the service sector industries.

.....
.....
.....
.....

19.Do you think that the Globalization and liberalization factors have affected the performance of your unit:

Yes ☐ No ☐ Can't Say ☐

20. Do you think that the performance of Service sector industries can be improved by using IT :

Yes ☐ No ☐ Can't Say ☐

21.What will be the benefits of using IT in the service industries. (Please rank them in the order 1,2,3,.....)

Increase productivity of professionals	☐	Reduce maintenance costs	☐
Increase Exports of services	☐	Higher Profits	☐
Increase the volume of service	☐	Improve labour welfare	☐
Enable the industry to use latest technology	☐	Improve quality of services	☐
Make the industry globally competitive	☐	Others: ..... (Pl. specify)	☐

22. Are you aware of the emergence of a Cyber Society in the world.

Yes ☐ No ☐

Thank you very much for your hearty co-operation and timely response

Please send this to: A.C Rajan,Dy. General Manager (S&P), KSIDC, Keston Road, Kawdiar, Trivandrum – 695 033.

APPENDIX - IV

D

QUESTIONNAIRE
(For the use of IT Industries)

(Please put a tick mark (✔)in the appropriate columns)

1. Name of Unit :

   a. Location of the Unit/district :
   b. Products Manufactured :
   c. Services Offered :

2. Investment /Gross Block of the Unit (Rs. lakhs)

   Below 50 ☐ 50-100 ☐ 100-500 ☐ Above 500 ☐

3. Name of Chief Promoter/Chief Executive : Mr. / Ms.:.....

4. Educational Qualification of the respondent:

   Under Graduate ☐ Graduate ☐ Post Graduate ☐

5. Technical/Professional Qualifications :

   Certificate ☐ Diploma ☐ Degree ☐ Post graduate ☐

6. Designation/Job of the respondent:

   Promoter/Owner ☐ Chief Executive ☐ Others..... ☐
   (Please specify)

7. Interested areas in the industry:

   a. Software ☐ b. Hardware ☐ c. ITES ☐

   d.Marketing ☐ e. Finance ☐ f. Administration ☐ g.Others.....☐
   (Please specify)

8. Do you know the status and trends of IT Units in Kerala

   Yes ☐ No ☐

9. If Yes, Please provide the present condition of IT industries as a whole.

   Prosperous ☐ Progressing ☐ Stagnant ☐ Declining ☐

10. Performance of your unit.

Prosperous ☐ Progressing ☐ Stagnant ☐ Declining ☐

11. What is your experience on industrial relations/work culture in the IT industries.

Cordial & Healthy ☐ Satisfactory ☐ Not so Healthy ☐ Unhealthy ☐

12. Expected future trends of your unit *(Please tick)*

a) Plans for capacity expansion : Yes ☐ No ☐

b) Programmes for diversification : Yes ☐ No ☐

13. Future trends of IT industries in the State (*Please give your views briefly*)

a) In the next 5 year period: (By2010)

.....

.....

.....

.....

b) In the coming decade: (By 2020)

.....

.....

.....

.....

14. What are the impact of globalization and liberalization on IT sector.

.....

.....

15.How the Globalization and liberalization factors have affected the performance of your unit:

.....

.....

16. Do you think that IT sector is the best industry suited for Kerala:

Yes ☐ No ☐ Can't say ☐

17. If your answer is Yes, kindly give its reasons:

i)

ii)

iii)

iv)

v)

18. Do you have any proposal for diversification ?

Yes ☐ No ☐

19. If yes, What are the areas/sectors to which you propose to diversify. ?

Traditional Industries ☐ Manufacturing Sector ☐ Healthcare ☐

Tourism ☐ Financial Services ☐ Others.....☐
(Please specify)

20. Are you aware of the emergence of a Cyber Society in the world.

Yes ☐ No ☐

Thank you very much for your hearty co-operation and timely response

Please send this to: A.C Rajan,Dy. General Manager (S&P), KSIDC, Keston Road, Kawdiar, Trivandrum – 695 033.

APPENDIX - V

INTERVIEW SCHEDULE

(To be administered with Bureaucrats, Scholars, Academicians, Politicians)

a. **Name of the Interviewee: Mr./Ms.**

b. **Name of the Department/Institution:**

c. **Impact of Information Technology (IT) Revolution on Industry.**

d. **Views on the influence of IT on Society**

e. **Does the IT can change all walks of life"**

f. **Are you aware of the emergence of a Cyber Society in the world?**

g. **When will Kerala be developed into a Cyber Society?**

h. **What will be the nature of Industries in such a society?**

i. **What will be the role of IT on industries in the context of liberalization and globalization?**

j. **Will the Service and IT sectors have a prominent role in the coming years in Kerala?**

k. **Do you think that the IT industry is the best suited for Kerala**

l. **How you come to that conclusion.**

m. **The Measures to be taken up for the development of IT industry**

n. **What are the policy initiatives to be taken for the development of service industries in Kerala?**

APPENDIX - VI

LIST OF INDUSTRIES COVERED IN THE STUDY

a) Traditional Industries

Name	Location/ District
Kommeri Weaver's Industrial Co-op Society	Kozhikode
Quilon Co-operative Spinning Mills	Kollam
Kerala State Handicrafts Apex Co-op Society (Surabhi)	Ernakulam
Kerala State Handloom Weavers' Co-op. Society (Hantex)	Trivandrum
Rajan Cashew Company	Kollam
Western India Cashew Co. Pvt. Ltd	Kollam
South Kerala Cashew Exporters Ltd	Kollam
Nita Cashews Pvt. Ltd.	Kollam
Dinesh Beedi Company	Kannur
Arafa Cashew Industries	Pathanamthitta
Coir Manufacturers Consortium Pvt.Ltd	Alappuzha
Charankattu Coir Industries Ltd.	Alappuzha
Palmfire products Pvt.Ltd	Alappuzha
Travancore Coco Tuft Industries	Alappuzha
Veluthampi Memorial Cashew company	Pathanamthitta
SRM Cashew Industries	Kollam
Southland cashews	Kollam
Achal Industries Pvt.Ltd	Kasargod

Sakthimatha Industries Pvt.Ltd	Pathanamthitta
St.Nicholas Cashew Industries	Kollam
Kerala State Handicrafts Development Corporation Ltd.	Trivandrum
Damodar Cashews	Kasargod
Travancore Mats & Mattings Pvt. Ltd	Alappuzha
Shah Cashews Pvt.Ltd	Trivandrum
Kerala State Artisans' Development Corporation Ltd.	Trivandrum

b) Manufacturing Industries

Travancore Oxygen Ltd	Alappuzha
Malankara Plantations Ltd	Idukki
Everest Pharma Pvt. Ltd	Thrissur
Stylus Polystores Pvt. Ltd.	Trivandrum
Rubfila International Ltd.	Palakkad
VKC Rubbers Pvt. Ltd	Kozhikode
Print Finish Pvt. Ltd	Idukki
Impel Machines (P) Ltd	Pathanamthitta
Kalpaka Plastic Pvt. Ltd	Thrissur
Nikasu Frozen Foods	Ernakulam
Nagarjuna Herbal Concentrates	Idukki
Lunar Rubbers (P) Ltd	Idukki
Terumo Penpol Ltd	Trivandrum
Foster Hotbread Pvt. Ltd.	Malappuram

Chethana Pharmaceuticals	Malappuram
Kerala Ayurveda Pharmacy Ltd.	Ernakulam
Diamond Roller Flour Mills	Kollam
Poabs Granite Products Ltd	Pathanamthitta
Silver Star Sea Foods Pvt.Ltd	Alappuzha
Rose Opticals Pvt. Ltd	Trivandrum
Empee Distilleries Ltd	Palakkad
Koluthara Exports Ltd	Ernakulam
Surabhi Ispat Pvt. Ltd	Palakkad
A.P.Steels Pvt. Ltd	Palakkad
Sea Fresh Exports Pvt. Ltd	Alappuzha

c) Service Industries

BTH Sarovaram	Ernakulam
Fort Scan Ltd	Trivandrum
Geojit Financial Services Ltd	Ernakulam
KTDC Yatri Nivas	Kollam
Kumarakam Lake Resorts	Kottayam
Bipha Tourist Lines	Idukki
Capstocks Ltd.	Trivandrum
Vanchinad Hospitals	Trivandrum
Venture Management Associates	Trivandrum

Solar Offset Printers	Trivandrum
Fort House	Kollam
Raji Industrial Consultants	Kollam
Arafa Hospital	Kollam
Lakeshore Hospitals Ltd	Ernakulam
Kerala Institute of Medical Sciences	Trivandrum
Air Travel Enterprises Pvt. Ltd	Trivandrum
Hotel Geeth International	Trivandrum
Fantasy Park	Palakkad
Hotel Srichakra International	Palakkad
Lakeview Resorts Pvt.Ltd.	Kollam
Joy's the Beach Resorts Pvt. Ltd	Trivandrum
Deedi Automobiles Ltd	Trivandrum
Silver Storm Industries	Thrissur
Tanjet Tours and Travels	Trivandrum
Geethanjali Hospital	Trivandrum

d) IT/ITES Industries

Avenir Computer Services (P) Ltd	Ernakulam
Standard IT	Trivandrum
InDatum	Trivandrum
Sandblue Pvt. Ltd	Trivandrum
CABS	Trivandrum
Vinirma Pvt. Ltd	Trivandrum
Traitz	Trivandrum
Cell Technologies	Trivandrum
TBIC - Kreara	Trivandrum
Softland Industries Pvt. Ltd	Trivandrum
Jayvee Computer Services	Trivandrum
Softlutions India (P) Ltd	Trivandrum
PIT Solutions	Trivandrum
Gemini Industries	Trivandrum
Proxy Systems	Trivandrum
Stabilix India (P) Ltd	Trivandrum
Exon Systems Pvt. Ltd	Trivandrum
Dimensions (P) Ltd.	Ernakulam
Indigo (P) Ltd	Ernakulam
Calphine Systems	Ernakulam
ARYS Pvt. Ltd	Ernakulam
Ditro Communications	Ernakulam
Amalki Pvt. Ltd	Ernakulam
IVL Systems Pvt. Ltd	Trivandrum
Torroid India Pvt. Ltd	Trivandrum

APPENDIX - VII

Prominent Personalities Interviewed

Shri T.K.Devakumar, MLA
(Haripad)
Kerala Legislative Assembly

Shri P.T.Thomas, MLA
(Thodupuzha)
Kerala Legislative Assembly

Shri Mankode Radhakrishnan MLA
(Nedumangad)
Kerala Legislative Assembly

Shri V.K.C.Mammad Koya MLA
(Beypore)
Kerala Legislative Assembly

Shri P.K.Kunhalikutty MLA
(Kuttipuram)
Ex-Minister for Industries & IT
Govt. of Kerala

Shri K.Mohanan Ex.M.P
Desabhimani Daily
Trivandrum

Shri P.H.Kurian IAS
Secretary , IT Dept.
Managing Director, KSIDC.
Govt. of Kerala

Shri John Mathai IAS
Principal Secretary (Industries)
Govt. of Kerala

Dr.B.Chandrachoodan Nair
Chief (Industrial & Infrastructure)
State Planning Board and
Director
Bureau of Public Enterprises
Govt. of Kerala

Shri K.G.Gireesh Babu
CEO
Infopark,
Kochi

Shri K.G.Satheesh Kumar
Ex-CEO
Technopark
Trivandrum

Shri K.Ramesh Kumar
Director
Software Technology Parks of India
Trivandrum

Shri G.Vasudevan
Technopark
Trivandrum

Dr.K.K.Subrahmonian
Hon.Fellow
Centre for Development Studies
Trivandrum

Shri K.Pankajakshan
Managing Director
A.P.Steels Pvt. Ltd.
Palakkad

Shri Jacob T.Mathew
Managing Director
Jayvee Computers Ltd
Trivandrum

Shri T.C.Paul
Managing Director
Joys the Beach Resorts Pvt. Ltd, Trivandrum
Deedi Automobiles, Trivandrum

Shri P.Kesavapillai
Chairman
Travancore Oxygen Ltd
Mavelikkara, Alappuzha

Shri Raveendranath
Managing Director
Stylus Polystores Pvt. Ltd,Trivandrum
Kollam Cashew Consortium Pvt. Ltd.
Kollam

Shri K.C.Sanjeev
Managing Director
Impel Machines Pvt. Ltd, Trivandrum
Intimate Machines Pvt. Ltd, Trivandrum
Solar Offset Printers (P) Ltd, Trivandrum
Print Finish Equipments, Idukki

NB 4977