Saurashtra University
Re – Accredited Grade 'B' by NAAC
(CGPA 2.93)

Bhatt, Kaushal A., 2012, *"An Assessment of Indian Information Technology Companies Listed on National Stock Exchange by Pearls Analysis: An Analytical Study"*, thesis PhD, Saurashtra University

http://etheses.saurashtrauniversity.edu/id/eprint/608

Copyright and moral rights for this thesis are retained by the author

A copy can be downloaded for personal non-commercial research or study, without prior permission or charge.

This thesis cannot be reproduced or quoted extensively from without first obtaining permission in writing from the Author.

The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the Author

When referring to this work, full bibliographic details including the author, title, awarding institution and date of the thesis must be given.

Saurashtra University Theses Service
http://etheses.saurashtrauniversity.edu
repository@sauuni.ernet.in

© The Author

"AN ASSESSMENT OF INDIAN INFORMATION TECHNOLOGY COMPANIES LISTED ON NATIONAL STOCK EXCHANGE BY PEARLS ANALYSIS: AN ANALYTICAL STUDY"

THESIS
SUBMITTED TO
SAURASHTRA UNIVERSITY
TO AWARD THE DEGREE OF
DOCTOR OF PHILOSOPHY IN COMMERCE
UNDER
FACULTY OF COMMERCE

SUBMITTED BY
MR. KAUSHAL A. BHATT
(M.Com. M. Phil. M.B.A. B.Ed. D.C.S.)
ASSISTANT PROFESSOR
SHRI J. V. INSTITUTE OF MANAGEMENT STUDIES
JAMNAGAR - 361005

GUIDED BY
Dr. A. K. CHAKRAWAL
PROFESSOR
DEPARTMENT OF COMMERCE AND
BUSINESS ADMINISTRATION
SAURASHTRA UNIVERSITY
RAJKOT – 360005

APRIL – 2012

Reg. No.: 4276 **Date of Reg.: 31st October, 2009**

KAUSHAL A. BHATT
(Ph. D. Scholar)
Department of Commerce and
Business Administration
Saurashtra University
Rajkot – 360 005

DECLARATION

I, the under signed, **KAUSHAL A. BHATT**, hereby, declare that the research work presented in this thesis is my own contribution and has been carried out under the supervision of **Dr. A. K. Chakrawal**, Professor, at the Department of Commerce, Saurashtra University, Rajkot.

This is an original contribution in every respect and has not been previously submitted to any university for any degree.

Date:

Place: Rajkot **(KAUSHAL A. BHATT)**

Dr. A. K. Chakrawal
Professor
Department of Commerce and
Business Administration
Saurashtra University
Rajkot – 360005

CERTIFICATE

This is to certify that the Thesis entitled **"AN ASSESSMENT OF INDIAN INFORMATION TECHNOLOGY COMPANIES LISTED ON NATIONAL STOCK EXCHANGE BY PEARLS ANALYSIS: AN ANALYTICAL STUDY"** submitted by Mr. **KAUSHAL A. BHATT**, for the award of the degree of **DOCTOR OF PHILOSOPHY** in the subject of Commerce under the Faculty of Commerce, Saurashtra University, has been completed under my supervision and guidance. To the best of my knowledge and belief this is an original research work carried out by the researcher Mr. Kaushal A. Bhatt and has not been previously submitted to any university for any degree.

Date:

Place: Rajkot **(Dr. A. K. CHAKRAWAL)**

ACKNOWLEDGEMENT

I hereby acknowledge my deep sense of gratitude to my guide Dr. A. K. Charawal, Professor, Department of Commerce and Business Administration, Saurashtra University, Rajkot. He encourages me to study and made my path very easy by giving valuable guidance. I am highly indebted to him.

I wish to express my heartfelt gratitude to Dr. (Mrs.) D. C. Gohil, Head, Department of Commerce and Business Administration, Saurashtra University, Rajkot for her inspiration to complete this research work. I am highly thankful to Prof. (Dr.) P. L. Chauhan, Dean and Head of Business Management Department, Saurashtra Uninversity, Rajkot for helping during my Ph. D. tenure. I am thankful to Dr. S. J. Parmar, Associate Professor, Department of Commerce and Business Administration, Saurashtra University. I am also thankful to teaching and non-teaching staff of Department of Commerce and Business Administration.

I express my humble gratitude to Dr. K. J. Thanakchan, Director of JVIMS, Dr. Ajay Shah, Dy. Director of JVIMS for supporting me during my Ph. D. tenure. I am highly obliged to Dr. G. G. Matharu, Friend – Philosopher – Guide for supporting and inspiring me during my research work. Moreover, I would like to thank all my colleague viz., Prashant Sir, Rajesh Sir, Ashish Sir, Shital Mam, Krunal Sir, Archna Mam, Nirav Sir, Hetvi Mam, Disha Mam and Ashok Sir for their support and cooperation. I am also thankful to Admin Staff of JVIMS viz., Mr. Nayabhai, Mr. Rajubhai and Mr. Nikhilbhai for suggesting the proper format for some of the issues of formatting. I am also very much thankful to support staff of JVIMS viz., Dipaben and

Balabhai for helping me during my Ph. D. work. I would also like to take the opportunity to thank Bharti Mam, Vinodbhai, Ketanbhai, Hemalbhai and Harenbhai Librarians of JVIMS for providing me books as and when needed. I also express my heartfelt thanks to those who helped me directly or indirectly in every respect.

Last but not least, I indeed have no words to express my gratitude to my beloved and respected parents who are my perennial source and soul of inspiration to pursue this research work. I am really very thankful to my father **Mr. Arvindbhai** and mother **Mrs. Kundanben** for giving me moral support throughout my Ph. D. work. I express my briskly thanks to my elder brother Hiren (Motabhai) for helping me in setting the thesis in proper manner. His minor suggestions had helped me to have errorless thesis. I am also thankful to Prexa bhabhi, niece Maitreyee (Chaki) and nephew Tathagat for making me tension free by playing mischief every time. I wish to express my humble gratitude to my in lows Mr. Rameshbhai and Mrs. Hashmitaben for their constant support throughout research work. I am also thankful to my brother in lows Nirav and Kartik for helping me in all respect. Last but not least, I am highly thankful to **"Lady Luck"** my bellowed wife Kinjal who supported me in every respect during the tenure of Ph. D. work.

Finally, I am indebted to Almighty who gave me the potency to complete this research work within specified time.

Date :

KAUSHAL A. BHATT
Assistant Professor
JVIMS – Jamnagar

Preface

The IT industry has emerged as one of the most important industries in the Indian economy contributing significantly to the growth of the economy. The IT industry of India got a major boost from the liberalization of the Indian economy. India's software exports have grown at an annual average rate of more than 50% since 1991. The structure of the IT industry is quite different from other industries in the Indian economy. The IT industry of India is hugely dependant on skilled manpower. Primarily a knowledge based industry, the IT industry of India has reordered significant success due to the huge availability of skilled personnel in India. IT services constitute a major part of the IT industry of India. IT services include client, server and web based services. Opportunities in the IT services sector exist in the areas of consulting services, management services, internet services and application maintenance.

The Information Technology Industry is thus, very important industry for Nation's development and growth. The companies fall under this industry will have to be assessed to have proper industry picture. We had an example of "Satyam Saga" which is the black spot for this developing industry. Here, researcher has tried to assess the financial stability of the selected companies using PEARLS technique developed by WOCCU (World Council for Credit Unions, USA) which includes the basic six parameters; they are **P**rotection, **E**ffective Financial Structure, **A**sset quality, **R**ates of Return and Costs, **L**iquidity and **S**ings of Growth. All these parameters help in measuring the financial performance of the Company. The research emphasizes on the comparative study of selected Indian Information Technology Companies listed on NSE.

INDEX

LIST OF TABLES

LIST OF CHARTS

LIST OF ABBREVIATIONS

ANOVA = Analysis of Variance
APAC = Asian Pacific American Coalition
ASTD = American Society for Training & Development
ATM = Automatic Teller Machine
ATMP = Assembly, Test, Mark and Packaging
BFSI = Banking, Financial Services and Insurance
BHAR = Buy-and-Hold-Abnormal Returns
BPO = Business Process Outsourcing
BSC = Business Solution Centers
BSE = Bombay Stock Exchange
CAMEL = Capital Adequacy, Asset Quality, Management, Earnings, and Liquidity
CAS = Central Authentication Service
CAS = Custom Application Services
CBS = Capacity Building Scheme
CCTNS = Crime and Criminal Tracking Network & Systems
CDMA = Code Division Multiple Access
CEO = Chief Executive Officer
CGAP = Consultative Group To Assist The Poorest
CIO = Chief information officer
CMC = Computer Maintenance Corporation
COBOL = Common Business-Oriented Language
COE = Centers of Excellence
CRM = Customer Relationship Management
CSC = Common Services Centers
CSO = Central Statistics Office

CSR = Corporate Social Responsibility
CU = Credit Unions
CUA = Credit Union Association
CUES = Credit Union Empowerment and Strengthening
CV = Coefficient of Variance
DHQ = District Head Quarter
DOE = Department of Electronics
DTH = Direct to Home
DVD = Digital Versatile/Video Disc
DWDM = Dense wavelength division multiplexing
EAS = Emergency Alert System
EAS = Enterprise Application Services
ECIL = Electronics Corporation of Indian Limited
EDOS = Engineering Design and Operation Solutions
EGDS = Enterprise Geospatial and Defense Solutions
EITS = Enterprise Information Technologies Solutions
EPCM = Engineering, Procurement and Construction Management
EPM = Enterprise Project Management
ERP = Enterprise Recourse planning
ERS = Engineering and Research & Development Services
ETS = Enterprise Transformation Services
EU = European Union
FAO = Finance and Accounting Outsourcing
FDI = Foreign Direct Investments
FERA = Foreign Exchange Regulation Act
FM = Frequency Modulation
FORTRAN = Formula Translating
G2B = Government to Business
G2C = Government to Citizen
G2G = Government to Government
GDM = Global Delivery Model
GDP = Gross Domestic Product
GSM = Global System for Mobile Communication
HCM = Human Capital Management
HRM = Human Recourse Management
HRO = Human Resources Outsourcing
HSD = Honestly Significant Difference

IBM = International Business Machine
ICL = Indian Cricket League
ICT = Information and Communication Technology
ICTE = Information, Communication Technology and Electronics
IEC = International Electrotechnical Commission
IEM = Industrial Entrepreneurs Memorandum
IIM-A = Indian Institute of Management - Ahmedabad
IIT = Indian Institutes of Technology
IMS = Infrastructure Management Services
INR = Indian National Rupee
IPC = International Patent Classifications
IPO = Initial Public Offer
IPTV = Internet Protocol Television
ISD = Infrastructure Services' Division
ISIN Code = International Securities Identification Number
ISO = International Organization for Standardization
ISP = Internet service provider
IT = Information Technology
ITES = Information Technology Enabled Services
ITSP = Internet telephony Service Provider
KPO = Knowledge Process Outsourcing
LCD = Liquid Crystal Device
LED = Light Emitting Diodes
LPG = Liberalization, Privatization, Globalization
M & A = Merger and Acquisition
MBA = Master of Business Administration
MBP = Micro enterprise Best Practices
Mbps = Mega Bite per Second
MCUB = Model Credit Union Building
MFI = Micro Finance Institutions
MMP = Mission Mode Projects
MNC = Multinational Companies
MPE = Media Publishing Entertainment
NASSCOM = National Association of Software and Service Companies
NCR = National Capital Region
NeGP = National e-Governance Plan
NGO = Non Governmental Organizations

NIC = National Informatics Centre
NICNET = National Informatics Centre's
NLD = National Long Distance
NRI = Non Resident Indians
NSE = National Stock Exchange
NTP = New Telecommunications Policy
O/O = Owner-Operators
OCB = Overseas Corporate Bodies
OEM = Original Equipment Manufacturer
OGC = Open Geospatial Consortium
OPEX = Operational Expenses
OSS = Open Source Solutions
OTC = Open Technology Center
PC = Personal Computer
PEARLS = Protection, Effective Financial Structure, Assets Quality, Rates of Return and Costs, Liquidity, Signs of Growth
PoP = Point of Purchase
POS = Point of sale
PRCSL = Pokhara Royal Cooperative Society Limited
PSU = Public Sector Units
RF = Radio Frequency
S&P = Standard and Poor
SAP = Special Assistance Plan
SBU = Strategic Business Unit
SCM = Supply Chain Management
SDC = State Data Centers
SDH = Synchronous Digital Hierarchy
SEEPZ = Santa Cruz Electronics Export Processing Zone
SEI-CMM = Software Engineering Institute
SeMT = State e-Governance Mission Team
SHQ = State Head Quarter
SIA = Secretariat for Industrial Assistance
SLA = Service Levels Agreements
SMB = Small and Medium Businesses
SME = Small and Medium Enterprise
SOA = Service Oriented Architecture
SPTS = Software Product and Technology Services

SSDG = State Service Delivery Gateway
STQC = Standardization Testing and Quality Certification
SWAN = State Wide Area Networks
TCS = Tata Consultancy Services
TOS = Total Outsourcing
TV = Tele Vision
UK = United Kingdom
US = United States
USAID = United States Agency for International Development
USD = United State Dollar
VSAT = Very Small Aperture Terminal
VSNL = Videsh Sanchar Nigam Limited
WiMAX = Worldwide Interoperability for Microwave Access
WOCCU = World Council for Credit Union
WSIS = World Summit on the Information Society
WTO = World Trade Organization

1.1 Introduction to Global Information Technology Industry

To understand the processes and impacts of a globalizing technology like the Internet, one must account for the historical development of that technology, the process of technology transfer in general, and the local cultural dynamics in unique regions. The Internet will diffuse differently in different regions and among different sectors within those regions. Chile, for historical and cultural factors, should demonstrate a different diffusion and use pattern than India or Kenya. This leads to different definitions of how Internet technologies are constructed within distinct regions and poses challenges for the development of a symmetrical global scientific community fueled by new ICTs. This last statement often weaves itself into the "taken for granted" rhetoric found in multilateral conferences like the World Summit on the Information Society (WSIS).

It is simplistic to assume that the Internet will resolve inequities in social, political, economic and even scientific terms. It is a noble perspective, but the last 50 years of development failures based on other western technologies and protocols does not provide much optimism[1]. The following session review highlights the complex factors involved in Internet diffusion, post war history, technological culture, case studies in the developing world, and innovations in technology research and development.

The session on History of Information Technology reflected many of the temporal, transnational and developmental dimensions of research in the information society. American scholars Martin Collins and Janet Abbate retraced the historical contexts of cellular and Internet technology research and development in the post war era. Collins discussed the ways Motorola's transnational Iridium project was constructed by both Cold War political culture and post Cold War market culture notions of the global. Abbate reminded us that "Internet culture" finds its roots in the values of the research community that first conceived and then developed it. Brazilian scholar Celso Candido offered us an overview of the developmental constraints and potentials of

[1] Strategic Review of The IT Industry India 2003 – NASSCOM release

Internet technology diffusion in his nation over the last quarter century. Brazil's case mirrors many of the diffusion processes unfolding throughout the developing world. The session concluded with Swedish scholar, Mikael Snaprud's overview of "open source" platform support for collaboration in ICT training and research[2].

1.2 History of Indian Information Technology Industry

The Indian Information Technology industry accounts for a 7.3% of the country's GDP and export earnings as of financial year 2011[3]. while providing employment to a significant number of its tertiary sector workforce. More than 2.5 million people are employed in the sector either directly or indirectly, making it one of the biggest job creators in India and a mainstay of the national economy. In 2010-11, annual revenues from IT-BPO sector is estimated to have grown over US$76 billion compared to China with $35.76 billion and Philippines with $8.85 billion[4]. India's outsourcing industry is expected to increase to US$225 billion by 2020[5]. The most prominent IT hub is IT capital Bangalore. The other emerging destinations are Chennai, Hyderabad, Kolkata, Pune, Mumbai, NCR and Kochi. Technically proficient immigrants from India sought jobs in the western world from the 1950s onwards as India's education system produced more engineers than its industry could absorb. India's growing stature in the Information Age enabled it to form close ties with both the United States of America and the European Union. However, the recent global financial crisis has deeply impacted the Indian IT companies as well as global companies. As a result hiring has dropped sharply and employees are looking at different sectors like the financial service, telecommunications, and manufacturing industries, which have been growing phenomenally over the last few years.

---

[2] Saxenian, AnnaLee (1999): Silicon Valley's new immigrant entrepreneurs. Public Policy Institute of California, San Francisco CA.

[3] Economic Times, Daily Business News Paper, dated, 23rd March, 2011

[4](2010b): Resource centre: facts and figures. NASSCOM, New Delhi. http:// www.nasscom.org/artdisplay.asp?cat_id=315

[5] www.nasscom.org

India's IT Services industry was born in Mumbai in 1967 with the establishment of Tata Group in partnership with Burroughs[6]. The first software export zone SEEPZ was set up here way back in 1973, the old avatar of the modern day IT Park. More than 80 percent of the country's software exports happened out of SEEPZ, Mumbai in 80s.

Each year India produces roughly 500,000 engineers in the country, out of them only 25% to 30% possessed both technical competency and English language skills, although 12% of India's population can speak in English[7]. India developed a number of outsourcing companies specializing in customer support via Internet or telephone connections. By 2009, India also has a total of 37,160,000 telephone lines in use, a total of 506,040,000 mobile phone connections, a total of 81,000,000 Internet users—comprising 7.0% of the country's population, and 7,570,000 people in the country have access to broadband Internet— making it the 12th largest country in the world in terms of broadband Internet users Total fixed-line and wireless subscribers reached 543.20 million as of November, 2009[8].

1.2.1 Phase – 1: 1960s and 1970s: Indigenization and Self Sufficiency

India was motivated to try developing self-sufficiency in computers and electronics largely by national security concerns related to border conflicts with China and Pakistan. The government created and Electronics Committee which devised a strategy for achieving self-sufficiency in electronics within ten years by "leapfrogging" ahead to absorb the most advanced products and technologies available. The goal was eventually to achieve indigenization of technology[9]. whereby India would move away from dependence on foreign technology and produce its own. This approach not only responded to the perceived security risks, but also fit the

---

[6] CMIE (1997): Centre for Monitoring Indian Economy. Prowess database (digital). Bombay.

[7] Report on "Knowledge revolution in rural India" published in THE HINDU newspaper dated 20.7.2003.

[8] Salmon, Felix. 2010. The Lessons of Andhra Pradesh. j.mp/ge0zyQ. November 18.

[9] Heeks (1996): India's software industry: state policy, liberalisation and industrial development. Sage Publications, New Delhi.

ideology of self-sufficiency which drove much of India's post-independence political and economic agenda.

The main vehicle chosen to gain access to advanced computer technologies was negotiation with multinational, primarily IBM, which dominated the computer market in India (from 1960-1972, IBM accounted for over 70% of all computers installed in India)[10]. From 1966 to 1968, the Indian government tried to get IBM to share equity with local capital in its Indian Operations. IBM said it would leave India before agreeing to equity sharing and the government let the matter drop.

In an attempt to satisfy government's interest in developing domestic production, both IBM and British-owned ICL began to refurbish used computers in Indian plans and sell or lease them to Indian customers. IBM felt that India should evolve technologically from one level of sophistication to the next. However, a 1966 report by government's Electronics Committee stated that such step-by-step technological evolution should be avoided and that India should leap ahead to the latest technologies. But at this point, the government was unable to impose its will on IBM. The government's early attempts to regulate the IT sector actually worsened the degree of technological backwardness as Indian users installed the domestically refurbished machines rather than importing newer models.

The government's inability to effectively regulate the MNCs was due partly to institutional weaknesses in the agencies assigned the task. In 1966, responsibility for implementing the Electronics Committee Report strategies had been given to the Department of Defense Supplies, with monitoring by a new agency, the Electronics Committee of India. However, the committee lacked support staff and had no authority to compel action by other agencies. This lack of authority and technical competence left the government unable to negotiate with the MNCs or to regulate the IT sector effectively. By 1971, the Department of Defense Supplies had a backlog of over 150 license requests for IT projects[11]. After much criticism of the Department by

---

[10] Ministry of Information Technology (1999a): Information Technology Action Plan. Part I – Software. New Delhi.

[11] (1999b): Information Technology Action Plan. Part II – New Policy Paradigm for the Hardware Industry. New Delhi.

other agencies and the private sector, the government announced the formation of a Department of Electronics and a new Electronics Commission. The Commission was responsible for policy formulation and oversight and the Department was responsible for day-to-day implementation of policies.

The Electronics Commission was given authority to direct other government units and to regulate private and public electronics enterprises and it developed a professional staff capable of providing the necessary technical support to effectively regulate the sector. In 1975, the Department of Electronics was given power over the licensing of computer imports. The new Committee and Department of Electronics (DOE) had the authority and capability to establish control over the development of IT in India and they did exactly that.

One of the first steps taken was the establishment of the Santa Cruz Electronics Export Processing Zone (SEEPZ) near Bombay, Foreign and Indian investors were offered incentives to establish an export bas in India, including tax breaks, cheap land, duty-free import of inputs and a streamlined permit process. In return, the government required that all or most of the production be exported and that Indian Components be used as much as possible.

A second step was the creation of the state-owned Electronics Corporation of Indian Limited (ECIL) as a national champion in minicomputer production. ECIL got almost all of the government's computer development funding and the DOE made it very difficult for private competitors to get operating licenses. The government's plan was to allow private firms to compete in the micro sector. Thanks to this support, ECIL's market share ranged from 40% to 53% of the computer installation in India between 1973 and 1977[12].

The third action taken by the Electronics Department and Commission was to once again challenge the position of the multinational. Using FERA regulations, the government began to pressure IBM and ICL to dilute their equity to 40% in their Indian operations. In 1975, the Indian cabinet approved a proposal to set up the state-owned Computer Maintenance Corporation (CMC) with a legal monopoly on the

[12] NASSCOM (2002a): The IT industry in India: Strategic Review 2002. NASSCOM, New Delhi.

maintenance of all foreign computers in the country. This reduced the advantages IBM had with users as a result of its superior service capabilities. The decline of ECIL was partly due to its own inability to produce competitive products but it was exacerbated by changes in policy. The DOE had come under criticism in the late 1970s for blocking the efforts of private sector firms to produce hardware and for protecting ECIL at the expenses of users and domestic competitors.

1.2.2 Phase – 2 The 1970s and 1980s: Software Exports

In the 1970s, there was no separate software industry. Multinationals such as IBM and ICL were the largest providers of hardware to the industry, which used to be bundled with the operating systems and a few basic packages that were generally written in FORTRAN and COBOL languages.

Larger enterprises (including the Indian defense and public organizations) that needed customized applications employed in-house teams that did everything from installing systems to writing software. In fact, when specific software applications become popular, stand-alone boxes were made for them. In 1970s, the concept of stand-alone word processing software did not exist. Later, when local companies grew (after IBM's exit in early 1980s), these companies also had their own proprietary operating systems that generally executed only their computer programs.

India exported its first software services and products in the mid-1970s. Although India was among the first developing nations to recognize the importance of software, the key driver behind exporting software was foreign exchange. To export software, Indian companies had to design it for hardware systems that were the standard worldwide, which in the 1970s were the IBM mainframe computers. In 1980s the regulatory scenario was not very favorable for software exports and this constitutes the beginning of the Indian software industry.

The first software exporting company from India was Tata Consulting Services (TCS) that started operations in 1968. Fortunately, after a few local orders, TCS bagged its first big export assignment in 1973-74, when it was asked to provide an inventory control software solution for an electricity generation unit in Iran. Despite the tough policy with respect to imports, by early 1980s, India was the only developing nation

to have any significant software exports – USD 12 million – a substantial leap over the 1979 level of USD 4.4 million and 30 companies were already beginning to export software[13]. In late 1980s the Indian IT industry witnessed the Indian Government policies becoming more favorable. Representative industry associations getting formed, one of which eventually became NASSCOM (the National Association of Software and Service Companies) and the IT training and education level gradually becoming strong enough for creating a full-fledged industry.

In terms of products and services, there have been continuous exports of software products since the early 1980s. These include enterprise systems, design software and database management tools. However, such exports have consistently formed less than about 5% of total exports[14]. Indian software exports have been and remain dominated by services.

1.2.3 Phase – 3 The 1991s (year of LPG policy) to year 2002 The Emergence of Offshore Outsourcing

Regulated VSAT links became visible in 1985. Desai (2006) describes the steps taken to relax regulations on linking in 1991. Videsh Sanchar Nigam Limited (VSNL) introduced Gateway Electronic Mail Service in 1991, the 64 kbit/s leased line service in 1992, and commercial Internet access on a visible scale in 1992. Election results were displayed via National Informatics Centre's NICNET. The Indian economy underwent economic reforms in 1991, leading to a new era of globalization and international economic integration. Economic growth of over 6% annually was seen between 1993 to 2002[15]. The economic reforms were driven in part by significant the internet usage in the country. The new administration under Atal Bihari Vajpayee—which placed the development of Information Technology among its top five priorities— formed the Indian National Task Force on Information Technology and

---

[13] Varma, Yograj (2001): Mega spenders: DQ-IDC survey. Dataquest, 30 November, 68-73.

[14] (2001): Indian software industry development: international and national perspective. Economic and Political Weekly, XXXVI (45), p.4278-4290.

[15] (2002b): Indian IT software and services directory 2002. NASSCOM, New Delhi.

Software Development. Wolcott & Goodman (2003) report on the role of the Indian National Task Force on Information Technology and Software Development. **The New Telecommunications Policy, 1999** (NTP 1999) helped further liberalize India's telecommunications sector. The Information Technology Act 2000 created legal procedures for electronic transactions and e-commerce. Throughout the 1990s, another wave of Indian professionals entered the United States. The number of Indian Americans reached 1.7 million by 2000. This immigration consisted largely of highly educated technologically proficient workers. Within the United States, Indians fared well in science, engineering, and management. Graduates from the Indian Institutes of Technology (IIT) became known for their technical skills. Thus GOI planned to establish new Institutes especially for Information Technology to enhance this field. In 1998 India got the first IT institute name **Indian Institute of Information Technology** at Gwalior. The success of Information Technology in India not only had economic repercussions but also had far-reaching political consequences. India's reputation both as a source and a destination for skilled workforce helped it improve its relations with a number of world economies. The relationship between economy and technology—valued in the western world—facilitated the growth of an entrepreneurial class of immigrant Indians, which further helped aid in promoting technology-driven growth. Today, Bangalore is known as the Silicon Valley of India and contributes 33% of Indian IT Exports. India's second and third largest software companies are head-quartered in Bangalore, as are many of the global SEI-CMM Level 5 Companies. Next to Bangalore **Chennai** plays an important role in IT. Lot of companies was developed in Chennai, in the last few years. And Mumbai too has its share of IT companies that are India's first and largest, like TCS and well established like Reliance[, Patni, L&T Infotech, i-Flex, WNS, Shine, Naukri, Jobspert etc. are head-quartered in Mumbai. and these IT and dot com companies are ruling the roost of Mumbai's relatively high octane industry of Information Technology. Such is the growth in investment and out sourcing, it was revealed that Cap Gemini will soon have more staff in India than it does in its home market of France with 21,000 personnel in India[16]. On 25 June 2002 India and the European Union agreed to bilateral cooperation in the field of science and technology. A joint EU-India group of

[16] Educational statistics from the 2001 census of Department of Education, Ministry of Home Affairs, Government of India

scholars was formed on 23 November 2001 to further promote joint research and development. India holds observer status at CERN while a joint India-EU Software Education and Development Center is due at Bangalore.

1.3 Structure of India's IT Industry:

The IT industry has emerged as one of the most important industries in the Indian economy contributing significantly to the growth of the economy. The IT industry of India got a major boost from the liberalization of the Indian economy. India's software exports have grown at an annual average rate of more than 50% since 1991[17]. The structure of the IT industry is quite different from other industries in the Indian economy. The IT industry of India is hugely dependant on skilled manpower. Primarily a knowledge based industry, the IT industry of India has reordered significant success due to the huge availability of skilled personnel in India.

The industry structure in the IT sector has four major categories[18]. These are -

A. IT Services

B. IT Enabled Services

C. Software Products

D. Hardware Products

A. IT services:

IT services constitute a major part of the IT industry of India. IT services include client, server and web based services. Opportunities in the IT services sector exist in the areas of consulting services, management services, internet services and application maintenance. With a view to improve the quality of IT services such as Web services, Facility Management, Internet, BPO Services and Telecom Services, a certification scheme, accredited by ITSMF, UK, based on international standard ISO / IEC 20000-1 has been introduced. Additionally, ITSMF accredited training programs for ISO 20000 auditors have also been conducted by STQC both in India and abroad. STQC has also developed a Lead Auditor program based on ISO 2000. IT Services

[17] Ministry of Information Technology (1999a): Information Technology Action Plan. New Delhi.
[18] NASSCOM-Mckinsey Reports, 1999 and 2002.

are undergoing a structural change from client/server to web/package based services. This will form the major chunk of IT services. Growth in IT services will continue to provide the biggest opportunity, while other sectors of IT software industry will also make a significant contribution. IT services, both export and domestic, will grow rapidly as new opportunities are emerging in management/consulting services, application maintenance and Internet services. The major users of IT services are the government, financial services and banking, manufacturing and retail and distribution.

New areas likely to emerge are communication, healthcare and utilities, as these will increasingly be deregulated. However, IT services essentially require high-quality manpower, state of the art skills, world-class telecom and IT-knowledge based environment.

The major users of IT services are –

- Government
- Banking
- Financial services
- Retail and distribution
- Manufacturing

B. IT Enabled Services:

The services which make extensive use of information and telecommunication technologies are categorized as IT enabled services. The IT enabled services is the most important contributor to the growth of the IT industry of India. The employment potential in ITES is substantial and the gestation period is lesser than in other sectors of the IT industry. It is highly quality-oriented, human –resource intensive and requires consistent performance with high standards. Therefore, the success of ITES will mainly depend on the quality of manpower and infrastructure. Knowledge based skill-oriented training is the key to quality of manpower. ITES to succeed requires top-class infrastructure with adequate bandwidth, fault-free and continuous power with two layers of redundancy to avoid any breakdown. ITES, or remote processing, presents a golden opportunity for Punjab. For this, the state has to emphasize on skill-formation through world-class training and infrastructure building. Punjab needs to

garner at least seven per cent share of the total revenue of India in ITES. This can provide employment to 77,000 educated youth and generate a turnover of US$ 1.26billion (` 6,300 crore) by 2007. Some of the important services covered by the ITES sector in India are -

- Customer-interaction services including call-centers
- Back-office services
- Revenue accounting
- Data entry and data conversion
- HR services
- Transcription and translation services
- Content development and animation
- Remote education,
- Data search
- GIS
- Market research
- Network consultancy

C. Software Products:

Software products are among the most highly exported products from India. The software industry in India originated in the 1970s and grew at a significant pace in the last ten years. Between 1996-1997 and 2002-2003, the Indian software industry grew more than five times from 2630 crores to 13200 crores[19]. During the same period software and service exports from India grew by almost twelve times. Information Technology (IT), a knowledge-based industry, has the tremendous potential of becoming an engine of accelerated economic growth, productivity improvement for

[19] Quarterly NASSCOM Reports.

all sectors of the economy and means of efficient governance. It enhances access to information, protects consumers, provides access to government services, makes skill formation and training more effective, improves delivery health services, and promotes transparency. It provides tremendous employment potential and linkages between government and the people both at the rural and urban level. Investment in knowledge based industries will determine the level of the country's dominant position in the world economy in the next two decades. **Software Product and Technology Services** provide a high growth opportunity for the Indian software industry. Indian companies have a market potential of software product development, such as enterprise software (e-business solution, ERP, e-corporate governance), consumer software (personal productivity tools) and embedded software. Indian companies have developed a number of highly acclaimed and popular packages, such as HR management and business accounting by TCS, banking automation packages by Infosys, ERP tools by RANCO, etc.

D. Hardware:

The hardware sector of the It industry focuses on the manufacturing and assembling of computer hardware. The consumption of computer hardware is high in the domestic market. Due to the rise in the number of IT companies, sales of desktops, laptops, servers, routers, etc have been on the rise in recent years. Many domestic and multi-national; companies have invested in the computer hardware market in India. Another categorization in the structure of India's IT industry is related to the market. There are two major market classifications - the domestic market and the export market. The export market, dominates the IT industry accounting for 75% of the revenue[20]. Electronics Hardware Manufacturing continues to be a thrust area for the Government. The Special Incentive Package Scheme that was announced on 21st March 2007 to encourage investments for setting up Semiconductor Fabrication and other micro and nano technology manufacture industries in India has received very positive response from prospective investors. Seventeen proposals involving an investment of the order of `1,57,000 crore, over a period of next 10 years covering

[20] Ministry of Information Technology (MIT), Report for Tenth Plan (2002-07).

setting up of Semiconductor fabrication, LCD panel manufacturing and Solar photovoltaic including polysilicon, under the Scheme have been received.

1.4 Contribution of India's I.T. Industry to Economic Progress

The contribution of India's IT industry to economic progress has been quite significant. The rapidly expanding socio-economic infrastructure has proved to be of great use in supporting the growth of Indian information technology industry. The flourishing Indian economy has helped the IT sector to maintain its competitiveness in the global market. The IT and IT enabled services industry in India has recorded a growth rate of 22.4% in the last fiscal year[21]. The total revenue from this sector was valued at ` 2.46 trillion in the fiscal year 2007. Out of this figure, the domestic IT market in India accounted for 900 billion rupees. So, the IT sector in India has played a major role in drawing foreign funds into the domestic market.

The growth and prosperity of India's IT industry depends on some crucial factors. These factors are as follows:

- India is home to a large number of IT professionals, who have the necessary skill and expertise to meet the demands and expectations of the global IT industry.
- The cost of skilled Indian workforce is reasonably low compared to the developed nations. This makes the Indian IT services highly cost efficient and this is also the reason as to why the IT enabled services like business process outsourcing and knowledge process outsourcing have expanded significantly in the Indian job market.
- India has a huge pool of English-speaking IT professionals. This is why the English-speaking countries like the US and the UK depend on the Indian IT industry for outsourcing their business processes.
- The emergence of Indian information technology sector has brought about sea changes in the Indian job market. The IT sector of India offers a host of opportunities of employment. With IT biggies like Infosys, Cognizant, Wipro,

[21] Economic Times, Daily Business News Paper, dated, 23rd March, 2011

Tata Consultancy Services, Accenture and several other IT firms operating in some of the major Indian cities, there is no dearth of job opportunities for the Indian software professionals.

- The IT enabled sector of India absorbs a large number of graduates from general stream in the BPO and KPO firms. All these have solved the unemployment problem of India to a great extent. The average purchasing power of the common people of India has improved substantially. The consumption spending has recorded an all-time high. The aggregate demand has increased as a result. All these have improved the gross production of goods and services in the Indian economy. So in conclusion it can be said that the growth of India's IT industry has been instrumental in facilitating the economic progress of India.

1.5 SWOT Analysis of Indian I.T. Industry

A. Strengths

- Highly skilled human resource
- Low wage structure
- Quality of work
- Initiatives taken by the Government (setting up Hi-Tech Parks and implementation of e-governance projects)
- Many global players have set-up operations in India like Microsoft, Oracle, Adobe, etc.
- Following Quality Standards such as ISO 9000, SEI CMM etc.
- English-speaking professionals
- Cost competitiveness
- Quality telecommunications infrastructure
- Indian time zone (24 x 7 services to the global customers). Time difference between India and America is approximately 12 hours, which is beneficial for outsourcing of work.

B. Weaknesses

- Absence of practical knowledge
- Dearth of suitable candidates

• Less Research and Development

• Contribution of IT sector to India's GDP is still rather small.

• Employee salaries in IT sector are increasing tremendously. Low wages benefit will soon come to an end.

C. Opportunities

- High quality IT education market
- Increasing number of working age people
- India 's well developed soft infrastructure
- Upcoming International Players in the market

D. Threats

- Lack of data security systems
- Countries like China and Philippines with qualified workforce making efforts to overcome the English language barrier
- IT development concentrated in a few cities only

1.6 FDI in India's I.T. Industry

Foreign Direct Investment (FDI) is now recognized as an important driver of growth in the country. Government is , therefore, making all efforts to attract and facilitate FDI and investment from Non Resident (NRIs) including Overseas Corporate Bodies (OCBs), that are predominantly owned by them, to complement and supplement domestic investment[22]. To make the investment in India attractive, investment and returns on them are freely repairable, except where the approval is subject to specific conditions such as lock -in period on original investment, dividend cap, foreign exchange neutrality, etc. as per the notified sectoral policy.

- The information technology industry of India has been attracting considerable amount of foreign direct investment in the recent years. Investments are being made in the four principal sectors of the Indian information technology

[22] Moitra, D. (2001). India's software industry. IEEE Software, January/February: 77-80.

industry - online businesses, information technology services, information technology based services and software merchandise.

- Newer investment opportunities are opening up every now and then in the Indian information technology scenario.
- As per the findings of the NASSCOM-McKinsey (National Association of Software and Service Companies) report the Indian information technology is supposed to receive between 4 and 5 billion United States dollars by way of foreign direct investment in the year 2008[23].
- There are however other ways in which foreign direct investment is being made in the information technology industry of India. A number of major information technology companies of the world have set up shop in India trying to recruit the skilled information technology professionals of India.
- One of the major advantages of this method is that the Indian information technology professionals are more viable from the economic point of view Since they are at par with the international standards as far as skills are concerned it is pretty easy to extract good work out of them. This has however helped in the expansion of the job market in India as an increasing number of people are landing jobs with the international information technology companies and are living better lives.
- Foreign direct investment in India's information technology industry has also been contributed to by the remarkable growth of the industry in the recent years.
- The worth of the Indian information technology industry was 150 million United States dollars in the financial year 1991-92 and since then it has grown at an appreciable rate to be worth 5.7 billion US dollars in the 1999-2000 fiscal[24]. The information technology has been among the best as far as rate of growth is concerned. This has lured the investors from all over the world

1.7 Growth of Indian I.T. Industry

[23] Krishna, S., Ojha, A.K. & Barrett, M. (2000). Competitive Advantage in the Software Industry: An Analysis of the Indian Experience, in *Information Technology in Context*, C. Avgerou & G. Walsham (eds), Ashgate, Aldershot, UK, 182-197.

[24] Heeks, R. (1996). *India's Software Industry*. New Delhi: Sage Publications.

- India's IT industry has recorded phenomenal growth over the last decade. During the period from 1992-2001, the compounded annual growth rate of the Indian IT services industry has been over 50%. The software sector in India has grown at almost double the rate of the US software sector.
- The statistics of the India's IT industry substantiates the huge momentum acquired by the IT sector in the recent past. During the financial year 2000-2001[25], the software industry in India accounted for $8.26 billion. The corresponding figure was $100 million 10 years back.
- As per the report of a study undertaken by NASSCOM-McKinsey, the software export from Indian IT industry is likely to reach 80 billion US dollars in the year 2012. This growth rate of the software sector for the year 2012 has been projected on the basis of the 35% per year growth rate achieved in the last couple of years[26].
- Export of software and services from India is expected to add almost 41 billion US dollars to the annual revenue of the Indian government in the current year. The share of technology industry in India's GDP is expected to reach 7.5% in 2012; while the corresponding figure in 1998 was as small as 1.2%.The study of NASSCOM has revealed that the growth of India's IT industry has prompted the growth of Indian exports by almost 36%. Another favorable effect of India's IT boom is the expansion of opportunities of employment. By the end of fiscal year 2012, the IT sector of India is expected to employ around 5 million skilled Indian youths[27].
- The growth of India's IT sector has brought about many other positive changes in the Indian economy. The purchasing power of a large section of Indian population has increased dramatically. This has resulted in an increase in the average standard of living of the majority of population of the country. The increase in purchasing power of the common people has propelled the growth rate of the other sectors of the economy as well.

---

[25] Gallaugher, J. and Stoller, G. (2004). Software Outsourcing in Vietnam: A Case Study of a Locally Operating Pioneer. *The Electronic Journal on Information Systems in Developing Countries*, 17(1): 1-18.

[26] Various sources- ENS Economic Bureau, Nasscomm , Hindustan Times dated June 2nd (handout titled – Software exports peak with 34.5% growth)

[27] www.ibef.org

- There has been considerable increase in the amount of fund available for venture capitalism and equity financing.
- India is now home to a number of IT giants. The operations of IT firms like Wipro, Infosys, Accenture, Capgemini, Tata Consultancy Services and many more in different locations of India have changed the entire scenario of the Indian job market. The ITES sector has also come up to complement the growth of Indian IT sector.

1.7.1 Electronics and IT Production Profile

Table No. 1.1

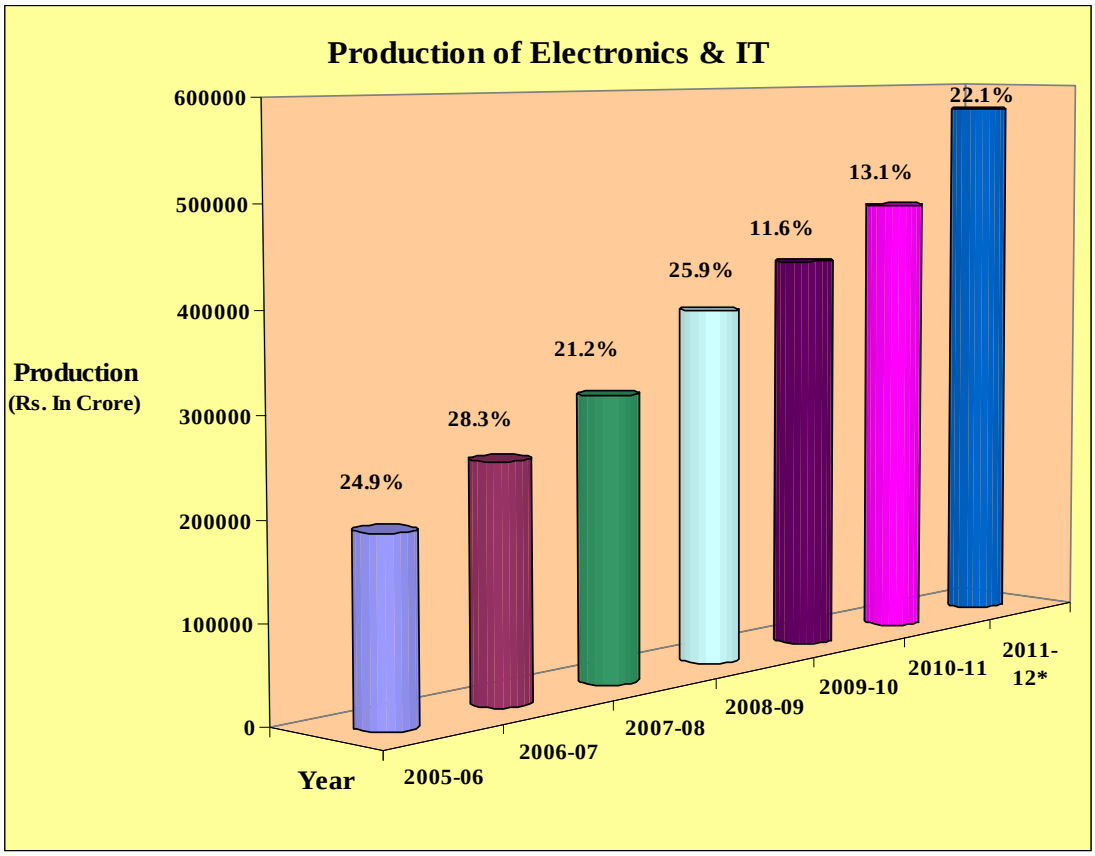
Production Profile of Electronics and IT

Year	Production (` Crore)	Growth (%)
2005-06	1,90,300	24.9
2006-07	2,44,000	28.3
2007-08	2,95,820	21.2
2008-09	3,72,450	25.9
2009-10	4,15,520	11.6
2010-11	4,70,090	13.1
2011-12*	5,73,770	22.1

*** Estimated figure,**

Source: Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.

Chart No. 1.1



The Government has identified growth of electronics and IT production as key area for improvement of this industry. The total production of Electronics & IT-ITeS Industry has grown at 13.1 per cent in 2010-11 as against 11.6 per cent in 2009-10. This increase in growth is attributed mainly to the accelerated growth of software and service industry, which is export driven and continues to dominate the electronics and IT industry. It is estimated that in the financial year 2011-12, the industry will grow at 22.1 per cent and it would produce ` 5,73,770 for electronics and IT related products.

1.7.2 Computer Software Production Profile

Software development is a high tech job that demands skill, time and state-of-the-art technologies and programs. Offshore development and offshore programming is becoming the way of doing software development in India.

Table No. 1.2

Production Profile of Computer Software

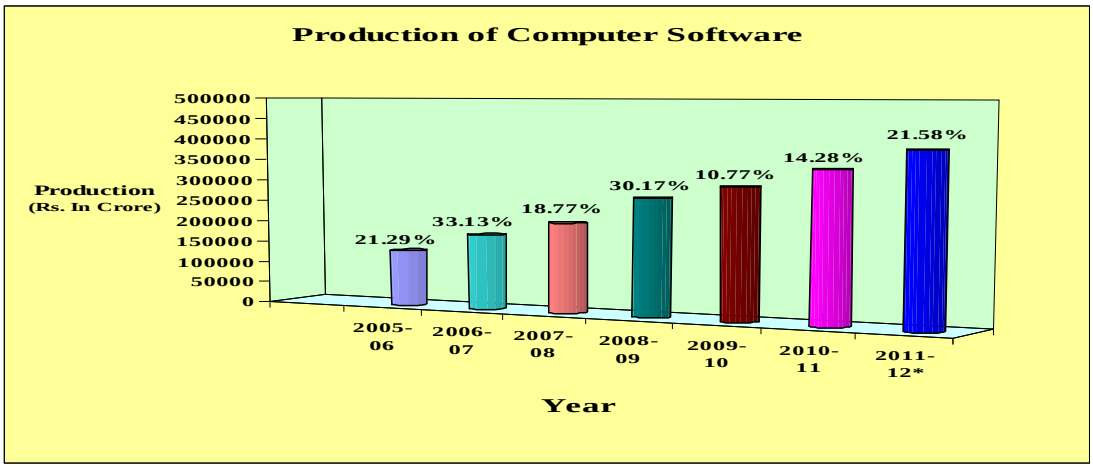
Year	Production (` Crore)	Growth (%)
2005-06	1,33,700	21.29
2006-07	1,78,000	33.13
2007-08	2,11,410	18.77
2008-09	2,75,190	30.17
2009-10	3,04,800	10.77
2010-11	3,48,330	14.28
2011-12*	4,23,500	21.58

*** estimated Figure,**

Source: Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.

Above table reveals the production of Computer Software during last six years. It also shows the estimated figures for financial year 2011-12. It is very clear from the table that the production shows continuous increasing trend during the last six years. Year on year basis it has increased and also in financial year 2011-12 it will increase and it will reach at its highest point i.e. ` 4,23,500. The growth in per cent shows fluctuating during last six years. It ranges between 10.77 percent and 30.17 percent. Here, production in rupees has shown the increasing trend whereas the growth in percentage has shown the fluctuating trend during last six years.

Chart No. 1.2



1.7.3 Electronics Hardware Production Profile

The convergence of information, communication and entertainment is bringing new momentum in the Electronics Hardware Industry in India. It has experienced rapid changes over the last few years. Changing life styles, higher disposable income and greater affordability is fuelling this growth.

Table No. 1.3

Production Profile of Electronics Hardware

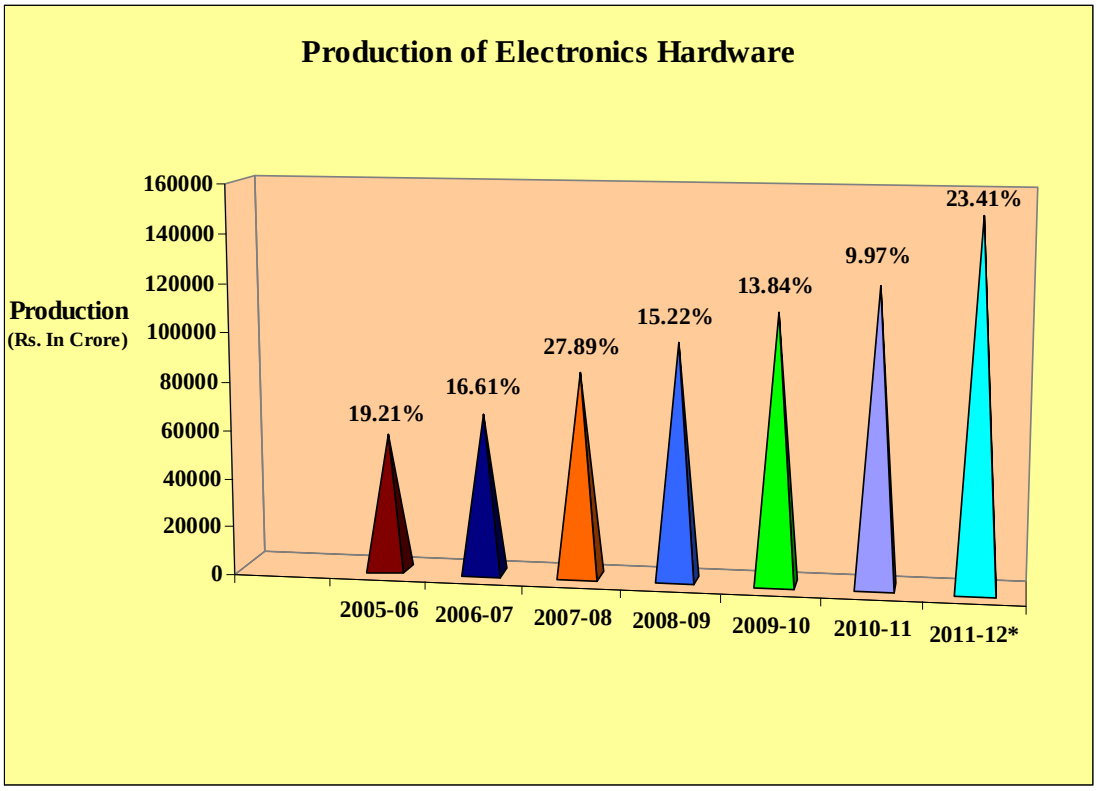
Year	Production (` Crore)	Growth (%)
2005-06	56,600	19.20
2006-07	66,000	16.61
2007-08	84,410	27.89
2008-09	97,260	15.22
2009-10	1,10,720	13.84
2010-11	1,21,760	9.97
2011-12*	1,50,270	23.41

*** estimated**

Source: Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.

Above table reveals the production of Electronics Hardware during last six years. It also shows the estimated figures for financial year 2011-12. It is very clear from the table that the production shows continuous increasing trend during the last six years. Year on year basis it has increased and also in financial year 2011-12 it will increase and it will reach at its highest point i.e. ` 1,50,270. The growth in per cent shows fluctuating during last six years. It ranges between 9.97 percent and 27.89 percent. Here, production in rupees has shown the increasing trend whereas the growth in percentage has shown the fluctuating trend during last six years.

Chart 1.3



1.7.4 Consumer Electronics Production Profile

The convergence of information, communication and entertainment is bringing new momentum in the consumer electronics industry in India. It has experienced rapid changes over the last few years. Changing life styles, higher disposable income and greater affordability is fuelling this growth. Consumer preference has shifted towards products and devices that come with smart technology, innovative designs and aesthetic looks. Premium products, particularly in the metros, are the growth drivers in the consumer electronics industry.

Consumer electronics is one of the largest segments in the electronics hardware sector in India. In this segment, Colour Television is the largest contributor. Market size for colour television in 2010-11 is expected to be 16.10 million units, a growth of 5.50 per cent over the previous year. In value terms, the growth is much higher at 16.40 per cent. This growth is fuelled by the sale of flat panel LCD TVs which is increasing in exponential terms. The market for LCD TV has increased from 1.5 million units in 2009-10 to 2.8 million units in 2010-11. Declining prices and low penetration levels is

responsible for the growth of this segment. Conventional CRT TV segment on the other hand is stagnant at around 13.30 million units.

The DVD player market continues to decline from 6.20 million units in 2009-10 to 5.40 million units in 2010-11. Rapid growth and popularity of the DTH sector is impacting the DVD player market. The Home Theatre segment continues to grow from 0.24 million units in 2009-10 to 0.30 million units in 2010-11, a growth of 25 per cent. Production of microwaves oven is estimated to grow by 21.6 per cent to reach ` 930 Crore in 2010-11 as against a growth of 7.9 per cent in 2009-10.

Table No. 1.4

Production Profile of Consumer Electronics

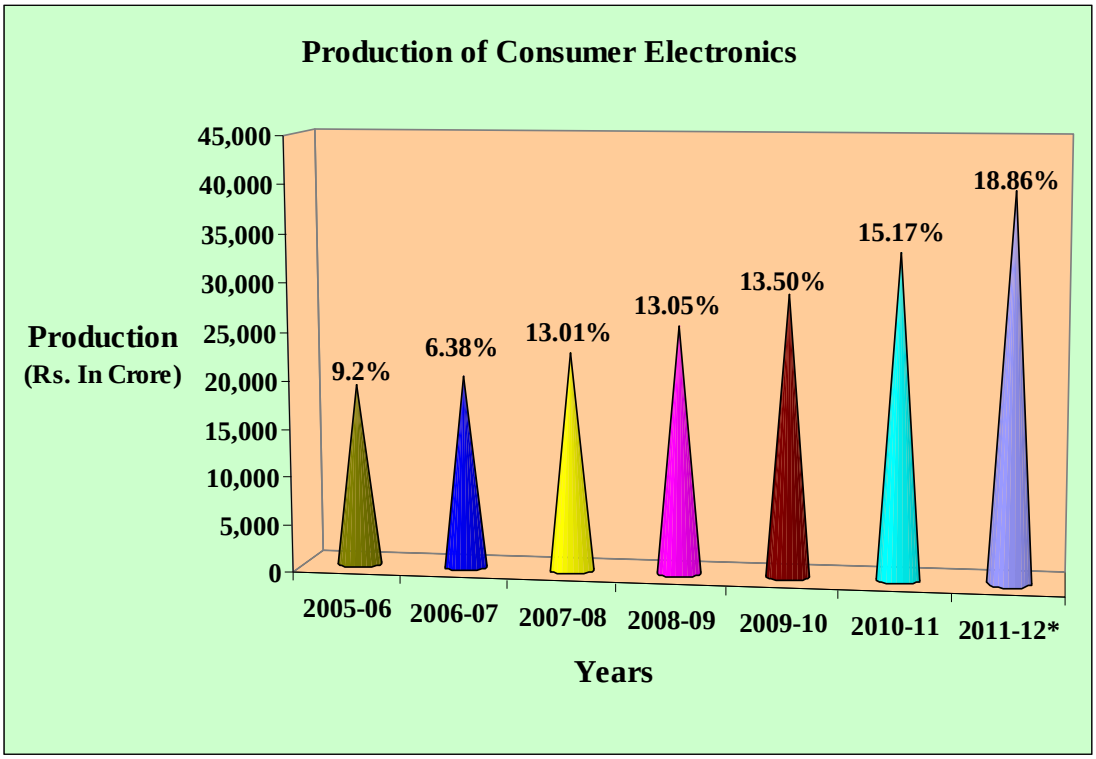
Year	Production (` Crore)	Growth (%)
2005-06	18,800	4.88
2006-07	20,000	6.38
2007-08	22,600	13.00
2008-09	25,550	13.05
2009-10	29,000	13.50
2010-11	33,400	15.17
2011-12*	39,700	18.86

*** estimated**

Source: Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.

Above table reveals the production profile of Consumer Electronics during the period of last six years. It also shows the estimated figures for financial year 2011-12. It is very clear from the table that the production shows continuous increasing trend during the last six years. Year on year basis it has increased and also in financial year 2011-12 it will increase and it will reach at its highest point i.e. ` 39,700. The growth in per cent shows fluctuating during financial year 2005-06 to 2011-12. It ranges between 6.38 percent and 18.86 percent. Here, production in rupees has shown the increasing trend whereas the growth in percentage has shown the fluctuating trend during last six years.

Chart 1.4



1.7.5 Industrial Electronics Production Profile

This segment of Electronics/IT industry includes critical hardware technologies and systems with built-in software. It is a very challenging area which is multi-disciplinary in nature requiring high level of technical skill in designing systems for applications in a variety of industrial sectors of the economy. Whereas we have a good amount of expertise in conceptualizing such systems and its erection and commissioning, the sector is very largely dependent on import of critical hardware and associated software. Large projects are implemented with total import of C&I packages from abroad without any knowledge of its design. In most cases, this leads to higher initial cost and a much higher maintenance cost in the long run. This process is continuing for a long time now. The important devices used in this segment relate to power electronics, medical electronics and other intermediates like semiconductor. Semiconductors are integral part of most medical equipments, starting from high end imaging to small hand held devices.

Table No. 1.5

Production Profile of Industrial Electronics

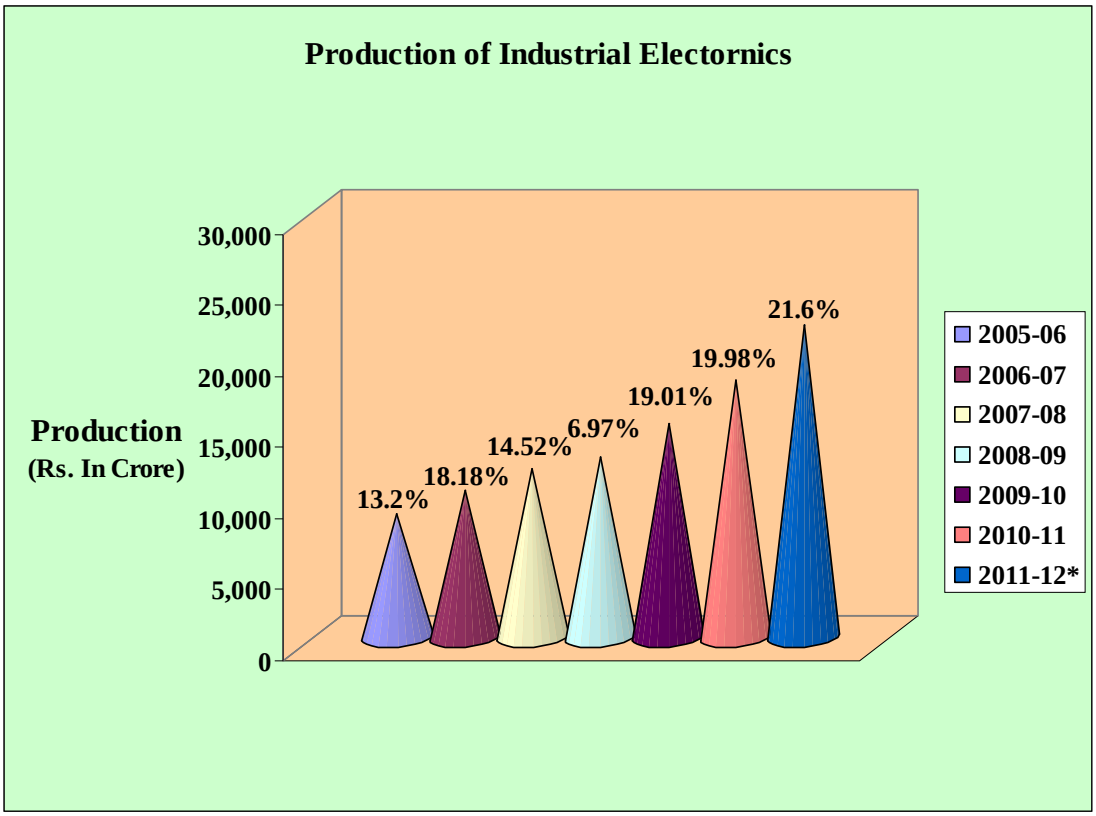
Year	Production (` Crore)	Growth (%)
2005-06	8,800	13.20
2006-07	10,400	18.18
2007-08	11,910	14.52
2008-09	12,740	6.97
2009-10	15,160	19.01
2010-11	18,190	19.98
2011-12*	22,120	21.60

*** estimated**

Source: Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.

Above table reflects the production of Industrial Electronics during last six years. It also shows the estimated figures for financial year 2011-12. It is very clear from the table that the production shows continuous increasing trend during the financial year 2005-06 to 2011-12. Year on year basis it has increased and also in financial year 2011-12 it will increase and it will reach at its highest point i.e. ` 22,120. The growth in per cent shows fluctuating during last six years. It ranges between 6.97 percent in financial year 2008-09 and 21.60 percent in financial year 2011-12. Here, production in rupees has shown the increasing trend whereas the growth in percentage has shown the fluctuating trend during last six years.

Chart 1.5



1.7.6 Computer Hardware Production Profile:

India is one of the fastest-growing IT systems and hardware market in the Asia-Pacific region. Most of the prominent global vendors and some locals have strong presence in the Indian market. Most MNCs have their assembly units in India. BFSI (Banking, Financial Services and Insurance), telecom, ITeS (Information Technology enabled Services), manufacturing verticals, Small & Medium Enterprises (SMEs), e-Governance and households are the key drivers of the IT systems and hardware market in India. With significant IT adoption plans on the anvil, the IT systems and hardware market is expected to expand rapidly in the ensuing years.

PC sales are expected to record a growth of 12 per cent in 2010-11 to touch 9.7 million. The Notebook sales are estimated to be 3.5 million in 2010-11 against 2.5 million in 2009-10, a growth of 40 per cent. This shows that Notebooks have caught the fancy of the consumers. Desktop sales are expected to reach 6.2 million in 2010-11 against 5.5 million in 2009-10, a growth of 12.7 per cent. As regards servers, sales

posted a growth of 41 per cent during second quarter 2010-11 on account of the easing of the Economic slowdown. Establishments which had been postponing their major IT purchases in last few quarters are now ready to invest in IT, which could be the major reason for the growth in the server sales. The Server market is expected to register positive growth in the future as the Server market expands to smaller cities and Small and Medium Businesses (SMBs). The small city growth is largely fuelled by the larger organizations strengthening their base in smaller cities on account of cost advantages. The SMB growth is largely fuelled by the adoption of nontraditional businesses like education, retail, healthcare & hospitality, etc.

Notwithstanding this surge in PC sales, domestic production is estimated to remain flat in 2010-11 at ` 14,970 Crore. This is largely due to decelerating growth in exports, substitution of domestic production by cheaper imports and rising input cost.

Table No. 1.6

Production Profile of Computer Hardware

Year	Production (` Crore)	Growth (%)
2005-06	10,800	12.54
2006-07	12,800	18.52
2007-08	15,870	23.98
2008-09	13,490	-14.99
2009-10	14,970	10.97
2010-11	15,210	1.61
2011-12*	16,690	9.73

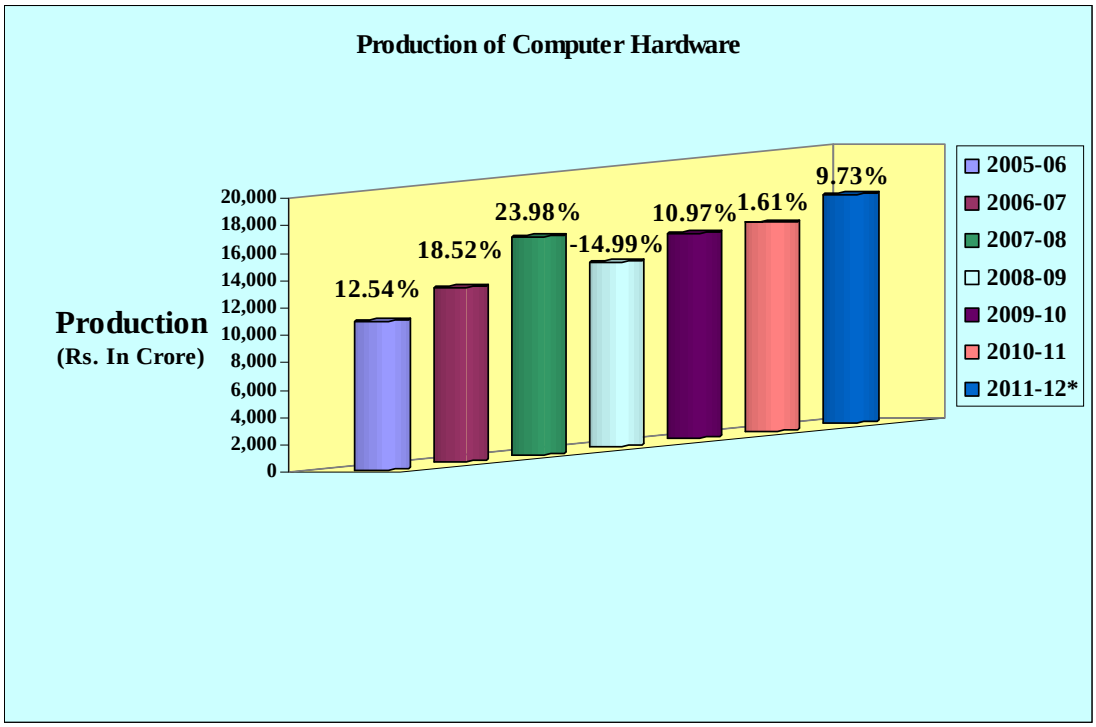
*** estimated**

Source: Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.

Above table indicates the production of Computer Hardware during last six years It is very clear from the table that the production shows continuous increasing trend during the financial year 2005-06 to 2011-12 except the financial year 208-09. Year on year

basis it has increased and also in financial year 2011-12 it will increase and it will reach at its highest point i.e. ` 16,690. The growth in per cent shows fluctuating during last six years. First time it goes into negative i.e. -14.99 in financial year 2008-09. Here, production in rupees has shown the increasing trend except financial year 2008-09 whereas the growth in percentage has shown the fluctuating trend during last six years.

Chart 1.6



1.7.7 Communication and Broadcast Equipment Production Profile:

Communication Technology is a key driver for development and growth. India is third largest in the world in terms of gross telephone subscribers, and second largest in Asia. The gross telephone subscribers in the country reached 787.28 Million at the end of December, 2010. Total wireless subscribers are 752.19 million as on December, 2010. The total Wireline subscribers are 35.09 million as on December, 2010. The overall Tele-density in India reached 66.16 per cent in December, 2010 with overall urban and rural tele-densities being 147.88 and 31.18 respectively. The

total broadband (256 kbps download) subscriber base of India is 10.92 million in December, 2010. The FM radio policy has been well received and there are a total of 248 channels operated by 42 operators in 84 cities at the end of September, 2010.

Besides the free DTH service of Doordarshan, there are 6 private DTH licensees, offering their services to the DTH subscribers. As on 30.9.2010, their reported subscriber base is 26.44 million. It is set to overtake the US as the largest DTH market in the world by 2012. This segment is expected to add 10-12 million subscribers every year. DTH with its digital picture and sound quality is able to deliver a much better performance vis-a-vis the analog cable operators. The growth is from both the urban area (where subscribers are moving away from cable) and rural area (where cable has not reached). Local manufacturing of Set-Top Box has now commenced and is meeting about 25 per cent of the total requirement of the DTH industry. Number of Set Top Boxes (STBs) installed in CAS notified areas of Delhi, Mumbai, Kolkata and Chennai increased from 7,70,519 in June-2010 to 7,75,876 in September-2010.

Table No. 1.7

Production Profile of Communication and Broadcast Equipment

Year	Production (` Crore)	Growth (%)
2005-06	7,000	29.40
2006-07	9,500	35.71
2007-08	18,700	96.84
2008-09	26,600	42.25
2009-10	31,000	16.54
2010-11	32,550	5.00
2011-12*	35,400	8.76

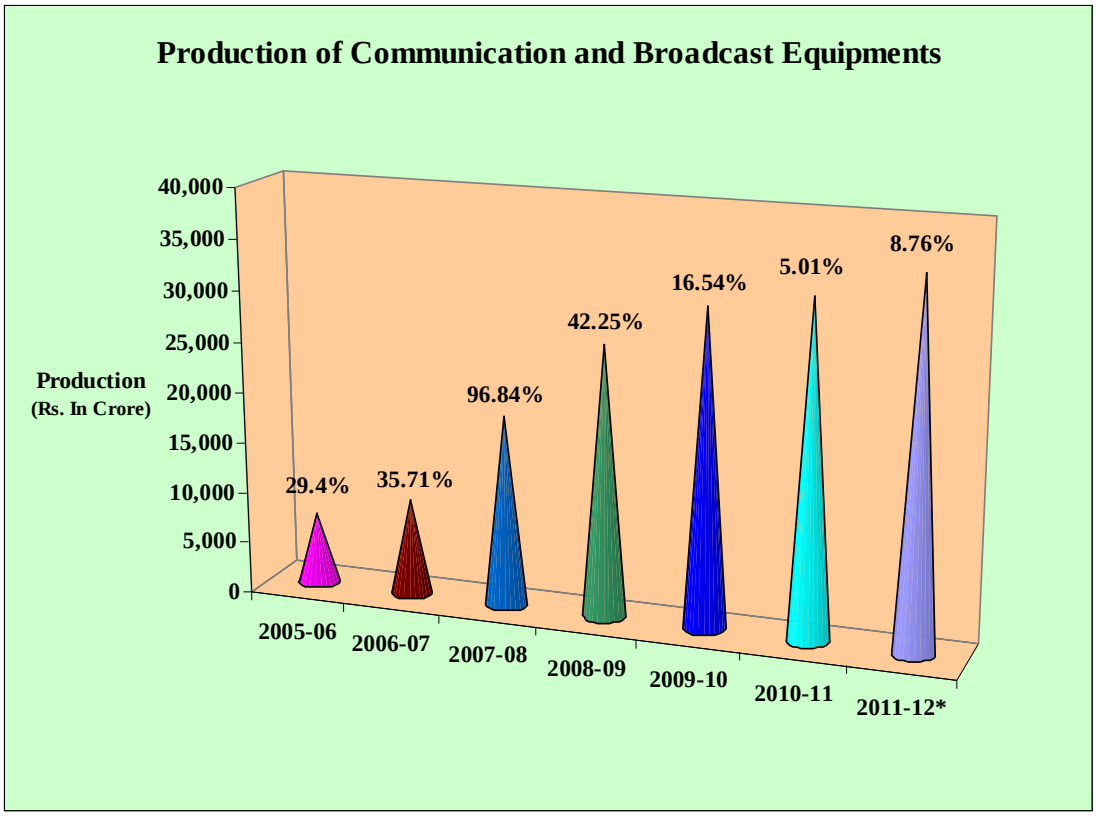
*** estimated**

Source: Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.

Above table reveals the production of Communication and Broadcast Equipment during last six years. It is very clear from the table that the production shows continuous increasing trend during the financial year 2005-06 to 2011-12. Financial

year 2007-08 recorded the drastic increment in the Production of this segment. Year on year basis it has increased and also in financial year 2011-12 it will increase and it will reach at its highest point i.e. ` 35,400 INR. The growth in per cent shows increasing trend except last three consecutive years. Here, production in rupees has shown the increasing trend during last six years whereas the growth in percentage has shown the fluctuating trend during last six years.

Chart 1.7



1.7.8 Strategic Electronics Production Profile:

The strategic electronics segment envelops satellite based Communication, navigation and surveillance system, radars, navigational aids, sonars, underwater electronic system, infra-red based detection and ranging system, disaster management system, internal security system, etc. The Indian strategic electronic industry has been able to meet the bulk of the requirements of India's defence and paramilitary forces. India's defence, aerospace and nuclear sectors are poised for substantial growth on the back

of economic growth and the need to maintain national and energy security. The role of IT in defence is expanding with the new focus on cyber security.

Driven by geo-political considerations, India is expected to be one of the top-5 markets for defence equipment by 2015. Similarly, economic growth and a focus by commercial aircraft manufacturers on lowcost countries are expected to create growth in the aerospace market in emerging markets in general and India in particular. The civilian nuclear agreement between the US and India will enable commerce and cooperation, in particular allowing India to collaborate with global companies on nuclear projects. India has an opportunity to play an important role in this global phenomenon.

Table No. 1.8

Production Profile of Strategic Electronics

Year	Production (` Crore)	Growth (%)
2005-06	3,200	25.70
2006-07	4,500	40.63
2007-08	5,700	26.67
2008-09	6,840	20.00
2009-10	6,980	2.05
2010-11	7,680	10.03
2011-12*	8,970	16.80

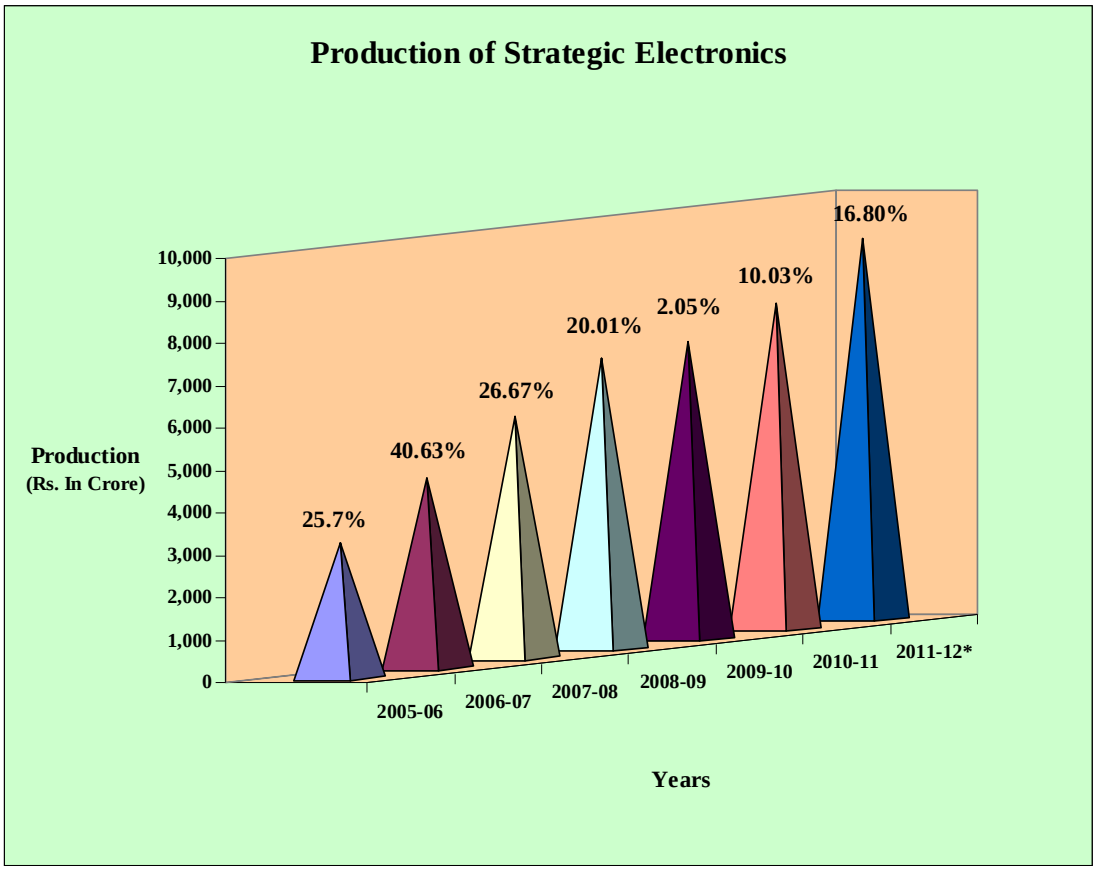
*** estimated**

Source: Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.

Above table shows the production of Strategic Electronics during last six years. It is very clear from the table that the production shows continuous increasing trend during the financial year 2005-06 to 2011-12. Year on year basis it has increased and also in financial year 2011-12 it will increase and it will reach at its highest point i.e. ` 8,970. The growth in per cent shows fluctuating trend during last six years. Here, production

in rupees has shown the increasing trend during last six years whereas the growth in percentage has shown the fluctuating trend during last six years. The growth percentage falls between 2.05 in financial year 2009-10 and 40.63 in financial year 2006-07. It is estimated that in coming financial year this segment will grow at 16.80 percentages.

Chart 1.8



1.7.9 Electronics Components Production Profile:

The electronic component segment caters to the consumer electronics, telecom, defense and IT verticals. The growth in these segments is key determinants for the growth of electronic components. The key constituents include semiconductor, capacitors, and resistors, picture tubes, x-ray tubes and cathode ray tubes.

The demand in consumer electronics and mobile segment in India has maintained its growth trend in the year 2010-11. The growth in electronic components is led by the increase in domestic consumption of IT products from residential, commercial and

enterprise. Further, the e-Governance initiatives of the government boost the demand for the segment.

The growth in this segment has been driven by growth of semiconductors. Semiconductor manufacturing extends beyond wafer fabs to include Assembly, Test, Mark and Packaging facilities (ATMPs), solar photovoltaic, optical LEDs, displays, display panels, storage devices and advanced micro and nanotechnology products. These products and other semiconductor devices are used in several applications, such as telecommunications for ubiquitous accessibility in electronics and consumer applications for product quality (e.g. PCs, mobile phones and TV sets), and in the automotive industry for safety, energy saving and driver assistance.

Table No. 1.9

Production Profile of Electronics Components

Year	Production (₹ Crore)	Growth (%)
2005-06	8,700	0.90
2006-07	8,800	1.15
2007-08	9,630	9.43
2008-09	12,040	25.02
2009-10	13,610	13.04
2010-11	14,970	9.99
2011-12*	16,520	10.35

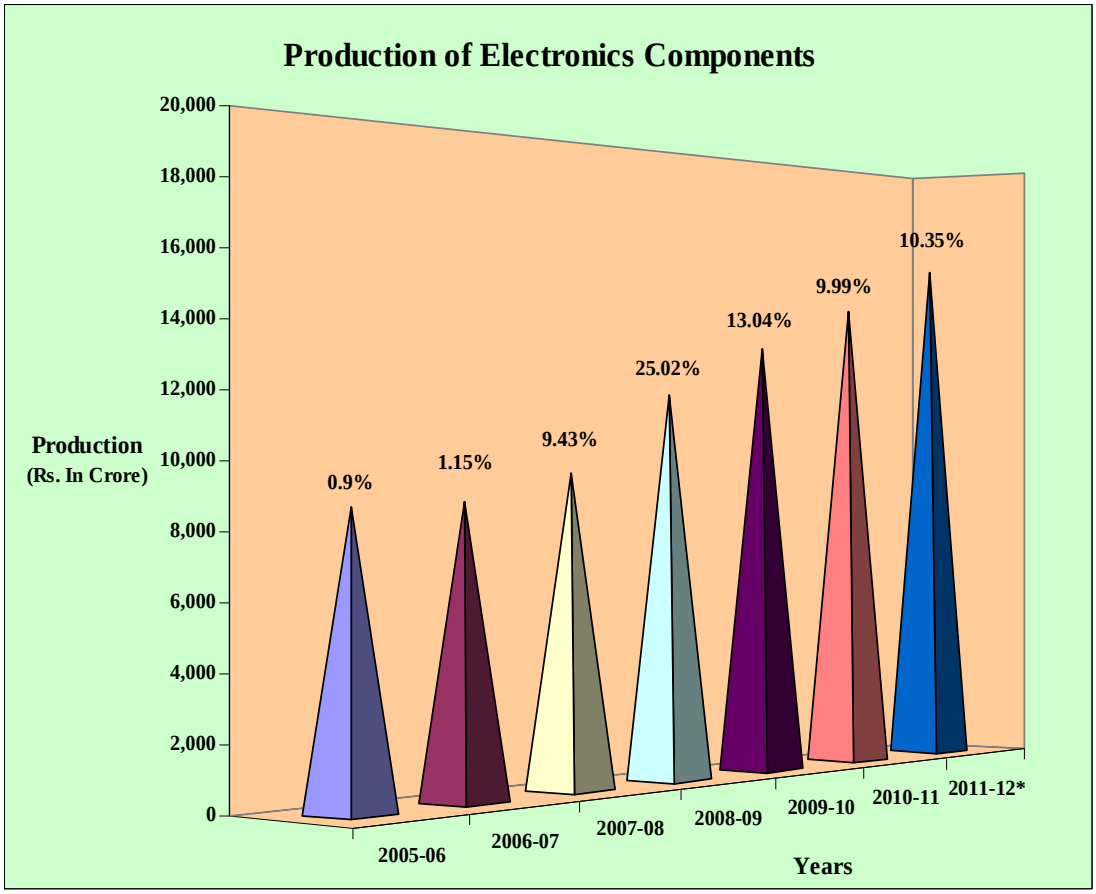
*** estimated**

Source: Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.

Above table shows the production of Electronics Components during last six years. It is very clear from the table that the production shows continuous increasing trend during the financial year 2005-06 to 2011-12. Year on year basis it has increased and also in financial year 2011-12 it will increase and it will reach at its highest point i.e. ` 16,520. The growth in per cent shows fluctuating trend during last six years. Here,

production in INR has shown the increasing trend during last six years whereas the growth in percentage has shown the fluctuating trend during last six years. The growth percentage falls between 0.90 in financial year 2005-06 and 25.02 in financial year 2008-09. It is estimated that in coming financial year this segment will grow at 10.35 percentages.

Chart 1.9



1.8 Exports of Indian IT Products

The export potential of India's IT industry has been recognized by all developed nations across the world. As per the NASSCOM-McKinsey report, IT export from India in the year 2012 is projected to be 35% of total Indian exports. According to this report, the products and services of IT sector will account for more than 7.5% of the

total growth of GDP in India in the 2011 fiscal[28]. The IT and IT enabled sectors, the online businesses, and the software products of India are renowned all over the world for their quality and cost efficiency. With its huge growth potential, the information technology sector of India has emerged as a preferred investment area for the IT biggies across the world.

1.8.1 Exports of Software and Services

The Information Technology – Business Process Outsourcing (IT-BPO) Industry in India has today become a growth engine for the economy, contributing substantially to increase in the GDP, employment and exports. This sector has continued to increase its contribution to India's economic development. In 2010-11 the IT-ITeS industry has witnessed remarkable rebound. Amidst speculation and an uncertain global economic environment, the Indian IT-BPO industry once again exhibited buoyancy and maturity, reflected through a strong customer demand. The Indian Software and Services Industry (excluding hardware) is estimated to grow by 19 per cent, with aggregate revenues of US $ 76 billion in 2010-11[29]. The IT-ITeS industry has geared itself by increasing its cost efficiencies, utilization rates. It has diversified into new verticals and shifted its business and pricing models. India is regarded as the premier destination for the global sourcing of IT-ITeS, accounting for almost 55 per cent in 2010 up from 51 per cent in 2009, of the global sourcing market.

Indian IT-ITeS exports are well diversified across a wide range of mature and emerging vertical markets. Banking, Financial Services & Insurance (BFSI) remains the largest vertical market accounting for over 40.8 per cent of the Indian IT-ITeS exports in year 2010-11 as compared to 40 per cent in 2009-10. The emerging verticals (retail, healthcare, media, utilities and transport) are growing faster around 21 per cent and accounting for over 24 per cent of total exports in 2010-11. Other verticals including hi-tech/ telecom and manufacturing has also witnessed double digit estimated growth of around 10 per cent and 17 per cent respectively during 2010-11.

---

[28] Economic Times, Daily Business News Paper, dated, 23rd March, 2011

[29] Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.

Growing strong for the past few years, it is expected that the emergence of the KPO market will offer high-value services in off shoring and help the Indian ITeS Industry to climb the global value and knowledge chain. Skilled manpower and multilingual capabilities combined with the advantages of lower costs can help the country to emerge as a front-runner in KPO globally. India has a large pool of skilled manpower like chartered accountants, doctors, MBAs, lawyers, research analysts, etc., which would add value to the global KPO business and its high-end processes like valuation research, investment research, patent filing, legal and insurance claims processing, online teaching, media content supply, etc. The transition from the BPO to the KPO, which offers a high quality of human capital and ICT enablement, can be relatively smooth as our IT-ITeS companies are well established.

Indeed, the phenomenal growth of the Indian IT-ITeS sector has had a perceptible multiplier effect on the Indian economy as a whole. In addition to the direct positive impact on National Income, the sector has grown to become the biggest employment generator and has spawned the mushrooming of several ancillary industries such as transportation, real estate and catering. Consequently, this sector has created a rising class of young consumers with high disposable incomes, triggered a rise in direct tax collections and propelled an increase in consumer spending.

Table No. 1.10

Exports of Software and Services

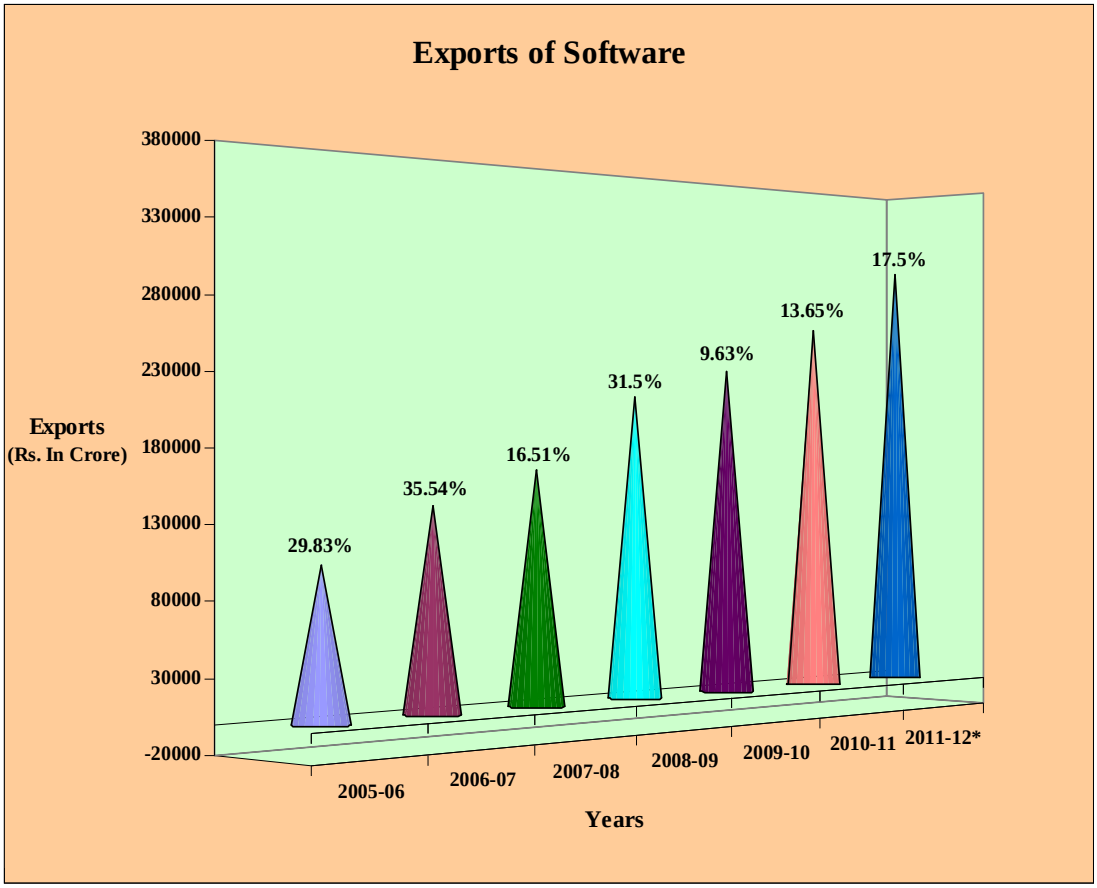
Year	Exports (` Crore)	Growth (%)
2005-06	1,04,100	29.83
2006-07	1,41,100	35.54
2007-08	1,64,400	16.51
2008-09	2,16,190	31.50
2009-10	2,37,000	9.63
2010-11	2,69,360	13.65
2011-12*	3,16,500	17.50

*** estimated**

Source: Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.

Above table shows the Exports of Software and Service Segment of Indian IT industry during last six years. It is very clear from the table that the exports shows continuous increasing trend during the financial year 2005-06 to 2011-12. Year on year basis it has increased and also in financial year 2011-12 it will increase and it will reach at its highest point i.e. ` 3,16,500. The growth in per cent shows fluctuating trend during last six years. Here, Exports in rupees has shown the increasing trend during last six years whereas the growth in percentage has shown the fluctuating trend during last six years. The growth percentage falls between 9.63 in financial year 2009-10 and 35.54 in financial year 2006-07. It is estimated that in coming financial year this segment will grow at 17.50 percentages.

Chart 1.10



1.8.2 Electronics and IT Exports:

Electronics and Information Technology is proving to be the growth engine in the current day economies of the world. The liberalized policy initiatives of the

Government of India in the last decade have propelled the Indian IT industry on to a path of development and prosperity.

Over the years, the Electronics Hardware Industry has evolved to offer several innovative products for the convenience of the mankind. Electronics devices have become integral part of human life and are playing a major role in their everyday routine activities. The electronics hardware industry is identified as one of the fastest growing segment in terms of international trade.

The Electronics Hardware and Computer Software / Services industry, a comparatively new entrant in India's export horizon, has emerged as a forerunner among all industries and has been consistently treading on a high growth path in recent years.

India has embarked on a policy agenda, which aims to restructure its economy with enhanced global participation. Foreign Direct Investment (FDI) to supplement domestic investment for achieving a quantum jump in growth rate is now an integral part of government of India policy initiative.

Imparting greater transparency to business procedures and integration with global market place are seen as the hallmark of the new industrial, trade and fiscal policies. Salient features of the industrial policy for the Electronics and IT sector are:

- Licensing virtually abolished except for manufacturing aerospace and defense equipment. Private sector entry into defense manufacturing is permitted.
- There is no reservation for public sector enterprises in the electronics industry and private sector investment is welcome in every area except aerospace and a few strategic defense industries.
- Electronics and IT units can be set up anywhere in the Country subject to clearance from the authorities responsible for control of environmental pollution and local zoning and land use regulations
- Industries exempted from licensing are only required to file information in the prescribed Industrial Entrepreneurs Memorandum (IEM) with the Secretariat for Industrial Assistance (SIA), Ministry of Industry and Government of India.

The Information Technology (IT) industry has shaped up as a major success story in Indias economy. Exports of computer software and IT enabled services have become a large component of the exports of the country. This is also an area where the Governments role has been very different from that in some other industries. The important contribution of the Government in the growth of this industry consist of telecom policies, which enabled low cost computer networking in the country and investments in human capital such as through the IITs.

Table No. 1.11

Exports of Electronics and IT

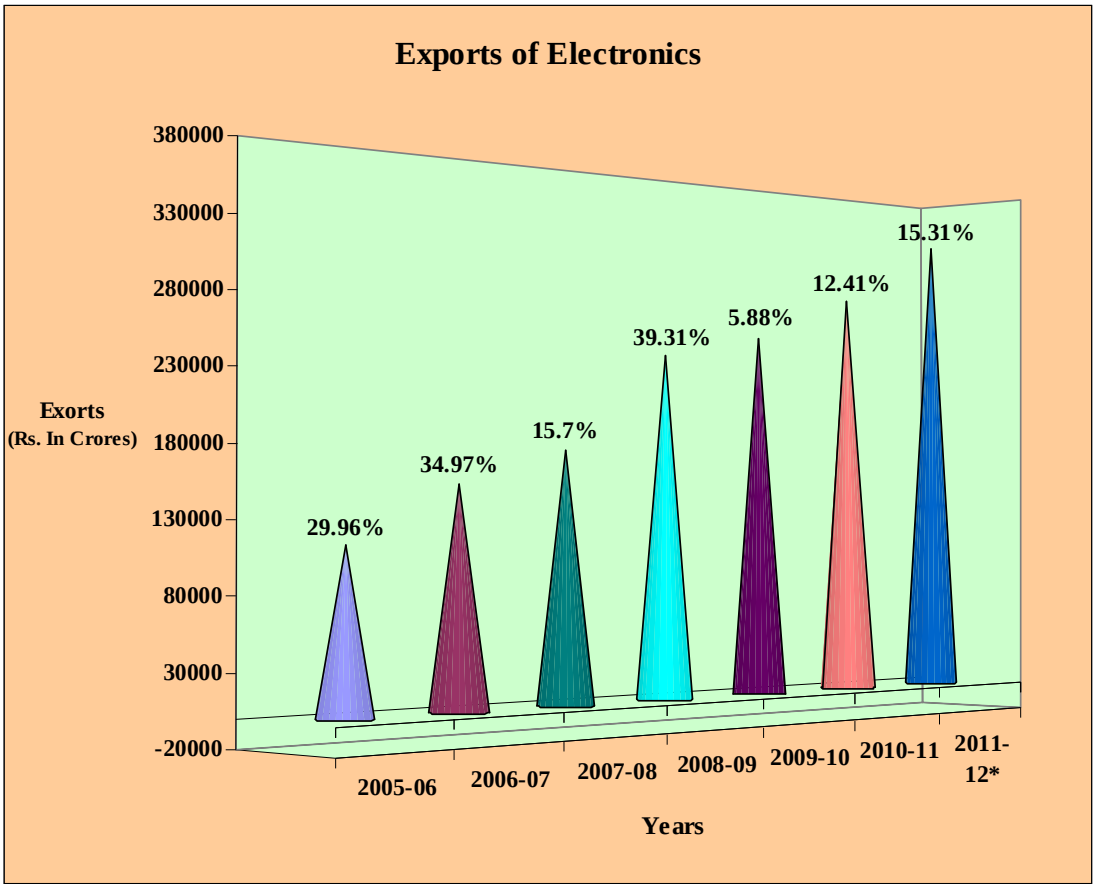
Year	Exports (` Crore)	Growth (%)
2005-06	1,13,725	29.96
2006-07	1,53,500	34.97
2007-08	1,77,600	15.70
2008-09	2,47,420	39.31
2009-10	2,62,900	5.88
2010-11	2,95,530	12.41
2011-12*	3,40,800	15.31

*** estimated**

Source: Annual Report of Information Technology, Government of India, Ministry of Communication and Information Technology, New Delhi.

Above table revels the Exports of Electronics and IT Segment of Indian IT industry during last six years. It is very clear from the table that the exports shows continuous increasing trend during the financial year 2005-06 to 2011-12. Year on year basis it has increased and also in financial year 2011-12 it will increase and it will reach at its highest point i.e. ` 3,40,800. The growth in per cent shows fluctuating trend during last six years. Here, Exports in rupees has shown the increasing trend during last six years whereas the growth in percentage has shown the fluctuating trend during last six years. The growth percentage falls between 5.88 in financial year 2009-10 and 34.97 in financial year 2006-07. It is estimated that in coming financial year this segment will grow at 15.31 percentages.

Chart 1.11



1.9 Challenges before Indian IT Industry

- At present there are a number of challenges that are facing the information technology industry of India. One of the major challenges for the Indian information technology industry was to keep maintaining its excellent performance standards[30].
- The experts are however of the opinion that there are certain things that need to be done in order to make sure that India can maintain its status as one of the leading information technology destinations of the world. The first step that needs to be taken is to create an environment for innovation that could be carried for a long time.

[30] CRISIL Research on Growth of Indian Information Technology, 20010-11

- The innovation needs to be done in three areas that are connected to the information technology industry of India such as business models, ecosystems and knowledge. The information technology sector of India also has to spread the range of its activities and also look at the opportunities in other countries.
- The improvement however, also needs to be qualitative rather than just being quantitative. The skill level of the information technology professionals is one area that needs improvement and presents a considerable amount of challenge before the Indian information technology industry.
- The Indian information technology industry also needs to co-ordinate with the academic circles as well as other industries in India for better performance and improved productivity[31]. The experts are of the opinion that the business process outsourcing service providers in India need to change their operations to a way that is more oriented to the knowledge process outsourcing. One of the most important crises facing the Indian information technology industry concerns the human resources aspect. The problems with outsourcing in countries like the United States of America are posing problems for the Indian information technology industry as well[32].
- In the recent times a bill has been passed in the state of New Jersey that allows only the citizens or legal non-Americans to be given contracts. This legislation has also affected some other states like Missouri, Connecticut, Wisconsin and Maryland. These states are also supposed to be considering these laws and their implementation. This is supposed to have an adverse effect on the outsourcing that is the source upon which the information technology industry of India thrives[33]. The information technology professionals who aim at working in the country are also likely to be hindered by the legislation as a significant amount of these professionals have been going to work in the USA for a long time.

---

[31] Feroli, M. (2001) Joint Economic Committee Study, Information Technology and the New Economy.

[32] Sonar, S.G., Devadas, V., and Das, Dillp. (2005) Emerging Urban Pattern in the context of Information Technology Revolution, National Conference on Urban Transport Planning and Management, Central Institute of Road Transport, India, Pune, Published in the proceeding, October 20-22, 2005.

[33] John, B., Newman, P., Hall, P. and Nijkamp, P. (1985) The Future of Urban Form, Nicholos Publishing Company, New York.

1.10 Future of Indian IT Industry:

- The current scenario in the IT industry of India and the tremendous growth registered in recent years has generated much optimism about the future of the Indian Information technology industry. Analysts are upbeat about the huge potential of growth in the Information Technology industry in India.
- The major areas of benefit that the future growth in the IT industry can generate for the Indian economy are –

(A) Exports - The IT industry accounts for a major share in the exports from India. This is expected to grow further in coming years. The information technology industry is one of the major sources of foreign currency or India.

(B) Employment - The biggest benefit of the IT industry is the huge employment it generates. For a developing country like India, with a huge population, the high rate of employment in the IT sector is a big advantage. The IT industry is expected to generate employment of 4.6 million by the end of 2012 which is expected to increase significantly in coming years[34].

(C) FDI (Foreign Direct Investment) - High inflow of FDI in the IT sector is expected to continue in coming years. The inflow of huge volumes of FDI in the IT industry of India has not only boosted the industry but the entire Indian economy in recent years.

- The NASSCOM- McKinsey report on the IT industry of India projects that the Indian IT industry will reach 110 billion US Dollars by the end of 2011[35]. 4.2 million Employment is expected to be created in the IT industry according to this report. The report also projects 90 billion US Dollars of IT exports from India by the end of 2011[36].
- Software exports from India are expected to grow in coming years. New markets for software exports from India have opened up in the Middle East,

[34] Published IT & ITES Policies State Government of Tamilnadu and Karnataka.
[35] Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.
[36] NASSCOM-Mckinsey Reports, 2007 and 2012

South and Southeast Asia, Africa, and Eastern Europe. The reputation that India has earned as a major destination for IT outsourcing has opened further possibilities. Many developing countries are now using the Indian model for growth in the IT sector.

- Another important area of future growth for the IT industry of India is the domestic market. While exports dominate the IT industry at present, there is huge scope of growth in the domestic market which can be tapped in the future.
- The US recession has had its share of negative impacts on the Indian IT industry. However, the industry has faced the challenges posed by the global market and is sustaining its rate of growth[37]. The focus for the future is to ensure that the benefits of the IT industry percolate to the grassroots levels.

1.11 Initiatives in Indian Information Technology Sector:

The Information, Communication Technology and Electronics (ICTE) is the world's largest and fastest growing industry. ICTE is increasingly finding applications in all sectors of the economy and thus is accepted as a key enabler in development. Today, India is a large, vibrant and one of the fastest growing economies in the world. As a result of impressive growth of the economy, steadily increasing buying power of the people and aspirations of the young, the consumption of electronics gadgets in the country is growing fast. India is one of the World's fastest growing electronics hardware markets. The domestic demand of electronics hardware is estimated at US$ 400 billion by 2020[38].

[37] Ministry of Information Technology, Government of India, New Delhi, www.mit.gov.in

[38] Kelkar, V L, D.N. Chaturvedi and M.K.Dhar (1991), "India's Information Economy: Role, Size and Scope", Economic and Political Weekly, 26(37): 2153-61.

1.11.1 National e-Governance Plan (NeGP)

The National e-Governance Plan was approved by the Government in May 2006 with a vision to provide Public services to the common man in his locality at affordable cost. The NeGP is a multi stakeholder programme which primarily focuses on making critical public services available and promoting rural entrepreneurship. The objective of NeGP is to transform traditional processes and service delivery mechanisms and create an environment that is citizen-centric, with rights based approach to governance while making interaction with Government easier, effective and transparent. NeGP is unique in itself. It is not restricted to Government or Industry, or Public alone, but has expanded its reach to all strata of society especially at the grassroots. NeGP's endeavor has been to improve the quality of life, by facilitating socio-economic development across the nation by giving access to crucial services and information in particular to the underserved population. Out of the 27 Mission Mode Projects, 24 have been approved by the Government. 15 MMPs have gone live and are delivering services electronically[39], though may not be in the entire country or the entire set of services. As the delivery of G2C services remain an ever moving target, the goal of NeGP is to ensure that relevant technologies are used to ensure maximum outreach of services and optimal utilization of scarce resources.

1.11.2 State Wide Area Networks (SWANs)

State Wide Area Network (SWAN) is envisaged as the converged backbone network for data, voice and video communications throughout a State/UT and is expected to cater to the information communication requirements of all the Departments. A SWAN has two components, typically Vertical Component and Horizontal Component. The vertical component of SWAN is implemented using multi-tier architecture (typically, three-tier) with the State/UT Headquarter connected to the District Head Quarter which in turn is connected to the Block Head. Each SHQ, DHQ and BHQ is called a Point of Presence (PoP), which is a bandwidth aggregation point. The bandwidth provision for network connectivity is minimum of 2 Mbps upto the

[39] NASSCOM (2003), The IT Industry in India: Strategic Review 2003. New Delhi: NASSCOM.

block level. For the horizontal component, 20 Horizontal offices at State/UT (HQ) and 10 Horizontal offices at each district and 5 Horizontal offices at each block level would be connected to these respective PoPs.

1.11.3 State Data Centers (SDCs)

State Data Centre has been identified as one of the important elements of the core infrastructure for supporting e-Governance initiatives under NeGP. It is proposed to create data repositories/data Centers in various States/UTs so that common secured data storage could be maintained to serve host of e-Governance applications. The broad policy guidelines for technical and financial assistance to the States for setting up of State Data Centers were finalized and circulated to the States including scheme of implementation and financial outlays. Under the SDC Scheme, it is proposed to establish Data Centers in all the States/UTs so that common secure IT infrastructure is created to host state level e-Governance applications/Data to enable seamless delivery of Government to Government (G2G), Government to Citizen (G2C) and Government to Business (G2B) services duly supported by State Wide Area Network and Common Service Centers established at the village level.

1.11.4 Common Services Centers (CSCs)

The Government has approved the Common Services Centres (CSCs) Scheme for providing support for establishing 100,000 Common Services Centres in 600,000 villages of India. The objective is to develop a platform that can enable Government, private and social sector organizations, to align their social and commercial goals for the benefit of the rural population in the remotest corners of the country through a combination of IT-based as well as non-IT based services. The Department has approved CSC proposal of two States (Karnataka and Goa) and two Union Territories (Andaman & Nicobar Islands and Chandigarh). The CSC Project is under implementation in thirty-one States.

1.11.5 Implementation of State Portal, State Service Delivery Gateway (SSDG) & Electronic Form application

This project creates State Portals that will host electronic forms to offer convenient and easy services to citizens. This project leverages the existing e-Governance infrastructure like CSCs, SDCs and SWANs. This project intends to provide easy, anywhere and anytime access to Government Services (both informational & transactional). The project aims to reduce number of visits of citizens to a Government office/Department for availing the services. It also aims to reduce administrative burden and service fulfillment time & costs for the Government, Citizens and Businesses and creating a more efficient communication through portal. The major components of this project include the State Portal, electronic forms, the services delivery gateway, gap infrastructure and training. Guidelines have been formulated to provide Technical and Financial assistance to the States for setting up State Portals, State Service Delivery Gateways (SSDGs) and Electronic Forms and financial assistance is being provided to the States/ UTs for creation of State Portal, SSDGs and Electronic Forms and meeting the operational expenses for a period of 3 years.

1.11.6 Capacity Building Scheme (CBS)

Capacity Building is one of the important components of NeGP for establishing internal capacity within the Government framework essentially at the State level to mitigate the major managerial and technological challenges towards implementation of the e-Governance projects. The consistent strategies for integration, resource optimization, prioritization and resolving conflicts and overlaps also require for effective implementation of e-Governance projects. Thus specialized skills are required at the States/UTs to provide technical support to the policy & decision making process; the overall management of the programme and leveraging the external industry resources etc. The scheme is mainly for providing technical & professional support to State level policy & decision making bodies and to develop specialized skills for e-Governance. The scheme is for a period of three years.

1.11.7 State e-Governance Mission Team (SeMT)

Setting up of SeMT on wet leasing in 27 States / UTs has been completed and rest are under process. Capacity Building Management Cell under NeGD of the Department as central agency has already initiated the process for creation of SeMTs centrally from open market on contract basis and from Central / State Governments/PSUs on deputation basis. Total 215 persons have been short listed and 90 on hold during the interviews conducted from 30th August to 16th September 2010 and all are in the process of positioning in 29 States/UTs.

1.11.8 Open Technology Center (OTC)

The Government has initiated the setting up of an Open Technology Center through NIC aimed at giving effective direction to the country on Open Technology in the areas of Open Source Solutions (OSS), Open Standard, Open Processes, Open Hardware specifications and Open Course-ware. This center is based in Chennai. This initiative will act as a National Knowledge facility providing synergy to the overall components of Open Technology initiative that are being taken by various communities and strengthen the support on the Open Technology. The OTC will provide the requisite support to the Standardization activity for e-Governance.

1.11.9 e-District

E-District is a State Mission Mode Project under the National e-Governance Plan. The Project aims to target certain high volume services currently not covered by any MMP under the NeGP and to undertake backend computerization to enable the delivery of these services through Common Services Centres. The Department has approved 16 Pilot e-District projects covering 41 districts. Pilot projects have been launched/ gone live in18 districts across 6 States in Uttar Pradesh, Tamil Nadu, Kerala, Bihar, West Bengal and Assam. The pilot project is in advance stage of implementation in 8 States - Maharashtra, Madhya Pradesh, Haryana, Punjab, Uttarakhand, Mizoram, Orissa and Jharkhand.

1.11.10 e-Bharat

The Department has been carrying out dialogue with World Bank for possible programmatic support for NeGP under the Bank's Development Policy Lending arrangement. Subsequent to an agreement with the World Bank to take forward this project initiative, intensive deliberations between the Department and World Bank are currently underway as part of preparatory activities for this project including identification of policy actions in the area of e-Governance for the purpose of this lending. On satisfactory completion of Bank's appraisal the loan funding will be approved and disbursed by the Bank.

1.12 History and Development of CMC Infotech Limited

1.12.1 History of CMC Infotech Limited

CMC was incorporated on December 26, 1975, as the 'Computer Maintenance Corporation Private Limited'. The Government of India held 100 per cent of the equity share capital. On August 19, 1977, it was converted into a public limited company.

In 1978, when IBM wound up its operations in India, CMC took over the maintenance of IBM installations at over 800 locations around India and, subsequently, maintenance of computers supplied by other foreign manufacturers as well. Taking over the activities of IBM in India, including many of its employees, helped the company to imbibe a service-oriented culture. This is demonstrated by our long-standing customer associations and our ability to provide high-quality and reliable service.

In 1980, we perceived the need for total IT system solutions in India, and acquired a 'solutions' orientation. We aligned our focus with the government's thrust on IT development activities. A significant milestone in our transition from a hardware maintenance company to a complete end-to-end IT solutions provider was 'Project Interact' (International Education and Research for Applications of Computer

Technology), a UN project involving design, development and systems-engineering of real-time, computer-based systems dedicated to applications in the areas of power distribution, railway freight operations management, and meteorology.

As we evolved along the value chain, CMC forayed into systems integration, interfacing, installation, commissioning, software development, as well as education and training, on a national basis. Our R&D facility was set up in 1982[40], to undertake competency development in niche areas in the frontiers of technology, to provide us the cutting edge. Today, our R&D facility is housed in our Hyderabad campus, and develops advanced solutions in areas such as real-time systems, embedded systems and pervasive computing.

To reflect our diversified business activities, we renamed ourselves 'CMC Limited', and obtained a fresh certificate of incorporation dated August 27, 1984.

Following a spurt in the global demand for IT services in the early 1990s, particularly in the United States, we decided to expand our operations and market our product and service offerings in these markets. Towards this end, in 1991, we acquired Baton Rouge International Inc, USA (it was subsequently renamed CMC Americas, Inc, in 2003), one of the first cross-border acquisitions by an Indian IT firm.

In 1992, the Indian government divested 16.69 per cent of CMC's equity to the General Insurance Corporation of India and its subsidiaries who, in turn, sold part of their stake to the public in 1996. In 1993, CMC's shares were listed on the Hyderabad Stock Exchange and the Bombay Stock Exchange (BSE).

To service and develop our clientele in the UK and Europe, we opened a branch office in London, in 2000. The next year, the government divested 51 per cent of CMC's equity to Tata Sons Ltd, through a strategic sale, and CMC became a part of the Tata group.

[40] www.cmc.com

In line with our strategy of offering our products and services globally, in 2003, we opened a branch office in Dubai to tap the hitherto unexplored markets of West Asia and Africa. In 2004, the government divested its remaining 26.5 per cent stake in CMC to the public.

1.12.2 Vision, Mission and Values of CMC Infotech Limited

(A) Vision: Global top 20 Systems engineering and Integration Company by 2020.

(B) Mission: As an innovative world class systems engineering and integration company, we shall provide sustainable advanced technology solutions and services to our global customers and in projects of national importance, maximizing value to our stake holders and the communities we serve.

(C) Values: We shall be vibrant organization where openness, trust, teamwork, simplicity, responsibility and innovations are valued and promoted.

1.12.3 Opportunities and Threats of CMC

(A) Opportunities

- Recovery and growth of economy as well as significant technology changes are presenting several opportunities to CMC. Cloud computing is emerging as a major disruptive force for both IT vendors and users. Cloud computing is Internet based computing, whereby shared resources, software and information are provided to computers and other devices on demand, like a public utility. Ability to effectively manage the cost without compromise on performance and several other benefits such as reliability and flexibility is making cloud computing an attractive proposition for enterprises. Gartner predicts that up to 20% of companies will own no IT assets of their own by 2012. Recognizing the potential of this trend, CMC is developing competency as well as alliances in this technology and services area.

- Another key technological change is the domination of smart phones over traditional desktops and laptops. By 2013, number of mobile phones could easily surpass PCs, as preferred way to access the net. This will be opening up several opportunities for mobile friendly applications as well as revamping of web sites to make them easier to surf on a mobile gadget.

- Enhanced awareness and concern for global warming is leading all enterprises to look for ways to reduce their carbon footprint without compromise on business growth and potential. CMC is readying itself with services in the area of Green IT as well an IT for green. An eco-system of partners and alliances is being set up to address this opportunity.

- Improving fortunes of IT industry is increasing the demand for IT professionals and large scale recruitment. The Education and Training SBU of CMC is offering courses and programs in both retail and corporate segment to address this need.

(B) Threats

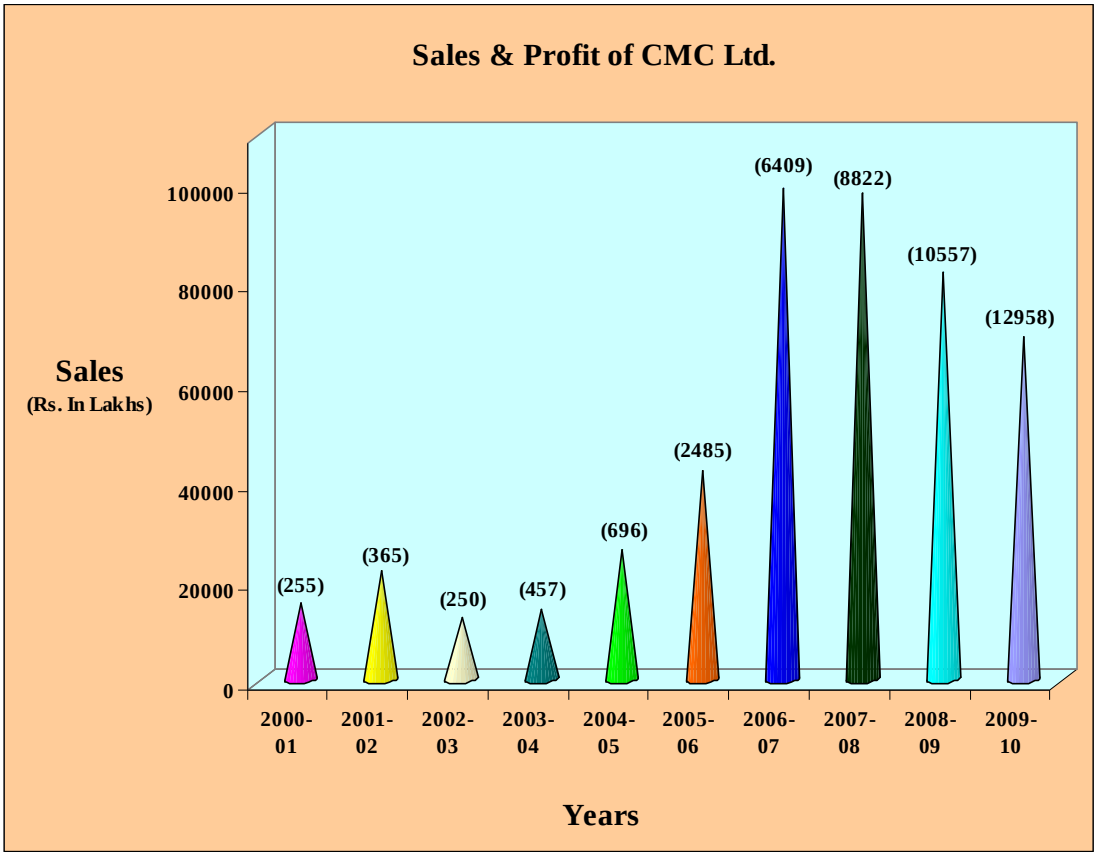
- As Indian economy continues to outpace developed economies in the world, India continues to be an attractive market for major IT players. This enhanced focus on India continues to exert competitive pressure on CMC's performance in domestic market.

- The growth in the economy and IT industry is expected to lead to increase in attrition next year. This pressure on attrition as well as fast changing technology landscape will necessitate increased investment in its people and innovative approaches to retain and develop right talent.

1.12.4 Sales and Profit of CMC for last 10 years

The sales and Profit of CMC Limited for last 10 financial years has been presented below with the help of chart[41].

Chart 1.12



The above chart shows the Sales & Services and Profit of the company for last 10 Years. Figures in the brackets represent the Profit for the respective year. It has been observed from the above chart that company has got the highest Sales and Services in the financial year 2007-08. Where as the company was having highest Profit in the financial year 2009-10. The sales of the company for first six years shows the increasing trend expect the financial year 2002-03 and for the last four years company's sales was decreasing. It has been noted here, that although the sales was decreasing but the profit of the company showed an increasing trend.

[41] Annual Reports of CMC from financial year 2000-01 to 2010-11

1.13 History and Development of GTL

GTL Limited, a Global Group Enterprise, is a leading Network Services company, offering services and solutions to address the Network Life Cycle requirements of Telecom Carriers and Technology providers (OEMs). Today GTL executes projects across 46 countries and has built over 70 cellular networks. Global Group is India's leading business group focused on Network Services and Shared Telecom Infrastructure. Global Holding Corporation Pvt. Ltd. is the holding company of "Global Group" that has 7 operating companies, two of which are listed on Indian Stock Exchanges. The Group is expected to own more than 30,000 towers and have revenues in excess of US$ 1.2 Billion, Balance sheet size of over US$ 5 Billion, and more than 35,000 professionals. The Group has operations across 46 countries, employs people of 22 nationalities and supports 18 social causes.

For over 2 decades Global Group has been partnering with leading telecom operators and OEMs offering its expertise in wireless communications. From 2G Networks to 3G, from WiMAX to IPTV, Global group provides complete life-cycle solutions around Network Services. The services include Network Planning and Design, Network Deployment, Network Operations and Maintenance, Infrastructure Management, Energy Management and Professional services.

Global Group Enterprises have received more than 35 accolades and awards for excellence in Business, CSR and Corporate Governance. The group's flagship company GTL features in the in the S&P's ESG India Index, is the recipient of "Outstanding Achievement" trophy from IMC RBNQA, "Certificate for strong Commitment" from CII-ITC for Sustainable Development and "Greentech Environment Excellence" Award. GTL Infra has won "Best Independent Infrastructure Provider" from Tele.Net, "Innovative Infrastructure Company of the year" by CNBC TV18 and "Top Independent Infrastructure Provider of India" by V&D. Global Towers has been awarded the "Best in class Innovation in Manufacturing Award" at International India Innovation summit, 2010. The Group offers excellent working conditions and provides social benefits like free Medical Care and Insurance for the employees' families. By 2013, the Group plans to Erect, Engineer and Manage 100,000 Cell Sites across 150 Networks. These Networks are

expected to connect more than 100 million subscribers in 50 countries across the world.

1.13.1 Services provided by GTL

GTL's core service offerings revolve around Networks and Network enabled services - for Telecom Companies and OEMs. For more than a decade, leading wireless carriers, equipment manufacturers and service providers have trusted our experienced and trained engineering professionals to Plan and Design, Deploy, Optimize, Operate and Maintain, Manage, and Secure their Critical Networks and Applications. Its skilled manpower of over 7,066 associates offer assured quality to its customers through its integrated end-to-end Network Services. They aim to Create Unique Value for customers by leveraging their:

- Expert knowledge of business and technology issues in the Telecom industry
- Capability to Advice, Plan, Deploy and Manage Networks
- System Integration through Multi Platform and Technologies
- Global customer relationships, Delivery capabilities and market presence

→ Network Planning & Design

GTL provides Network Planning & Design Services for its customer's right from Radio Frequency (RF) & Transmission Engineering to fixed and core network engineering design in the Wireless and Wireline domain – GSM, CDMA, Microwave Transmission, SDH, DWDM WiMAX and Broadband networks. The planning and design process assesses alternative options of Network Technologies, Network Migration, Expansion Considerations and incorporates them into the planning document. Network Planning & Design Services deliver value by designing the most economical network with the highest Quality of Service to support current and future service, technology and capacity requirements. To satisfy the discerning requirements of global customers, GTL engineers use technology expertise, sophisticated algorithms, world-class tools and disciplined design processes to provide the total end-to-end, multi-vendor design solutions that not only fulfill but even exceed customer expectations.

→ Network Operations and Maintenance

GTL's Network Operations and Maintenance service portfolio enables Network Operators to focus on the core of their business in marketing, brand building and value creation while ensuring effective network Operations and Maintenance activities thus yielding significant reduction in Operational Expenses (OPEX). GTL's expert Engineers and field personnel undertake operations and maintenance of all network processes and elements for a wide range of technologies. GTL's extensive experience on multi technology products across geographies, system & process based maintenance and right shoring of operations provides the operator with required comfort to partner with GTL for managing its business critical task of operations & maintenance.

→ Energy Management services & Solutions

Energy is an indispensable resource in any Organization, as well as an increasingly critical cost factor. Better management of energy has thus become vital. Energy management in the changing business scenario needs to consider technology development, planning, optimization, monitoring and dissemination of the energy products and services to the Telecom Operators and OEMs. In order to provide end-to-end Energy Management services & Solutions to the telecom operators, OEMs and ISPs, GTL has set-up a new vertical i.e Energy Management Services. GTL's energy management division will strive to drive a revolution in the field of Telecom infrastructure management by providing tailor made solutions to telecom operators for optimizing their energy usage. With over 22 years of Project management experience in the area of telecom network engineering and deployment, GTL is uniquely positioned as a one-stop solution provider for large scale Energy Management across the globe for Telco's.

→ Infrastructure Management Services

GTL's Infrastructure Management Services allows the Network Operator to make optimal use of its assets by the way of critical and periodic evaluation of performance of various assets vis-à-vis their desired outcomes. GTL's Infrastructure Management Services offer management of passive and active (Selective) Infrastructure,

Documentation and process management of filed activities and site access management. The offerings are aimed at increasing profitability and competitive advantage of operators.

→ Professional Services

GTL's Professional Services Group has on board, a pool of skilled resources from the various technologies and OEM platforms in the telecom domain. The services of these skilled resources are offered to the service providers as well as to OEMs on a monthly basis to meet with their mid-term & long-term requirement of skilled resources as well as to meet any peak load resource requirements. The skilled resources from the Professional Services Group render their valuable services across the entire telecom network lifecycle namely.

1.13.2 Vision and Values of GTL

→ Vision:

To be the world's Largest Network Service Provider.

→ Values:

- Ethics & Transparency
- Proactively manage change
- Delight customers through superior services
- Develop entrepreneurs through an achievement-oriented culture
- Build a sustainable global organization
- Share knowledge and focus on end-result

1.13.3 Awards and Recognitions

GTL have a corporate culture of innovation and healthy competition. Their quest for learning and constant up gradation is backed by an ingenious learning process, with superior quality being an underlying factor in all. This passion to excel comes down

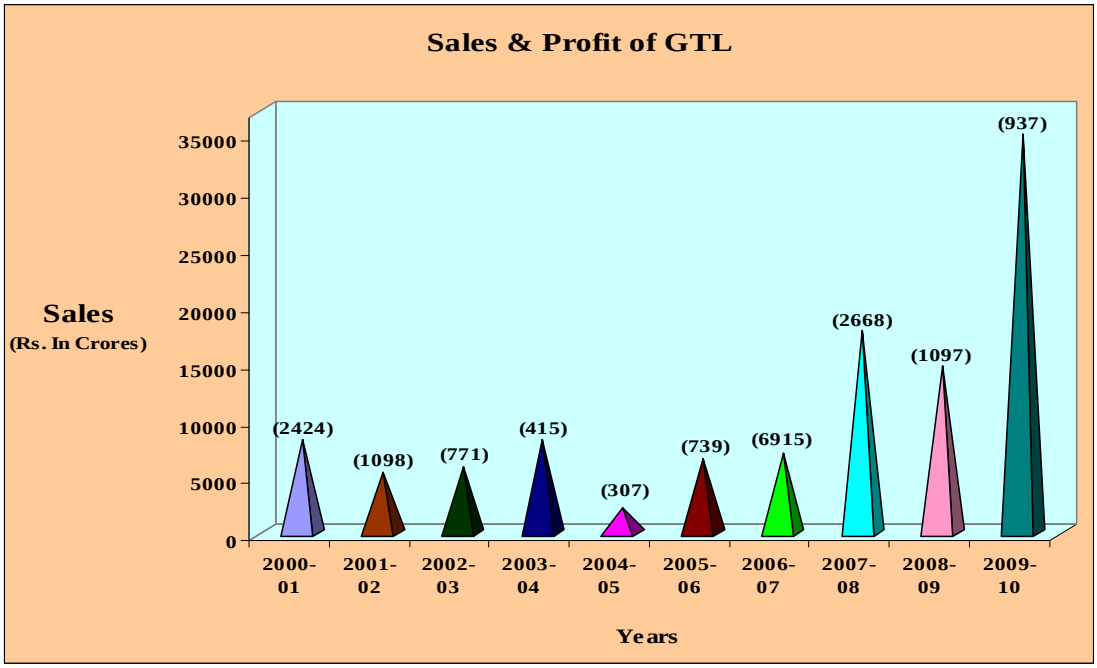
to us from our leaders, who themselves have been commended for their pioneering initiatives. Their passion to excel, their commitment and emphasis to quality in their businesses and processes have won them recognition, and awards to their Chairman and Managing Director. Their association with technology leaders has drawn them to the zenith and their accolades are continuous. Few of them are listed bellow.

- GTL wins “Top Company of the Year”
- GTL wins Ramakrishna Bajaj National Quality Outstanding Achievement Trophy
- GTL wins prestigious Greentech Excellence Award
- GTL receives "Certificate for Strong Commitment" from CII ITC center for sustainable development
- GTL ranked 6th amongst India‘s best 50 companies in S&P ESG Index
- GTL bags " Excellence in Infrastructure for Connecting people with Disability" award
- Golden Peacock National Quality Award
- ICAI Award of High Commendation for Published Accounts

1.13.4 Sales and Profit of GTL for last 10 years

The sales and Profit of GTL Limited for last 10 financial year has been presented below with the help of chart[42].

Chart 1.13



The above chart shows the Sales & Services and Profit of the company for last 10 Years. Figures in the brackets represent the Profit for the respective year. It has been observed from the above chart that company has got the highest Sales and Services in last financial year 2009-10. Where as the company was having highest Profit in the financial year 2007-08. The sales of the company for first five years shows the decreasing trend and for next five years company's sales showed an increasing trend. It has been noted here, that there was a positive correlation between sales and profit. The Sales reached the highest point in the financial year 2009-10.

[42] Annual Reports of GTL from financial year 2000-01 to 2010-11

1.14 History and Development of HCL Infosystem

HCL Infosystems Ltd is one of the pioneers in the Indian IT market, with its origins in 1976. For over quarter of a century, we have developed and implemented solutions for multiple market segments, across a range of technologies in India. We have been in the forefront in introducing new technologies and solutions. **HCL Infosystems** (HCLI) draws it's strength from 30 years of experience in handling the ever changing IT scenario , strong customer relationships, ability to provide the cutting edge technology at best-value-for-money and on top of it, an excellent service & support infrastructure. Today, HCL is country's premier information enabling company. It offers one-stop-shop convenience to its diverse customers having an equally diverse set of requirements. Be it a large multi-location enterprise, or a small/medium enterprise, or a small office or a home, HCLI has a product range, sales & support capability to service the needs of the customer. Last 30 years apart from knowledge & experience have also given us continuity in relationship with the customers, thereby increasing the customer confidence in us.

Strengths of HCL Infosystems can be summarized as:

- Ability to understand customer's business and offer right technology.
- Long standing relationship with customers.
- Pan India support & service infrastructure.
- Best-vale-for-money offerings.

1.14.1 Vision and Mission of HCL Infosystems:

→ Vision:

A Global corporation enriching lives and enabling business transformation for our customers, with leadership in chosen technologies and markets. Be the first choice for employees and partners with commitment to sustainability.

→ Mission:

We enable business transformation and enrichment of lives by delivering sustainable world-class technology Products, Solutions & Services in our chosen markets, thereby creating superior shareholder value.

1.14.2 Products and Services of HCL Infosystems

HCL has been touching lives in the ICT space through a wide bouquet of products designed to meet diverse needs of different customers. HCL has constantly innovated to offer a wide range of products, including: Computing products; Office Automation; Imaging & Printing solutions; Display products; Office Automation Telecom & AVSI solutions; Digital Lifestyle products & solutions; Storage solutions; Networking products; Software licenses; POS, ATM, KIOSK; Customer Service; Counter products and Software solutions. We have pioneered the home PC market in India – we launched Beanstalk Media Centre, India's first Multimedia enabled PC for home users; HCL Infosystems also introduced path breaking products like Ezeebee, Busybee brand of PCs and ME Laptops in the personal computing space. Leveraging three decades of expertise in total technology solutions, HCL Desktops and Laptops offer increased security, ultra-efficient manageability and maximum productivity for a smart business landscape. As enterprises have unique needs for their computing platforms, HCL range of business Desktops and Laptops comes with unique features that enhance productivity while reducing TCO. For our Enterprise & SMB customers, we offer customised built-to-order range of ME Laptops and Desktops.

1.14.3 Solutions Portfolio of HCL Infosystems

→ Systems Integration:

With a strong legacy and over thirty years of expertise in this domain, we offer turnkey ICT solutions and Systems Integration services that integrate best-in-class products and solutions to meet the business needs of Enterprise.

→ ICT Networking Infra Consultancy & Facilities Management Services

Our Consulting Group has extensive experience of working with corporate and public sector organisations on the rollout of technology infrastructure and business transformation based on ICT solutions.

→ ICT Products

We offer an entire range of ICT products, which include PCs, Notebooks, Servers, Imaging & Printing Solutions, Voice & Video Solutions, Networking Products, TV and FM Radio Broadcasting Solutions, Communication & Security Solutions and ATMs & Kiosks.

→ IT Audit, Security Compliance & Risk Management

We assist customers in evaluating processes and technology to secure their infrastructure and to minimise the risk to meet their requirements.

→ ERP Consulting & Services

Through strategic associations with Oracle, SAP, Microsoft and other Software & ERP companies, we offer state-of-theart IT consulting services to align their IT strategy with their business strategy.

→ Strategic Outsourcing Services

We offer a one-stop shop for strategic outsourcing of information systems, leading to an overall advantage for the customer in reduction of deployment time, access to a pool of technical expertise and lowering the cost of total ownership.

→ VPN & Managed Network Services

These are provided through HCL Infinet Ltd., which is the Networking Services arm of the HCL Infosystems. The company holds an all India license to operate as a Class "A" ISP, ITSP and NLD service provider.

→ Homeland Security Products & Solutions

HCL Security Ltd is a 100% subsidiary of HCL Infosystems Ltd. With the core objective of addressing end-to-end solution requirements in the Security &

Surveillance domain and leveraging on world-class alliances, HCL Security Ltd offers the best of deeply integrated global technologies to ensure safety & security of infrastructure.

1.14.4 Awards and Recognitions

DQ-IDC: Ranked No. 1 in the Best Employer Survey 2009, among the IT companies in India

Frost & Sullivan:'India Manufacturing Excellence Award (IMEA) 2008', Gold Award in the "IT & Automation Hardware" Category

CISCO PAL: Awarded the "Gold Star" rating for customer satisfaction excellence survey

DQ CSA: Ranked No. 1 IT services company in 2009 for the second consecutive year

Computer Active: Best Desktop PC Category award

Infocus: Emerald Award for best all-round performance

HDFC Standard Life Insurance Co. Ltd.: Platinum Certificate of Excellence award in appreciation of its contribution & efforts towards the continued success of HDFC SLI

Dun & Bradstreet Rolta Corporate Award for the year 2009: In computer hardware and peripherals category

ELCINA-Dun & Bradstreet Award: For 'Outstanding achievement in Quality for the year 2009'

'The Electronics Company of the Year 2009': Recognition by EFY

Green peace's 'Guide to Greener Electronics': HCL Infosystems was ranked amongst the top five green electronic companies in the world

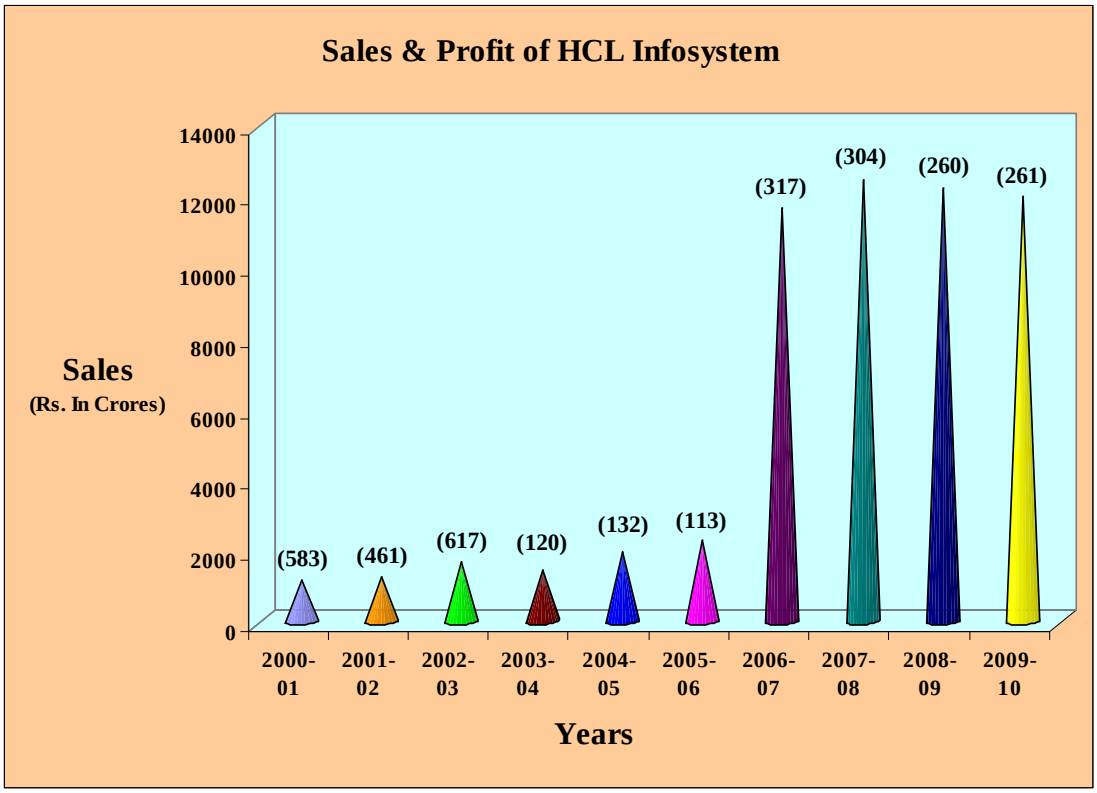
Ranked number one in the Best Employer Study 2009: Conducted by IDC – Dataquest

'HCL ME': Ranked amongst the top 10 brands by a Business Standard survey 'Brand Durby 2009'

1.14.5 Sales and Profit of HCL Infosystem for last 10 years

The sales and Profit of HCL Infosystem Limited for last 10 financial year has been presented below with the help of chart[43].

Chart 1.14



The above chart shows the Sales & Services and Profit of the company for last 10 Years. Figures in the brackets represent the Profit for the respective year. It is very clear from the above chart that company has got low sales during first six year i.e. from 2000-01 to 2005-06. It has got the highest Sales and Services in last financial year 2007-08. Where as the company was having highest Profit in the financial year 2002-03. It has been observed that after the financial year 2005-06 there was a drastic increase in the sales as well as profit of the company. In last four financial years i.e. from 2006-07 to 2009-10 company showed and increasing trend.

[43] Annual Reports of HCL Info system from financial year 2000-01 to 2010-11

1.15 History and Development of HCL Technologies

HCL Technologies is a leading global IT services company, working with clients in the areas that impact and redefine the core of their businesses. Since its inception into the global landscape after its IPO in 1999, HCL focuses on 'transformational outsourcing', underlined by innovation and value creation, and offers integrated portfolio of services including software-led IT solutions, remote infrastructure management, engineering and R&D services and BPO. HCL leverages its extensive global offshore infrastructure and network of offices in 26 countries to provide holistic, multi-service delivery in key industry verticals including Financial Services, Manufacturing, Consumer Services, Public Services and Healthcare. HCL takes pride in its philosophy of 'Employees First, Customer Second' which empowers our 73,420 transformers to create a real value for the customers. HCL Technologies, along with its subsidiaries, had consolidated revenues of US$ 3.3 billion (Rs. 15,160 crores), as on 31 March 2011 (on LTM basis).

HCL Technologies is a relatively young company formed, 15 years ago, in 1998. During this period, HCL has built unique strengths in IT applications (custom applications for industry solutions and package implementation), IT infrastructure management and business process outsourcing, while maintaining and extending its leadership in product engineering. HCL has also built domain depth through a micro-verticalization strategy in industries such as Financial Services, Hi-tech and Manufacturing, Retail, Media and Entertainment, Life Sciences, and Telecom. HCL has created the ability to distribute value across the customer's IT landscape through its well-distributed services portfolio, significant domain strengths, and locally relevant geographic distribution. HCL has the widest service portfolio among Indian IT service providers, with each of its services having attained critical mass.

Five mature lines of business are R&D and Engineering, Custom Applications, Enterprise Applications, IT Infrastructure Management, and BPO Services. In addition, HCL has recently launched its Enterprise Transformation Service offerings comprising of Business, Technology, Application and Data Transformation – the four broad needs of any enterprise. Our ability to synergistically integrate these service

lines across the entire IT landscape creates new zones for value creation. Additionally, HCL has created unique service leadership in each of these areas through best-of-breed unique propositions. HCL's leadership in these service areas has been recognized by several leading independent analysts.

1.15.1 Services offered by HCL Technologies

Customer centric value offerings establish the difference between services and services. The difference comes from unique customer insights and value propositions backed by competencies and validated by customer experience. HCL believes in the good practice of regularly re-structuring and re-energizing its diversified portfolio of service offerings. By re-evaluating and realigning this portfolio from time to time, HCL is able to develop a robust and resilient business model. No single service line contributes more than 32% to the total revenue even while maintaining a leading edge in key verticals where HCL chooses to focus.

→ Custom Application Services (CAS)

The Custom Application Services division at HCL leverages a domain-driven approach to design, and implements scalable, reliable, robust, secure, and easily maintainable applications that provide our customers with business differentiation through IT. Service offerings include application development, management, support, re-engineering, modernization, migration, and independent verifi cation and validation. With more than 10,000 domain and technology experts supporting more than 100 clients across geographies, this group contributes over 29% of HCL's revenues, and services at least two of the top five players in various industries like retail, banking, insurance, media & publishing, gaming and life sciences.

→ Engineering and R&D Services (ERS)

HCL is one of the few Indian companies with significant focus on engineering services. Contributing to over 19% of the company's revenues, this group brings a balance to the service portfolio unlike some of our peers. The ERS group offers end-to end engineering services and solutions in hardware, embedded, mechanical and software product engineering to industry leaders across Aerospace & Defence,

Automotive, Consumer Electronics, Industrial Manufacturing, Medical Devices, Networking & Telecom, Offi ce Automation, Semiconductor, Servers & Storage and Software Products. HCL well understands the importance of Research & Development (R&D) in augmenting its customers businesses and is committed to providing these world-class services to them. Over a decade of operating in complex multi-vendor environments and customer value chains, we have the ability to seamlessly integrate into their existing R&D ecosystem, working with other innovation partners, captive centers, universities, industry bodies and manufacturing partners. The group has recently started a business unit with a dedicated team to focus on Defense, Space & Security (DSS).

→ Enterprise Application Services (EAS)

HCL's Enterprise Applications Services (EAS) division provides best-in-class services and solutions to customers in ERP, SCM, CRM, HCM, EPM, BI and Middleware. This is enhanced by leveraging strong strategic partnerships with SAP, Oracle and Microsoft. The EAS division accounts for over 22% of HCL's revenue and is one of the key areas of growth. HCL's EAS service line is completed by its Microsoft group. This team enjoys a pivotal partnership with Microsoft's Business Solutions group. It has built capabilities on key Microsoft Dynamics product lines, particularly Microsoft Dynamics AX and Microsoft Dynamics CRM.

→Enterprise Transformation Services (ETS)

HCL's Enterprise Transformation Services assists customers in developing a transformation roadmap by aligning business with IT strategy. HCL partners with customers and helps them identify the initiatives driving change, manage the transformation process, and implement supporting technology solutions that add value to the organization. HCL's ETS offers an integrated approach for enabling transformations through the "Advise to Execute" services portfolio. The service portfolio consists of Process Transformation Services, Data Management Services, Integration Services, Architecture Services, Disruptive Technology Services (Including Cloud related services) and IT Strategy and Change Management services. This is offered through the ouquet of best-in-class services in key areas including Middleware & SOA, Data Warehousing & Business Intelligence Services, Enterprise

Content Management & Portals, Independent Verification & Validation, Mainframe and Midrange Services, Business Consulting and Technology Consulting.

→Infrastructure Management Services (IMS)

HCL's Infrastructure Management Services group is the fastest growing business line and contributes to over 22% of HCL Technologies' total revenues. Through its differentiated value proposition - "Industrialized IT Management and co-sourcing model", this practice has been able to carve a credible growth story and solid foundation for the future. Today, it has close to 200 customers globally, out of which, 100 are G/F 1000 companies - world leaders in their own space. The IMS division has been recognized as the leader in Global Delivery of Infrastructure Management by several Industry analysts, and is said to be the "leading light in RIM" by NASSCOM. HCL was the co-founder of the "NASSCOM IMS forum", which comprises of the leading industry players. David G Thomson in his global best seller, "Blueprint to a Billion" has compared HCL's Infrastructure Services' Division (ISD) growth story to world leaders like Cisco, Microsoft and Google.

→ Business Process Outsourcing (BPO)

HCL's BPO Business Services accounts for over 6% of the company's revenues. This division of HCL Technologies is heading towards a maturity level where a new form of BPO called 'Transformational BPO' is evolving which constitutes Full Process and Multiple Process outsourcing. With over 11,000 professionals operating out of India, Northern Ireland and USA, it serves customers in Telecom, Retail, Media Publishing Entertainment (MPE), Energy Utility & Public Services, Banking & Financial Services, Insurance, and Healthcare. HCL BPO Business Services runs 25 delivery centers across India, UK and USA and offers 24x7 multi-channel, multi-lingual support in eight European and eight APAC languages. It also services various operations across Customer Relationship Management, Technical Support Services, Knowledge Process Management, Finance and Accounting Outsourcing (FAO), Human Resources Outsourcing (HRO), and other niche services.

1.15.2 Vision and Mission

Vision:

To be the most preferred and significant software led global IT services Provider in our chosen markets.

Mission:

To establish technology partnerships with end-to-end users and OEM organizations on a global basis, to deliver the highest quality and most cost-effective software engineering solutions for the emerging markets.

1.15.3 Awards and Recognition

As Company pursues excellence relentlessly, your Company is delighted to receive phenomenal share of recognitions and awards this year, not just from the media, but also from analysts, governing bodies, academic institutions, partners and even customers. Some of the key accolades received during last few years include:

• Ranked No. 1 among the top 50 best managed global outsourcing vendors of 2009 by Brown & Wilson's Black Book of Outsourcing.

• Chosen from among more than 188 corporate entries, your Company won the prestigious 'Golden Peacock Innovation' award for its MTaaSTM (a Business Service Management centric service delivery platform) offering in the IT Sector category.

• Ranked No.1 amongst the 2009 Top Cross-Industry BPO Vendors by the Black Book of Outsourcing.

• Ranked No.1 in the traditional IT Outsourcing space by Datamonitor's, lack Book of Outsourcing 2009-10.

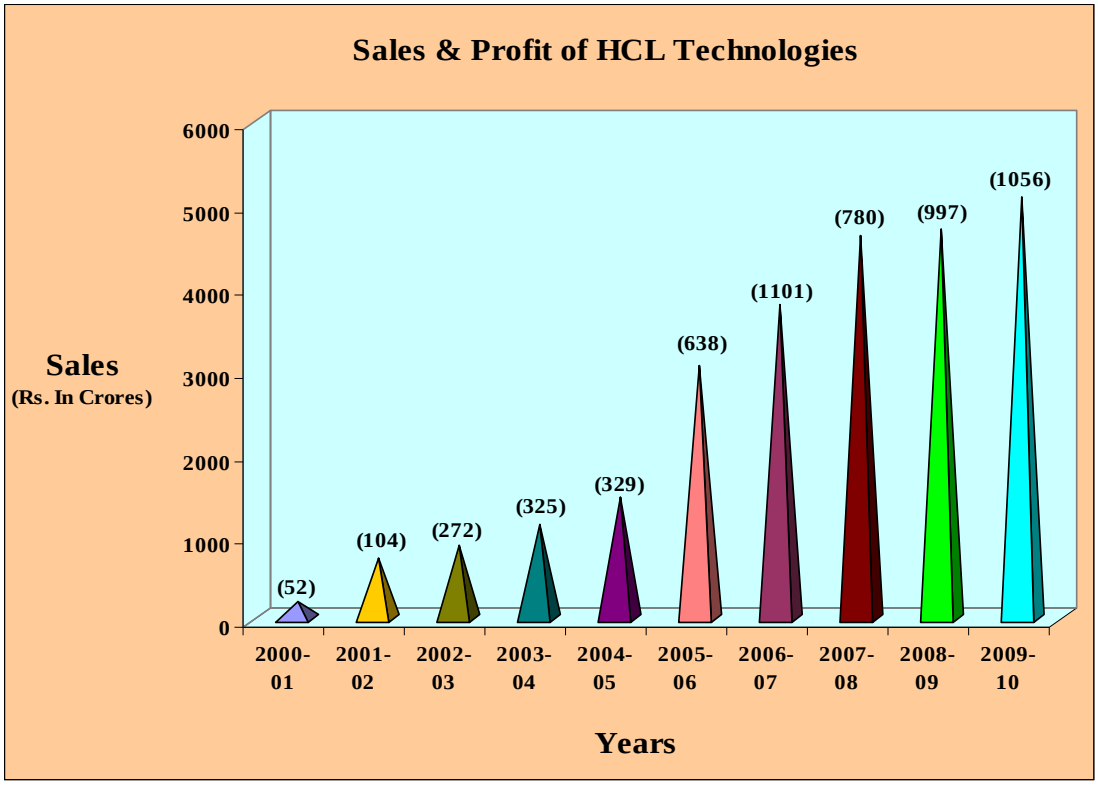
• Ranked No. 1 in the RIMO (Remote Infrastructure Management Outsourcing) space and scores highest in 18 significant ITO criteria and 13 signifi cant RIMO criteria surveyed.

• HCL AXON rated a leader in the Forrester Wave for SAP Implementation Providers making it a serious contender across all phases of the SAP implementation life cycle.

1.15.4 Sales and Profit of HCL Technologies for last 10 years

The Sales and Profit of HCL Technologies Limited for last 10 financial years have been presented below with the help of chart[44].

Char 1.15



The above chart shows the Sales & Services and Profit of the company for last 10 Years. Figures in the brackets represent the Profit for the respective year. It is very clear from the above chart that company's Profit and Sales consistently increasing from financial year 2000-01 to 200-10. It has been also observed that after the financial year 2004-05 there was a drastic increase in the sales as well as profit of the company. The company has got the highest sales in the financial year 2009-10 and it

[44] Annual Reports of HCL Technologies from financial year 2000-01 to 2010-11

has got the highest profit in the financial year 2006-07. It can be concluded from the above chart that the company was stable in terms of its operations.

1.16 History and Development of Infosys

Infosys Technologies Ltd. was started in 1981 by seven people with US$ 250. Today, we are a global leader in the "next generation" of IT and consulting with revenues of US$ 6.04 billion. Infosys defines, designs and delivers technology-enabled business solutions for Global 2000 companies. Infosys also provides a complete range of services by leveraging our domain and business expertise and strategic alliances with leading technology providers. Infosys offerings span business and technology consulting, application services, systems integration, product engineering, custom software development, maintenance, re-engineering, independent testing and validation services, IT infrastructure services and business process outsourcing. Infosys pioneered the Global Delivery Model (GDM), which emerged as a disruptive force in the industry leading to the rise of offshore outsourcing. The GDM is based on the principle of taking work to the location where the best talent is available, where it makes the best economic sense, with the least amount of acceptable risk.

Infosys has a global footprint with 64 offices and 63 development centers in US, India, China, Australia, Japan, Middle East, UK, Germany, France, Switzerland, Netherlands, Poland, Canada and many other countries. Infosys and its subsidiaries have 130,820 employees as on March 31, 2011. Infosys takes pride in building strategic long-term client relationships. 98% of our revenues come from existing customers.

1.16.1 Vision, Mission and Values:

Vision:

We will be a globally respected corporation.

Mission:

To achieve our objectives in an environment of fairness, honesty, and courtesy towards our clients, employees, vendors and society at large

Values:

Infosys believes that the softest pillow is a clear conscience. The values that drive their underscore their commitment to:

- **Client Value:** To surpass client expectations consistently
- **Leadership by Example:** To set standards in our business and transactions and be an exemplar for the industry and ourselves
- **Integrity and Transparency:** To be ethical, sincere and open in all our transactions
- **Fairness:** To be objective and transaction-oriented, and thereby earn trust and respect
- **Excellence:** To strive relentlessly, constantly improve ourselves, our teams, our services and products to become the best

1.16.2 Services offered by Infosys

Infosys' IT solutions, Technology and Business Process Outsourcing services help you accelerate innovation and maximize value from your IT investments. Our business solutions and services help accelerate innovation, increase productivity, reduce costs, and optimize asset utilization.

→ IT Services

Infosys create IT-enabled business solutions for our clients by leveraging our domain and business expertise along with a complete range of services.

→ Engineering Services

Infosys provide concept-to-market R&D and engineering services to improve your product operations. Our services address the complete engineering value chain spanning various industry verticals.

→ Consulting Services

Infosys consulting services ensure that one become stronger, more competitive and capable of managing global business

→ BPO Services

Infosys BPO combines domain expertise, process skills and technology to deliver world-class process outsourcing.

→ Products and Platforms

Infosys products and platforms provide a holistic and integrated transformation approach, complete with solutions and services.

→ Cloud + Services

As a Cloud ecosystem integrator, we offer enterprises single point accountability, rapid time-to-value and improved customer experience. Infosys Cloud + Services helps you orchestrate and integrate Cloud services with your existing enterprise investments

1.16.3 Sustainability of Infosys

Infosys has always adopted a sustainable approach to business. We are aware that growth is inextricably linked to the well being of our ecosystem - employees and business partners, local communities and the environment. As the world gets flatter, we have a larger responsibility to achieve a sustainable tomorrow.

Our sustainability policy guides interactions with stakeholders and influences day-to-day actions. As a responsible corporate citizen, we collaborate with customers and governments to develop sustainable solutions and governance frameworks. We engage with the United Nations Global Compact for coordinated action towards sustainable development.

Every year, we publish a Sustainability Report based on the guidelines of the Global Reporting Initiative. The reports focus on our activities - business-as-usual as well as beyond business - and share our progress in the pursuit of sustainable growth. The report for 2009-2010 delineates our sustainability agenda in three areas:

→ Social Contract

We are committed to an equitable society. Our employees make a difference by taking up social causes in healthcare, education, art and culture, rural rehabilitation and inclusive growth.

→ Resource Efficiency

We are responsible consumers of energy and natural resources. Our long-term vision is to become water sustainable. We are reducing our ecological impact even as we grow our global operations.

→ Green Innovation

We develop sustainable solutions to reduce the carbon footprint of our customers. We combine sustainability with engineering to develop smart and green products.

1.16.4 Awards and Recognition

Infosys pursue excellence relentlessly, it is delighted to receive several global recognitions and awards.

• Ranked among the best in investor relations in the APAC region

• Received the Gold Award for Investor Relations in Technology in the U.S. in the 'Asset Triple A Corporate Awards'

• Ranked as the most sought-after company in India by Business Today Survey

• Received the award for excellence in inclusivity instituted by the American Society for Training & Development (ASTD)

• Honored with the Oracle Titan Partner Award at Oracle® Open World 2009 event

• Received the Excellence Award for Diversity Hiring Initiatives for Infosys BPO

• Listed on Forbes Asian Fabulous 50 for the fourth consecutive year

• Recognized as one of 'India's Best Companies to Work For' in a survey conducted by Great Place to Work® Institute

• Listed in Fortune's 100 fastest-growing companies

• Ranked as the Best Outsourcing Partner by the Waters Rankings 2009

• Listed among best companies for leaders by Hay Group and Chief Executive Magazine

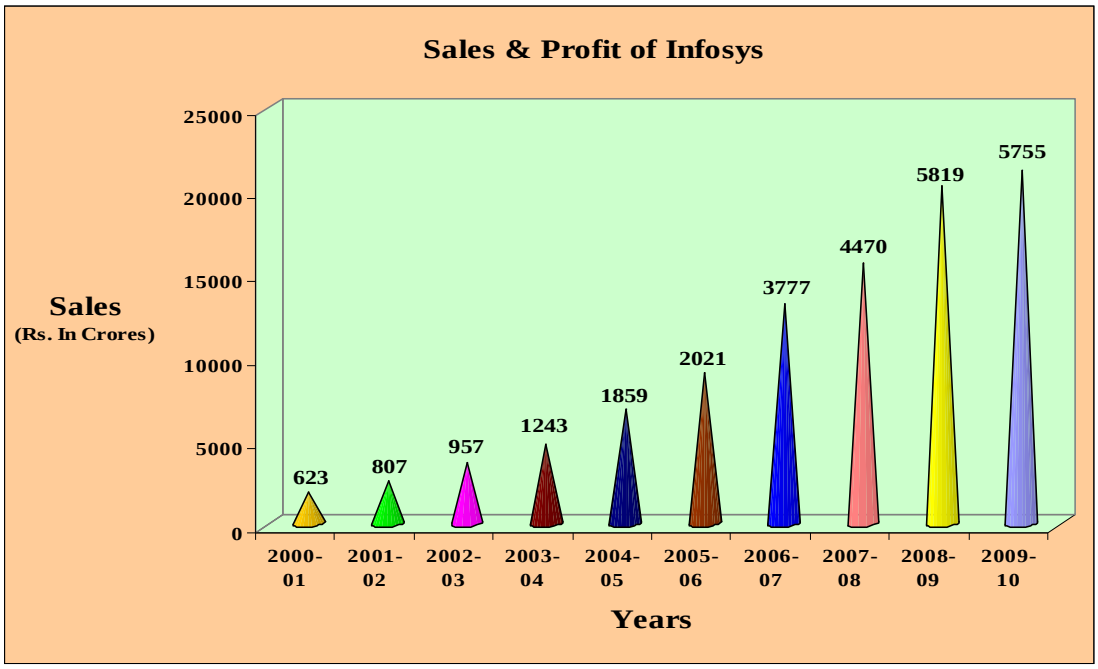
• The sole company from India to be featured in the Top 25 list of Business Week's InfoTech 100

• Received the distinction of having one of the 'Best Ranked Online Annual Reports in Greater China & Asia / Pacific' at IR Global Rankings 2009.

1.16.5 Sales and Profit of Infosys for last 10 years

The sales and Profit of Infosys for last 10 financial years have been presented below with the help of chart[45].

Chart 1.16



The above chart shows the Sales & Services and Profit of the company for last 10 Years. Figures in the brackets represent the Profit for the respective year. It is very

[45] Annual Reports of Infosys from financial year 2000-01 to 2010-11

clear from the above chart that company's Profit and Sales consistently increasing from financial year 2000-01 to 200-10. It has been also observed that after the financial year 2004-05 there was a drastic increase in the sales as well as profit of the company. The company has got the highest sales in the financial year 2009-10 and it has got the highest profit in the financial year 2008-09. It can be concluded from the above chart that the company was stable in terms of its operations.

1.17 History and Development of Polaris Software Lab Limited

Founded in 1993 and publicly-listed, **Polaris Software** is the world's most sophisticated banking and insurance software company. Polaris is the chosen outsourcing partner for 10 of the top 15 global banks and 6 of the 10 top global insurance companies. Polaris offers state-of-the-art, comprehensive solutions for core banking, corporate banking, wealth & asset management and insurance. Over the last two decades, Polaris has implemented its solutions and services among 200 of the world's largest financial institutions. Polaris Software is also recognized by the world's top analysts (Forrester and Gartner) as global leaders in banking and insurance software.

Polaris began its journey over 25 years ago when it partnered with Citibank to create India's first ATM system. In 1993, Polaris was recognized by the Smithsonian Institute for creating the FIRST Banking solution on distributed architecture.

As a result of this partnership experience with Citibank, Polaris gained two very critical experiences:

- Creating mission-critical solutions with leading-edge functionality, built on reliable and robust technical architecture which could be successfully implemented and replicated across the globe. Today, this experience and learning has culminated in a suite of modular solution components: Intellect Global Universal Banking**.**

- Creating successful outsourcing models which enables Polaris to meet and exceed global standards. This experience has been converted into a predictable and repeatable model of success and is known as the OPERA.

In 2003, Polaris acquired Citibank's banking IT arm and transformed it into the world's leading Financial Technology Corporation. Today, Polaris has been rated among the top 8 in IT services in banking globally. While the rest of the Indian IT industry was busy building expertise on COBOL, Java and Lotus, Polaris built expertise around Banking, Financial Services and Insurance (BFSI) specializing on industry segments such as Investment Banking, Retail Banking, Credit Cards, Corporate Banking, and Insurance.

Polaris organized itself into 7 Business Solution Centers (BSC's). Each BSC houses expertise in one domain area. For example, the Hyderabad BSC houses investment banking & wealth management expertise and is the world's first specialty center for Investment Banking. Polaris is proud to serve the world's most prestigious banks, including Citigroup, SEB, Shinsei Bank, Mekong Housing Bank, Saigon Hanoi Bank, Al Hilal Bank, and Deutsche Leasing, to name a few. Polaris' strength lies in its people: World-class bankers, peerless information technology experts, and quality assurance gurus all work together to ensure the best possible outcomes for clients.

1.17.1 Vision and Mission of Polaris

Vision:

- Create the environment to attain personal mastery to push new frontiers
- Unleash the collective knowledge potential
- Achieve global stature by helping customers win in their market place
- Anchor the family and its aspirations
- Impact the society at large
- Rooted in Polaris Values – Passion, Humility, Integrity, Respect, FUN - ‘PHIR FUN’

Mission:

To be a reliable and responsive Techno-Business Solution partner and provide cost-effective, timely solution, meeting customer expectation through continuous process improvement and Win-Win relationships in the Banking, Financial Services and Insurance space

1.17.2 Services offered by Polaris

Polaris keeps your technology current and relevant to your business using selected services and technologies. Polaris services are organized as Centers of Excellence (COE) and called 'entity'. Entity provide application management services to maintain, reengineer, aggregate and upgrade portfolios of business applications cost-effectively by leveraging Polaris' continuously replenished warehouse of intellectual property.

The expertise of entity lies in its ability to utilize domain knowledge, outsourcing experience and Intellectual Property to deliver superior technology solutions that are aligned to the business outcomes of our customers. The entity in Polaris offers the following distinct advantages in the chosen area of technology and business applications.

- Increased productivity from understanding of the domain
- Expertise in the entity is nurtured through stringent certification, mentoring and on the job
- Focus on converting IPs into innovative solutions for customer needs
- Serve as extended technology and business arm for customers for predictable results with assured value and speed

→ Polaris Centers of Excellence

The entity in Polaris is organized in six different areas namely Technology, Enterprise solutions, Testing, Performance Engineering, Domain led and Infrastructure led.

→ Outsourcing

Welcome to the world of boundary less banking! With 20 years, 56 business applications and over 10,000 financial technology specialists, Polaris has emerged as the dominant force in delivering business savvy solutions to this sector.

→ Retail Banking

The Retail Banking environment today is changing fast. The changing customer demographics demands to create a differentiated application based on scalable technology, improved service and banking convenience. Higher penetration of technology and increase in global literacy levels has set up the expectations of the customer higher than never before. Increasing use of modern technology has further enhanced reach and accessibility.

→ Corporate Banking

Polaris' Corporate Banking business model is powered by our Intellect Suite of Products. Our custom solutions include:

- Risk and Treasury Management
- Cash Management
- Portals
- Trade Finance

→ Investment Banking

Technology is one of the key Differentiators for any leading Investment Banker. Every year, Investment firms make huge investments in technology, but the winners make smart investments. Polaris works with its clients to make the right technology investments by bringing leading edge insight, experienced professionals, and a rigorous process to every project. In an information-intensive industry where time is of the essence, our rapid and robust software development and deployment methodologies helps clients reduce risk in their projects and implement them successfully on a crashed time frame.

→ Insurance

As a technology partner of global insurance clients, Polaris combines the understanding of insurance industry requirements with the technology expertise to develop and deliver techno-business solutions. We are committed to develop and provide lasting insurance solutions that are of value-add to meet the ever-changing business needs of customers.

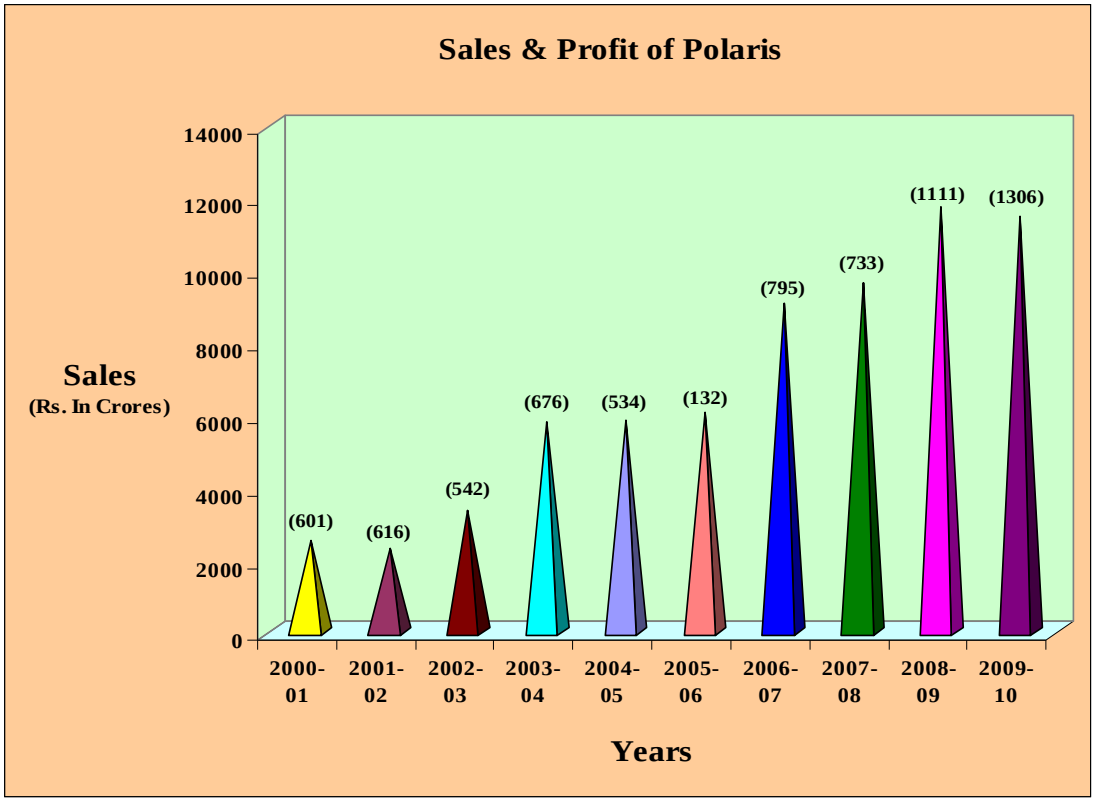
1.17.3 Awards and Recognitions

- Polaris' Software Core Banking is a LEADER in Gartner's Magic Quadrant for International Retails Core Banking, 2010
- Polaris Software Lab Ltd, ranked 4th amongst Indian IT companies in 2009 FinTech 100
- Arun Jain wins the Indo-Asean Business Initiative Award 2008
- Polaris' Intellect Treasury wins The Banker Capital Markets Projects Award
- Polaris named Leader in 'Specialty Application Development' among the Global Services 100 for second consecutive year
- Polaris had won "The Front Office Project of the Year" award in The Banker Technology Awards 2007 for its 'Intellect – Treasury Project'.
- Polaris has been awarded second time the Leader in the category of "Speciality Application Development" among the Top 100 global Companies by Cyber Media Publications for the Year 2006.
- Polaris also emerged as the Best in "Specialty Application Development" in the exclusive Global Services annual listing of the Top 100 outsourcing companies in 10 service-delivery areas spanning BPO, ITO and customer care.
- Intellect Treasury from Polaris has won the The Banker Capital Markets Projects Award.

1.17.4 Sales and Profit of Polaris for last 10 years

The sales and Profit of Polaris for last 10 financial years have been presented below with the help of chart[46].

Chart 1.17



The above chart shows the Sales & Services and Profit of the company for last 10 Years. Figures in the brackets represent the Profit for the respective year. It is very clear from the above chart that company's Profit and Sales consistently increasing from financial year 2000-01 to 200-10. It has been also observed that Company has got increase in three phases, i.e. financial year 2000-01 to 2002-03 Phase – I, Financial year 2003-04 to 2005-06 Phase – II and Financial year 2006-07 to 2009-10. It can be concluded from the above chart that the company was stable in terms of its operations and can able to increase its earning and profit on year – on – year basis.

1.18 History and Development of Rolta India Limited

[46] Annual Reports of Polaris from financial year 2000-01 to 2010-11

Rolta is a global market leader and provider of solutions that deliver insight and impact based upon innovative information technology solutions, services and software. We have a heritage of providing unique geospatial and enterprise IT solutions for the Defense, Homeland Security, Government, Utilities & Communications, Transportation, Process and Power and Financial Services sectors. Over the years, Rolta has successfully executed multi-million dollar contracts across a broad spectrum of industries in over 40 countries. Rolta serves these markets by providing innovative solutions - Enterprise Geospatial and Defense Solutions (EGDS), Engineering Design and Operation Solutions (EDOS) and Enterprise IT Solutions (EITS).

The Company's EGDS Division, through a combination of its own IP, innovative R&D and technologies acquired from world leaders, develops and provides state-of-the-art Defense, Homeland and Maritime security solutions, . Rolta's intellectual property repository contains a unique solutions framework for enterprise-level integration – Rolta Geospatial FusionTM, and other cutting-edge software for earth sciences, providing the foundation for C4ISTAR information systems, Military Communications, Digital Soldier, and Vehicle Systems, covering the entire "sensor to shooter" chain, and sophisticated Homeland Security Solutions. The EGDS Division meets the needs of the Utilities and Communications industry, and city/municipal governments by providing solutions based on Rolta Geospatial FusionTM that are focused on operational excellence including enterprise-level spatial business intelligence, mobile field operations, web mapping solutions and data services.

Rolta's EDOS Division provides comprehensive Engineering, Procurement and Construction Management (EPCM) services for the entire lifecycle of plants in Oil & Gas, Power and Chemical/Petrochemical industries. Rolta One View is an innovative business intelligence solution for the process industry that enhances operational decision making in critical work processes such as production operations, safety, reliability, maintenance and cut-over.

Rolta's EITS Division addresses IT requirements like enterprise business systems, enterprise performance monitoring, business intelligence and application integration. The division is focused on developing and upgrading the Company's IP to enhance its

value proposition to customers, and strengthening its standing in the market by offering unique technological solutions such as the Rolta iPerspective Suite. This is a rapid application development workbench that brings innovation to enterprise application integration, cloud computing and the automatic building and deployment of web services.

1.18.1 Vision and Mission of Rolta India Limited

Vision:

To continuously innovate and provide knowledge based IT solutions that deliver remarkable insights and lasting impact in the way our world operates

Mission:

To develop innovate solutions that dramatically change market place. Deliver valuable insights that enable the best decision making. Create measurable and relevant impact by always executing with the end result in mind

1.18.2 Services offered by Rolta India Limited

→ Enterprise Geospatial and Defense Information Solutions:

EGDS enables customers to extract insights through a spatial view into business and operational data. These insights strengthen strategic and operational decision-making thatcan generate a significant impact on operational performance. Our spatial business intelligence solutions, based upon Geospatial Fusion™, transform our customers' ability to manage operations and achieve previously unattainable levels of performance. Our team has countless years of experience in providing Geospatial, Photogrammetry and Imaging services for commercial and defense customers. Through the innovative fusion of business and spatial information, Rolta provides new insights that strengthen strategic and operational decision-making and deliver great impact to a diverse range of Governmental, Utility, Communications, Economic Development, Transportation and Defense agencies. The excellence of our geospatial solutions and data service offerings is rooted in our deep knowledge of the industry,

excellence in global sourcing, knowledge of engineering IT applications, disciplined project execution and Rolta intellectual property that is used for enterprise integration, visualization, data conversion and quality assurance. Rolta's unique IP includes: the OGC compliant Rolta Geospatial Fusion™ - a solution that provides enterprise wide fusion of spatial and business information that is powered by Rolta OnPoint™ - an enterprise geospatial web application, Rolta OneView Mobile™ - which synchronizes office and field workforce for enhanced productivity, Rolta GeoImaging Suite – an integrated system for Remote Sensing and Image Processing consisting of Rolta GeoImaging Accelerator - an automated image processing system enhancing speed and efficiency, Rolta GeoConference – a real time geospatial collaboration system, and Rolta Photogrammetry – a comprehensive suite of 3D digital Map production solutions with multi-sensor support.

→ Defense & Homeland Security

Rolta is a dominant market leader for Geospatial Defense solutions in India for over two decades and has a deep understanding of the operational environment of the Forces. Today, Rolta continues to design innovative solutions to address their unique requirements through a combination of its own IP, R&D and partner technologies which provide field proven, hi-tech solutions for Defense, Homeland and Maritime Security applications.

Rolta's solutions include: Homeland Security and Maritime Safety, Security and Situational Awareness, Asset Protection (On-shore, Off-shore), Surveillance, Defense Command & Control, Comprehensive Battlefield Management, Defense Intelligence Surveillance & Reconnaissance and Intelligence analysis for Mission planning.

For Defense Forces, Rolta provides C4ISTAR solutions for Battlefield Management, Tactical Communications, Future Digital Soldier, Command & Control, Communications, Night Vision, Weapon Sights, Mobile Surveillance, and Advanced Photogrammetry & High End Imaging solutions for 3D Terrain Visualization, Automated Change Detection and Advanced Stereo Pair Ingestion.

Rolta Homeland & Maritime Security solutions include: Safe City C4I, Computer Aided Dispatch, CCTNS and Coastal Security powered by Rolta Command Bridg technology.

→ Enterprise Design and Operation Solutions

Rolta has an exceptional combination of Engineering and IT expertise with 1,100 person team of Engineers, developers and consultants. This combination uniquely enables us to provide comprehensive solutions for EPCs and Owner-Operators(O/O), from concept to completion of new plants and then solutions for ongoing operations. EDOS provides Asset Design solutions (including FEED and Detail Design, Data Validation and Handover, Model and Data Migration, Software & Technology Tools and Asset Information Management) as well as Asset Performance Solutions (including Structure Plant Data Model, Visual Views of Asset and Operational Data, Engineering Fusion and Industry-Specific BI solutions based on Rolta's OneView™ software). Our EDOS solutions enable O/Os within the process and power industry to view plant operations, capital projects and asset information as a single, fully integrated ecosystem.

→ Enterprise IT Solutions

Rolta EITS has some of the world's most knowledgeable technology and business experts and the depth of experience that can only be gained through many years of successful projects. EITS has advanced to a world class organization through the merger of Rolta's IT Consulting Division with the acquisitions of TUSC, Whittmanhart Consulting and Piocon Technologies. Each organization brings significant credentials to Rolta EITS. TUSC, known as "the Oracle experts," has a stellar track record of successful projects and very technically innovative solutions. Whittmanhart Consulting was widely known for Hyperion expertise and EPM solutions for the Financial Services Industry. Piocon has deep roots in Oracle and Business Intelligence projects. Rolta for many years has been a leading provider of IT infrastructure management solutions based on CA products. This broad range of complementary, cutting edge technical expertise is the foundation for EITS solutions; solutions which provide lasting value. EITS has the breadth and depth to implement,

build, manage and support the IT applications, databases, systems and infrastructures that are at the core of successful business operations.

Enterprise IT Solutions provides products and solutions for Commercial, Oil, Gas, Power, Petrochemicals, Government, Defense, Homeland Security, Utilities, Telecom and Financial Services industries. These solutions are based on deep expertise in Business Intelligence, Enterprise Performance Management, Oracle Enterprise Business Suite, Oracle Database Management & Administration, Security and enterprise IT Management. Rolta's solution offerings bring together the latest thinking in Cloud Computing, EAI, SOA, Enterprise GIS and Business Intelligence. Rolta's unique ability to see more than meets the eye, deep knowledge of IT, combined with hands-on industry knowledge, backed by world-class infrastructure ensures that it provides highly relevant state-of-the-art solutions for its customers.

1.18.3 Awards and Recognitions

Rolta's transformation has not gone unnoticed. The following are a few of the recognitions that have been awarded to the company:

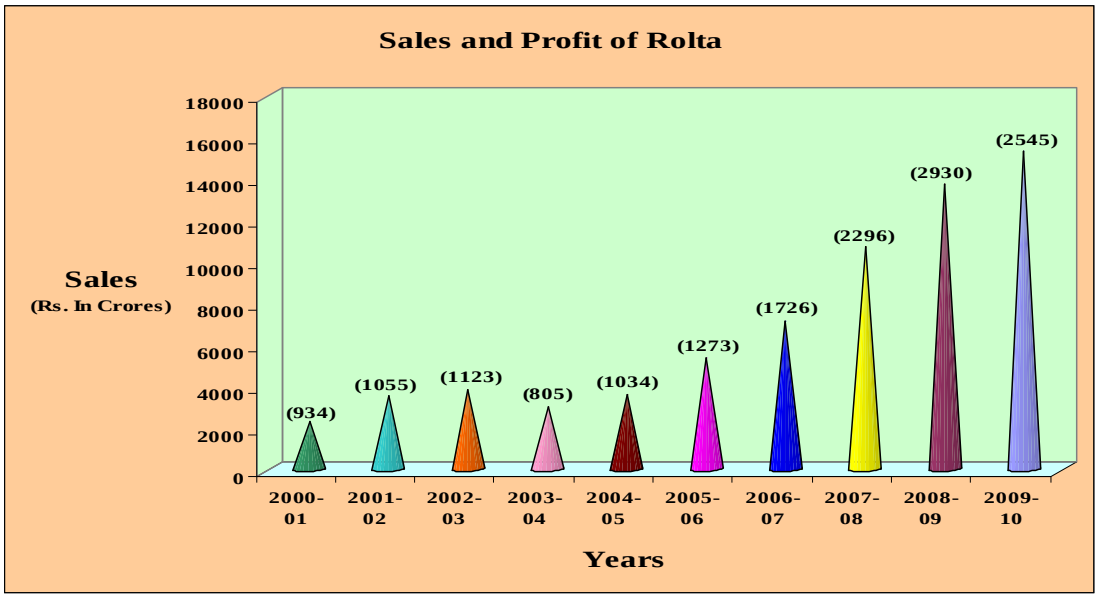
- 7 Oracle Titan Awards for excellence in solving real-world customer challenges and for development and deployment of Oracle technology
- "The Great Mind Challenge for Business 2010" award by IBM for building the most innovative solution using IBM's Rational Suite
- Microsoft Partner Network IMPACT Award for Data Management Solution of the Year category
- Rolta was at the 2nd position as a preferred employer, and at the 4th position in overall ranking in the DQ-IDC IT Best Employer's Survey
- Rolta ranked 26th among the 500 best performing midsize firms in India by Inc. magazine Rolta has been included in the S&P Global Challengers List™ 2008 by Standard & Poor's (S&P)
- "Geospatial Award of the Year" by Geospatial Today
- "Technology Leadership Award in the Hydro Carbon Industry" by Chemtech Foundation
- "Amity Corporate Excellence" award by Amity International Business School

- Rolta was ranked 11th amongst "India's most investor-friendly companies" by Business Today
- Forbes Global "200 Best Companies" outside US - 4 times in 6 years
- Amongst the 500 fastest growing technology companies in Asia Pacific - Deloitte Touche Tohmatsu

1.18.4 Sales and Profit of Rolta India Limited for last 10 years

The sales and Profit of Rolta for last 10 financial years have been presented below with the help of chart[47].

Chart 1.18



The above chart shows the Sales & Services and Profit of the company for last 10 Years. Figures in the brackets represent the Profit for the respective year. It has been observed from the above chart that company has got the highest Sales and Services in last financial year 2009-10. Where as the company was having highest Profit in the financial year 2007-08. The sale of the company showed continues increasing trend during last 10 years. It can be concluded that after the financial year 2006-07 the company's sales and profit has increased drastically. It has been noted here, that there

[47] Annual Reports of Rolta India Ltd. from financial year 2000-01 to 2010-11

was a positive correlation between sales and profit. The Sales reached the highest point in the financial year 2009-10.

1.19 History and Development of Wipro Limited

Wipro IT Business, a division of Wipro Limited, is amongst the largest global IT services, BPO and Product Engineering companies. In addition to the IT business, Wipro also has leadership position in niche market segments of consumer products and lighting solutions. The company has been listed since 1945 and started its technology business in 1980. Today, Wipro generates USD 6 billion of annual revenues. Its equity shares are listed in India on the Mumbai Stock Exchange and the National Stock Exchange; as well as on the New York Stock Exchange in the US.

Wipro makes an ideal partner for organizations looking at transformational IT solutions because of its core capabilities, great human resources, commitment to quality and the global infrastructure to deliver a wide range of technology and business consulting solutions and services, 24/7. Wipro enables business results by being a 'transformation catalyst'. It offers integrated portfolio of services to its clients in the areas of Consulting, System Integration and Outsourcing for key-industry verticals.

With more than 100,000 associates from over 70 nationalities and 72 plus global delivery centers in over 55 countries, Wipro's services span financial services, retail, transportation, manufacturing, healthcare services, energy and utilities, technology, telecom and media. Wipro's unwavering focus has been on business transformation with matchless innovation in service delivery and business models. More than 800 active clients that include governments, educational institutes, utility services, and over 150 Global Fortune 500 enterprises have benefited from this approach. One of the world's largest third party R&D services provider, Wipro caters to product engineering requirements in multiple domains. Most of the technology that you come across in daily life - airplanes, automobile navigation systems, cell phones, computing servers, drug delivery devices, microwaves, printers, refrigerators, set top boxes, TVs - will find a Wipro component in them. Our service portfolio includes product strategy and architecture, application and embedded software, electronic and

mechanical hardware, system testing, compliance and certification and product sustenance and support.

1.19.1 Vision and Mission of Wipro Limited

Vision:

Wipro has a vision that Practicing Values to create values.

Mission:

Wipro's mission is understanding and responding to the needs of our community – Employees, Customers, Shareholders and the society at large.

1.19.2 Services provided by Wipro Limited

→ Delivering strategic BPO services

Business Process Outsourcing optimizes business performance to attain value creation. There has been a tremendous upsurge in the outsourcing industry in many developing countries, like India which aid in reducing costs and increasing service quality. Wipro Business Process Outsourcing (BPO) is a leading provider of BPO services focusing on the complex, voice and non-voice based segment of customer-care services. The integrated solution approach provides enhanced value to the customers through process standardization, process simplification and process optimization. Customer services are provided from outsourcing companies in North America, Central and Eastern Europe, India, China and Latin America.

→ Enterprise BPO

The technology dependency across industry domains has increased with each passing year. At Wipro BPO we have leveraged our range of enterprise services to enable diverse domains meet existing technology and functional requirements. Our best-in-class solutions provide you with a platform to take your enterprise to the next level of operational excellence.

→ Domestic BPO

With nearly 500 players, India's domestic business process outsourcing (BPO) market is set to touch USD 6.82 billion (around Rs 31,700 crore) by 2013. The domestic BPO market is evolving into third-party 'transformational outsourcing' relationships from the existing captive dominated market structure. This implies that rather than merely running isolated processes for customers, BPOs would engage more deeply to identify and transform core business processes to add greater market value in the 'creation and delivery of end products and services'.

→ Consulting Services

At Wipro Consulting, we help companies think ahead. Business today is evolving faster than at any other time in history, and tomorrow there are going to be challenges we can't even imagine today. And opportunities. But to survive and thrive, we *must* imagine that future. We must anticipate it. Even while we're helping you solve your business challenges today, we're thinking about the future - and how we can take you there.

→ Total Outsourcing

Global competitiveness is driving market growth across domains and as your business expands, the need to focus on core capabilities becomes increasingly critical. You require the best resources to be devoted across your enterprise as you grow. With IT infrastructure emerging as an important element of defining and achieving your business objectives, you also need to be technologically ready to take on strategic challenges that can fuel your growth. Balancing these business and technology requirements would unnecessarily burden your organizational resources. With this in mind, outsourcing is the key to taking care of IT infrastructure and application needs while allowing you to concentrate on your business competencies. Across domains, IT is an integral part of organizational process and growth and Wipro is that partner who can help you achieve technology competence of the highest level.

Wipro Total Outsourcing (TOS) services are targeted at achieving maximum value by providing end-to-end best of breed IT practices for your business. From technology optimization to mitigating risks, we fulfill your constant IT infrastructure and application demands while evaluating, deploying and managing flexible, responsive

and economical solutions. Through our acknowledged quality processes and program governance frameworks, we help you achieve and sustain business momentum. Based on service level agreements (SLAs), we meet every need and objective of your business by providing IT infrastructure solutions that seamlessly align with organizational processes and practices.

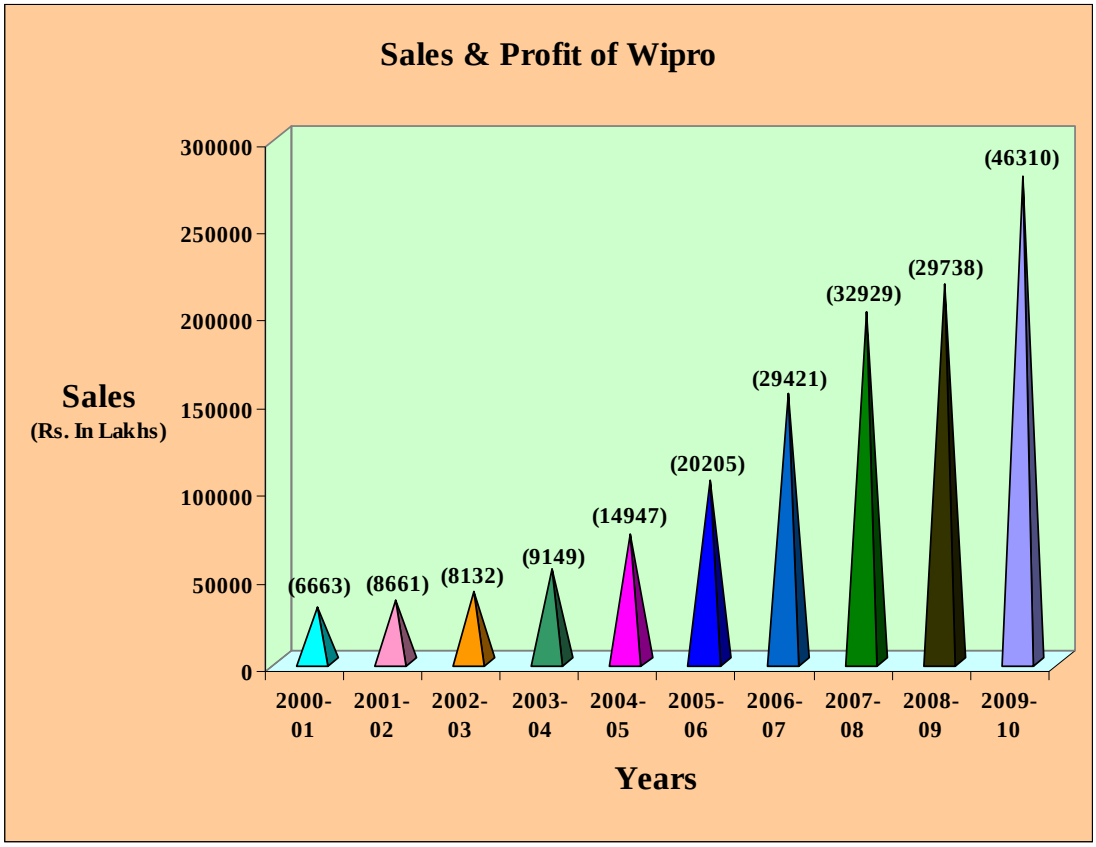
1.19.3 Awards and Recognitions

- Awarded with REMMY (the Recruitment Marketing) Award by The Times Group
- Outsourcing Excellence Award for Best IT Enablement in BPO
- BPO Excellence Award for Operational Excellence & Quality
- BPO Excellence Award for Use of Technology for Operational Excellence
- BPO Excellence Award for Fun at Work
- BPO Excellence Award for outstanding work in Utilities Company in UK
- Awarded with DL Shah National Quality Award
- "Company Of The Year - International", Economictimes.com BPO Industry Award
- Ranked 2nd in the Dataquest IDC BPO Satisfaction Survey
- Ranked #3 Top BPO Employers, NASSCOM Survey 2009-10
- Wipro receives Most Outstanding Alliance Partner of the Year Award in Asia-Pacific and Japan from HP. This is the third time in the last five years that Wipro Technologies has been recognized by HP Software and Solutions.
- Bharat Gaurav Award, 2010 for Nagarajan A., VP, Business Operations, Wipro Arabia for excellence in keeping Indian Flag high in other countries.

1.19.4 Sales and Profit of Wipro for last 10 years

The sales and Profit of Wipro for last 10 financial years has been presented below with the help of chart[48].

Chart 1.19



The above chart shows the Sales & Services and Profit of the company for last 10 Years. It is very clear from the above chart that company's Profit and Sales consistently increasing from financial year 2000-01 to 200-10. It has been also observed that after the financial year 2004-05 there was a drastic increase in the sales as well as profit of the company. The company has got the highest sales in the financial year 2009-10 and it has got the highest profit in the financial year 2009-10. It can be concluded from the above chart that the company was stable.

References

[48] Annual Reports of Wipro from financial year 2000-01 to 2010-11

1. Strategic Review of The IT Industry India 2003 – NASSCOM release
2. Saxenian, AnnaLee (1999): Silicon Valley's new immigrant entrepreneurs. Public Policy Institute of California, San Francisco CA.
3. Economic Times, Daily Business News Paper, dated, 23rd March, 2011
4. (2010b): Resource centre: facts and figures. NASSCOM, New Delhi. http://www.nasscom.org/artdisplay.asp?cat_id=315
5. www.nasscom.org
6. CMIE (1997): Centre for Monitoring Indian Economy. Prowess database (digital). Bombay.
7. Report on "Knowledge revolution in rural India" published in THE HINDU newspaper dated 20.7.2003.
8. Salmon, Felix. 2010. The Lessons of Andhra Pradesh. j.mp/ge0zyQ. November 18.
9. Heeks (1996): India's software industry: state policy, liberalisation and industrial development. Sage Publications, New Delhi.
10. Ministry of Information Technology (1999a): Information Technology Action Plan. Part I – Software. New Delhi.
11. (1999b): Information Technology Action Plan. Part II – New Policy Paradigm for the Hardware Industry. New Delhi.
12. NASSCOM (2002a): The IT industry in India: Strategic Review 2002. NASSCOM, New Delhi.
13. Varma, Yograj (2001): Mega spenders: DQ-IDC survey. Dataquest, 30 November, 68-73.
14. (2001): Indian software industry development: international and national perspective. Economic and Political Weekly XXXVI (45)4278-4290.
15. (2002b): Indian IT software and services directory 2002. NASSCOM, New Delhi.
16. Educational statistics from the 2001 census of Department of Education, Ministry of Home Affairs, Government of India
17. Ministry of Information Technology (1999a): Information Technology Action Plan. New Delhi.
18. NASSCOM-Mckinsey Reports, 1999 and 2002.
19. Quarterly NASSCOM Reports.

20. Ministry of Information Technology (MIT), Report for Tenth Plan (2002-07).
21. Economic Times, Daily Business News Paper, dated, 23rd March, 2011
22. Moitra, D. (2001). India's software industry. IEEE Software, January/February: 77-80.
23. Krishna, S., Ojha, A.K. & Barrett, M. (2000). Competitive Advantage in the Software Industry: An Analysis of the Indian Experience, in Information Technology in Context, C. Avgerou & G. Walsham (eds), Ashgate, Aldershot, UK, 182-197.
24. Heeks, R. (1996). India's Software Industry. New Delhi: Sage Publications.
25. Gallaugher, J. and Stoller, G. (2004). Software Outsourcing in Vietnam: A Case Study of a Locally Operating Pioneer. The Electronic Journal on Information Systems in Developing Countries, 17(1): 1-18.
26. Various sources- ENS Economic Bureau, Nasscomm , Hindustan Times dated June 2nd (handout titled – Software exports peak with 34.5% growth)
27. www.ibef.org
28. Economic Times, Daily Business News Paper, dated, 23rd March, 2011
29. Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.
30. CRISIL Research on Growth of Indian Information Technology, 20010-11
31. Feroli, M. (2001) Joint Economic Committee Study, Information Technology and the New Economy.
32. Sonar, S.G., Devadas, V., and Das, Dillp. (2005) Emerging Urban Pattern in the context of Information Technology Revolution, National Conference on Urban Transport Planning and Management, Central Institute of Road Transport, India, Pune, Published in the proceeding, October 20-22, 2005.
33. John, B., Newman, P., Hall, P. and Nijkamp, P. (1985) The Future of Urban Form, Nicholos Publishing Company, New York.
34. Published IT & ITES Policies State Government of Tamilnadu and Karnataka.
35. Annual Report of Information Technology (2010-11), Government of India, Ministry of Communication and Information Technology, New Delhi.
36. NASSCOM-Mckinsey Reports, 2007 and 2012

37. Ministry of Information Technology, Government of India, New Delhi, www.mit.gov.in
38. Kelkar, V L, D.N. Chaturvedi and M.K.Dhar (1991), "India's Information Economy: Role, Size and Scope", Economic and Political Weekly, 26(37): 2153-61.
39. NASSCOM (2003), The IT Industry in India: Strategic Review 2003. New Delhi: NASSCOM.
40. www.cmc.com
41. Annual Reports of CMC from financial year 2000-01 to 2010-11
42. Annual Reports of GTL from financial year 2000-01 to 2010-11
43. Annual Reports of HCL Infosystem from financial year 2000-01 to 2010-11
44. Annual Reports of HCL Technologies from financial year 2000-01 to 2010-11
45. Annual Reports of Infosys from financial year 2000-01 to 2010-11
46. Annual Reports of Polaris from financial year 2000-01 to 2010-11
47. Annual Reports of Rolta from financial year 2000-01 to 2010-11
48. Annual Reports of Wipro from financial year 2000-01 to 2010-11

2.1 Introduction

A literature review is a body of text that aims to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to a particular topic. Literature reviews are secondary sources, and as such, do not report any new or original experimental work. A well-structured literature review is characterized by a logical flow of ideas; current and relevant references with consistent, appropriate referencing style; proper use of terminology; and an unbiased and comprehensive view of the previous research on the topic.
Literature reviews should comprise the following elements:

- An overview of the subject, issue or theory under consideration, along with the objectives of the literature review
- Division of works under review into categories (e.g. those in support of a particular position, those against, and those offering alternative theses entirely)
- Explanation of how each work is similar to and how it varies from the others
- Conclusions as to which pieces are best considered in their argument, are most convincing of their opinions, and make the greatest contribution to the understanding and development of their area of research

A literature review may constitute an essential chapter of a thesis or dissertation, or may be a self-contained review of writings on a subject. In either case, its purpose is to:

- Place each work in the context of its contribution to the understanding of the subject under review
- Describe the relationship of each work to the others under consideration
- Identify new ways to interpret, and shed light on any gaps in, previous research
- Resolve conflicts amongst seemingly contradictory previous studies
- Identify areas of prior scholarship to prevent duplication of effort
- Point the way forward for further research
- Place one's original work (in the case of theses or dissertations) in the context of existing literature

(1)

Title of the Work: **"Microfinance in Nepal: Institutional viability & sustainability and their compatibility with outreach to the poor"**

Type of Work : Research Paper

Researcher : Prof. Dr. Hans Dieter and Prof. Dr. Bijay Kumar,

Place and Year : Kathmandu University, 1998.

Abstract :

A coordinated approach of MFI data collection and analysis is worked out and Collected data of MFI financial monitoring and evaluation has been analyzed with the help of WOCCU **PEARLS** Analysis, the data has been analyzed and evaluated with the help of sub ratios of PEARLS and finally the condition of Micro Finance Institutions located in Nepal has been evaluated.

(2)

Title of the Work : **"A Framework for Regulating Microfinance Institutions"**

Type of Work : Research Paper

Researcher : Hennie Van Greuning, Joselito Gallardo and Bikki Randhawa

Place and Year : The World Bank, Dec -1998.

Abstract :

This paper seeks to provide a framework for addressing regulatory issues which impact operations and institutional development of microfinance institutions (MFIs). Arguing against universal regulation or creating separate specialized regulations, the approach in this paper uses the analysis of MFIs' liabilities to highlight the distinguishing features of different types of MFIs and focuses on risk-taking activities that need to be managed and regulated. The paper points out the benefits from a transparent and inclusive regulatory framework within which MFIs can progressively evolve into formal financial institutions.

(3)

Title of the Work: **"Village Banks, Caisses Villageoises, and Credit Unions: Lessons from Client-Owned Microfinance Organizations in West Africa".**

Type of Work : Case Study

Researcher : Korotoumou Ouattara, Claudio Gonzalez-Vega and Douglas H. Graham

Place and Year : West Africa - December 1999

Abstract :

This case study was prepared for the Micro enterprise Best Practices (MBP) Project, funded by the United States Agency for International Development (USAID). WOCCU created a performance rating system for CUs to be used as a management as well as a supervisory tool. It is based on the PEARLS system (**P**rotection, **E**ffective financial structure, **A**sset quality, **R**ate of return and costs, **L**iquidity, and **S**igns of growth), which is used to assess the performance of banks.

(4)

Title of the Work : **"The Value of Comprehensive Credit Reports: Lessons from the U.S. Experience"**

Type of Work : Research Paper

Researcher : Michael Fiebig & J. Lange

Place and Year : New York - 2001.

Abstract :

According to this study, the financial issues can be resolved by using PEARLS analysis developed by WOCCU, USA. They applied PEARLS as a prominent supervisory tool and concluded that, Agricultural finance is a risky and expensive business. However, the problem does not lie with the unchangeable risks and costs which can be avoided by not providing access to rural smallholders, but with the accurate management of the risks and costs.

(5)

Title of the Work : **"Ways Donors Can Help the Evolution of Sustainable Microfinance Organizations"**

Type of Work : Research Paper

Researcher : Richardson and Lennon

Place and Year : U. S. A. - 2001.

Abstract :

In their research paper, "Commercialization of Micro Finance: Perspectives from South and South East Asia", concluded that Use of the PEARLS financial ratios has

been especially useful in pinpointing key financial weaknesses and improving the transparency of credit unions' progress in overcoming them.

(6)

Title of the Work : **"Retooling Credit Unions: The Case of Credit Union Association of Ghanak"**

Type of Work : Case Study

Researcher : Dr. Kwadwo A. Ofei

Place and Year : Ghana, November - 2001

Abstract :

According to this Case Study, he studied in assessing the financial performance of CUA (Credit Union Association of Ghana) they adopted the World Council of Credit Union (WOCCU's) unique Credit Union monitoring and rating system called PEARLS. The PEARLS Evaluation System is a very efficient and effective tool for monitoring the progress of Credit Unions. Hence, it helps to monitor efficiency and profitability in the Credit Unions.

(7)

Title of the Work : "**Focus On Transparency"**

Type of Work : Research Paper

Researcher : Craig F. Churchill, Isabelle Barrès and Geetha Nagarajan

Place and Year : U. S. A., November - 2001

Abstract :

Here, they studied data provided information for measuring performance using ratio and trend analysis of critical indicators for each Network member. The standard indicators facilitate comparison across the Network. Opportunity currently uses 20 quantitative indicators to measure outreach, loan portfolio quality, efficiency, profitability and sustainability. The aforementioned key PEARLS indicators provide a snapshot to assess performance over time, they concluded at the end.

(8)

Title of the Work :**"Financial Transparency: an MFI's Information Sequence"**

Type of Work : Research Paper

Researcher : The Consultative Group To Assist The Poorest (CGAP)

Place and Year : U. S. A., November - 2001

Abstract :

"Assessment / Performance Measurement: Financial Transparency" a programme focuses on PEARLS technique for financial analysis of MFIs. Microfinance assessments can contribute to improving transparency in microfinance. However, several challenges require attention: improving information, standardizing indicators and definitions, increasing the frequency of assessments, and reducing their costs. For information about work on these and other challenges to transparency by CGAP and others. PEARLS is a set of 45 financial ratios used to evaluate and monitor the financial stability of credit unions within WOCCU.

(9)

Title of the Work : **"Creating wealth in the West Midlands through sustainable credit unions"**

Type of Work : Research Project

Researcher : Paul Jones

Place and Year : U. K., February 2005

Abstract :

The action research project, "Creating wealth in the West Midlands through sustainable credit unions", marks a step forward in understanding the organizational development of credit unions as quality financial institutions. The project has aimed to help credit unions restructure in ways that prioritize financial discipline, economic strength, professionalism and quality in financial services. This involved encouraging business and market oriented practices, modernized lending procedures, a new financial structure and PEARLS ratio analysis as well as a more entrepreneurial and enterprise-driven culture.

(10)

Title of the Work : **"Factors Influencing the Financial Sustainability of the Microfinance Sector in Namibia"**

Type of Work : Research Paper

Researcher : Jonathan Adongo and Christoph Stork

Place and Year : Namibia - 2005

Abstract :

The research paper concluded that, The benefits of microfinance are dependent on the standards of microfinance provision. This requires that the institutions are registered and qualified and that microfinance industry regulation exists and is appropriate - or is not enforced if inappropriate. In Namibia, the microfinance practice has seen the widespread adoption of industry standards advocated by CGAP (Consultative Group to Assist the Poorest) Practitioners advocate the use of Generally Accepted Accounting Principles to maintain accounting standards. In addition, co-operatives involved in microfinance are required to adhere to a set of internationally accepted rules concerning regulation and supervision at the institutional level.

(11)

Title of the Work : **"Financial Health Check-up of Pokhara Royal Co-operative Society Limited in the Framework of PEARLS"**

Type of Work : Research Paper

Researcher : Keshar J. Baral

Place and Year : Nepal, Dec. 2006

Publication : The Journal of Nepalese Business Studies

Abstract :

This paper examines the financial health of PRCSL in the framework of PEARLS. The health check up conducted on the basis of publicly available financial data concludes that Pokhara Royal Cooperative Society Limited (PRCSL) has not earned enough to pay up the return on member share capital and build up the institutional capital as the second line of defense for saving deposits of member-clients. The perusal of indicators of different components of PEARLS indicates that the financial health of PRCSL is not so sound.

(12)

Title of the Work : **"Teaching Old Dogs New Tricks: The Commercialization of Credit Unions"**

Type of Work : Research Paper

Researcher : David C. Richardson

Place and Year : USA, WOCCU, August - 2008

Abstract :

He studied that Credit unions in most developing countries must deal with volatile macroeconomic conditions that can radically affect their financial performance. PEARLS system serves as an invaluable guide through highly volatile conditions to improve significantly the decision making capacity of management. In summary, the process of commercialization brings numerous financial and social advantages if the external market conditions and macroeconomic variables are harmonized with the internal, institutional operating policies and ideologies. By harmonizing these variables and harnessing their advantages, commercialized credit unions and NGOs can provide significant competitive advantages to the people they serve.

(13)

Title of the Work : **"PEARLS Rating System in the Context of Islamic Banking"**

Type of Work : Research Paper

Researcher : Abdul Awwal Sarker

Place and Year : Bangladesh - 2008

Publication : Internal and Islamic Economics Division at Research Department of Bangladesh Bank

Abstract :

The paper titled, "PEARLS Rating System in the Context of Islamic Banking" discusses the framework and modalities of PEARLS rating linking it to the newly growing banking system based on Islamic Shariah. It is hoped that this new framework would enrich the on-site and offsite surveillance systems currently employed by the regulatory authorities in monitoring the financial condition and performance of the entire banking system. The study reveals some untouched area that should be incorporated in the banking supervision literature and discussion.

(14)

Title of the Work : **"Policy and Regulatory Issues in Microfinance"**

Type of Work : Research Paper

Researcher : Tulasi Prasad Uprety

Place and Year : Kathmandu - 2008

Publication : Micro- finance Summit Kathmandu

Abstract :

According to this paper, Micro-finance in Nepal is emerging and transforming itself from directed regime to market led private effort over the years. Nepal government, Nepal Rastra Bank (Central Bank) and donor institutions are providing attention to this sector. Their role is recognized as systematizing, regulating, supervising, promoting and facilitating the system, methods and institutions. Nepal Rastra Bank is considered as one of the prominent regulator, which always is in support of poverty reduction strategies through the provision of development finance especially micro finance.

(15)

Title of the Work : **"A review of the credit union movement in Wales"**

Type of Work : Research Paper

Researcher : Cardiff Institute for Co-operative Studies

Place and Year : Welsh - 2009

Abstract :

According to Research Paper, PEARLS analysis provides a useful 'stock take' of performance and an audit of key indicators. There are also more qualitative measures required to assess overall competence and performance. These can be in relation to strategic objectives, leadership and operation management, for example: milestones and outcomes measures; application of co-operative values; social and environmental reporting; skills gaps analyses and training needs assessments; governance structures and processes; and succession planning. This would also help to identify the need for intervention to support the development and build the capacity of members, staff and directors.

(16)

Title of the Work : **"Rural Financial Institutions: Savings Mobilization"**

Type of Work : Research Paper

Researcher : Janette Klaehn

Place and Year : Latin America - 2009

Abstract :

He studied the goal of a credit union is to provide high-quality financial products and services to its members at competitive prices. Quality service provision should enable

members to improve their economic and social well-being through income generation and asset accumulation. Voluntary savings are a critical tool to this end, equally or more important than credit. Traditionally, the three main groups of credit union products have been savings, loans and insurance.

(17)

Title of the Work : **"Rural Financial Institutions: Restructuring and Post Restructure Results"**

Type of Work : Research Paper

Researcher : Luis Sasuman

Place and Year : Philippines, 2009.

Abstract :

WOCCU's mission is "Quality Credit Unions for Everyone" and Credit Union Empowerment and Strengthening (CUES) Philippines adopts the same mission for the entire cooperative movement in the country. CUES Philippines is not in the business of directing the partner cooperatives on how to manage their businesses but instead provide them with a proven financial tool for use in their strategic planning. When the Model Credit Union Building (**MCUB)** methodology was introduced, it was geared towards making Batch 1 cooperatives as stable businesses capable of providing safe and sound credit and savings services.

(18)

Title of the Work : **"Information Technology: When is it Worth the Investment?"**

Type of Work : Research Paper

Researcher : Walter Stewart, Sheri Coulson, Robert Wilson

Place and Year : California State University San Bernardino, 2007

Publication : Communication of IIM-A

Abstract :

As companies attempt to streamline work processes and reduce costs, analyzing the role of information technology continues to be essential in such efforts. CEOs are now more skeptical regarding the contribution of information technology to the overall financial performance of the company. They doubt that IT direction is meaningfully linked to business goals. Therefore, before the person performing the role of CIO

prepares a recommendation for investment in IT technology/systems it is critical to support their case with hard data showing clearly the expected return on the investment. This paper examines the research over the last 10 years on IS/IT investment value in an effort to highlight issues that should be considered before investing in information technology.

(19)

Title of the Work : **"Globalization and Relative Compensation in India's Information Technology Sector"**

Type of Work : Research Paper

Researcher : Sumit K. Majumdar

Place and Year : USA, University of Texas - 2010

Publication : Annenberg School for Communication & Journalism

Abstract :

This article evaluates the relationship between foreign earnings and wage share for a large number of information technology–sector firms in India over a recent six-year period. The results that are established, after accounting for the fact that exporting is an endogenous phenomenon, show that the foreign earnings and wage share relationship is positive and significant for Indian firms during the entire period of analysis. In general, there has been disquiet that the gains from growth are not shared with employees, and that other firm stakeholders appropriate these gains. The firms that are actively engaged in the global information technology economy have, in part, been cognizant of providing higher rewards to their key human capital resources, and the consequences of globalization have been positive for the employees of Indian information technology firms.

(20)

Title of the Work : **"Effect of Information Technology Investments on Customer Satisfaction: An Empirical Analysis"**

Type of Work : Research Paper

Researcher : Sunil Mithas, M. S. Krishnan and Claes Fornell

Place and Year : University of Michigan - March 2004

Publication : Ross School of Business

Abstract :

In this paper, they studied the effect of information-technology (IT) investments on firms' customer-satisfaction performance. Although much of the prior work on the business value of IT at the firm level focused on financial and accounting measures, this paper explores the effect of IT investments on more qualitative outputs, such as improved customization, product variety and customer convenience, as reflected in the overall customer satisfaction for a firm. The analysis of 125 panel observations on fifty firms for multiple years indicates a positive association between aggregate IT investments and customer satisfaction. Their results also indicate that the effect of IT investments on customer satisfaction may differ across manufacturing and service companies. This paper also studied the effect of customer interfacing IT applications such as customer relationship management systems on customer satisfaction.

(21)

Title of the Work : **"Off shoring the Financial Services Industry: Implications for the Evolution of Indian IT Clusters"**

Type of Work : Research Paper

Researcher : Michael H. Grote and Florian A. Taube

Place and Year : University of Johann Wolfgang Goethe - Nov.- 2004

Publication : Journal of Environment and Planning

Abstract :

This paper explores the opportunities for existing Indian IT clusters to upgrade and undertake financial research activities. For the first time complex tasks at the core of financial activity are off shored which makes it an interesting case for a lot of other industries and their spatial economic organization in an ever globalizing world. This paper argues that research activities are locally embedded in Western financial centers to an extent that such a development is not likely. Two different research activities, viz. country analysis and institutional equity analysis are examined. This analysis shows, however, that there is a certain potential for some research activities to be relocated to India. So far investments take place in very few existing IT clusters which have already gained reputation in the financial community.

(22)

Title of the Work : **"Information Technology and Regional Development - Global Village or Rural Backwater"**

Type of Work : Research Paper

Researcher : Hildegunn Kyvik Nordas

Place and Year : Bergen, December - 2000

Publication : Foundation in Economics & Business Administration

Abstract :

This paper discusses the information and communication technology and regional development. A two region model is adopted to a stylized urban-rural setting and numerical simulations presented. Diffusion of Information Technology, modeled as a reduction in the cost of transmitting digitized producer over geographical distances, has a dramatic impact on rural skilled workers' wages both relative to rural unskilled workers and relative to urban skilled workers. The paper presents a case study of naval architecture and design company located in rural Norway selling their services all over the world.

(23)

Title of the Work : **"The Dynamics of the Indian Information Technology Industry"**

Type of Work : Research Paper

Researcher : Ashok Desai

Place and Year : New Delhi, March - 2003

Publication : Department of Internal Development

Abstract :

This paper, based inter alia on over 60 interviews with Indian IT firms, reviews the growth of the industry and evaluates its prospects. It aims to go beyond the received wisdom about the Indian industry, which includes the following misconceptions amongst others.

(24)

Title of the Work : **"U.S. immigration regulations and India's information technology industry"**

Type of Work : Research Paper

Researcher : Ron Hira

Place and Year : New York, January - 2004

Publication : Journal of Technical Forecasting & Social Change

Abstract :

The export-led growth of India's information technology (IT) industry has been nothing short of phenomenal over the past half-dozen years. Other studies have provided a number of explanations for the growth. This paper proposes that a significant factor has been overlooked or understated in prior explanations. Specifically, the Indian IT industry has utilized U.S. immigration regulations for competitive advantage to accelerate its growth. The importance of this factor is estimated through quantitative data analysis at the macro and firm levels. The analysis helps to explain why India's IT industry grew while that of other developing countries, with similar human capital resources and wage rates, did not. The U.S. Congress is currently debating U.S. immigration policies and may change them in the near future. Any changes will have significant effects on the future growth pattern of the Indian IT industry. The results from this study may help those policymakers better understand a key factor of India's success in exporting IT.

(25)

Title of the Work : **"Evaluation of the Effectiveness of Accounting Information Systems of Selected Information Technology Companies"**

Type of Work : Research Paper

Researcher : H. Sajady and M. Dastgir

Place and Year : Iran, December - 2008

Publication : International Journal of Information Science and Technology

Abstract :

In this study the effectiveness of accounting information systems of finance managers of listed companies at Tehran Stock Exchange is evaluated. The results indicate that implementation of accounting information systems at these companies caused the improvement of managers' decision-making process, internal controls, and the quality of the financial reports and facilitated the process of the company's transactions. The results did not show any indication that performance evaluation process had been improved.

(26)

Title of the Work :**"Is Information Technology Workplace Equal for Women? Some observations from Indian software industry"**

Type of Work : Research Paper

Researcher : P. Vigneswara Ilavarasan

Place and Year : Bangalore - 2008

Abstract :

This paper fills the gap by testing four hypotheses that explore whether IT workplace is equal for women. The quantitative data was collected from two software organizations located in Bangalore, India. The study did not find any support for the delineated hypotheses and concluded the following: women software workers do not perform low skilled activities; they experience same as men on core job characteristics and group process; and work hours do not differ men and women. It is noted that structural constraints outside the IT organizations need to be removed to increase the women participation in IT.

(27)

Title of the Work :**"Financial Performance of Indian Manufacturing Companies during Pre and Post Merger"**

Type of Work : Research Paper

Researcher : S. Vanitha and M. Selvam

Place and Year : Tiruchirappalli - 2007

Publication : International Research Journal of Finance and Economics

Abstract :

Indian industries have been increasingly exposed to both domestic and international competition and competitiveness. Hence, in recent times, companies have started restructuring their operations around their core business activities through M & As. But M & A is an area of potential good as well as potential harm in corporate strategy. It is necessary that an analysis has to be made to compare the financial performance of the pre and post – merger. In India, there are totally 58 manufacturing companies which have undergone mergers and acquisitions during 2000, 2001 & 2002. Thirty percent from the total population was taken as sample size (i.e. 17 companies out of 58). The present study is mainly based on secondary data. In order to evaluate the

financial performance, ratio analysis, mean, standard deviation and‘t’ test have been used as tools of analysis.

(28)

Title of the Work :**“Information Technology and India’s Economic Development”**

Type of Work : Research Paper

Researcher : Nirvikar Singh

Place and Year : University of California, USA - July 2002

Abstract :

This paper discusses the possibilities for broad-based IT-led economic growth in India, including increasing value-added, using better telecom links to capture more benefits domestically through offshore development for developed country firms, greater spillovers to the local economy, broadening the IT industry with production of telecom access devices, improving the functioning of the economy through a more extensive and denser communications network, and improving governance. We also examine the policy environment, arguing that government policy is better focused on removing labor market distortions and infrastructure constraints, rather than providing output or export subsidies to the software industry.

(29)

Title of the Work : **“Direct and Indirect Benefits of Business Process Outsourcing on Indian Economy”**

Type of Work : Research Paper

Researcher : Meenakshi Rajeev and B. P. Vani

Place and Year : Centre for Economic Studies and Policy, India-2007

Publication : Journal of Information Technology Impact

Abstract :

Growth of the BPO industry has helped the economies of many developing countries, especially in Asia, and India is prominent amongst them. Unlike the software industry, BPOs (though are export oriented) do not demand highly skilled labor. Therefore, the industry has played a major role, besides earning foreign exchange, in reduction of educated unemployment in many of these countries. This paper examines the direct and indirect benefits of the industry on Indian economy together with the

major concerns. In particular it discusses how computer knowledge can be spread to the hitherto computer illiterate regions through commercial endeavors relating to the outsourcing industry. India being a prominent player in this segment Indian experience is expected to provide important insights to the other similarly placed nations.

(30)

Title of the Work :**"Emerging Trends of Women in the IT Profession – India"**

Type of Work : Research Paper

Researcher : R.Rajalakshmi

Place and Year : Tamilnadu - 2003

Abstract :

Women personalities like Sarojini Naidu & Indira Gandhi made India proud by leading from the front. Today, there are many such women who have been the backbone of the recognition that India has achieved in ICT business. A silent revolution is taking place with evolution of women empowerment in the knowledge era. They are getting the best access to Information and Communication Technology (ICT) education, employment opportunity & becoming owners of IT companies. The purpose of this study is to map the emerging trends in India on the role of Women in Information & Communication Technology and look at what could happen in future, if this trend continues and is maintained with gender equality.

(31)

Title of the Work : **"Innovation and the Performance of Technology Firms: Evidence from Initial Public Offerings in Germany"**

Type of Work : Research Paper

Researcher : Wolfgang Bessler and Claudia Bittelmeyer

Place and Year : Germany, May - 2006

Abstract :

Here, it has been investigated the patenting behavior and long-run performance of German firms that went public (IPOs) on the "Neuer Market" during the period from 1997 to 2002. The main objective of the empirical analysis is to examine whether IPOs with patents outperformed those firms with no patented technology. The technology is measured by both the patent stock and patent indicators. The impact of

patents on performance is analyzed with buy-and-hold-abnormal returns (BHAR), the three-factor asset pricing model as well as cross-sectional-regressions. In the regression analysis they include specific patent variables such as the number of International Patent Classifications (IPC), family size, the number of backward- and forward citations, and the frequency of cited articles. The empirical evidence suggests that innovation, patents, and intellectual capital are important factors that have a positive impact on the success, valuation, and the long run performance of start-up technology firms.

(32)

Title of the Work : **"An Information Technology trilogy: business strategy, business deployment and organizational performance "**

Type of Work : Research Paper

Researcher : Anne - Marie Croteau and Bergeron

Place and Year : Canada, April - 2001

Publication : Journal of Strategic Information Systems

Abstract :

The objective of this empirical study is to identify various profiles of technological deployment specific to various types of business strategy that best support organizational performance. Top Managers from 223 organization asked questions and accordingly findings will be carried out.

(33)

Title of the Work :**"Financial Performance and Diversification Strategy of Indian Business Group"**

Type of Work : Research Paper

Researcher : Ram Kumar Kakani

Place and Year : Calcutta, December - 2000

Publication : Journal of Strategic Information Systems

Abstract :

In this study he studied the impact of diversification strategy on the financial performance of the organization. Here, he studied various business groups of India, viz., Microsoft, Nokia, Coca cola, Tata, etc. Most of the business groups in the eastern world adopting this strategy were also successful.

(34)

Title of the Work : **"Information technology (IT) investment and the role of a firm: An exploratory study"**

Type of Work : Research Paper

Researcher : Thompson S. H. Teo and Poh Kam Wong

Place and Year : Singapore - 2000

Publication : International Journal of Information Management

Abstract :

This study extends IT investment into four types of management objectives: transactional, strategic, informational and threshold. The relationships between these management objectives and fierm's role (defined in terms of traditional, evolving and strategic) are investigated through a questionnaire survey of managers in the service sector. As expected, firms adopting a traditional role seem to favor investment in transactional IT. However, there appears to be an increasing emphasis on strategic IT investment for all three types of firms, regardless of the role of Information Technology.

(35)

Title of the Work : **"Evaluation of Information Technology Vendor Services: An Empirical Study"**

Type of Work : Research Paper

Researcher : Muhammad A. Obeidat

Place and Year : Southern Polytechnic State University, USA - 2011

Publication : International Management Review

Abstract :

An empirical study of the evaluation of information technology vendor services is presented. The study aims at identifying and prioritizing the most critical factors in evaluating information technology vendor services according to information technology professionals. Information technology refers to hardware, software, networks, and telecommunication technology, and supplier services. A random sample of information technology professionals was surveyed, statistically analyzed, and reported.

(36)

Title of the Work : **"Human Capital and Indian Software Industry"**

Type of Work : Research Paper

Researcher : Ashish Arora and Surendra K. Bagde

Place and Year : Cambridge, July - 2010

Publication : National Bureau of Economics Research

Abstract :

In this study they studied the effect of the supply of engineers, measured by engineering baccalaureate capacity, on the regional growth of the software exports between 1990 and 2003. They found significant effect of engineering baccalaureate capacity on the growth of software exports even after controlling for other relevant factors. This conclusion is especially interesting because much of this capacity is due to private, rather than publicly supported colleges, and testifies to the private willingness to invest in human capital even in poor countries.

(37)

Title of the Work : **"The Information Technology (IT) Industry in Bangalore: A Case of Urban Competitiveness in India? "**

Type of Work : Research Paper

Researcher : Dr. S. Srinivas

Place and Year : New Delhi- 2010

Publication : National Bureau of Economics Research

Abstract :

This paper aims to understand the reasons for Bangalore's success in attracting both foreign and domestic IT industries and investigates the extent to which the city can continue to be the preferred location for IT industry in the country. The analysis is conducted at the national level (which examines the global competitiveness of the IT industry in India), and at the city level, which provides a comparative analysis of the industry in Bangalore vis-à-vis other major metropolitan areas in India. On the conceptual ground, the paper endeavors to put forward a case of urban competitiveness of Bangalore. The study found a strong link between the IT industry and the research institutes in Bangalore. Such links were especially strong in the R & D activities. Many of the interviewed firms felt that Bangalore would continue to be the preferred location for the IT industry in the country. However, they do not rule out

the possibility that an impending infrastructure crisis in the city will undermine its competitiveness.

(38)

Title of the Work : **"Knowledge Transfer to Developing Countries after WTO Theory and Practice in I.T. in India"**

Type of Work : Research Paper

Researcher : Thomas L. Brewer and Stanley D. Nollen

Place and Year : Washington DC, March - 1998

Publication : Carnegie Bosch Institute

Abstract :

In this study they examined theoretically the effect of the new WTO rules on the transfer of knowledge by multinational corporations to businesses in emerging market economies. They also suggest that the amount and type of knowledge transferred depends on decisions of MNCs about the mode of their participation in international business (trading, licensing, direct investment, or strategic alliances). They suggest that the new WTO rules will change some of these decisions. We illustrate our theoretical propositions by using case study data from three foreign invested companies in the information technology sector in India.

(39)

Title of the Work : **"Shareholder Value Maximization, Stock Market and New Technology: Should the US Corporate Model be the Universal Standard?"**

Type of Work : Research Paper

Researcher : Ajit Singh

Place and Year : University of Cambridge, September - 2005

Publication : Centre for Business Research

Abstract :

He studied that in 1992 a blue-ribbon group of US economists led by Michael Porter concluded that the US stock market-based corporate model was misallocating resources and jeopardizing US competitiveness. The faster growth of US economy since then and the supposed US lead in the spread of information technology has brought new legitimacy to the stock market and the corporate model, which is being

hailed as the universal standard. Two main conclusions of the analysis presented here are: (a) there is no warrant for revising the blue-ribbon group's conclusion; and (b) even US corporations let alone developing country ones would be better off not having stock market valuation as a corporate goal.

(40)

Title of the Work : **"Information Technology and Productivity: Evidence from India's Manufacturing Sector"**

Type of Work : Research Paper

Researcher : K. J. Joseph and Vinoj Abraham

Place and Year : University of Cambridge, August 1997

Publication : Centre for Business Research

Abstract :

This paper is an attempt at addressing the issue of developing Indian Manufacturing sector with the help of Information Technology usage by analyzing an unpublished data set on the investment in computers and software at the industry level made available by the CSO. The study finds that low level of IT investment intensity in the manufacturing sector notwithstanding, IT investment does have a positive and significant impact on both partial and total factor productivity. The findings of the paper suggest that in a context wherein the policy makers are concerned with low levels of growth in manufacturing output and productivity, policy measures and institutional interventions towards promoting IT diffusion in the manufacturing sector is likely to give rich dividends.

(41)

Title of the Work : **"The Effect of Information Technology on wage Inequality: Evidence from Indian Manufacturing Sector"**

Type of Work : Research Paper

Researcher : Vinoj Abraham

Place and Year : University of Cambridge, September - 2010

Publication : Centre for Business Research

Abstract :

This paper explained a persistent widening of skill based wage inequality in the Indian Organized Manufacturing sector has been reported by many researchers. Two

main hypotheses had been tested in developed economies to explain such a phenomenon; an inter-sectoral shift in demand structure and an intra-sectoral shift in production technology. A decomposition of the change in wage share of skilled workers showed that sector bias explained very little of the changes in the share of skilled worker wages while more than 85 percent of the changes occurred within industries, giving support to the argument of changing skill mix within industries, rather than between industries.

(42)

Title of the Work : **"Economic Adversity and Entrepreneurship-led Growth Lessons from the Indian Software Sector"**

Type of Work : Research Paper

Researcher : Suma Athreye

Place and Year : United Nations University, January - 2010

Publication : Economic and social Research training centre

Abstract :

In this paper, they draw on the experience of Indian software firms where entrepreneurial growth has belied these predictions. This paper argues that the business models chosen by Indian firms were those that best aligned the country's abundant labour resources and advantages to global demand. Many potentially higher value added opportunities struggled to attain success, but the qualitative value of experimental failures and the capability gaps they exposed was invaluable for collective managerial learning in the industry. Second, the paper also shows that the presence of growth opportunities and the success of firms stimulated institutional evolution to promote entrepreneurial growth. Last they show that the distinctive aggregate contribution of entrepreneurial firms was that they outperformed business houses and multinational subsidiaries in their more productive use of available capital resources whilst achieving similar levels of growth in output and employment.

(43)

Title of the Work : **"Are credit unions in Ecuador achieving economies of scale? Testing the tradeoff between access and efficiency"**

Type of Work : Research Paper

Researcher : Nick A. Marchio

Place and Year : Macalester College, July - 2009

Publication : Economics Department of University

Abstract :

This study tests the assertion that membership growth in credit unions is constrained by their unique structural features, such as their non-profit mission and member-based ownership. Although these features enhance inclusiveness, existing theory suggest that they work against efficiency when membership grows too diffuse. To address this issue, this study uses a model that takes into account existing theory on constrained-optimization in credit unions and theory on the adverse effects of diffuse ownership. Using data on 36 public credit unions in Ecuador, the empirical analysis finds evidence that credit unions can achieve economies of scale despite their problematic structural features. One possible explanation for this result may stem from the level of formality in Ecuador‘s financial system including its level of prudential regulation, information technology, and capital market formation. Moreover, the optimal credit union size may be a function of institutional and technological development in addition to their unique structural features.

(44)

Title of the Work : **“Growing Credit Unions in the West Midlands – the case for restructuring”**

Type of Work : Research Paper

Researcher : Paul Jones

Place and Year : Macalester College, July - 2009

Publication : Economics Department of University

Abstract :

This paper explores current issues in the modernization of British credit unions. It describes and analyses the challenges and dilemmas they face as they Endeavour to increase their market share and to serve a diverse membership with attractive financial products and services. The paper makes the case for a radical financial and organizational restructuring of credit unions and argues that, they are only going to grow as viable and relevant financial institutions in Britain, if they adopt robust market oriented and commercial principles. The paper analyses the implementation of these principles within a credit union strengthening project in the West Midlands with the help of PEARLS Analysis system.

(45)

Title of the Work :**"Strengthening WOCCU's Partners in a Time of Crisis Using PEARLS Financial Monitoring: The Case of Ecuador"**

Type of Work : Research Paper

Researcher : Anna Cora Evans

Place and Year : USA, November - 2001

Publication : The Micro Banking Bulletin

Abstract :

This paper explains, the World Council of Credit Unions, Inc. (WOCCU) began its technical assistance program in Ecuador in late 1995. Funding of US$3 million for the program was provided by USAID's Office of Microenterprise Development through September 2001. As program participants, the 23 Ecuadorian credit unions started using WOCCU's PEARLS Monitoring System as a tool for managers to monitor and improve their performance. Developed as an off-site monitoring tool, PEARLS has allowed networks and affiliates to speak the same language, increasing the value of feedback and analysis.

(46)

Title of the Work : **"The Power of Financial Ratios in detecting Fraudulent financial Reporting: The Case of Saving and Credit Co-operative Societies in Kenya"**

Type of Work : Master's Dissertation

Researcher : Leonard Rang'ala Lari

Place and Year : Strathmore University, July - 2009

Abstract :

The study aimed at providing that the financial ratios currently computed by savings and Credit Co-operative Society in Kenya may not assist users of financial reports towards detection of fraudulent financial reports; other ratios can bring to light possible fraud. Further study is suggested to determine the extent of earnings management and the power of ratios in detection, besides the multipurpose co-operatives and marketing co-operatives to complete the result of this study.

3.1 Introduction

Research has moved during this century from the periphery to the centre of our social and economic life. What is the nature of this force? Why it is getting momentum? Most of us recognize that the progress which has been made in our society has been largely the result of research. So, research in common parlance refers to the search for knowledge. Research simply seeks the answer of certain questions which have not been answered so far and the answers depend upon the human efforts. Research is based upon observable experience or empirical evidence.

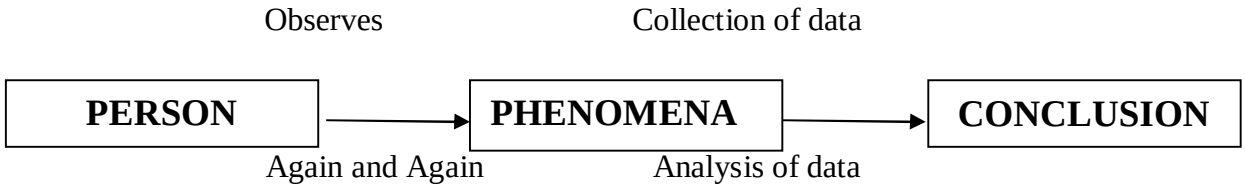
3.2 Meaning of Research

Research is simply the process of arriving as dependable solution to a problem through the planned and systematic collection, analysis and interpretation of data. The term research consists of two words:

Research = Re + Search

'Re' means again and again and 'Search' means to find out something[1].

The following is the process:



Therefore, research means to observe the phenomenon again and again from different dimensions. The research is a process of which a person observes the phenomena again and again and collects the data and on the basis of data he draws some conclusions.

[1] Panneerselvam, R., Research Methodology, Prentice-Hall of India Private Ltd., 6th Printing, 2008.

3.3 Research Design

"According to **Bernard S. Philips,** "The research design constitutes the blue print for the collection, measure and analysis of data.[2]" The definition highlights that research design includes the methods of research, viz. Survey, observation, experiment, the content analysis or their combinations. It also includes the types of data (quantitative or qualitative) data to be collected, questionnaire or schedule (structures or unstructured) and also about the size and technique of sampling.

Different authors have defined the research design differently. The most popular book on research methodology among the students of social sciences is that of **Claire Selitiz and others.** "A research design is the arrangement of the condition for collection and analysis of data in a manner that aims to combine relevance to research purpose with economy in procedure.[3]"

Fred N. had opined that, "Research design is the plan (an overall outline from beginning to the end), structure and strategy (variables, and their operations, objectives, problems and solutions) of investigation conceived so as to obtain answers to each question and to control variance.[4]"

3.4 Rationale for the Study

The research is based on the PEARLS Approach which includes the basic six parameters; they are Protection, Effective Financial Structure, Asset quality, Rates of Return and Costs, Liquidity and Sings of Growth. All these parameters help in measuring the financial performance of the Company. The research emphasizes on the comparative study of selected companies listed on NSE. Here, eight Companies are taken for the study. This research, basically, is helpful to the Companies to check their

---

[2] Fred N. Kerlinger, Foundation of Behavioral Research, New York: Holt, Reinhart and Winston, 1973.

[3] Paul E. Green And Donald S. Tull, Research for Marketing Decisions, New Jersy: Prentice Hall, 1970.

[4] William J. Goode and Paul K. Hart, Methods in Social Research, New York: Mc graw Hill Book Company, Inc.1952.

financial performance during the study period i.e. from year 2000-2001 to the year 2009-10. Moreover, the results of the research will give the broad perspective in the field of Investment in the Information Technology Industry.

Here, on the bases of the research the selected companies can be effectively compared with each other. This comparison can be very helpful to both the sectors in the efforts to increase the financial performance.

3.5 Statement of Problem

The Indian **Information Technology industry** accounts for a 7.3% of the country's GDP and export earnings as of financial year 2011[5], while providing employment to a significant number of its tertiary sector workforce. More than 2.5 million people are employed in the sector either directly or indirectly, making it one of the biggest job creators in India and a mainstay of the national economy. In 2010-11, annual revenues from IT-BPO sector is estimated to have grown over US$76 billion compared to China with $35.76 billion and Philippines with $8.85 billion[6]. India's outsourcing industry is expected to increase to US$225 billion by 2020[7]. The Information Technology Industry is thus, very important industry for Nation's development and growth. The companies fall under this industry will have to be assessed to have proper industry picture. We had an example of "Satyam Saga" which was the black spot for this developing industry. Here, researcher will try to assess the financial stability of the selected companies using PEARLS technique developed by WOCCU (World Council for Credit Unions, USA). Therefore, the statement of problem for this research is,

"AN ASSESSMENT OF INDIAN INFORMATION TECHNOLOGY COMPANIES LISTED ON NATIONAL STOCK EXCHANGE BY PEARLS ANALYSIS: AN ANALYTICAL STUDY"

[5] Economic Times, Daily Business News Paper, dated, 23rd March, 2011

[6] Journal of Information Technology, June 2011.

[7] Economic Survey, 2010 – 2011, Government of India.

3.6 Objectives of the Study

With an outlook of the every research, it has been conducted for specific objective. It must have clear-cut problem and based on it the objectives must also be clearly defined. Therefore, that research gets clear idea about their task. Research objectives help the researcher to achieve his task easily. Also after the completion of research project can be evaluated based on the research objective. Thus it is at most important to define the research objective.

Research refers to a scientific search for pertinent information on a special topic. In fact, research is an art of scientific investigation. In short, research is a systematized effort to gain new knowledge. So research is systematic way of finding something new.

The purpose of research is to discover answers to question through the application of scientific procedures. The main aim of research is to find out the truth which is hidden and which has not been discovered as yet. Though, each research study has its own specific purpose. Without any objectives we cannot do any research. Thus, the objectives are very important.

The following objectives have been framed to assess growth, progress and various other aspects of the Indian Information Technology companies listed on National Stock Exchange.

PRIMARY OBJECTIVE

The primary objective of the study is to check the financial stability of the selected companies listed on National Stock Exchange by PEARLS Analysis.

SECONDAY OBJECTIVES

1. To study the Financial Stabilisation of selected I.T. companies through PEARLS analysis.
2. To evaluate the Performance of selected Indian I.T. companies.
3. To examine how selected I.T. companies achieve the standard goals of PEARLS.
4. To compare all the selected I.T. companies on the basis of PEARLS analysis.
5. To study the Effective Financial Structures of selected I.T. companies.

6. To check the Liquidity position of selected I.T. companies.
7. To assess the Asset Quality of selected Indian I.T. companies.
8. To study the Growth of selected Indian I.T companies.
9. To check the interrelationships of PEARLS ratios.
10. To analyze the role of Indian I. T. industry in present scenario.
11. To make suitable suggestions based on research findings to improve the effectiveness and efficiency of the Indian I.T. Industry.

3.7 Universe and Sample of the Study

All Indian Information Technology companies listed on National Stock Exchange is formed a Universe for the present study. Out of the universe, the researcher has identified eight Companies which constitute the CNXIT Index of N.S.E. and the companies which have been listed before financial year 1999 - 2000 have been selected for analysis. The following table shows the name and listing date of selected companies[8].

Table No. 3.1

Selected Companies with Listing Date and ISIN Code

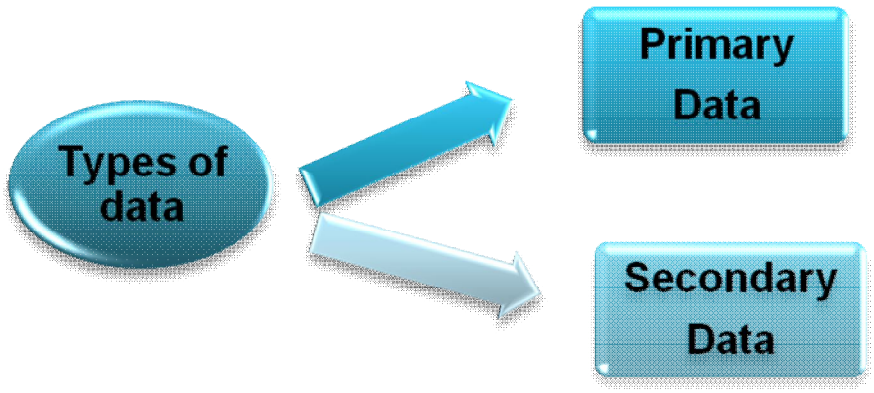
Sr. No.	Name of Company	ISIN Code	Listing Date
1	CMC Ltd.	INE314A01017	9th June, 1999
2	GTL Ltd.	INE043A01012	29th March, 1995
3	HCL Infosystems Ltd.	INE236A01020	1st January, 1997
4	HCL Technologies Ltd.	INE860A01027	6th January, 2000
5	Infosys Technologies Ltd.	INE009A01021	8th February, 1995
6	Polaris Software Lab Ltd.	INE763A01023	24th November, 1999
7	Rolta India Ltd.	INE293A01013	1st March, 1995
8	Wipro Ltd.	INE075A01022	8th November, 1995

Source: www.nseindia.com

[8] www.nseindia.com (National Stock Exchange, New Delhi)

3.8 Data Collection

The task of data collection begins after a research problem has been defined and research design/plan chalked out. While deciding about the method of data collection to be used for the study, the researcher should keep in mind Two Types of Data viz,



The **Primary Data** are those data which are collected afresh and for the first time which happened to be original in character.

The **Secondary Data** are those which are already been collected by someone else and which have already been passed through the statistical process.

The researcher will try to analyze the Performance and Financial Stability of selected Indian Information Technology companies during the study period. The main source of data used for the study is secondary, derived from the published annual reports of selected units and all data relating to history, growth and development of Information Technology Industry have been collected mainly from the books, magazines relating to industry, published paper, report, articles, news papers, bulletins, other journals like monthly review of Economy and web sites relating to industry. The data relating to the selected units under study have been obtained from prospectus, pamphlets and annual reports of the selected units.

3.9 Period of the Study

Present study covers the PEARLS analysis of selected Indian Information Technology companies listed on National Stock Exchange for ten consecutive financial years. The period of the study will start from 1st April, 2000 to 31st March, 2010. Researcher has selected the base year 2000- 01. This year is normal for the purpose of analysis and evaluation.

3.10 Scope of the Study

The Information Technology (IT) sector in India holds the distinction of advancing the country into the new-age economy. The growth momentum attained by the overall economy since the late 1990s to a great extent can be owed to the IT sector, well supported by a liberalised policy regime with reduction in telecommunication cost and import duties on hardware and software.

The present research study is very wide. But for this research **PEARLS** analysis will be taken into consideration for the purpose of evaluation and analysis. This study is specifically limited to Information Technology Companies listed on National Stock Exchange. The analysis is for ten financial years only. Here researcher will try to analyse the selected Companies on the basis of Six Parameters i.e. **Protection, Effective Financial Structure, Asset Quality, Rates of Return and Costs, Liquidity and Signs of Growth.**

3.11 Significance of the Study

(A) Contribution to the Knowledge

(i) Through this study the knowledge particularly regarding PEARLS Concept will improve.

(ii) Through this study the knowledge particularly regarding various ratios based on PEARLS will improve.

(iii) Through this study the knowledge regarding statistical tools and technique and statistical test will improve.

(B) Contribution to the Society

(i) Through this research society will able to know the real Financial situation of selected companies.

(ii) Through this study the investors can take proper decision.

(iii) Through this study the management of the selected companies can improve their performance.

(C) Contribution to the Industry

(i) Industry may be able to create more Wealth.

(ii) The selected units may show PEARLS analysis in their published annual reports.

3.12 Type of Research

There are various types of research which a researcher can adopt like Descriptive and Analytical, Applied and Empirical, Historical research, Experimental research, etc. here the researcher will adopt an Experimental type of research.

Experimental research also known as hypothesis-testing research and it is the one in which the researcher tests the hypothesis of casual relationships between variables.

3.13 Hypothesis of the Study

G. A. Berg corroborates that, "A hypothesis is a tentative generalization the validity of which remains to be tested. In its most elementary stage, the hypothesis may be any hunch, guess or imaginative idea, which becomes the basis for action or investigation."[9] The definition rightly specifies that the hypothesis provides the basis for the research work and the entire research work is oriented towards the hypothesis.

"A hypothesis is a special proposition, formulated to be tested in a certain given situation as a part of research which states what the researcher is looking for"[10]. A hypothesis may be descriptive, which identifies the existence, form, size or

[9] "Statistics for Decision Making" by Gulerian R.C. , 1997, p.29-30

[10] "Research Methodology" by Michael V. P., p.145

distribution of the variables for their analysis. The testable hypothesis may also be relational. It describes relationship between variables. This relation may or may not be cause-effect relation. However, the explanatory hypothesis always shows a cause effect relationship. There are mainly two types of hypothesis viz., Null Hypothesis and Alternative Hypothesis.

(A) Null Hypothesis

(i) There would be no significant difference in Protection Ratios in selected units.

(ii) There would be no significant difference in Effective Financial Structure Ratios in Selected units.

(iii) There would be no significant difference in Assets Quality Ratios in Selected units.

(iv) There would be no significant difference in Rates of Return and Cost Ratios in Selected units.

(v) There would be no significant difference in Liquidity Ratios in Selected units.

(vi) There would be no significant relationship among PEARLS ratios of selected companies during study period.

(B) Alternative Hypothesis

(i) There would be significant difference in Protection Ratio in selected units.

(ii) There would be significant difference in Effective Financial Structure Ratios in Selected units.

(iii) There would be significant difference in Assets Quality Ratios in Selected units.

(iv) There would be significant difference in Rates of Return and Cost Ratios in Selected units.

(v) There would be significant difference in Liquidity Ratios in Selected units.

(vi) There would be significant relationship among PEARLS ratios of selected companies during study period.

3.14 Tools and Techniques of Analysis

Tools and Techniques of Analysis and Interpreting the result thereof mainly divided into two parts.

(A) PEARLS Analysis

(i) PROTECTION

P-1 = Allowance for Loan Losses/Delinquency greater than 12 months

P-2 = Net Allowance for Loan Losses/Delinquency of 1-12 months

P-3 = Total Write-off of Delinquent Loans greater than 12 months

P-4 = Annual Loan Write-offs/Average Loan Portfolio

P-5 = Accumulated Loan Recoveries/Accumulated Loan Write-offs

P-6 = Solvency (Net Value of Assets/Total Shares and Deposits)

(ii) EFFECTIVE FINANCIAL STRUCTURE

E-1 = Net Loans/Total Assets

E-2 = Liquid Investments / Total Assets

E-3 = Financial Investments / Total Assets

E-4 = Non-Financial Investments / Total Assets

E-5 = Savings Deposits / Total Assets

E-6 = External Credit / Total Assets

E-7 = Member Share Capital / Total Assets

E-8 = Institutional Capital / Total Assets

E-9 = Net Institutional Capital/ Total Assets

(iii) ASSET QUALITY

A-1 = Total Loan Delinquency / Gross Loan Portfolio

A-2 = Non-Earning Assets / Total Assets

A-3 = Net Institutional & Transitory Capital + Non Interest-Bearing Liabilities / Non-earning Assets

(iv) RATES OF RETURN AND COSTS

R-1 = Net Loan Income / Average Net Loan Portfolio

R-2 = Total Liquid Investment Income / Average Liquid Investments

R-3 = Total Financial Investment Income / Average Financial Investments

R-4=Total Non-Financial Investment Income/Average Non-Financial Investments

R-5 = Total Interest Cost on Savings Deposits / Average Savings Deposits

R-6 = Total Interest Cost on External Credit / Average External Credit

R-7 = Total Interest (Dividend) Cost on Shares / Average Member Shares

R-8 = Total Gross Income Margin / Average Total Assets

R-9 = Total Operating Expenses / Avg. Total Assets

R-10 = Total Loan Loss Provision Expense / Average Total Assets

R-11 = Non-Recurring Income or Expense / Average Total Assets

R-12 = Net Income / Average Total Assets

(v) LIQUIDITY

L-1 = Short Tearm Investments + Liquid Assets – Short Term Payables / Savings Deposits

L-2 = Liquidity Reserves / Savings Deposits

L-3 = Non-Earning Liquid Assets / Total Assets

(vi) SINGS OF GROWTH

S-1 = Growth in Loans to Members

S-2 = Growth in Liquid Investments

S-3 = Growth in Financial Investments

S-4 = Growth in Non-Financial Investments

S-5 = Growth in Savings Deposits

S-6 = Growth in External Credit

S-7 = Growth in Share Capital

S-8 = Growth in Institutional Capital

S-9 = Growth in Net Institutional Capital

S-10 = Growth in Membership

S-11 = Growth in Total Assets

(B) Statistical Tools

(i) Mean

In mathematics and statistics, the arithmetic mean (or simply the mean) of a list of numbers is the sum of the entire list divided by the number of items in the list. If the list is a statistical population, then the mean of that population is called a population mean. If the list is a statistical sample, we call the resulting statistic a sample mean. The mean is the most commonly-used type of average and is often referred to simply as the average.

The term "mean" or "arithmetic mean" is preferred in mathematics and statistics to distinguish it from other averages such as the median and the mode. The arithmetic mean is the "standard" average[11], often simply called the "mean". The formula of mean is as under.

$$\overline{X} = \frac{\Sigma X}{n}$$

(ii) Standard Deviation (σ)

In statistics, standard deviation is a simple measure of the variability or dispersion of a data set. A low standard deviation indicates that the data points tend to be very close to the same value (the mean), while high standard deviation indicates that the data are "spread out" over a large range of values. In addition to expressing the variability of a population, standard deviation is commonly used to measure confidence in statistical conclusions[12]. The term "standard deviation" was first used [1] in writing by Karl Pearson [2] in 1894 following use by him in lectures. This was as a replacement for earlier alternative names for the same idea; for example Gauss used "mean error" [3] a useful property of standard deviation is that, unlike variance, it is expressed in the same units as the data. The formula of standard deviation is as under.

$$\sigma = \sqrt{\frac{\Sigma (X - \overline{x})^2}{n-1}}$$

[11] Gupta, S. P., Statistical Methods, Sultan Chand & Sons, New Delhi, 13th Edition, 2001.

[12] Sancheti, D. C., and V. K. Kapoor, Statistics (Theory, Methods & Application), Sultan Chand & Sons, New Delhi, 7th Edition, 1991.

(iii) Co –Efficient of Variance

In probability theory and statistics, the coefficient of variance (CV) is a normalized measure of dispersion of a probability distribution. It is defined as the ratio of the standard deviation to the mean[13].

This is only defined for non-zero mean, and is most useful for variables that are always positive. It is also known as unitized risk.

The coefficient of variation should only be computed for data measured on a ratio scale. It does not have any meaning for data on an interval scale. The formula of co-efficient of variance is as under.

$$C.V = \frac{\sigma}{\bar{X}} \times 100$$

(iv) Two – Way ANOVA Table

The ANOVA procedure is one of the most powerful statistical techniques. ANOVA is a general technique that can be used to test the hypothesis that the means among two or more groups are equal, under the assumption that the sampled populations are normally distributed. The two-way analysis of variance is an extension to the one-way analysis of variance. There are two independent variables (hence the name two-way)[14].

[13] Khan M Y & Jain P K., Financial Management, Tata McGraw-Hill, New Delhi, 3rd Ed., 2002, p. 4.1.

[14] "Research Methodology" by Kothari C. R. , 2006, p.266

Table No. 3.2

Two-way ANOVA Table

Source of Variation	**Sum of Squares (SS)**	**Degree of Freedom (df)**	**Mean Square (MS)**	**F-ratio**
Between Rows	$\sum \frac{(Tj)2}{nj} - \frac{(T)2}{n}$	(r – 1)	SS between rows / (r -1)	MS between rows / MS residual
Between Columns	$\sum \frac{(Ti)2}{ni} - \frac{(T)2}{n}$	(c -1)	SS between rows / (c -1)	MS between columns / MS residual
Error	Total SS – (SS between columns + SS between rows)	(c -1) (r -1)	SS residual / (c -1) (r -1)	
Total	$\sum Xij^2 - \frac{(T)^2}{n}$	(C*r – 1)		

Source: "Research Methodology" by Kothari C. R., 2006, p.266

- In the table c= no. of columns
- r= no of rows
- SS residual = Total SS-(SS between columns + SS between rows)

(v) One – Way ANOVA Table

Under the one - way ANOVA, only one factor is considered and than observe that the reason for said factor to be important is that several possible types of samples can occur within that factor. In the present study, in one – way classification the analysis of variance table takes the following form.[15]

[15] "Statistics for Decision Making" by Gulerian R.C. , 1997, p.29-30

Table 3.3

Analysis of Variance Table for One – Way ANOVA

Source of variation	**Sum of sqares (SS)**	**Degrees of freedom (d.f.)**	**Mean Squares (MS) (This is SS divided by d.f.) and is an estimation of variance to be used in F-ratio**	**F-ratio**
Between samples or categories	$n_1(X_1 - X)^2 + + n_k(X_k - X)^2$	(k-1)	SS between / (k-1)	MS between / MS within
Within samples or categories	$\Sigma(X_{li} - X_l)^2 + + \Sigma(X_{ki} - X_k)^2$ i=1,2,3 …	(n-k)	SS within / (n-k)	
Total	$\Sigma(X_{ij} - X_l)^2$ i=1,2,… j=1,2,…	(n-1)		

(vi) Multiple Correlation of Coefficient

In statistics, multiple correlations are a linear relationship among more than two variables[16]. It is measured by the coefficient of multiple determinations, denoted as R^2, which is a measure of the fit of a linear regression. A regression's R^2 falls somewhere between zero and one (assuming a constant term has been included in the regression); a higher value indicates a stronger relationship among the variables, with a value of one indicating that all data points fall exactly on a line in multidimensional space and a value of zero indicating no relationship at all between the independent variables collectively and the dependent variable.

Unlike the coefficient of determination in a regression involving just two variables, the coefficient of multiple determination is not computationally commutative: a

[16] Sancheti, D. C., and V. K. Kapoor, Statistics (Theory, Methods & Application), Sultan Chand & Sons, New Delhi, 7th Edition, 1991.

regression of y on x and z will in general have a different R^2 than will a regression of z on x and y. For example, suppose that in a particular sample the variable z is uncorrelated with both x and y, while x and y are linearly related to each other. Then a regression of z on y and x will yield an R^2 of zero, while a regression of y on x and z will yield a positive R^2.

(vii) Tukey's HSD (Honestly Significant Difference) Test

Tukey's test, also known as the Tukey range test, Tukey's HSD (Honestly Significant Difference) test, or the Tukey–Kramer method, is a single-step multiple comparison procedure and statistical test generally used in conjunction with an ANOVA to find which means are significantly different from one another. This test is named after John W. Tukey,[17] it compares all possible pairs of means, and is based on a studentized range distribution q (this distribution is similar to the distribution of t from the t-test)

The test compares the means of every treatment to the means of every other treatment; that is, it applies simultaneously to the set of all pair wise comparisons and identifies where the difference between two means is greater than the standard error would be expected to allow. The confidence coefficient for the set, when all sample sizes are equal, is exactly $1 - \alpha$. For unequal sample sizes, the confidence coefficient is greater than $1 - \alpha$. In other words, the Tukey method is conservative when there are unequal sample sizes. Here, sample size is equal.

The Tukey HSD can be used to test all pair wise comparisons among means in a one-factor ANOVA as well as comparisons among marginal means in a multi-factor ANOVA. Tukey's HSD (Post Hoc Test Steps) test takes into consideration the number f treatment levels, the value of mean square error, and the sample size. Using these values and a table value, q, the HSD determines the critical difference necessary between the means of tany two treatment levels for the means to be significantly different. Once the HSD is computed, the researcher can examine the absolute value of any or all differences between pairs of means from treatment level to determine

[17] Ken Black, Business Statistics for Contemporary Decision Making, 5th Edition, Wiley India Edition, 2009, p. 421-423

whether there is a significant difference. The formula for the equal-sample-size case is shown below.

$$\overline{d}_T = q_T \sqrt{\frac{MS_{s/A}}{n}}$$

q_T is the studentized range statistic, $MS_{s/A}$ is the mean square error from the overall F-test, and n is the sample size for each group.

3.15 Limitations of the study

1. Present study will be based on secondary data and secondary data has its own limitations which might affect the study.
2. Present study will be done considering PEARLS analysis only and there are certain ratios which are not applicable to Information Technology companies so it will be one of the major limitations of the study.
3. Sample is low compare to universe so the findings will be based on the selected units only and they can not be generalizing for whole population.
4. Statistical tools have its own limitations and it will affect to present study.
5. The economic condition varies at different point of time and that will affect the findings of the present study.

3.16 Chapter Planning

The present study will be divided into seven chapters. These chapters are as under.

The **First Chapter** will deal with the overview of I. T. Industry in India. This chapter will also include the present status and growth of the I. T. Industry in India.

The **Second Chapter** will include the Review of Literature relating to the present study. Here, the researcher will explain the conclusions and findings of early published research studies in nut shell.

The **Third Chapter** will explain the Research Methodology in detail. It will include Problem Statement of the study, main Objectives of the study, Universe and Sample, Hypothesis, Period of the study, etc.

The **Fourth Chapter** will include in detail Conceptual Frame work of PEARLS analysis. It will also include the importance of each component with their standard goals given by WOCCU. It also includes the calculative formula of each of the component of PEARLS.

The **Fifth Chapter** will be the key chapter of the study. It will include the detailed Analysis of selected Indian I.T. companies through PEARLS analysis.

The **Sixth Chapter** will explain the Interrelationships of the PEARLS. Here the researcher will try to find out the degree of interrelationships among all the ratios with the help of some statistics tools.

The **Seven Chapter** will include the Summary, Findings and Suggestions of the present study.

References

1. Panneerselvam, R., Research Methodology, Prentice-Hall of India Private Ltd., 6th Printing, 2008.
2. Fred N. Kerlinger, Foundation of Behavioral Research, New York: Holt, Reinhart and Winston, 1973.
3. Paul E. Green And Donald S. Tull, Research for Marketing Decisions, New Jersy: Prentice Hall, 1970
4. William J. Goode and Paul K. Hart, Methods in Social Research, New York: Mc graw Hill Book Company, Inc.1952.
5. Economic Times, Daily Business News Paper, dated, 23rd March, 2011
6. Journal of Information Technology, June 2011.
7. Economic Survey, 2010 – 2011, Government of India.
8. www.nseindia.com
9. "Statistics for Decision Making" by Gulerian R.C. , 1997, p.29-30
10. "Research Methodology" by Michael V. P., p.145
11. Gupta, S. P., Statistical Methods, Sultan Chand & Sons, New Delhi, 13th Edition, 2001.
12. Sancheti, D. C., and V. K. Kapoor, Statistics (Theory, Methods & Application), Sultan Chand & Sons, New Delhi, 7th Edition, 1991.
13. Khan M Y & Jain P K., Financial Management, Tata McGraw-Hill, New Delhi, 3rd Ed., 2002, p. 4.1.
14. "Research Methodology" by Kothari C. R. , 2006, p.266
15. "Statistics for Decision Making" by Gulerian R.C. , 1997, p.29-30
16. Sancheti, D. C., and V. K. Kapoor, Statistics (Theory, Methods & Application), Sultan Chand & Sons, New Delhi, 7th Edition, 1991.
17. Ken Black, Business Statistics for Contemporary Decision Making, 5th Edition, Wiley India Edition, 2009, p.421-423

4.1 Background

In the late 1980s, the World Council of Credit Unions (WOCCU)[1] embarked on a new strategy to renovate and strengthen credit unions using a commercially oriented operating methodology. WOCCU had come to realize that donor-funded lines of credit were not a panacea for poverty alleviation, and that donor funding did not provide a good framework around which to build sustainable institutions[2]. Initially, WOCCU (World Council of Credit Unions) staff tried to adapt the US CAMEL[3] ranking system to the credit unions in Guatemala, but found that several modifications were needed. CAMEL is a supervisory tool; in the US, its ratios intend to protect the solvency of institutions and the safety of member deposits. Beyond supervision, WOCCU was looking for a tool that would evaluate the financial structure of the balance sheet, critical to Guatemalan credit unions undergoing a major restructuring of assets, liabilities and capital. In addition, credit union mangers needed to monitor growth of total assets, seen as key to addressing the problems resulting from monetary devaluations and runaway inflation. In essence, PEARLS was designed first as a management tool, and later became an effective supervisory mechanism.

Drawing on the results of using "**PEARLS"** in Guatemala, WOCCU adopted a new approach to credit union development in 1994. In the ***new model credit union***, market pricing for products and services facilitates local savings mobilisation. With PEARLS, WOCCU has set international financial standards for credit union performance. Many different financial ratios and "rules of thumb"[4] have been promoted for financial institutions worldwide, but few have been consolidated into an evaluation program that is capable of measuring both the individual components and the system as a whole. Since 1990, the World Council of Credit Unions, Inc. has been

[1] WOCCU is a US-based NGO that was incorporated in 1970 to promote, support, represent, and serve credit unions worldwide.

[2] Almeyda, Gloria and Brian Branch, "Microfinance in Guatemala: The Case of Credit Unions", Report prepared for The World Bank Sustainable Banking with the Poor Program, Washington, DC: The World Bank, August 1997.

[3] There are many different CAMEL systems in circulation around the world with varying key formulas and ratios. (CAMEL stands for Capital Adequacy, Asset Quality, Management, Earnings, and Liquidity.) The CAMEL system used by WOCCU in 1988 came from the National Credit Union Administration in Washington, D.C.

[4] "Analysis of Microfinance Development in Russia," SME Resource Center, Moscow, 2003.

using a set of financial ratios known as **"PEARLS."**[5] Each letter of the word PEARLS measures key areas of Credit Union operations: **P**rotection, **E**ffective financial structure, **A**sset quality, **R**ates of return and cost, **L**iquidity and **S**igns of growth. **"PEARLS"** provides credit union managers with concise, easy-to-read reports that reveal institutional weaknesses and trends. It also offers a strategic business planning tool to help managers implement change. The PEARLS Monitoring System includes:

- Monitoring tool with PEARLS financial ratios.
- Ranking tool for comparing credit unions.
- Business planning tool to create strategic plans that help improve performance.
- Customizable labels that can be adapted to suit local language requirements.

4.2 Introduction of PEARLS

PEARLS is a financial performance monitoring system designed to offer management guidance for credit unions and other savings institutions. PEARLS is also a supervisory tool for regulators. PEARLS can be used to compare and rank institutions; it can provide comparisons among peer institutions in one country or across countries. PEARLS is a set of financial ratios or indicators that help to standardize terminology between institutions. In total, there are 44 quantitative financial indicators that facilitate an integral analysis of the financial condition of any financial institution. The purpose for including a myriad of indicators is to illustrate how change in one ratio has ramifications for numerous other indicators. Each indicator has a prudential norm or associated goal. The target goal, or standard of excellence for each indicator is put forth by the World Council of Credit Unions, Inc. (WOCCU) based on its field experience working to strengthen and modernize credit unions and promote savings-based growth. Depositors can have confidence that savings institutions that meet the standards of excellence are safe and sound. PEARLS, primarily a management tool for institutions, can also be used as a

[5] David C. Richardson, "PEARLS - Financial Stabilization Monitoring and Evaluation", World Council of Credit Unions Research Monograph Series, No. 4, August 1997 edition (processed).

supervisory tool by regulators[6]. As a management tool, PEARLS signals problems to managers before the problems become detrimental. For boards of directors, PEARLS provides a tool to monitor management's progress toward financial goals. For regulators, PEARLS offers indicators and standards to supervise the performance of savings

institutions. In partnership with credit unions, WOCCU created PEARLS in the late 1980s. WOCCU has refined and adjusted PEARLS over the past decade. WOCCU uses PEARLS with all credit unions participating in its technical assistance programs around the world. In addition to individual credit unions and credit union national federations and associations the Bolivian Superintendence of Banks uses PEARLS to supervise regulated credit unions in Bolivia. PEARLS serves as an invaluable guide through highly volatile conditions to improve significantly the decision making capacity of management.[7]

4.3 The Commercial and Social Impact of PEARLS

The process of commercialization is multidimensional; it is not only about finances, yields, and efficiency, there can also be a significant social impact. The PEARLS monitoring system has the unique ability to measure financial performance while simultaneously promoting social impact. This is possible because each of the areas measured by PEARLS has both business and social consequences. Table 3.1 illustrates this point by linking each of the areas measured and analyzed by PEARLS with the commercial and social impact it creates[8].

[6] The Microfinance Revolution: Sustainable Finance for the Poor (Volume 1), World Bank and Open Society Institute, 2003.
[7] World Bank Development Report 2000–2001.

[8] In 2002, BancoSol was the largest bank in Bolivia in terms of number of clients, with 35 percent of all borrowers. In 2003, it had a loan portfolio of approximately $91 million. (Source: Gail Buyske.)

Table 4.1

The Commercial and Social Impact of PEARLS

PEARLS Area	Commercial Impact	Social Impact
Protection	Measures the complete process of credit administration: · Delinquency control · Loan-loss reserves · Loan charge-offs · Loan recoveries	Provides members with a safe place to deposit their money.
Effective Financial Structure	Helps to optimize institutional solvency, profitability and liquidity.	Encourages community loans to members, community savings from either rich or poor members, and capital accumulation through earnings instead of member shares.
Asset Quality	Optimizes profitability by minimizing non-earning assets, and seeking to finance those assets with funds that have no explicit interest cost.	Applies pressure on delinquent members to cancel their debts without obligating others to pay. It also restricts the acquisition of fixed assets that are not affordable.
Rates of Return and Cost	Optimizes the balance between portfolio yields, savings deposit yields, dividends on shares, operating efficiency, and the capitalization of net earnings.	Institutional profitability is limited to recovering all costs instead of maximizing profits. It provides savers and shareholders with real rates of return on their capital. Employees are paid competitive wages for their services.
Liquidity	Optimizes the level of liquidity needed to satisfy member withdrawal requests. Minimizes idle liquidity.	Provides members with instant liquidity whenever needed. Promotes the timely payment of all debt obligations.
Sings of Growth	Enables balance sheet account comparisons between structure and yield, while simultaneously trying to achieve real growth.	Promotes the affiliation of any person who follows the rules. Promotes thrift and savings among the membership. Promotes the acquisition of needed goods and services via loans to creditworthy members.

Source: David C. Richard (2008), "Teaching Old Dogs new Tricks: The Commercialization of Credit Unions", woccu.

4.4 Objectives of PEARLS

1. Executive Management Tool

Monitoring the performance of the credit union is the most important use of the PEARLS system. It is designed as a management tool that goes beyond the simple identification of problems. It helps managers find meaningful solutions to serious institutional deficiencies. For example, the PEARLS system is capable of identifying a credit union with a weak capital base, and can also identify the probable causes (e.g., insufficient gross income, excessive operating expenses, or high delinquency losses).

Use of the system permits managers to quickly and accurately pinpoint troubled areas, and to make the necessary adjustments before problems become serious. In essence, PEARLS is an "early warning system" that generates invaluable management information.

2. Standardized Evaluation Ratios and Formulas

The use of standardized financial ratios and formulas eliminates the diverse criteria used by credit unions to evaluate their operations. It also creates a universal financial language that everyone can speak and understand.

The use of standardized financial ratios and formulas eliminates the diverse criteria used by credit unions to evaluate their operations. It also creates a universal financial language that everyone can speak and understand. One result can be enhanced communication that facilitates a greater understanding of the main concepts along with a commitment to achieve greater uniformity in the quality and strength of each individual credit union, by improving deficient operational areas.

3. Objective, Comparative Rankings

The combined use of the standardized accounting system and the PEARLS performance indicators produces a completely new type of information: comparative credit union rankings.

Historically, it was impossible to compare one credit union with another due to the diverse criteria and reporting formats that existed. The standardization of financial information eliminates the diversity and provides an effective tool for comparing credit union performance on a national basis.

One particularly important aspect of the PEARLS comparative rankings is its objectivity. No qualitative or subjective indicators are included in the rankings. This differs from the U.S. CAMEL system that gives management a numerical rating based upon the examiner's overall subjective judgment. By avoiding subjective assessments, it is possible to present objective reports to the credit unions that are substantiated by financial information taken from their balance sheets. The objective ranking system permits open discussion of problems with Boards of Directors and management. It is particularly useful in situations where a credit union is at the bottom of the ranking scale. No time is lost debating different points of view, and leadership can become more focused in seeking solutions to the problems affecting their institutions.

4. Facilitate Supervisory Control

In addition to its usefulness as a management tool, the PEARLS system provides the framework for a supervisory unit at the National Federation. National Associations can use the financial ratios generated by PEARLS to conduct quarterly or monthly analyses of all key areas of credit union operations. These evaluations are invaluable for spotting trends and detecting areas of concern among the affiliates. With the standardization of the key financial ratios, all interested parties are looking at the same thing--what is important to the examiner is also important to the credit union manager.

The introduction of the PEARLS evaluation system can change the role of National Association examiners to that of verifying the financial information used in calculating the ratios. If errors are found, they are relatively easy to correct and often provide management with further insight to their operations. The Federation examiners should play a key role in preserving the credibility of the financial information and ratios reported by the credit unions.

4.5 PEARLS V/S. CAMEL

The PEARLS system can be adapted to the specific needs of mature or emerging Credit Union Movements. An early attempt was made to adapt the U.S. CAMEL ranking system to credit unions by the World Council of Credit Unions, Inc., but too many modifications were needed[9].

In particular, the CAMEL system possessed two major deficiencies that limited its effectiveness:

1. The CAMEL system does not evaluate the financial structure of the balance sheet. This was a critical area of concern in many countries since modernization implies a major restructuring of credit union assets, liabilities and capital. Balance sheet structure has a direct impact on efficiency and profitability. These areas are critically important for effective and sustainable credit union operations in a competitive environment.

2. CAMEL does not consider growth rates. In many countries, growth of total assets is a key strategy used to address the problems that accompany monetary devaluations and runaway inflation. In a relatively hostile macro-economic environment, the credit unions have to sustain aggressive growth if they are to preserve the value of their assets.

The failure of the CAMEL system to evaluate financial structure and growth is indicative of its current application in the United States. CAMEL was created as a supervisory tool, not a management tool. The main concern of the CAMEL ratios is to protect the solvency of the institution and the safety of member deposits. It is not designed as a tool for the analysis of all key areas of credit union operations.

[9] David C. Richard (2008), "Teaching Old Dogs new Tricks: The Commercialization of Credit Unions", WOCCU.

4.6 Components of PEARLS

The PEARLS system is uniquely different. It was first designed as a management tool, and later became an effective supervisory mechanism. Each letter of the name "PEARLS" looks at a different, but critical aspect of the credit union.

4.6.1 P = Protection

Adequate protection of assets is a basic tenet of the new credit union model. Protection is measured by (1) comparing the adequacy of the allowances for loan losses against the amount of delinquent loans and (2) comparing the allowances for investment losses with the total amount of non-regulated investments.[10] Protection against loan losses is deemed adequate if a credit union has sufficient provisions to cover 100% of all loans delinquent for more than 12 months, and 35% of all loans delinquent for 1-12 months. Inadequate loan loss protection produces two undesirable results: inflated asset values and fictitious earnings.[11] Most credit unions are not anxious to recognize loan losses, and much less, to charge them off against earnings. That unwillingness leads to widespread abuse of the principles of safety and soundness. Reported net income is overstated, asset values are inflated, provisions for loan losses are inadequate, and member savings are not adequately protected.

Many credit unions are not concerned about the inadequacy of their allowances for loan losses since they view their capital reserves as the primary source of protection against loan losses. This erroneous idea is gradually changing as management becomes convinced that it is much easier and less painful to use the allowances for loan losses as the primary source of protection, rather than having to get approval from the membership to diminish capital reserves because of losses.[12]

---

[10] Richardson (2002), PEARLS: Monitoring System, WOCCU, USA

[11] Reka SundaramStukel (2006), Evaluating The Role Of Peruvian Credit Unions: A Case Study Of 8 Credit Unions.

12. Ford C. and Evans A (2005), "Assessing the Impact of HIV/AIDS: A Survey of Rwandan Credit Unions" USAID report and WOCCU Research Monograph No. 22.

The World Council of Credit Unions, Inc. promotes the principle that the allowance for loan losses is the first line of defense against non-performing loans.[13] The PEARLS system evaluates the adequacy of protection afforded to the credit union by comparing the allowance for loan losses to loan delinquency.

There are Six sub ratios under Protection[14] which are explained as under with its Purpose, Formula and Standard of Excellence.

Table no. 4.2

Ratios under Protection

Title	Description of Ratio	Goal
P-1	Allowance for Loan Losses/Delinquency greater than 12 months	100%
P-2	Net Allowance for Loan Losses/Delinquency of 1-12 months	35%
P-3	Total Write-off of Delinquent Loans greater than 12 months	100%
P-4	Annual Loan Write-offs/Average Loan Portfolio	Minimal
P-5	Accumulated Loan Recoveries/Accumulated Loan Write-offs	100%
P-6	Solvency (Net Value of Assets/Total Shares and Deposits)	>= 100%

Source: David C. Richardson (October 2002), The World Council of Credit Unions: Monogram 4.

Explanation of Each Sub Ratios is as under.

P-1. Allowance for Loan Losses / Allowances Required for Loans Delinquent greater than 12 Months

Purpose: To measure the adequacy of the allowances for loan losses when compared to the allowances required for covering all loans delinquent over 12 months.

13 USAID, (2005). "Development and Testing Povery Assessment Tools: Results from Accuracy Tests in Perú.

14. Barham, Bradford, L., Stephen R. Boucher, and Michael R. Carter (1996). "Credit Constraints, Credit Unions, and Small Scale Producers in Guatemala," in World Development 24:5, pp. 793-806.

Accounts

a. Allowance for Loan Losses (Balance Sheet)

b. Percentage of allowances required for covering loans that are more than 12 months delinquent. WOCCU suggests use 100%, but a different percentage may be used in countries where local laws or regulations are different.

c. Loan Balances of all loans delinquent more than 12 months

Formula

*a/b*c*

Goal: 100%

P-2. Net Allowance for Loan Losses / Delinquency of 1-12 months

Purpose: To measure the adequacy of the allowances for loan losses after deducting the allowances used to cover loans that are more than twelve months delinquent.

Accounts

a. Total Allowance for Loan Losses

b. Allowances used for covering Loans that are more than 12 months delinquent

c. Percentage of allowances required for covering loans that are 1-12 months delinquent. WOCCU suggests using 35%, but a different percentage may be used in countries where local law or regulations are different.

d. Total Balance of all Delinquent Loans outstanding from 1-12 months

e. Percentage of allowances required for non-delinquent loans. While WOCCU does not require any specific allowance for this category, some countries may require a specific percentage that is mandated by local law or regulations.

f. Total Balance of all Non-Delinquent Loans.

Formula

*(a-b)/[(c*d)+(e*f)]*

Goal: 100% of allowances required for all loans delinquent less than 12 months and for non-delinquent loans.

P-3. Total Write-off of Delinquent Loans greater than 12 months

Purpose: To measure the total charge-off of all delinquent loans greater than 12 months.

Account: a. Total Delinquent Loans greater than 12 months

Formula: If (a) = 0 (Zero) then Yes, else No.

Goal: Charge-off 100% of all Loans Delinquent greater than 12 months

P-4. Annual Loan Write-offs/Average Loan Portfolio

Purpose: To measure the amount of loans charged-off from the loan portfolio in the current year. Note that the loans charged-off should be maintained in an auxiliary ledger and are not found on the balance sheet.

Accounts

a. Accumulated Charge-offs for Current year
b. Accumulated Charge-offs for previous year
c. Gross loan portfolio (excluding allowances) as of Current year-end
d. Gross loan portfolio (excluding allowances) as of Last year-end

Formula

(a - b)/ [(c+d)2]

Goal: Minimize

P-5. Accumulated Loan Recoveries/Accumulated Loan Write-offs

Purpose: To measure the accumulated amount of charge-offs that have been recovered through successful collection efforts. This is a historical figure that includes all previous years.

Accounts

a. Accumulated Recovery of Charge-offs

b. Accumulated Charge-offs

Formula

a /b

Goal: 100%

P-6. Solvency (Net Value of Assets/Total Shares and Deposits)

Purpose: Measure the degree of protection that the credit union has for member savings and shares in the event of liquidation of the credit union's assets and liabilities.

Accounts

a. Total Assets

b. Allowances for Risk Assets

c. Balance of Loans Delinquent greater than 12 months.

d. Balance of Loans Delinquent from 1 to 12 months.

e. Total Liabilities

f. Problem Assets (Losses that will be liquidated)

g. Total Savings

h. Total Shares

Formula

[(a+b)-(c+.35(d)+e+ f - g)] / (g+h)

Goal: greater than 110.

4.6.2 E = Effective Financial Structure

The financial structure of the credit union is the single most important factor in determining growth potential, earnings capacity, and overall financial strength. The PEARLS system measures assets, liabilities and capital, and recommends an "ideal" structure for credit unions. The following ideal targets are promoted:

4.6.2.1 Assets

* 95% productive assets composed of loans (70-80%), and liquid investments (10-20%)

* 5% unproductive assets composed of primarily fixed assets (land, buildings, equipment etc.)

Credit unions are encouraged to maximize productive assets as the means to achieve sufficient earnings. Since the loan portfolio is the most profitable asset of the credit union, the World Council of Credit Unions, Inc. recommends maintaining 70-80% of total assets in the loan portfolio. Excess liquidity is discouraged because the margins on liquid investments (e.g., savings accounts) are significantly lower than those earned on the loan portfolio. Non-Earning assets are also discouraged because once purchased, they are often difficult to liquidate. The only effective way to maintain the ideal balance between productive and unproductive assets is by increasing the volume of productive assets.

4.6.2.2 Liabilities

* 70-80% member deposit savings

A healthy percentage of deposit savings indicates that the credit union has developed effective marketing programs and is well on its way to achieving financial independence it also indicates that members are no longer "saving" in order to borrow money, but are instead saving because of the competitive rates offered.

4.6.2.3 Capital

* 10-20% member share capital

* 10% institutional capital (undivided reserves)

Under the new capitalization system, member shares are de-emphasized and replaced with institutional capital. This capital has three purposes:

a. Finance Non-Earning Assets

Since the institutional capital has no explicit interest cost, its primary function is to finance all non-income generating assets of the credit union (i.e., land, buildings and equipment). If sufficient capital is unavailable, the credit union is forced to use more expensive deposit savings or member shares to finance the difference. Even though this makes little sense, the practice is still widespread.[15]

b. Improve Earnings

Institutional capital also has a powerful effect on the credit union's capacity to generate net income and hence, additional capital. With no explicit interest cost, capital that is lent out at market interest rates provided a 100% return to the credit union. The use of this institutional capital to finance productive assets (e.g., loans) is very profitable for the credit union. Institutional capital can be generated much faster than by relying only on the slim margins from deposit savings.[16] For credit unions with a weak capital base, the process is much slower, since the capacity to generate sufficient capital is linked to the capacity to retain capital.

c. Absorb Losses

As a last resort, institutional capital is used to absorb losses from loan delinquency and/or operational deficits. In many countries, the law requires that any reduction in institutional capital from losses must be approved by the General Assembly.[17] This can be a painful and oftentimes, fatal experience for credit union management. Consequently, it makes much more sense to create adequate loan loss provisions in order to eliminate non-performing assets.

The PEARLS measurement of institutional capital is a key ratio that is linked to a number of other operational areas. If deficient, it can quickly signal where potential

[15] David C. Richardson (October 2002), The World Council of Credit Unions : Monogram 4.

[16] Mushinski, D. W. (1999). "An Analysis of Offer Functions of Banks and Credit Unions in Guatemala," in Journal of Development Studies 36:2, pp. 88-112.

[17] Young, L., N.P. Sherman, and T.H. Rose, 1981, Co -operatives and Development Agricultural Politics in Ghana and Uganda. (Madison: University of Wisconsin Press).

weaknesses might exist in other areas of the operation. Ratio under Effective Financial Structure is as under.[18]

Table no. 4.3

Ratios under Effective Financial Structure

Title	Description of Ratio	Goal
E-1	Net Loans/Total Assets	70-80%
E-2	Liquid Investments / Total Assets	Max 20%
E-3	Financial Investments / Total Assets	Max 10%
E-4	Non-Financial Investments / Total Assets	0%
E-5	Savings Deposits / Total Assets	70-80%
E-6	External Credit / Total Assets	Max 5%
E-7	Member Share Capital / Total Assets	10-20%
E-8	Institutional Capital / Total Assets	Min 10%
E-9	Net Institutional Capital/ Total Assets	Min 10%

Source: David C. Richardson (October 2002), The World Council of Credit Unions: Monogram 4.

Explanation of Each Sub Ratios with formulas is as under.

The indicators in this section measure the composition of the most important accounts on the Balance Sheet. An effective financial structure is necessary to achieve safety, soundness, and profitability, while at the same time, positioning the credit union for aggressive real growth.

E-1. Net Loans/Total Assets

Purpose: To measure the percentage of total assets invested in the loan portfolio.

Accounts

a. Total Gross Loan Portfolio Outstanding

b. Total Allowance for loan losses

c. Total Assets

Formula

$(a - b) / c$

Goal: **Between 70 - 80%**

[18] Holmen, H., 1990, "State Co-operative and Development in Africa." Research Report No. 86, The Scandinavian Institute of African Studies, Uppsala. Jordan, J., 1980, "Co-operative Movement System and Futures." Working Paper No. 2.

E-2. Liquid Investments / Total Assets:

Purpose: To measure the percentage of total assets invested in Short-term Investments.

Accounts

a. Total Liquid Investments

b. Total Assets

Formula

a / b

Goal: Maximum 20%

E-3. Financial Investments / Total Assets

Purpose: To measure the percentage of total assets invested in Long-term investments

Accounts

a. Total Financial Investments

b. Total Assets

Formula:

a / b

Goal: Maximum 10%

E-4. Non-Financial Investments / Total Assets

Purpose: To measure the percentage of total assets invested in non-financial investments (i.e., supermarkets, pharmacies, residential housing developments etc.)

Accounts:

a. Total Non-Financial Investments

b. Total Assets

Formula

a / b

Goal: 0%

E-5. Savings Deposits / Total Assets

Purpose: To measure the percentage of total assets financed by savings deposits.

Accounts

a. Total Savings Deposits

b. Total Assets

Formula

a / b

Goal: Between 70 – 80%

E-6. External Credit / Total Assets

Purpose: To measure the percentage of total assets financed by external borrowing (i.e., debt obligations with other financial institutions outside of the credit union). Here External Credit may include Borrowed Funds.

Accounts

a. Total Short-term loan obligations

b. Total Long-term loan obligations

c. Total Assets

Formula

(a+b) / c

Goal: Maximum 5%

E-7. Member Share Capital / Total Assets

Purpose: To measure the percentage of total assets financed by Member shares.

Accounts

a. Total Member Shares

b. Total Assets

Formula

a / b

Goal: Maximum 20%

E-8. Institutional Capital / Total Assets

Purpose: To measure the percentage of total assets financed by Institutional Capital. Here, Institutional Capital is defined as all legal and non-distributable reserves, capital donations and the portion of the current

year's surplus that will be retained as legal or non-distributable reserves. These reserves are not expended and no member may present an individual claim.

Accounts

a. Total Institutional Capital

b. Total Assets

Formula

a / b

Goal: Minimum 10%

E-9. Net Institutional Capital/ Total Assets

Purpose: To measure the real level of institutional capital, after adjusting the allowances for risk assets to meet the standards of P1&P2, and covering any other potential losses.

Accounts

a. Institutional Capital

b. Allowances for Risk Assets

c. Balance of Loans Delinquent greater than 12 months.

d. Balance of Loans Delinquent from 1 to 12 months.

e. Problem Assets (Losses that will be liquidated)

f. Total Assets

Formula

[(a+b)-(c+.35(d)+e)] / f

Goal: Minimum 10%

4.6.3 A = Assets Quality

A non-productive or non-earning asset is one that does not generate income. An excess of non-earning assets affects credit union earnings in a negative way. The following PEARLS indicators are used to identify the impact of non-earning assets:

a. Delinquency Ratio

Out of all the PEARLS ratios, the delinquency ratio is the most important measurement of institutional weakness. If delinquency is high, it usually affects all other key areas of credit union operations.[19] By using the PEARLS formula to accurately measure delinquency, credit unions are properly informed of the severity of

[19] David C. Richardson (October 2002), The World Council of Credit Unions : Monogram 4.

the situation before a crisis develops. The ideal goal is to maintain the delinquency rate below 5% of total loans outstanding.[20]

b. Percentage of Non-Earning Assets

A second key ratio is the percentage of non-earning assets owned by the credit union. The higher the ratio, the more difficult it is to generate sufficient earnings. The goal also limits non-earning assets to a maximum of 5% of the total credit union assets.[21] Where credit unions are in dire need of improving their poor physical image, the non-earning asset ratio can increase in the short run. An improved image is more important to the success of aggressive marketing programs than it is to keep a ratio within its limits. As new members join and deposit their savings with the credit union, the non-earning asset ratio begins to decrease as a result of increased public confidence.[22]

c. Financing of Non-Earning Assets

While reducing the percentage of non-earning assets is important, the financing of those assets is just as important. Traditionally, credit unions use member share capital to finance the purchases of fixed assets. Under the WOCCU model, the objective is to finance 100% of all non-earning assets with the credit union's institutional capital, or with other liabilities that have no explicit financial cost.[23] By using no-cost capital to finance those assets, credit union earnings are not unduly affected. This is one of the strong arguments supporting the capitalization of all net earnings-to upgrade old buildings and worn-out equipment.

[20] Boucher, S., B.L. Barham, and M.R. Carter (2002). "Marketfriendly Reforms and the Operation of Credit and Land Markets in Central America," under review, World Development.

[21] Asante, Y., and M. Danso-Manu, 1994, "Impact of Credit Unions on Individuals and Households in Ghana." A report prepared for African Confederation of Cooperative Savings and Credit Association.

[22] Petrie Ragan, (2002). "Rwandan Credit Unions Member and NonMember Survey 2002. WOCCU Research Monograph No. 20.

[23] Holmen, H., 1990, "State Co-operative and Development in Africa." Research Report No. 86, The Scandinavian Institute of African Studies, Uppsala. Jordan, J., 1980, "Co-operative Movement System and Futures." Working Paper No. 2.

The indicators in this section measure the percentage of non-earning assets that negatively impact profitability and solvency. They are: loan delinquency, non-earning assets, and the financing of non earning assets.[24]

Table no. 4.4

Ratios under Asset Quality

Title	Description of Ratio	Goal
A-1	Total Loan Delinquency / Gross Loan Portfolio	Less than or equal to 5%
A-2	Non-Earning Assets / Total Assets	Less than or equal to 5%
A-3	Net Institutional & Transitory Capital + Non Interest-Bearing Liabilities / Non-earning Assets	Greater than 200%

Source: David C. Richardson (October 2002), The World Council of Credit Unions: Monogram 4.

A-1. Total Loan Delinquency / Gross Loan Portfolio

Purpose: To measure the total percentage of delinquency in the loan portfolio, using the criterion of outstanding delinquent loan balances instead of accumulated delinquent loan payments.

Accounts

a. Sum of all delinquent loan balances (a non-bookkeeping control)

b. Total (Gross) Loan Portfolio Outstanding

Formula

a / b

Goal: Less Than or Equal to 5%

[24] Brownbridge, M. & Kirkpatrick, C. 2000. Financial Regulation in Developing Countries. Finance and Development Research Working Paper Series No. 12. University of Manchester, Manchester.

A-2. Non-Earning Assets / Total Assets

Purpose: To measure the percentage of the total assets not producing income.

Examples of Non-earning Assets:

1. Cash on hand
2. Non-interest bearing monetary checking accounts
3. Accounts receivable
4. Assets in liquidation
5. Fixed assets (Land, Building, equipment etc.)
6. Prepaid expenses and other deferrals

Accounts

a. Total Non-earning Assets

b. Total Assets

Formula

a / b

Goal: Less Than or Equal to 5%

A-3. Net Institutional & Transitory Capital + Non Interest-Bearing Liabilities / Non-earning Assets

Purpose: To measure the percentage of non-earning assets that is financed with institutional capital, transitory capital and liabilities without interest. Transitory Capital includes Monetary, Educational & Social Reserves, Revalued Assets, and Undistributed Income Referred to as “Zero Cost Funds”

Accounts

a. Total Net Institutional Capital (as per E-8 ratio)

b. Total Transitory Capital

c. Total Non Interest-Bearing Liabilities

d. Total Non-earning assets

Formula

$(a+b+c) / d$

Goal: Greater than or equal to 200%

4.6.4 R = Rates of Return and Costs

The PEARLS system segregates all of the essential components of net earnings to help management calculate investment yields and evaluate operating expenses. In this way, PEARLS demonstrates its value as a management tool. Unlike other systems that calculated yields on the basis of average assets, PEARLS calculates yields on the basis of actual investments outstanding. This methodology assists management in determining which investments are the most profitable. It also permits the credit unions to be ranked according to the best and worst yields.[25]

By comparing financial structure with yields, it is possible to determine how effectively the credit union is able to place its productive resources into investments that produce the highest yield. These powerful analysis techniques help management stay abreast of the financial performance of the credit union.[26]
Yield information is computed on four main areas of investment:

a. Loan Portfolio: All interest income, delinquent interest penalties and commissions from lending operations are divided by the total amount invested in the loan portfolio.

b. Liquid Investments: All income from bank savings accounts and liquidity reserves deposited in either the National Association or regulatory body is divided by the amounts invested in those areas.

c. Financial Investments: Many credit unions invest liquidity into financial investments (e.g. government securities) that pay higher yields than bank savings

[25] David C. Richardson (October 2002), The World Council of Credit Unions : Monogram 4.

[26] Christen, R.P., Rhyne, E. & Vogel, R. 1994. Successful Financial Institutions. Mimeo. USAID, Washington DC.

accounts.[27] This investment income is also divided by the outstanding capital invested in those instruments.

d. Other Non-financial Investments: Any investment that does not fit into the previous categories is classified as "other" non-financial investments.[28] For many credit unions, this includes investments in supermarkets, pharmacies, schools, and residential development projects. All income from these different sources is likewise divided by the original capital investments.

Operational costs are also important. They are broken down into three main areas:

e. Financial Intermediation Costs: This area evaluates the financial costs paid on deposit savings, member shares, and external loans. Unlike commercial banks that try to minimize financial costs, credit unions should try to pay as high a rate as possible without jeopardizing the stability of the institution.[29] In many instances, a poor growth rate for deposit savings is linked to noncompetitive interest rates. Likewise, dividends on member share capital are closely monitored to ensure that credit unions are not taking advantage of their members by paying substandard dividend yields on their share capital.

f. Administrative Costs: Another critical area requiring close analysis is administrative costs. Many credit unions are highly competitive with commercial banks on interest rates for deposits and loans, but their administrative costs are much higher on a per unit basis. Costs are higher because of the smaller loan size. Fixed administrative expenses could not be spread over a larger loan amount.[30] For example, the fixed costs to make a US$1,000 loan are almost identical to those of a US$10,000 loan. High administrative costs are one of the main reasons why many credit unions

[27] Saltzmann, S.B., Rock, R. & Salinger, D. 1998. Performance and Standards in Microfinance: ACCION's Experience with the PEARLS Instrument. Discussion Paper No. 7. ACCION, Somerville.

[28] Credit Unions Retooled: A Road Map for Financial Stabilization, March 1993

[29] The Role and Impact of Credit Unions: Helping to Meet the Needs of Small Scale Producers, November 1994

[30] Sacay, Orlando and Bikki Randhawa, Design Issues in Rural Finance. World Bank Discussion Paper No. 293, Washington, DC: The World Bank, 1995.

are not profitable. The "ideal" target recommended by the PEARLS system is to maintain administrative costs at 5% of average total assets.

g. Provisions for Loan Losses: The final cost area evaluated by PEARLS separates the costs of creating provisions for loan losses from other administrative costs. This can be facilitated by the use of clear accounting nomenclature. Traditional accounting standards usually include loan loss provisions as part of the overall administrative costs.

In reality, the creation of adequate provisions represents a completely different type of expense. It is directly linked to experienced credit analysis and effective loan collection techniques.[31] By isolating this expense from the other administrative costs, it is possible to get a much clearer picture of weak credit administration practices in the credit union.

By segregating income and expenses into the previously mentioned areas, the PEARLS ratios can accurately pinpoint the reasons why a credit union is not producing sufficient net income. The ratios under Rates of Return and Costs are as under.[32]

Table no. 4.5

Ratios under Rates of Return and Costs

Title	Description of Ratio	Goal
R-1	Net Loan Income / Average Net Loan Portfolio	Entrepreneurial Rate
R-2	Total Liquid Investment Income / Average Liquid Investments	Market Rates
R-3	Total Financial Investment Income / Average Financial Investments	Market Rates
R-4	Total Non-Financial Investment Income /	Greater than R-1

[31] Flaming, Mark, Technical Guide for the Analysis of Microenterprise Finance Institutions, Microenterprise Division, Washington, DC: Inter-American Development Bank, 1994.

[32] Balkenhol, Bernd and Haje Schutte, Collateral, Collateral Law and Collateral Substitutes. ILO Poverty-oriented Banking Programme, Geneva: International Labour Office, 1996.

	Average Non-Financial Investments	
R-5	Total Interest Cost on Savings Deposits / Average Savings Deposits	Market Rates Greater than Inflation
R-6	Total Interest Cost on External Credit / Average External Credit	Market Rates
R-7	Total Interest (Dividend) Cost on Shares / Average Member Shares	Market Rates Greater than or Equal to R-5
R-8	Total Gross Income Margin / Average Total Assets	Variable - Linked to R9, R11, R12
R-9	Total Operating Expenses / Avg. Total Assets	5%
R-10	Total Loan Loss Provision Expense / Average Total Assets	Dependent on Delinquent Loans
R-11	Non-Recurring Income or Expense / Average Total Assets	Minimal
R-12	Net Income / Average Total Assets	Linked to E-9

Source: David C. Richardson (October 2002), The World Council of Credit Unions: Monogram 4.

These indicators measure the average income yield for each of the most productive assets of the Balance Sheet. In addition, they measure the average yield (cost) for each of the most important liability and capital accounts. The yields are actual investment returns and not the typical "spread analysis" yields that are figured on the basis of average assets. The corresponding yields indicate whether the credit union is earning and paying market rates on its assets, liabilities and capital. Explanation of Each Sub Ratios with formulas is as under.

R-1. Net Loan Income / Average Net Loan Portfolio

Purpose: To measure the yield on the loan portfolio.

Accounts:

a. Total Loan income (including commissions, fees, and delinquent interest penalties) during year.

b. Insurance Premiums paid on Loans

c. Net loan portfolio (Net of Allowances for Loan Losses) as of Current year-end

d. Net loan portfolio (Net of Allowances for Loan Losses) as of Last year-end

Formula

[(a - b) / {(c+d) / 2}]

Goal: Entrepreneurial rate which covers financial, operating, and provisioning expenses and contributes to capital levels which maintain Institutional Capital at least 10%.

R-2. Total Liquid Investment Income / Average Liquid Investments

Purpose: To measure the yield on all short-term investments (i.e., Bank deposits, etc.).

Accounts

a. Total Liquid Investment Income during year.

b. Total Liquid Investments as of Current year-end.

c. Total Liquid Investments as of Last year-end.

Formula

[a / {(b+c) / 2}]

Goal: Highest rates possible w/o undue risk

R-3. Total Financial Investment Income / Average Financial Investments:

Purpose: To measure the yield on all long term investments (i.e., Fixed Deposits, Shares, Securities, etc.)

Accounts:

a. Total Financial Investment Income

b. Total Financial Investments as of Current year-end.

c. Total Financial Investments as of Last year-end.

Formula

[a / { (b+c)/ 2}]

Goal: Highest rates possible with out undue risk

R-4.Total Non-Financial Investment Income / Average Non-Financial Investments

Purpose: To measure the yield on all non-financial investments which do not belong to categories R1-R3. Typically, this is income from supermarkets, pharmacies, rental properties and residential housing developments.

Accounts

a. Total Non-Financial Investment Income

b. Total Non-Financial Investments as of Current year-end.

c. Total Non-Financial Investments as of Last year-end.

Formula

[a / {(b+c) / 2}]

Goal: Rate greater than R-1

R-5. Total Interest Cost on Savings Deposits / Average Savings Deposits

Purpose: To measure the yield (cost) of Savings Deposits.

Accounts

a. Total Interest Paid on Savings Deposits

b. Total insurance premium paid on Savings Deposits

c. Total Taxes paid by Credit Union on Savings Deposit Interest

d. Total Savings Deposits as of Current year-end.

e. Total Savings Deposits as of Last year-end.

Formula

[(a+b+ c) / {(d +e) / 2}]

Goal: Rates which protect the nominal value of the savings deposits (>Inflation)

R-6. Total Interest Cost on External Credit / Average External Credit

Purpose: To measure the yield (cost) of all Borrowed Funds

Accounts:

a. Total Interest Paid on Borrowed Funds

b. Total Borrowed Funds as of Current year-end

c. Total Borrowed Funds as of Last year-end

Formula:

[a / {(b+c) / 2}]

Goal: Same or lesser yield (cost) than R-5

R-7. Total Interest (Dividend) Cost on Shares / Average Member Shares

Purpose: To measure the yield (cost) of Member Shares.

Accounts:

a. Total Dividends paid on Member Shares

b. Total insurance premium paid on Member Shares

c. Total Taxes paid by credit union on Dividends on Shares

d. Total Member Shares as of Current year-end

e. Total Member Shares as of Last year-end

Formula

[(a+b+ c) / { (d +e) / 2}]

Goal: Same or greater yield than R5

R-8. Total Gross Income Margin / Average Total Assets

Purpose: To measure the gross income margin generated, expressed as a yield on all assets, before subtracting operating expenses, provisions for loan losses, and other extraordinary items.

Accounts

a. Loan Interest Income
b. Liquid Investment Income
c. Financial Investment Income
d. Non-Financial Investment Income
e. Other Income
f. Interest Cost of Savings Deposits
g. Dividend or Interest Cost of Member Shares
h. Interest Cost of Borrowed Funds
I. Total Assets as of Current Year-end
j. Total Assets as of Last Year-end

Formula

$[\{(a+b+c+d+e) - (f+g+h)\} / \{(i+j) / 2\}]$

Goal: To generate sufficient income to cover all operating expenses and allowances for loan losses and provide for adequate increases in institutional capital.

R-9. Total Operating Expenses / Avg. Total Assets

Purpose: To measure the cost associated with the management of all Credit Union assets. This cost is measured as a percentage of total assets and indicates the degree of operational efficiency or inefficiency.

Accounts

a. Total Operating Expenses (exclusive of Provisions for loan losses)
b. Total Assets as of Current year-end
c. Total Assets as of Last year-end

Formula
[a / {b+c) / 2}]

Goal: less than 10%

R-10. Total Loan Loss Provision Expense / Average Total Assets:

Purpose: To measure the cost of losses from risk assets such as delinquent loans or uncollectible accounts receivable. This cost is different than other operational expenses and should be separated to highlight the effectiveness of Credit Union collection policies and procedures.

Accounts

a. Total Current Year Provision Expense of all Risk Assets

b. Total Assets as of Current year-end

c. Total Assets as of Last year-end

Formula:

[a / {(b+c) / 2}]

Goal: Enough to cover 100% of delinquent loans >12 months and 35% for loans delinquent 1-12 months.

R-11. Non-Recurring Income or Expense / Average Total Assets:

Purpose: To measure the net amount of non-recurring income and expenses. These items typically should not be a significant amount if the Credit Union is specializing in Financial Intermediation.

Accounts

a. Total Non-Recurring Income or Expenses (Current Year)

b. Total Assets as of Current year-end

c. Total Assets as of Last year-end

Formula

[a / {(b+c) / 2}]

Goal: Minimum possible

R-12. Net Income / Average Total Assets

Purpose: To measure the adequacy of earnings and also, the capacity to build Institutional Capital.

Accounts

a. Net Income (After dividends)

b. Total assets as of Current year-end

c. Total assets as of Last year-end

Formula

[a / {(b+c) / 2}]

Goal: Enough to attain the goal of E9

4.6.5 L = Liquidity

Effective liquidity management becomes a much more important skill as the credit union shifts its financial structure from member shares to more volatile deposit savings. In many movements following the traditional model, member shares are very illiquid and most external loans have a long payback period, therefore there is little incentive to maintain liquidity reserves. Liquidity is traditionally viewed in terms of cash available to lend--a variable exclusively controlled by the credit union.[33] With the introduction of withdrawable savings deposits, the concept of liquidity is radically changed. Liquidity now refers to the cash needed for withdrawals--a variable the credit union can no longer control.

[33] David C. Richardson (October 2002), The World Council of Credit Unions : Monogram 4.

The maintenance of adequate liquidity reserves is essential to sound, financial management in the WOCCU credit union model. The PEARLS system analyzes liquidity from two perspectives:

a. Total Liquidity Reserves

This indicator measures the percentage of savings deposits invested as liquid assets in either a National Association or a commercial bank. The "ideal" target is to maintain a minimum of 15% after paying all short-term obligations (30 days and under).

b. Idle Liquid Funds

Liquidity reserves are important but they also imply a lost opportunity cost. Funds in checking accounts and simple savings accounts earn negligible returns,[34] in comparison with other investment alternatives. Consequently, it is important to keep idle liquidity reserves to a minimum. The "ideal" target of this PEARLS ratio is to reduce the percentage of idle liquidity to as close to zero as was possible.

The ratios under Liquidity are as under.[35]

Table no. 4.6

Ratios under Liquidity

Title	Description of Ratio	Goal
L-1	Short Term Investments + Liquid Assets – Short Term Payables / Savings Deposits	Min 15%
L-2	Liquidity Reserves / Savings Deposits	10%
L-3	Non-Earning Liquid Assets / Total Assets	Less than 1%

Source: David C. Richardson (October 2002), The World Council of Credit Unions: Monogram 4.

The liquidity indicators show whether the Credit Union is effectively managing its cash so that it can meet deposit withdrawal requests and liquidity reserve requirements. In addition, idle cash is also measured to insure that this non-earning

[34] Smith, D.J., T.F. Cargill, and R.A. Meyer (1981), "Credit Unions: An Economic Theory of a Credit Union," *The Journal of Finance*, No. 36, pp. 519-528.

[35] Paxton, Julia Anne (1997), "Determinants of Successful Group Loan Repayment: An Application to Burkina Faso," Ph.D. dissertation, Columbus, Ohio: The Ohio State University.

asset does not unduly affect profitability. Explanation of each ratio under Liquidity is as under.

L-1. Short Term Investments + Liquid Assets – Short Term Payables / Savings Deposits

Purpose: To measure the adequacy of the liquid cash reserves to satisfy deposit withdrawal requests, after paying all immediate obligations less than 30 days.

Accounts

a. Total Earning Liquid Investments
b. Total Non-earning Liquid Assets
c. Total Short-term Payables less than 30 days
d. Total Savings Deposits

Formula

[(a+b - c) / d]

Goal: Minimum 15%

L-2. Liquidity Reserves / Savings Deposits

Purpose: To measure compliance with obligatory Central Bank, CFF, or Other Liquidity Reserve Deposit requirements.

Accounts

a. Total Liquidity Reserves (Earning Asset)
b. Total Liquidity Reserves (Non-earning Asset)
c. Total Savings Deposits

Formula

[(a+b) / c]

Goal: 10%

L-3. Non-Earning Liquid Assets / Total Assets

Purpose: To measure the percentage of total assets that is invested in non-earning liquid accounts.

Accounts

a. Total Liquid Non-Earning Assets

b. Total Assets

Formula

a / b

Goal: less than 1%

4.6.6 S = Signs of Growth

The only successful way to maintain asset values is through strong, accelerated growth of assets, accompanied by sustained profitability. Growth by itself is insufficient. The advantage of the PEARLS system is that it links growth to profitability, as well as to the other key areas by evaluating the strength of the system as a whole.[36] Growth is measured in five key areas:

a. Total Assets

Growth in total assets is one of the most important ratios. Many of the formulas used in the PEARLS ratios include total assets as the key denominator. Strong, consistent growth in total assets improves many of the PEARLS ratios. By comparing the growth in total assets to other key areas, it is possible to detect changes in the balance sheet structure that could have a positive or negative impact on earnings.[37] The ideal

[36] David C. Richardson (October 2002), The World Council of Credit Unions : Monogram 4.

[37] Barltrop, Chris J. and Diana McNaughton (1992), "Interpreting Financial Statements," in Banking Institutions in Developing Countries, Volume 2. Washington, D.C.: The World Bank.

goal for all credit unions is to achieve real positive growth (i.e., net growth after subtracting for inflation) each year.

b. Loans

The loan portfolio is the most important and profitable credit union asset. If growth in total loans keeps pace with growth in total assets, there is a good likelihood that profitability will be maintained.[38] Conversely, if loan growth rates drop, this suggests that other, less profitable areas are growing more quickly.

c. Savings Deposits

With the new emphasis on savings mobilization, savings deposits are the new cornerstones of growth. The growth of total assets is dependent on the growth of savings. The rationale for maintaining aggressive marketing programs is that it stimulates growth in new savings deposits that in turn, affect the growth of other key areas.[39]

d. Shares

Although member share savings are de-emphasized under the WOCCU model, some credit unions may maintain a dependence on shares for growth.[40] If growth rates in this area are excessive, it usually signals an inability of the credit unions to adapt to the new system of promoting deposits over shares.

e. Institutional Capital

Institutional capital growth is the best indicator of profitability within credit unions. Static or declining growth trends in institutional capital usually indicate a problem with earnings.[41] If earnings are low, the credit union will have great difficulty in

[38] Ferguson C. & McKillop D. (1997). The strategic development of credit unions. Chichester: John Wiley & Sons.

[39] Prudential Standards in Credit Unions (2003) Wisconsin: World Council of Credit Unions.

[40] Coetzee, Gerhard and Steven Goldblatt. 1998. Regulation and Supervision of Microfinance Institutions: Experiences from South Africa. Paper presented on the CGAPConference "Savings in the Context of Microfinance". Kampala, Uganda, 10.-13. Februar 1998.

[41] Krahnen, Jan Pieter and Reinhard H. Schmidt. 1994. Development Finance as Institution Building: A New Approach to Poverty-Oriented Banking. Boulder and Oxford: Westview Press.

adding to institutional capital reserves. One of the indisputable signs of success of a robust credit union in transition is a sustained growth of institutional capital, usually greater than the growth of total assets.

The Ratio under Sings of Growth is as under.[42]

Table no. 4.7

Ratios under Sings of Growth

Title	Description of Ratio	Goal
S-1	Growth in Loans to Members	Dependent on E1
S-2	Growth in Liquid Investments	Dependent on E2
S-3	Growth in Financial Investments	Dependent on E3
S-4	Growth in Non-Financial Investments	Dependent on E4
S-5	Growth in Savings Deposits	Dependent on E5
S-6	Growth in External Credit	Dependent on E6
S-7	Growth in Share Capital	Dependent on E7
S-8	Growth in Institutional Capital	Dependent on E8
S-9	Growth in Net Institutional Capital	Dependent on E9
S-10	Growth in Membership	Greater than 12%
S-11	Growth in Total Assets	Greater than Inflation

Source: David C. Richardson (October 2002), The World Council of Credit Unions: Monogram 4.

The indicators of this section measure the percentage of growth in each of the most important accounts on the financial statement, as well as growth in membership. In inflationary economies, real growth (after subtracting inflation), is a key to the long run viability of the Credit Union

S-1. Growth in Loans to Members

Purpose: To measure the year-to-date growth of the Loan Portfolio.

Accounts

a. Current Loan Portfolio balance

b. Loan Portfolio balance as of Last year-end

[42] Luang, Eduardo C. and Malena Vasquez. 1997. "Philippines". In Churchill, editor, pp. 35-42.

Formula

[a / b] -1 x 100

Goal: To Increase the Percentage of Total Loans Outstanding (E-1) S-1 must be greater than S-11

To Maintain the Percentage of Total Loans Outstanding (E-1), S-1 must be equal to S-11.

To Decrease the Percentage of Total Loans Outstanding (E-1), S-1 must be less than S-11.

S-2. Growth in Liquid Investments

Purpose: To measure the year-to-date growth of liquid investments.

Accounts

a. Total Current Liquid Investments

b. Total Liquid Investments as of Last year-end

Formula

[a / b] -1 x 100

Goal: To Increase the Percentage of Liquid Investments (E-2), S-2 must be greater than S-11.

To Maintain the Percentage of Liquid Investments (E-2), S-2 must be equal to S-11.

To Decrease the Percentage of Liquid Investments (E-2), S-2 must be less than S-11.

S-3. Growth in Financial Investments

Purpose: To measure the year-to-date growth of Financial Investments.

Accounts

a. Total Current Financial Investments

b. Total Financial Investments as of Last year-end

Formula

[a / b] -1 x 100

Goal: To Increase the Percentage of Financial Investments (E-3), S-3 must be greater than S-11.

To Maintain the Percentage of Financial Investments (E-3), S-3 must be equal to S-11.

To Decrease the Percentage of Financial Investments (E-3), S-3 must be less than S-11.

S-4. Growth in Non-Financial Investments

Purpose: To measure the year-to-date growth of the Loan Portfolio.

Accounts

a. Total Current Non-financial Investments

b. Total Non-financial Investments as of Last year-end

Formula

[a / b] -1 x 100

Goal: To Increase the Percentage of Non-Financial Investments (E-4), S-4 must be greater than S-11.

To Maintain the Percentage of Non-Financial Investments (E-4), S-4 must be equal to S-11.

To Decrease the Percentage of Non-Financial Investments (E-4), S-4 must be less than S-11.

S-5. Growth in Savings Deposits

Purpose: To measure the year-to-date growth of Savings Deposits.

Accounts

a. Total Current Savings Deposits

b. Total Savings Deposits as of the Last year-end

Formula

[a / b] -1 x 100

Goal: To Increase the Percentage of Total Savings Deposits (E-5), S-5 must be greater than S-11.

To Maintain the Percentage of Total Savings Deposits (E-5), S-5 must be equal to S-11.

To Decrease the Percentage of Total Savings Deposits (E-5), S-5 must be less than S-11.

S-6. Growth in External Credit (Borrowed Funds)

Purpose: To measure the year-to-date growth of Borrowed Funds.

Accounts

a. Total Current Borrowed Funds

b. Total Borrowed Funds as of Last year-end

Formula

[a / b] -1 x 100

Goal: To Increase the Percentage of Total Borrowed Funds (E-6), S-6 must be greater than S-11.

To Maintain the Percentage of Total Borrowed Funds (E-6), S-6 must be equal to S-11.

To Decrease the Percentage of Total Borrowed Funds (E-6), S-6 must be less than S-11.

S-7. Growth in Share Capital

Purpose: To measure the year-to-date growth of Member shares.

Accounts

a. Total Current Member Shares

b. Total Member Shares as of Last year-end

Formula

[a / b] -1 x 100

Goal: To Increase the Percentage of Total Member Shares (E-7), S-7 must be greater than S-11.

To Maintain the Percentage of Total Member Shares (E-7), S-7 must be equal to S-11.

To Decrease the Percentage of Total Member Shares (E-7), S-7 must be less than S-11.

S-8. Growth in Institutional Capital

Purpose: To measure the year-to-date growth of Institutional Capital.

Accounts

a. Current Institutional Capital

b. Institutional Capital as of the Last year-end

Formula

[a / b] -1 x 100

Goal: To Increase the Percentage of Total Institutional Capital (E-8), S-8 must be greater than S-11.

To Maintain the Percentage of Total Institutional Capital (E-8), S-8 must be equal to S-11.

To Decrease the Percentage of Total Institutional Capital (E-8), S-8 must be less than S-11.

S-9. Growth in Net Institutional Capital

Purpose: To measure the year-to-date growth of Net Institutional Capital.

Accounts

a. Current Net Institutional Capital (the definition of NIC as in E9)

b. Net Institutional Capital as of the Last year-end

Formula

[a / b] -1 x 100

Goal: To Increase the Percentage of Net Institutional Capital (E-9), S-9 must be greater than S-11.

To Maintain the Percentage of Net Institutional Capital (E-9), S-9 must be equal to S-11.

To Decrease the Percentage of Net Institutional Capital (E-9), S-9 must be less than S-11.

S-10. Growth in Membership:

Purpose: To measure the year-to-date growth in Membership of the Credit Union.

Accounts

a. Current Number of Members (non-bookkeeping control)

b. Number of Members as of Last year-end (non-bookkeeping control)

Formula

[a / b] -1 x 100

Goal: Greater than **12%**

S-11. Growth in Total Assets

Purpose: To measure the year-to-date growth of Total Assets.

Accounts

a. Total current assets

b. Total assets as of the Last year-end

Formula

[a / b] -1 x 100

Goal: Greater than the inflation rate

4.7 Conclusion

PEARLS is a financial performance monitoring system designed to offer management guidance for credit unions and other savings institutions. PEARLS is also a supervisory tool for regulators. PEARLS can be used to compare and rank institutions; it can provide comparisons among peer institutions in one country or across countries. PEARLS is a set of financial ratios or indicators that help to standardize terminology between institutions. In total, there are 44 quantitative financial indicators that facilitate an integral analysis of the financial condition of any financial institution. The purpose for including a myriad of indicators is to illustrate how change in one ratio has ramifications for numerous other indicators.

Each indicator has a prudential norm or associated goal. The target goal, or standard of excellence for each indicator is put forth by the World Council of Credit Unions, Inc. (WOCCU) based on its field experience working to strengthen and modernize credit unions and promote savings-based growth. Depositors can have confidence that savings institutions that meet the standards of excellence are safe and sound.

PEARLS, primarily a management tool for institutions, can also be used as a supervisory tool by regulators. As a management tool, PEARLS signals problems to managers before the problems become detrimental. For boards of directors, PEARLS provides a tool to monitor management's progress toward financial goals. For regulators, PEARLS offers indicators and standards to supervise the performance of savings
institutions.

References

1. WOCCU is a US-based NGO that was incorporated in 1970 to promote, support, represent, and serve credit unions worldwide.
2. Almeyda, Gloria and Brian Branch, "Microfinance in Guatemala: The Case of Credit Unions", Report prepared for The World Bank Sustainable Banking with the Poor Program, Washington, DC: The World Bank, August 1997.
3. There are many different CAMEL systems in circulation around the world with varying key formulas and ratios. (CAMEL stands for Capital Adequacy, Asset Quality, Management, Earnings, and Liquidity.) The CAMEL system used by WOCCU in 1988 came from the National Credit Union Administration in Washington, D.C.
4. "Analysis of Microfinance Development in Russia," SME Resource Center, Moscow, 2003.
5. The Microfinance Revolution: Sustainable Finance for the Poor (Volume 1), World Bank and Open Society Institute, 2003.
6. David C. Richardson, "PEARLS - Financial Stabilization Monitoring and Evaluation", World Council of Credit Unions Research Monograph Series, No. 4, August 1997 edition (processed).
7. World Bank Development Report 2000–2001.
8. In 2002, BancoSol was the largest bank in Bolivia in terms of number of clients, with 35 percent of all borrowers. In 2003, it had a loan portfolio of approximately $91 million. (Source: Gail Buyske.)
9. David C. Richard (2008), "Teaching Old Dogs new Tricks: The Commercialization of Credit Unions", WOCCU.
10. Richardson (2002), PEARLS: Monitoring System, WOCCU, USA
11. Reka SundaramStukel (2006), Evaluating The Role Of Peruvian Credit Unions: A Case Study Of 8 Credit Unions.
12. Ford C. and Evans A (2005), "Assessing the Impact of HIV/AIDS: A Survey of Rwandan Credit Unions" USAID report and WOCCU Research Monograph No. 22.
13. USAID, (2005). "Development and Testing Povery Assessment Tools: Results from Accuracy Tests in Perú.

14. Barham, Bradford, L., Stephen R. Boucher, and Michael R. Carter (1996). "Credit Constraints, Credit Unions, and Small Scale Producers in Guatemala," in World Development 24:5, pp. 793-806.
15. David C. Richardson (October 2002), The World Council of Credit Unions : Monogram 4.
16. Mushinski, D. W. (1999). "An Analysis of Offer Functions of Banks and Credit Unions in Guatemala," in Journal of Development Studies 36:2, pp. 88-112.
17. Young, L., N.P. Sherman, and T.H. Rose, 1981, Co -operatives and Development Agricultural Politics in Ghana and Uganda. (Madison: University of Wisconsin Press).
18. Holmen, H., 1990, "State Co-operative and Development in Africa." Research Report No. 86, The Scandinavian Institute of African Studies, Uppsala. Jordan, J., 1980, "Co-operative Movement System and Futures." Working Paper No. 2.
19. David C. Richardson (October 2002), The World Council of Credit Unions : Monogram 4.
20. Boucher, S., B.L. Barham, and M.R. Carter (2002). “Marketfriendly Reforms and the Operation of Credit and Land Markets in Central America,” under review, World Development.
21. Asante, Y., and M. Danso-Manu, 1994, "Impact of Credit Unions on Individuals and Households in Ghana." A report prepared for African Confederation of Cooperative Savings and Credit Association.
22. Petrie Ragan, (2002). “Rwandan Credit Unions Member and NonMember Survey 2002. WOCCU Research Monograph No. 20.
23. Holmen, H., 1990, "State Co-operative and Development in Africa." Research Report No. 86, The Scandinavian Institute of African Studies, Uppsala. Jordan, J., 1980, "Co-operative Movement System and Futures." Working Paper No. 2.
24. Brownbridge, M. & Kirkpatrick, C. 2000. Financial Regulation in Developing Countries. Finance and Development Research Working Paper Series No. 12. University of Manchester, Manchester.
25. David C. Richardson (October 2002), The World Council of Credit Unions : Monogram 4.

26. Christen, R.P., Rhyne, E. & Vogel, R. 1994. Successful Financial Institutions. Mimeo. USAID, Washington DC.
27. Saltzmann, S.B., Rock, R. & Salinger, D. 1998. Performance and Standards in Microfinance: ACCION's Experience with the PEARLS Instrument. Discussion Paper No. 7. ACCION, Somerville.
28. Credit Unions Retooled: A Road Map for Financial Stabilization, March 1993
29. The Role and Impact of Credit Unions: Helping to Meet the Needs of Small Scale Producers, November 1994
30. Sacay, Orlando and Bikki Randhawa, Design Issues in Rural Finance. World Bank Discussion Paper No. 293, Washington, DC: The World Bank, 1995.
31. Flaming, Mark, Technical Guide for the Analysis of Microenterprise Finance Institutions, Microenterprise Division, Washington, DC: Inter-American Development Bank, 1994.
32. Balkenhol, Bernd and Haje Schutte, Collateral, Collateral Law and Collateral Substitutes. ILO Poverty-oriented Banking Programme, Geneva: International Labour Office, 1996.
33. David C. Richardson (October 2002), The World Council of Credit Unions : Monogram 4.
34. Smith, D.J., T.F. Cargill, and R.A. Meyer (1981), "Credit Unions: An Economic Theory of a Credit Union," The Journal of Finance, No. 36, pp. 519-528.
35. Paxton, Julia Anne (1997), "Determinants of Successful Group Loan Repayment: An Application to Burkina Faso," Ph.D. dissertation, Columbus, Ohio: The Ohio State University.
36. David C. Richardson (October 2002), The World Council of Credit Unions : Monogram 4.
37. Barltrop, Chris J. and Diana McNaughton (1992), "Interpreting Financial Statements," in Banking Institutions in Developing Countries, Volume 2. Washington, D.C.: The World Bank.
38. Ferguson C. & McKillop D. (1997). The strategic development of credit unions. Chichester: John Wiley & Sons.
39. Prudential Standards in Credit Unions (2003) Wisconsin: World Council of Credit Unions.

40. Coetzee, Gerhard and Steven Goldblatt. 1998. Regulation and Supervision of Microfinance Institutions: Experiences from South Africa. Paper presented on the CGAPConference "Savings in the Context of Microfinance". Kampala, Uganda, 10.-13. Februar 1998.
41. Krahnen, Jan Pieter and Reinhard H. Schmidt. 1994. Development Finance as Institution Building: A New Approach to Poverty-Oriented Banking. Boulder and Oxford: Westview Press.
42. Luang, Eduardo C. and Malena Vasquez. 1997. "Philippines". In Churchill, editor, pp. 35-42.
43. David C. Richardson (October 2002), The World Council of Credit Unions: Monogram 4.

5.1 Introduction

PEARLS is a financial performance monitoring system designed to offer management guidance for credit unions and other savings institutions. PEARLS is also a supervisory tool for regulators. PEARLS can be used to compare and rank institutions; it can provide comparisons among peer institutions in one country or across countries. PEARLS is a set of financial ratios or indicators that help to standardize terminology between institutions. The purpose for including a myriad of indicators is to illustrate how change in one ratio has ramifications for numerous other indicators. Each indicator has a prudential norm or associated goal. The target goal, or standard of excellence for each indicator is put forth by the World Council of Credit Unions, Inc. (WOCCU) based on its field experience working to strengthen and modernize credit unions and promote savings-based growth. As a management tool, PEARLS signals problems to managers before the problems become detrimental. For boards of directors, PEARLS provides a tool to monitor management's progress toward financial goals. For regulators, PEARLS offers indicators and standards to supervise the performance of institutions.

5.2 Protection

Adequate protection of assets is a basic tenet of the new credit union model. Protection is measured by (1) comparing the adequacy of the allowances for loan losses against the amount of delinquent loans and (2) comparing the allowances for investment losses with the total amount of non-regulated investments. The World Council of Credit Unions, Inc. promotes the principle that the allowance for loan losses is the first line of defense against non-performing loans. The PEARLS system evaluates the adequacy of protection afforded to the credit union by comparing the allowance for loan losses to loan delinquency.

P-1. Allowance for Loan Losses to Allowances Required for Loans Delinquent greater than 12 Months Ratio

This ratio includes Allowance for Loan Losses which is not there in current study. Current study is related with Information Technology Industry of India and Loan

Losses are not available in the selected companies' balance sheet. Hence, the calculation and analysis of this ratio is not possible in current study.

P-2. Net Allowance for Loan Losses / Delinquency of 1-12 months

This ratio is also not possible to calculate because Net Allowance for Loan Losses are not available in Information Technology Companies. Here, not only Loan Losses but also delinquency is not available. This ratio is purely related with Micro Finance Institutions which allow loans to their members.

P-3. Total Write-off of Delinquent Loans greater than 12 months

This ratio is also not possible to calculate because Total wirte-off of Delinquent Loans are not available in Information Technology Companies.

P-4. Annual Loan Write-offs to Average Loan Portfolio

This ratio includes Annual loan write offs which is not there in current study. Current study is related with Information Technology Industry of India and write offs of Loan is not available in the selected companies' balance sheet as their business does not include sanctioning of loans. Hence, the calculation and analysis of this ratio is not possible in current study.

P-5. Accumulated Loan Recoveries/Accumulated Loan Write-offs

This ratio is also not possible to calculate because Loan recoveries are not available in Information Technology Companies. Here, not only Loan recoveries but also write-off of loan is not available. This ratio is purely related with Micro Finance Institutions which allow loans to their members and there Loan recoveries and loan write-off may be possible.

P-6. Solvency (Net Value of Assets/Total Shares and Deposits)

Purpose: Measure the degree of protection that the credit union has for member savings and shares in the event of liquidation of the credit union's assets and liabilities. This ratio is very important to measure Solvency of the institution.

Formula:

$$\frac{\textbf{Net Value of Assets}}{\textbf{Total Share Holder's Fund}} \textbf{ X 100}$$

The component of above formula will be explained as under.

Here, Net Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in numerator.

Here, Total share Holder's fund includes Total Equity Capital and Reserves and Surplus of the selected company during the study period.

This ratio is very important parameter for the Solvency of the company as this ratio shows the relationship between Total Assets and Share Holder's fund of the institutions. Here, WOCCU has announced that the ratio must be 110% or higher than that. The institutions which do not have the said ratio, should try to achieve the target as soon as possible. There is no upper limit for this ratio. So, the higher the ratio better will be the solvency of the company. The analysis of this ratio is shown in the following table.

Table No. 5.1

Analysis of Solvency (P – 6)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	95.427	69.885	219.693	86.956	237.031	67.398	139.492	102.295	**127.272**
2002	96.360	76.053	181.654	100.157	295.875	59.602	141.569	101.074	**131.543**
2003	100.128	80.266	132.481	100.252	357.625	114.863	139.828	102.096	**140.942**
2004	100.255	60.942	118.682	104.287	1396.137	79.823	147.288	102.865	**263.785**
2005	128.828	59.467	120.246	103.379	1612.923	75.695	136.413	101.294	**292.281**
2006	166.335	94.146	150.367	100.520	1815.000	89.454	102.475	100.955	**327.407**
2007	143.786	129.563	129.386	101.903	1681.024	88.657	156.295	102.592	**316.651**
2008	183.444	145.681	135.730	100.788	1840.382	84.462	156.722	88.236	**341.931**
2009	218.668	166.988	120.034	114.728	2051.728	65.320	162.236	140.080	**379.973**
2010	237.065	362.006	126.528	128.311	2086.973	48.001	165.070	131.271	**410.653**
Average	**147.030**	**124.500**	**143.480**	**104.128**	**1337.470**	**77.328**	**144.739**	**107.276**	
Overall Avg.	**273.244**								
S. D.	**52.596**	**91.388**	**32.804**	**10.814**	**745.818**	**18.742**	**18.013**	**15.711**	
C.V.	**35.772**	**73.404**	**22.863**	**10.386**	**55.763**	**24.237**	**12.446**	**14.646**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.1 shows the company wise Solvency during study period. It reveals from the above table that the solvency ratio of CMC InfoTech Ltd., registered a continuous increasing trend during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal solvency ratio for the institution would be minimum 110 percent. It reveals from the above table that CMC InfoTech Ltd. did not achieve the target in first four years during the period under review i.e. financial year 2000-01 to 2003-04. After the financial year 2003-04 the company achieved the goal which has been laid down by WOCCU. However, the Solvency ratio of the CMC InfoTech Ltd. showed an increasing trend except the financial year 2006-07 during the study period. The ratio ranges from 95.426 percent to 237.064 percent. It also reveals from the above table that the growth of solvency ratio was slow in first four years and it increased rapidly in last six year during the study period. The solvency ratio achieved its standard in the financial year 2004-05. The CMC InfoTech Ltd. has got 147.030 percentages as the average for ten years which is higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that CMC's solvency ratio was lower than industry average so company need to focus on its solvency. The company's average for ten years was 147.030 percent and industry average during the same period was 273.244 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 35.772 percent which shows that the company has got moderate variability in the said ratio. Finally, it can be concluded that the solvency of CMC InfoTech Ltd, was satisfactory during the study period.

GTL LIMITED

Table 5.1 reveals Solvency of the GTL Ltd. during study period. It can be seen from the above table that the solvency ratio of GTL Ltd., registered a continuous increasing trend except financial year 2003-04 and 2004-05 during study period. According to WOCCU, the ideal solvency ratio for the institution would be minimum 110 percent. It reveals from the above table that GTL Ltd. did not achieve the goal in first six years during the period under review i.e. financial year 2000-01 to 2005-06. After the financial year 2005-06 the company achieved the goal which has been laid down by

WOCCU. However, the Solvency ratio of the GTL Ltd. showed positive trend. The ratio ranges from 69.885 percent in financial year 2000-01 to 362.006 percent in financial year 2009-10. It also reveals from the above table that the growth of solvency ratio was slow in first Six years and it increased rapidly in last four years during the study period. The solvency ratio achieved its standard in the financial year 2006-07 which was very late comparing to other companies. The GTL Ltd. has got 124.50 percentages as the average for ten years which is higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that GTL's solvency ratio is lower than industry average so company need to focus on its solvency part. The company's average for ten years was 124.50 percent and industry average during the same period was 273.244 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 73.404 percent which shows that the company has got higher variability in the said ratio. The variability also exists because of increment in ratio during last four years. Finally, it can be concluded that the solvency of GTL Ltd, was satisfactory during the study period.

HCL INFOSYSTEMS LIMITED

Table 5.1 shows the company wise Solvency analysis during study period. It reveals from the above table that the solvency ratio of HCL Info Systems Ltd., registered a fluctuating trend during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal solvency ratio for the institution would be minimum 110 percent. It reveals from the above table that HCL Info Systems Ltd. has achieved the standard ratio in every year during the period under review. However, the Solvency ratio of the HCL Info Systems Ltd. showed fluctuating trend during the study period. The ratio ranges from 126.528 percent in financial year 2009-10 to 219.693 percent in financial year 2000-01. It also reveals from the above table that the growth of solvency ratio was always high during the study period. The HCL Info Systems Ltd. has got 143.480 percentages as the average for ten years which is higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that HCL's solvency ratio is much lower than industry average so company need to increase its solvency. The

company's average for ten years was 143.480 percent and industry average during the same period was 273.244 percent. Coefficient of variance shows the variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 22.863 percent which shows that the company has got low variability in the said ratio which is positive sign for company's solvency. Finally, it can be concluded that the solvency of HCL Info Systems Ltd, has more than satisfactory during the study period as the ratio is higher in every year than the standard ratio during the study period. The company needs to focus on the consistency part of the said ratio as it is not stable during last ten years.

HCL TECHNOLOGIES

Table 5.1 shows the company wise Solvency during study period. It reveals from the above table that the solvency ratio of HCL Technologies registered a continuous increasing trend except financial year 2005-06 and financial year 2007-08 during study period. According to WOCCU, the ideal solvency ratio for the institution would be minimum 110 percent. It reveals from the above table that HCL Technologies did not achieve the target in first eight years during the period under review i.e. financial year 2000-01 to 2007-08. After the financial year 2007-08 the company achieved the goal which has been laid down by WOCCU which is negative sing for company's growth in solvency. The ratio ranges from 86.956 percent in financial year 2000-01 to 128.311 percent in financial year 2009-10. It also reveals from the above table that the growth of solvency ratio was very slow in first eight years and it increased gradually in last two years during the study period. The solvency ratio achieved its standard in the financial year 2007-08. The HCL Technologies has got 104.128 percentages as the average for ten years which was lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that HCL Technologies's solvency ratio was lower than industry average and standard ratio laid down by WOCCU so company need to focus on its solvency. The company's average for ten years was 104.128 percent and industry average during the same period was 273.244 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 10.386 percent which shows that the company has got lowest variability in the said ratio. Finally, it can be

concluded that the solvency of HCL Technologies is not satisfactory during the period under study.

INFOSYS

Table 5.1 reveals Solvency of the Infosys during study period. It can be seen from the above table that the solvency ratio of Infosys registered a continuous increasing trend except financial year 2006-07 during study period. According to WOCCU, the ideal solvency ratio for the institution would be minimum 110 percent. It reveals from the above table that Infosys has achieved the goal of standard ratio from the first year onwards during the period under review. It also reveals from the table that Infosys has got the highest solvency during the study period as its ratio is much higher than standard ratio. The ratio ranges from 237.031 percent in financial year 2000-01 to 2086.973 percent in financial year 2009-10. It also reveals from the above table that the growth of solvency ratio was very high during the study period. The solvency ratio achieved its standard in the first financial year 2000-01. The Infosys has got 1337.470 percentages as the average for ten years which is much higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that Infosys's solvency ratio was also much higher than industry average. The company's average for ten years was 1337.470 percent and industry average during the same period was 273.244 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 55.760 percent which shows that the company has got higher variability in the said ratio during the study period. The variability also exists because of continuous increment in ratio during period under review. Finally, it can be concluded that the solvency of Infosys was highly satisfactory during the study period.

POLARIS SOFTWARE LAB LIMITED

Table 5.1 reveals Solvency of the Polaris Software Lab Ltd. during study period. It can be seen from the above table that the solvency ratio of Polaris Software Lab Ltd., registered a continuous decreasing trend except financial year 2002-03 and 2005-06 during study period which is negative sign for company's solvency. According to

WOCCU, the ideal solvency ratio for the institution would be minimum 110 percent. It reveals from the above table that Polaris Software Lab Ltd. did not achieve the goal in nine years during the period under review. It had achieved the goal in only one financial year 2002-03. The ratio ranges from 48.001 percent in financial year 2009-10 to 114.863 percent in financial year 2002-03. It also reveals from the above table that the growth of solvency ratio was very slow and negative in last Seven years and it never highly increased during the study period in last seven years. The Polaris Software Lab Ltd. has got 77.328 percentages as the average for ten years which is much lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that Company's solvency ratio was much lower than industry average so company need to focus on its solvency part. The company's average for ten years was 77.328 percent and industry average during the same period was 273.244 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 24.234 percent which shows that the company has got lower variability in the said ratio. The lower variability also exists because of no much increment in ratio during study period. Finally, it can be concluded that the solvency of Polaris Software Lab Ltd, is highly dissatisfactory during the study period.

ROLTA INDIA LIMITED

Table 5.1 shows the company wise Solvency analysis during study period. It reveals from the above table that the solvency ratio of Rolta India Ltd., registered a fluctuating trend in first five years during study period and increasing trend during the second half i.e. last five years during the study period starting from 2000-01 to 2009-10. According to WOCCU, the ideal solvency ratio for the institution would be minimum 110 percent. It reveals from the above table that Rolta India Ltd. has achieved the standard ratio in every year except financial year 2005-06 during the period under review. The ratio ranges from 102.475 percent in financial year 2005-06 to 165.070 percent in financial year 2010-11. It also reveals from the above table that the growth of solvency ratio was always high except one financial year during the study period. The Rolta India Ltd. has got 144.739 percentages as the average for ten years which is higher than the minimum standard laid down by WOCCU. Comparing

company's average with overall average of the industry, it can be concluded that Rolta India's solvency ratio was much lower than industry average so company need to increase its solvency. The company's average for ten years was 144.739 percent and industry average during the same period was 273.244 percent. Coefficient of variance shows the variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV is 12.446 percent which shows that the company has got low variability in the said ratio which was positive sign for company's solvency. Finally, it can be concluded that the solvency of Rolta India Ltd, has more than satisfactory during the study period as the ratio is much higher in every year than the standard ratio during the study period. The company needs to focus on overall solvency part as company has got low average than industry standard.

WIPRO

Table 5.1 shows the company wise Solvency during study period. It reveals from the above table that the solvency ratio of Wipro registered a fluctuating trend during the study period. According to WOCCU, the ideal solvency ratio for the institution would be minimum 110 percent. It reveals from the above table that wipro did not achieve the target in first eight years during the period under review i.e. financial year 2000-01 to 2007-08. After the financial year 2007-08 the company achieved the goal which has been laid down by WOCCU which is negative sing for company's growth in solvency. The ratio ranges from 88.236 percent in financial year 2007-08 to 140.080 percent in financial year 2008-09. It also reveals from the above table that the growth of solvency ratio was very slow in first eight years and it increased gradually in last two years during the study period. The solvency ratio achieved its standard in the financial year 2008-09. The Wipro has got 107.273 percentages as the average for ten years which was lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that Wipro's solvency ratio was much lower than industry average and standard ratio laid down by WOCCU so company need to focus on its solvency. The company's average for ten years was 107.273 percent and industry average during the same period was 273.244 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the

consistency. Here, company's CV was 14.646 percent which shows that the company has got lowest variability in the said ratio. The low CV may be because of low increase in ratio. Finally, it can be concluded that the solvency of Wipro was not satisfactory during the period under study.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.1 shows the company wise Solvency during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it is being observed that none of the company expect Infosys has got the highest average than the industry average. The industry average during study period was 273.244 percent where as CMC Info Tech Ltd., registered 147.030 percent, GTL Ltd., recorded 124.50 percent, HCL Info systems Ltd., got 143.480 percent, HCL Technologies registered 104.128 percent, Infosys recorded the highest and it was 1337.470 percent, Polaris Software Lab Ltd., achieved 77.328 percent, Rolta India Ltd., registered 144.739 percent and Wipro registered with 107.276 percent. It clearly reveals that HCL Technologies, Polaris Software Lab Ltd. and Wipro were having low Solvency ratio not only industry standard but also standard goal lay down by WOCCU. Comparing CV of all the selected companies, it reveled that HCL Technologies has got the lowest during period under study. If we rank the selected companies on the basis of their average than Infosys comes out as out performer Information Technology Company in Solvency ratio. The second and third rank secured by CMC Info Tech Ltd., and Rolta India Ltd respectively. The forth rank onwards to seventh rank secured by HCL Info Systems Ltd., GTL Ltd., Wipro and HCL Technologies respectively. Polaris Software Lab Ltd., was the least rank company in solvency ratio of selected companies during study period.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Solvency ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Solvency ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Solvency ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Solvency ratio differs significantly within Selected Information Technology Companies.

Table 5.2

Two – Way ANOVA of Solvency Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	793203.12	9	88133.68	1.282	2.032
Within Companies	12985126.74	7	1855018.11	26.977	2.159
Error	4332103.055	63	68763.54		
Total	18110432.92	79			

In Table 5.2, the value of the calculated F ratio for the years is 1.282, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 26.977, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[1.282]** $< F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in the Solvency ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[26.977]** $> F_{\alpha = 0.05 \text{ and d.f.} = (7, 63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Solvency ratio within selected Indian Information Technologies Companies during period under review.

5.3 Effective Financial Structure

The financial structure of the institution is the single most important factor in determining growth potential, earnings capacity, and overall financial strength. The PEARLS system measures assets, liabilities and capital, and recommends an "ideal" structure for credit unions.

E-1. Total Loans to Total Assets Ratio:

Purpose: To measure the percentage of total assets invested in the loan portfolio.

Formula: $$\frac{\textbf{Net Loans Taken}}{\textbf{Total Assets}} \textbf{ X 100}$$

The component of above formula will be explained as under.

Here, Total Loans taken contains Secured and Unsecured loans of the selected companies during study period.

Here, Net Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

This ratio plays vital role in deciding Effective Financial Structure of an organization. Here, WOCCU has announced that the ratio must be between 70-80% or lower than that. The institutions which do not have the said ratio, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Effectiveness of Financial structure of the company. The analysis of this ratio is shown in the following table.

Table No. 5.3

Analysis of Total Loans to Total Assets Ratio (E – 1)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	30.830	66.823	35.294	3.535	49.316	31.426	16.472	35.843	33.692
2002	33.072	64.376	44.150	3.037	51.635	25.832	17.579	63.178	37.857
2003	32.163	79.736	53.641	3.931	53.023	40.873	18.076	49.279	41.340
2004	34.904	151.215	37.510	6.551	52.444	69.108	17.096	33.535	50.295
2005	37.837	218.412	29.164	6.589	34.891	69.398	17.429	22.596	54.540
2006	41.181	270.526	22.783	4.249	32.594	57.218	8.823	25.722	57.887
2007	59.504	359.228	8.597	1.782	21.627	56.177	7.136	28.443	67.812
2008	53.550	511.716	5.101	2.044	28.666	72.614	8.904	44.406	90.875
2009	48.921	558.018	4.263	1.917	32.955	94.514	8.007	41.653	98.781
2010	47.156	335.896	3.029	3.017	31.669	105.270	9.552	42.307	72.237
Average	**41.912**	**261.595**	**24.353**	**3.665**	**38.882**	**62.243**	**12.907**	**38.696**	
Overall Avg.	**60.532**								
S. D.	**9.910**	**179.354**	**18.395**	**1.743**	**11.548**	**25.588**	**4.720**	**12.171**	
C.V.	**23.644**	**68.562**	**75.533**	**47.564**	**29.699**	**41.110**	**36.569**	**31.452**	

Source: Calculated from the Annual Reports of Selected companies during study under review.

CMC INFOTECH LIMITED

Table 5.3 shows the ratio of Total Loan to Total Assets for the CMC InfoTech Limited during the period under review. The ratio showed a fluctuating trend for last ten years. It ranges between 30.830 in financial year 2000-01 to 59.504 in the financial year 2006-07. This ratio shows the total loans to total assets ratio of the company. This ratio explains the company's ability to pay its loans on time. If the ratio is more than 100 percent than it means that the company is having higher loans than its total value of assets. This situation creates problem for the company's Financial Structure. Here, WOCCU announced the standard ratio for the institutions is 70-80% or lower than this level. It reveals from the company's analysis that CMC Info Tech Ltd. never had higher ratio than the standard lay down by WOCCU. Comparing company's average with overall industry average, it can be concluded that the company was having low ratio which has got positive impact on its Financial Structure. Company's average was 41.912 percent and Industry average was 60.532 percent during the period under study. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 23.644 percent which shows that the company has got lowest variability in the said ratio. The low CV may be because of low increase in ratio. Finally, it can be concluded that the Net Loans to Total Assets of CMC Info Tech Ltd. was under control during the period under study. It also can be concluded that the Financial Structure of CMC Info Tech Ltd. was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

GTL LIMITED

Table 5.3 reveals Total Loans to Total Assets ratio of the GTL Ltd. during study period. It can be seen from the above table that the ratio of GTL Ltd., registered a continuous increasing trend except financial year 2001-02 and 2009-10 during study period. According to WOCCU, the ideal solvency ratio for the institution would be maximum 80 percent. It reveals from the above table that GTL Ltd. did not achieve the goal in last seven years during the period under review i.e. financial year 2003-04 to 2009-10. The ratio ranges from 64.376 percent in financial year 2001-02 to 558.018 percent in financial year 2008-09. The Total Loans to Total Assets ratio achieved its standard in first three financial years which was not positive sign for the company. It

has been observed that the ratio showed an increasing trend which was also not good for the company's Effective Financial Structure as the loan amount is always greater than the amount of total assets of the company during the study period. The GTL Ltd. has got 261.595 percentages as the average for ten years which was much higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that GTL's total loans to total assets ratio was much higher than industry average so company need to focus on its financial structure as higher ratio impact negatively to the financial structure of the company. The company's average for ten years was 261.595 percent and industry average during the same period was 60.532 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV is 68.560 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded that the total loans to total assets ratio of GTL Ltd, was not satisfactory during the study period.

HCL INFOSYSTEMS LIMITED

Table 5.3 shows the ratio of Total Loan to Total Assets for the HCL Info system Limited during the period under review. The ratio showed continuous decreasing trend during study period except financial year 2001-02 and 2002-03. This was positive sing for the company's effective financial structure. It ranges between 3.029 in financial year 2009-10 to 53.641 in the financial year 2002-03. This ratio explains the company's ability to pay its loans on time. If the ratio is more than 100 percent than it means that the company is having higher loans than its total value of assets. Here, the ratio never goes beyond its standard level. Here, WOCCU announced the standard ratio for the institutions is 70-80% or lower than this level. It reveals from the company's analysis that HCL Info system Ltd. never had higher ratio than the standard lay down by WOCCU. Comparing company's average with overall industry average, it can be concluded that the company was having low ratio which has got positive impact on its Financial Structure. Company's average was 24.353 percent and Industry average was 60.532 percent during the period under study. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 75.533 percent which shows

that the company has got less variability in the said ratio. The high CV may be because of continuous decrease in ratio. Finally, it can be concluded that the Total Loans to Total Assets of HCL Info system Ltd. was under control during the period under study. It also can be concluded that the Financial Structure of HCL Info system Ltd. was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

HCL TECHNOLOGIES

Table 5.3 shows the company wise Total Loans to Total Assets ratio during study period. It reveals from the above table that ratio of HCL Technologies registered fluctuating trend during study period. According to WOCCU, the ideal Total Loans to Total Assets ratio for the institution would be maximum 80 percent. It reveals from the above table that HCL Technologies achieved the target during the period under review. This was a positive sign for company's effective financial structure. The ratio ranges from 1.782 percent in financial year 2006-07 to 6.589 percent in financial year 2004-05. It also reveals from the above table that the growth of Total Loans to Total Assets ratio was very high during the study period. The Total Loans to Total Assets ratio achieved its standard in all financial years during the period under review. The HCL Technologies has got 3.665 percentages as the average for ten years which was the lowest among all the selected companies and the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that HCL Technologies's Total Loans to Total Assets ratio was lower than industry average and standard ratio laid down by WOCCU so company was very safe in case of effectiveness regarding its financial structure. The company's average for ten years was 3.665 percent and industry average during the same period was 60.532 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 47.564 percent which shows that the company has got moderate variability in the said ratio. Finally, it can be concluded that the Total Loans to Total Assets ratio of HCL Technologies was highly satisfactory during the period under study.

INFOSYS

Table 5.3 shows the ratio of Total Loan to Total Assets for the Infosys during the period under review. The ratio showed a fluctuating trend for last ten years. It ranges between 21.627 in financial year 2006-07 to 53.023 in the financial year 2002-03. This ratio shows the total loans to total assets ratio of the company. This ratio explains the company's ability to pay its loans on time. If the ratio is more than 100 percent than it means that the company is having higher loans than its total value of assets. This situation creates problem for the company's Financial Structure. Here, WOCCU announced the standard ratio for the institutions was 70-80% or lower than this level. It reveals from the company's analysis that Infosys never had higher ratio than the standard lay down by WOCCU. Comparing company's average with overall industry average, it can be concluded that the company was having low ratio which has got positive impact on its Financial Structure. Company's average was 38.882 percent and Industry average was 60.532 percent during the period under study. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 29.699 percent which shows that the company has got the second lowest variability in the said ratio among selected companies. The low CV may be because of low increase in ratio. Finally, it can be concluded that the Total Loans to Total Assets ratio of Infosys was under control during the period under study. It also can be concluded that the Financial Structure of Infosys was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

POLARIS SOFTWARE LAB LIMITED

Table 5.3 reveals Total Loans to Total Assets ratio of the Polaris Software Lab Ltd. during study period. It can be seen from the above table that the ratio of Polaris Software Lab Ltd., registered a continuous increasing trend except financial years, 2001-02, 2005-06 and 2006-07 during study period. According to WOCCU, the ideal solvency ratio for the institution would be maximum 80 percent. It reveals from the above table that Polaris Software Lab Ltd. did not achieve the goal in last two financial years during the period under review i.e. financial year 2008-09 and 2009-10. The ratio ranges from 25.832 percent in financial year 2001-02 to 105.270 percent in financial year 2009-10. It has been observed that the ratio showed an increasing

trend which was also not good for the company's Effective Financial Structure as the loan amount was greater than the amount of total assets of the company during the study period. The Polaris Software Lab Ltd. has got 62.243 percentages as the average for ten years which was much higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's total loans to total assets ratio was higher than industry average. However, company's average was under the standard given by WOCCU. The company's average for ten years was 62.243 percent and industry average during the same period was 60.532 percent. Coefficient of variance shows the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV is 25.588 percent which shows that the company has got moderate variability in the said ratio. Finally, it can be concluded that the total loans to total assets ratio of Polaris Software Lab Ltd. was not satisfactory in last two financial years during the study period.

ROLTA INDIA LIMITED

Table 5.3 shows the company wise Total Loans to Total Assets ratio during study period. It reveals from the above table that ratio of Rolta India Ltd. registered fluctuating trend during study period. According to WOCCU, the ideal Total Loans to Total Assets ratio for the institution would be maximum 80 percent. It reveals from the above table that HCL Technologies achieved the target during the period under review. This was a positive sign for company's effective financial structure. The ratio ranges from 7.136 percent in financial year 2006-07 to 18.076 percent in financial year 2002-03. It also reveals from the above table that the growth of Total Loans to Total Assets ratio was very high during the study period. The Total Loans to Total Assets ratio achieved its standard in all financial years during the period under review. The Rolta India Ltd. has got 12.907 percentages as the average for ten years which was the second lowest among all the selected companies and the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's Total Loans to Total Assets ratio was lower than industry average and standard ratio laid down by WOCCU so company was very safe in case of effectiveness regarding its financial structure. The company's average for ten years was 12.907 percent and industry average during the same period

was 60.532 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 36.569 percent which shows that the company has got moderate variability in the said ratio. Finally, it can be concluded that the Total Loans to Total Assets ratio of Rolta India Ltd. was highly satisfactory during the period under study.

WIPRO

Table 5.3 shows the ratio of Total Loan to Total Assets for the Wipro during the period under review. The ratio showed fluctuating trend for last ten years. It ranges between 22.596 in financial year 2004-05 to 63.178 in the financial year 2001-02. This ratio shows the total loans to total assets ratio of the company. This ratio explains the company's ability to pay its loans on time. If the ratio is more than 100 percent than it means that the company is having higher loans than its total value of assets. This situation creates problem for the company's Financial Structure. Here, WOCCU announced the standard ratio for the institutions was 70-80% or lower than this level. It reveals from the company's analysis that Wipro never had higher ratio than the standard lay down by WOCCU. Comparing company's average with overall industry average, it can be concluded that the company was having low ratio which has got positive impact on its Financial Structure. Company's average was 38.696 percent and Industry average was 60.532 percent during the period under study. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 31.452 percent which shows that the company has got moderate variability in the said ratio among selected companies. The low CV may be because of low increase in ratio. Finally, it can be concluded that the Total Loans to Total Assets ratio of Wipro was under control during the period under study. It also can be concluded that the Financial Structure of Wipro was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.3 shows the company wise Total Loans to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it is being observed that none of the company expect GTL Ltd. and Polaris Software Lab Ltd. has got the highest average than the industry average. The industry average during study period was 60.532 percent where as CMC Info Tech Ltd., registered 41.912 percent, GTL Ltd. recorded the highest ratio and it was 261.595 percent, HCL Info systems Ltd., got 24.353 percent, HCL Technologies registered the lowest ratio and it was 3.665 percent, Infosys recorded 38.882 percent, Polaris Software Lab Ltd. achieved 62.243 percent, Rolta India Ltd. registered 12.907 percent and Wipro registered with 38.696 percent. It clearly reveals that GTL Ltd. was having the highest Solvency ratio from not only industry standard but also standard goal lay down by WOCCU. This was not positive sign for the company's effective financial structure. Comparing CV of all the selected companies, it reveals that CMC Ltd has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than HCL Technologies comes out as out performer Information Technology Company in Total Loans to Total Assets ratio. The second and third rank secured by Rolta India Ltd and HCL Info systems Ltd. respectively. The forth rank onwards to seventh rank secured by Wipro, Infosys, CMC Ltd. and Polaris Software Lab Ltd. respectively. GTL Ltd. was the least rank company in Total Loans to Total Assets ratio of selected companies during study period.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Total Loans to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Total Loans to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Total Loans to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Total Loans to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Table 5.4

Two – Way ANOVA of Total Loans to Total Assets Ratio

Source of Variation	***SS***	***df***	***MS***	***F***	***F crit***
Within Years	34593.63	9	3843.736	0.905	2.032
Within Companies	485321.9	7	69331.7	16.328	2.159
Error	267501.6	63	4246.057		
Total	787417.1	79			

In Table 5.4, the value of the calculated F ratio for the years is 0.905, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 16.328, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$$F_{\text{Calculated}}\,[0.905] < F_{\alpha\,=\,0.05 \text{ and d.f. } = (9,63)}\,[2.032]$$

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in the Total Loans to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{Calculated}$ **[16.328]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Total Loans to Total Assets ratio within selected Indian Information Technologies Companies during the period under review.

E-2. Liquid Investments to Total Assets Ratio

Purpose: To measure the percentage of total assets invested in Short-term Investments.

Formula: $$\frac{\textbf{Total Liquid Investment}}{\textbf{Total Assets}} \textbf{ X 100}$$

The component of above formula will be explained as under.

Here, Total Liquid Investment contains Investment for very short period or Current Investments are taken here.

Here, Total Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

This ratio plays very important role in deciding Effective Financial Structure of an organization. Here, WOCCU has announced that the ratio must be Maximum 20% or lower than that. The institutions which do not have the said ratio, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Effectiveness of Financial structure of the company. The analysis of this ratio is shown in the following table.

Table No. 5.5

Analysis of Liquid Investment to Total Assets Ratio (E – 2)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	31.330	1.745	8.490	2.141	0.000	28.520	0.000	7.234	9.933
2002	31.219	1.177	18.127	4.049	0.000	25.502	0.000	16.120	12.024
2003	27.951	0.000	32.301	3.714	0.000	9.240	0.000	22.979	12.023
2004	7.070	0.000	46.336	6.155	28.558	5.491	8.370	49.925	18.988
2005	0.000	3.561	19.726	4.190	22.262	3.644	0.000	41.907	11.911
2006	0.000	3.530	18.735	5.147	9.917	3.954	3.267	45.460	11.251
2007	0.000	0.743	11.888	1.192	0.000	3.865	5.444	31.191	6.790
2008	28.761	1.841	15.001	0.413	0.000	14.096	13.780	13.776	10.958
2009	28.729	1.303	19.132	0.000	0.000	4.648	1.342	8.633	7.973
2010	40.986	1.407	35.101	1.180	16.670	8.966	1.753	12.969	14.879
Average	**19.605**	**1.531**	**22.484**	**2.818**	**7.741**	**10.793**	**3.396**	**25.019**	
Overall Avg.	**11.673**								
S. D.	**15.904**	**1.236**	**11.740**	**2.115**	**10.996**	**9.183**	**4.593**	**15.990**	
C.V.	**81.124**	**80.775**	**52.216**	**75.060**	**142.054**	**85.090**	**135.259**	**63.912**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.5 shows the company wise Liquid Investment to Total Assets Ratio during study period. It reveals from the above table that the ratio of CMC InfoTech Ltd., registered a continuous decreasing trend except financial year 2007-08 and 2009-10 during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Liquid Investment to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that CMC InfoTech Ltd. did not achieve the target in first three years and last three years during the period under review i.e. financial year 2000-01 to 2002-03 and 2007-08 to 2009-10. The company achieved the goal which has been laid down by WOCCU in financial years 2003-04 to 2006-07. However, the ratio of the CMC InfoTech Ltd. Showed Zero percent as the company was not having any Liquid Investment in financial years 2004-05 to 2006-07. The ratio ranges from 27.951 percent to 40.986 percent. It also reveals from the above table that the growth of ratio was slow in first four years and it increased in last year during the study period. The Liquid Investment to Total Assets ratio could not achieve its standard in any financial year. The CMC InfoTech Ltd. has got 19.605 percentages as the average for ten years which was lower than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that CMC's ratio was much higher than industry average so company need to focus on its ratio. The company's average for ten years was 19.605 percent and industry average during the same period was 11.673 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV is 81.124 percent which shows that the company has got the highest variability in the said ratio.

GTL LIMITED

Table 5.5 reveals Total Liquid Investments to Total Assets ratio of the GTL Ltd. during study period. It can be seen from the above table that the ratio of GTL Ltd., registered fluctuating trend during study period. According to WOCCU, the ideal Total Liquid Investment to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that GTL Ltd. achieved the goal during the period under review. The ratio ranges from 0.743 percent in financial year 2006-07 to

3.530 percent in financial year 2005-06. It also reveals from the above table that the ratio was nil because of non availability of Liquid Investments in financial years 2002-03 and 2003-04. The Total Liquid Investments to Total Assets ratio achieved its standard in all the years which was positive sign for the company. It has been observed that the ratio never went above the standard goal so it affects positively to the company's Effective Financial Structure. The GTL Ltd. has got 1.531 percentages as the average for ten years which was much lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that GTL's total Liquid Investments to Total Assets ratio was much lower than industry average so company was safe on its financial structure. The company's average for ten years was 1.531 percent and industry average during the same period was 11.673 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV is 80.775 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded that the total Liquid Investments to Total Assets ratio of GTL Ltd, was highly satisfactory during the study period.

HCL INFOSYSTEMS LIMITED

Table 5.5 shows the ratio of Total Liquid Investments to Total Assets for the HCL Info system Limited during the period under review. The ratio showed fluctuating trend during study period. It ranges between 8.490 in financial year 2000-01 to 46.336 in the financial year 2003-04. This ratio explains the relationship between company's total liquid investments and total assets. Here, the ratio went beyond its standard level in three financial years i.e. 2002-03, 2003-04 and 2009-10. Here, WOCCU announced the standard ratio for the institutions is 20% or lower than this level. Comparing company's average with overall industry average, it can be concluded that the company was having high ratio which has got negative impact on its Financial Structure. Company's average was 22.484 percent and Industry average was 11.673 percent during the period under study. However, it can be noted that overall average of company during the study period was low than the standard lay down by WOCCU which would have positive impact on company's financial structure. Coefficient of variance shows the movement or the consistency in the ratio.

The higher the CV, the lower will be the consistency. Here, company's CV was 52.216 percent which shows that the company has got moderate variability in the said ratio. The high CV may be because of continuous increase in ratio. Finally, it can be concluded that the Total Liquid Investments to Total Assets of HCL Info system Ltd. was under control during the period under study. It also can be concluded that the Financial Structure of HCL Info system Ltd. was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

HCL TECHNOLOGIES

Table 5.5 reveals Total Liquid Investments to Total Assets ratio of the HCL Technologies during study period. It can be seen from the above table that the ratio of HCL Technologies, registered fluctuating trend during study period. According to WOCCU, the ideal Total Liquid Investment to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that HCL Technologies achieved the goal during the period under review. The ratio ranges from 0 percent in financial year 2008-09 to 6.155 percent in financial year 2003-04. It also reveals from the above table that the ratio was nil because of non availability of Liquid Investments in financial year 2008-09. The Total Liquid Investments to Total Assets ratio achieved its standard in all the years which was positive sign for the company. It has been observed that the ratio never went above the standard goal so it affects positively to the company's Effective Financial Structure. The HCL Technologies has got 2.818 percentages as the average for ten years which was much lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's total Liquid Investments to Total Assets ratio was much lower than industry average so company was safe on its financial structure. The company's average for ten years was 2.818 percent and industry average during the same period was 11.673 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV is 75.060 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded that the total Liquid Investments to Total Assets ratio of HCL Technologies was highly satisfactory during the study period.

INFOSYS

Table 5.5 shows the ratio of Total Liquid Investments to Total Assets for the Infosys during the period under review. The ratio showed decreasing trend during study period. It ranges between 9.917 percent in financial year 2005-06 to 28.558 in the financial year 2003-04. This ratio explains the relationship between company's total liquid investments and total assets. Here, the ratio went beyond its standard level in two financial years i.e. 2003-04 and 2004-05. Here, WOCCU announced the standard ratio for the institutions is 20% or lower than this level. Comparing company's average with overall industry average, it can be concluded that the company was having low ratio which has got negative impact on its Financial Structure. Company's average was 7.741 percent and Industry average was 11.673 percent during the period under study. Here, it can be noted that overall average of company during the study period was low than the standard lay down by WOCCU which would have positive impact on company's financial structure. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 142.054 percent which shows that the company has got the highest variability in the said ratio among all selected companies. The high CV may be because of continuous increase in ratio. Finally, it can be concluded that the Total Liquid Investments to Total Assets of Infosys was under control during the period under study. It also can be concluded that the Financial Structure of Infosys was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

POLARIS SOFTWARE LAB LIMITED

Table 5.5 reveals Total Liquid Investments to Total Assets ratio of the Polaris Software Lab Ltd. during study period. It can be seen from the above table that the ratio of Polaris Software Lab Ltd., registered a continuous decreasing trend except financial years 2007-08 and 2009-10 during study period. According to WOCCU, the ideal Total Liquid Investments to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that Polaris Software Lab Ltd. did not achieve the goal in first two financial years during the period under review i.e. financial year 2000-01 and 2001-02. The ratio ranges from 3.644 percent in financial year 2004-05 to 28.520 percent in financial year 2001-02. It has been observed that

the ratio showed an decreasing trend which was positive sign for the company's Effective Financial Structure. The Polaris Software Lab Ltd. has got 10.793 percentages as the average for ten years which was almost half than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's total liquid investments to total assets ratio was lower than industry average. However, company's average was lower than the standard given by WOCCU. The company's average for ten years was 10.793 percent and industry average during the same period was 11.673 percent. Coefficient of variance shows the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV is 85.090 percent which shows that the company has got high variability in the said ratio. Finally, it can be concluded that the total liquid investments to total assets ratio of Polaris Software Lab Ltd. was satisfactory during the study period.

ROLTA INDIA LIMITED

Table 5.5 shows the company wise Liquid Investment to Total Assets Ratio during study period. It reveals from the above table that the ratio of Rolta India Ltd. registered fluctuating trend during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Liquid Investment to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that Rolta India Ltd. not achieved the target in all the years during the period under review. The company achieved the goal which has been laid down by WOCCU in all the financial years. However, the ratio of the Rolta India Ltd. showed Zero percent as the company was not having any Liquid Investment in financial years 2000-01 to 2002-03 and 2004-05. The ratio ranges from 1.342 percent to 13.780 percent. It also reveals from the above table that the growth of ratio was slow in first four years and it increased in last year during the study period. The Rolta India Ltd. has got 3.396 percentages as the average for ten years which was much lower than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was much lower than industry average so company need not to focus on its ratio. The company's average for ten years was 3.396 percent and industry average during the same period was 11.673 percent. Coefficient of variance shows the movement or variability or the

consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 135.259 percent which shows that the company has got the second highest variability in the said ratio.

WIPRO

Table 5.5 shows the company wise Liquid Investment to Total Assets Ratio during study period. It reveals from the above table that the ratio of Wipro Ltd. registered fluctuating trend during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Liquid Investment to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that Wipro Ltd. did not achieve the target in the financial years 2003-04 to 2006-07 during the period under review. The company achieved the goal which has been laid down by WOCCU in remaining financial years. The ratio ranges from 7.234 percent to 49.925 percent. It also reveals from the above table that the growth of ratio was high in first four years and it increased in last year during the study period. The Wipro has got 25.019 percentages as the average for ten years which was higher than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was much higher than industry average so company need to focus on its ratio. The company's average for ten years was 25.019 percent and industry average during the same period was 11.673 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 63.912 percent which shows that the company has got the second highest variability in the said ratio. Finally, it can be concluded that Wipro's total liquid investments to total assets ratio was not under control during the period under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.5 shows the company wise Total Liquid Investments to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect CMC Ltd., HCL Info Systems Ltd. and Wipro has got the highest average than the industry average. The industry average during study period was

11.673 percent where as CMC Info Tech Ltd., registered 19.605 percent, GTL Ltd. recorded the lowest ratio and it was 1.531 percent, HCL Info systems Ltd., got the second highest 22.484 percent, HCL Technologies registered 2.818 percent, Infosys recorded 7.741 percent, Polaris Software Lab Ltd. achieved 10.793 percent, Rolta India Ltd. registered 3.396 percent and Wipro registered with the highest 25.019 percent. It clearly reveals that GTL Ltd. was having the lowest Liquid Investments to Total Assets ratio from not only industry standard but also standard goal lay down by WOCCU. This was positive sign for the company's effective financial structure. Comparing CV of all the selected companies, it reveals that HCL Info Systems Ltd has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than GTL Ltd. comes out as the best performer Information Technology Company in Total Liquid Investments to Total Assets ratio. The second and third rank secured by HCL Technologies Ltd and Rolta India Ltd. respectively. The forth rank onwards to seventh rank secured by Infosys Ltd., Polaris Software Lab Ltd., CMC Ltd and HCL Info Systems Ltd respectively. Wipro was the least rank company in Total Liquid Investments to Total Assets ratio of selected companies during study period as it had the highest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Liquid Investments to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Liquid Investments to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Liquid Investments to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Liquid Investments to Total Assets ratio differs significantly within Selected Information Technology Companies.

Table 5.6

Two – Way ANOVA of Liquid Investments to Total Assets Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	842.703	9	93.634	0.834	2.032
Within Companies	6239.369	7	891.339	7.946	2.159
Error	7066.578	63	112.168		
Total	14148.651	79			

In Table 5.6, the value of the calculated F ratio for the years is 0.834, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 7.946, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$$F_{\text{Calculated}}\,[0.834] < F_{\alpha\,=\,0.05 \text{ and d.f.} = (9,63)}\,[2.032]$$

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in the Liquid Investments to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$$F_{\text{Calculated}}\,[7.946] > F_{\alpha\,=\,0.05 \text{ and d.f.} = (7,63)}\,[2.159]$$

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Liquid Investments to Total Assets ratio within selected Indian Information Technologies Companies during the period under review.

E-3. Financial Investments to Total Assets Ratio

Purpose: To measure the percentage of total assets invested in Long-term Financial investments

Formula: $$\frac{\textbf{Financial Investments}}{\textbf{Total Assets}} \textbf{ X 100}$$

The component of above formula will be explained as under.

Here, Financial Investments contains Investment done by the company in other company's share and security, investments in Mutual Fund Units, investment in subsidiary companies, etc

Here, Total Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

This ratio plays very crucial role in deciding Effective Financial Structure of an organization. Here, WOCCU has announced that the ratio must be Maximum 10% or lower than that. The institutions which do not have the said ratio, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Effectiveness of Financial structure of the company. The analysis of this ratio is shown in the following table.

Table No. 5.7

Analysis of Financial Investments to Total Assets Ratio (E – 3)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	58.512	3.223	13.062	5.688	2.448	41.565	10.910	58.512	17.944
2002	58.304	3.286	24.217	6.266	2.115	42.361	6.949	58.304	20.273
2003	52.202	9.615	49.227	8.221	1.153	16.141	11.710	52.202	23.830
2004	52.102	9.127	59.345	9.418	31.571	14.759	12.344	52.102	32.092
2005	37.976	29.684	23.453	8.973	25.334	27.625	12.737	37.976	27.935
2006	28.742	25.237	21.889	7.364	12.701	16.336	24.885	28.742	23.819
2007	32.733	14.672	25.584	6.530	7.517	20.228	5.444	32.733	15.656
2008	31.227	29.690	15.744	5.547	7.146	17.460	13.780	31.227	17.016
2009	30.695	23.724	20.313	1.406	5.643	4.839	1.342	30.695	14.733
2010	42.686	27.522	37.464	3.526	20.819	9.303	1.753	42.686	22.711
Average	**42.518**	**17.578**	**29.030**	**6.294**	**11.645**	**21.062**	**10.185**	**42.518**	
Overall Avg.	**21.601**								
S. D.	**11.851**	**10.761**	**14.991**	**2.457**	**10.690**	**12.554**	**6.874**	**20.841**	
C.V.	**27.873**	**61.218**	**51.641**	**39.037**	**91.801**	**59.608**	**67.492**	**60.415**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.7 shows the company wise Financial Investment to Total Assets Ratio during study period. It reveals from the above table that the ratio of CMC InfoTech Ltd., registered a continuous decreasing trend except financial year 2006-07 and 2009-10 during study period. According to WOCCU, the ideal Financial Investments to Total Assets ratio for the institution would be maximum 10 percent. It reveals from the above table that CMC InfoTech Ltd. did not achieve the target ratio during the period under review. The ratio ranges from 28.742 percent in financial year 2005-06 to 58.512 percent in financial year 2000-01. It also reveals from the above table that the growth of ratio was high in first four years and it increased in last year during the study period. The Financial Investments to Total Assets ratio could not achieve its standard in any financial year. The CMC InfoTech Ltd. has got 42.518 percentages as the average for ten years which was much higher than the maximum standard laid down by WOCCU and industry average. Comparing company's average with overall average of the industry, it can be concluded that CMC's ratio was much higher than industry average so company need to focus on its ratio. The company's average for ten years was 42.518 percent and industry average during the same period was 21.601 percent. Here, industry average was also higher than the standard lay down by WOCCU. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV is 27.873 percent which shows that the company has got lower variability in the said ratio. Finally, it can be concluded that company's ratio was not under control and it should focus to reduce the ratio below the standard one.

GTL LIMITED

Table 5.7 reveals Total Financial Investments to Total Assets ratio of the GTL Ltd. during study period. It can be seen from the above table that the ratio of GTL Ltd., registered an increasing trend except financial year 2005-06, 2006-07 and 2008-09 during study period. According to WOCCU, the ideal Total Financial Investments to Total Assets ratio for the institution would be maximum 10 percent. It reveals from the above table that GTL Ltd. achieved the goal during the period of first four years i.e. 2000-01 to 2003-04 during the study period. The ratio ranges from 3.223 percent in financial year 2000-01 to 29.683 percent in financial year 2004-05. It has been

observed that the ratio went above the standard goal after the financial year 2004-05 onwards. So, it affects negatively to the company's Effective Financial Structure. The GTL Ltd. has got 17.578 percentages as the average for ten years which was higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that GTL's total Financial Investments to Total Assets ratio was higher than industry average so company was not safe on its financial structure. The company's average for ten years was 17.578 percent and industry average during the same period was 21.601 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 61.612 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded that the total Financial Investments to Total Assets ratio of GTL Ltd, was not satisfactory during the study period.

HCL INFOSYSTEMS LIMITED

Table 5.7 shows the ratio of Total Financial Investments to Total Assets for the HCL Info system Limited during the period under review. The ratio showed continuous increasing trend except financial years 2004-05, 2005-06 and 2007-08 during study period. It ranges between 13.062 in financial year 2000-01 to 59.345 in the financial year 2003-04. This ratio explains the relationship between company's total Financial Investments and total assets. Here, the ratio went beyond its standard level in all the financial years during the period under review. Here, WOCCU announced the standard ratio for the institutions is 10% or lower than this level. Comparing company's average with overall industry average, it can be concluded that the company was having high ratio which has got negative impact on its Financial Structure. Company's average was 29.030 percent and Industry average was 21.601 percent during the period under study. However, it can be noted that overall average of company during the study period was also higher than the standard lay down by WOCCU which would also have negative impact on company's financial structure. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 51.641 percent which shows that the company has got high variability in the said ratio. The

high CV may be because of continuous increase in ratio. Finally, it can be concluded that the Total Financial Investments to Total Assets ratio of HCL Info system Ltd. was not under control during the period under study. It also can be concluded that the Financial Structure of HCL Info system Ltd. was not effective as the company was not able to achieve the standard ratio given by WOCCU during the study period.

HCL TECHNOLOGIES

Table 5.7 reveals Total Financial Investments to Total Assets ratio of the HCL Technologies during study period. It can be seen from the above table that the ratio of HCL Technologies, registered an increasing trend in first four financial years and decreasing trend during last six financial years. According to WOCCU, the ideal Total Financial Investments to Total Assets ratio for the institution would be maximum 10 percent. It reveals from the above table that HCL Technologies achieved the goal during the period under review. The ratio ranges from 1.406 percent in financial year 2008-09 to 9.418 percent in financial year 2003-04. The Total Financial Investments to Total Assets ratio achieved its standard in all the years which was positive sign for the company. It has been observed that the ratio never went above the standard goal so it affects positively to the company's Effective Financial Structure. The HCL Technologies has got 6.294 percentages as the average for ten years which was much lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's total Financial Investments to Total Assets ratio was much lower than industry average so company was safe on its financial structure. The company's average for ten years was 6.294 percent and industry average during the same period was 21.601 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 39.037 percent which shows that the company has got moderate variability in the said ratio. Finally, it can be concluded that the total Financial Investments to Total Assets ratio of HCL Technologies was highly satisfactory during the study period.

INFOSYS

Table 5.7 shows the ratio of Total Financial Investments to Total Assets for the Infosys during the period under review. The ratio showed decreasing trend except financial year 2003-04 and 2009-10 during study period. It ranges between 1.153 percent in financial year 2002-03 to 31.571 in the financial year 2003-04. This ratio explains the relationship between company's total financial investments and total assets. Here, the ratio went beyond its standard level in four financial years i.e. 2003-04, 2004-05, 2005-06 and 2009-10. Here, WOCCU announced the standard ratio for the institutions is 10% or lower than this level. Comparing company's average with overall industry average, it can be concluded that the company was having high ratio which has got negative impact on its Financial Structure. Company's average was 11.645 percent and Industry average was 21.601 percent during the period under study. Here, it can be noted that overall average of company during the study period was high than the standard lay down by WOCCU which would have negative impact on company's financial structure. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 91.801 percent which shows that the company has got the highest variability in the said ratio among all selected companies. The high CV may be because of continuous increase in ratio. Finally, it can be concluded that the Total Financial Investments to Total Assets of Infosys was not under control during the period under study. It also can be concluded that the Financial Structure of Infosys was not effective as the company was not achieving the standard ratio given by WOCCU during the study period.

POLARIS SOFTWARE LAB LIMITED

Table 5.7 reveals Total Financial Investments to Total Assets ratio of the Polaris Software Lab Ltd. during study period. It can be seen from the above table that the ratio of Polaris Software Lab Ltd. registered a fluctuating trend during study period. According to WOCCU, the ideal Total Financial Investments to Total Assets ratio for the institution would be maximum 10 percent. It reveals from the above table that Polaris Software Lab Ltd. did not achieve the goal in first eight financial years during the period under review i.e. financial year 2000-01 and 2007-08 which affects negatively to its financial structure. The ratio ranges from 4.839 percent in financial

year 2008-09 to 42.361 percent in financial year 2001-02. The Polaris Software Lab Ltd. has got 21.602 percentages as the average for ten years which was almost doubled than the standard lay down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's total financial investments to total assets ratio was slightly lower than industry average. However, company's average was higher than the standard given by WOCCU. The company's average for ten years was 10.793 percent and industry average during the same period was 21.602 percent. Coefficient of variance shows the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV is 59.608 percent which shows that the company has got high variability in the said ratio. Finally, it can be concluded that the total financial investments to total assets ratio of Polaris Software Lab Ltd. was not satisfactory during the study period.

ROLTA INDIA LIMITED

Table 5.7 shows the company wise Financial Investments to Total Assets Ratio during study period. It reveals from the above table that the ratio of Rolta India Ltd. registered fluctuating trend during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Financial Investments to Total Assets ratio for the institution would be maximum 10 percent. It reveals from the above table that Rolta India Ltd. not achieved the target in all the years except financial years 2001-02, 2006-07, 2008-09 and 2009-10 during the period under review. The company achieved the goal which has been laid down by WOCCU in above four financial years only. The ratio ranges from 1.342 percent in financial year 2008-09 to 24.885 percent in financial year 2005-06. It also reveals from the above table that the growth of ratio was slow in first two years and it increased in third year onwards up to financial year 2008-09. The Rolta India Ltd. has got 10.185 percentages as the average for ten years which was very close to maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was much lower than industry average so company need not to focus on its ratio. The company's average for ten years was 10.185 percent and industry average during the same period was 21.601 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV

was 67.492 percent which shows that the company has got the second highest variability in the said ratio.

WIPRO

Table 5.7 shows the company wise Financial Investments to Total Assets Ratio during study period. It reveals from the above table that the ratio of Wipro Ltd. registered continuous increasing trend except financial year 2004-05, 2005-06 and 2006-07 during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Financial Investments to Total Assets ratio for the institution would be maximum 10 percent. It reveals from the above table that Wipro Ltd. did not achieve the target during the period under review except the financial year 2000-01. The Financial Investments to Total Assets ratio ranges from 8.140 percent in financial year 2000-01 to 68.067 percent in financial year 2003-04. It also reveals from the above table that the growth of ratio was during the study period. The Wipro has got 34.496 percentages as the average for ten years which was much higher than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was much higher than industry average so company need to focus on its ratio. The company's average for ten years was 34.496 percent and industry average during the same period was 21.601 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 60.615 percent which shows that the company has got high variability in the said ratio. Finally, it can be concluded that Wipro's total financial investments to total assets ratio was not under control during the period under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.7 shows the company wise Total Financial Investments to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect HCL Technologies has achieved the standard ratio lay down by WOCCU. The industry average during study period was 21.601 percent which was also high than the standard ratio, where as CMC Info Tech Ltd. registered the highest

42.518 percent, GTL Ltd. recorded 17.578 percent, HCL Info systems Ltd., got 29.030 percent, HCL Technologies registered the lowest among all selected companies 6.294 percent, Infosys recorded 11.645 percent, Polaris Software Lab Ltd. achieved 21.062 percent, Rolta India Ltd. registered the second lowest 10.185 percent and Wipro registered with the second highest 34.496 percent. It clearly reveals that HCL Technologies was having the lowest Financial Investments to Total Assets ratio from not only industry standard but also standard goal lay down by WOCCU. This was positive sign for the company's effective financial structure. Comparing CV of all the selected companies, it reveals that CMC Ltd has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than HCL Technologies comes out as the best performer Information Technology Company in Total Financial Investments to Total Assets ratio. The second and third rank secured by Rolta India Ltd and Infosys respectively. The forth rank onwards to seventh rank secured by GTL Ltd., Polaris Software Lab Ltd., HCL Info Systems Ltd. and Wipro respectively. CMC Ltd. was the least rank company in Total Financial Investments to Total Assets ratio of selected companies during study period as it had the highest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Financial Investments to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Financial Investments to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Financial Investments to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Financial Investments to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Table 5.8

Two – Way ANOVA of Financial Investments to Total Assets Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	2239.748	9	248.861	1.757	2.032
Within Companies	11392.158	7	1627.451	11.488	2.159
Error	8924.778	63	141.663		
Total	22556.683	79			

In Table 5.8, the value of the calculated F ratio for the years is 1.757, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 11.488, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[1.757]** < $F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in the Financial Investments to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[11.488]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Financial Investments to Total Assets ratio within selected Indian Information Technologies Companies during the period under review.

E-4. Non-Financial Investments to Total Assets Ratio

This ratio is not possible to calculate because none of the selected Information Technology Company was having Non-Financial Investments during the period under review. All company was having similar capital structure as they fall under one industry. Here, the standard ratio was also must be 0 percent which has been achieved by the selected Information Technology Companies.

E-5. Savings Deposits to Total Assets Ratio

Purpose: To measure the percentage of total assets financed by savings deposits.

Formula: $$\frac{\textbf{Total Savings Deposits}}{\textbf{Total Assets}} \textbf{ X 100}$$

The component of above formula will be explained as under.

Here, Saving Deposits contains Cash and Bank Balance at the end of the financial year of the company.

Here, Total Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

This ratio plays very crucial role in deciding Effective Financial Structure of an organization. Here, WOCCU has announced that the ratio must be Maximum 80% or lower than that. The institutions which do not have the said ratio, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Effectiveness of Financial structure of the company. The analysis of this ratio is shown in the following table.

Table No. 5.9

Analysis of Total Savings Deposits to Total Assets Ratio (E – 5)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	1.073	41.050	16.311	19.848	27.718	24.140	1.728	22.205	19.259
2002	1.426	38.457	14.210	4.020	37.115	24.237	1.607	11.467	16.567
2003	0.042	29.150	10.031	1.599	46.697	20.185	1.924	12.050	15.210
2004	2.357	52.400	9.435	3.046	50.354	6.912	4.632	8.037	17.146
2005	0.014	60.266	27.856	2.857	28.253	9.628	3.650	10.832	17.920
2006	93.113	32.443	23.490	4.100	47.542	11.902	73.859	12.705	37.394
2007	144.338	43.765	17.734	12.508	49.337	10.489	35.641	19.346	41.645
2008	70.457	23.745	23.237	21.199	47.658	5.564	12.714	38.067	30.330
2009	81.583	29.037	14.935	34.129	50.755	7.299	5.212	25.154	31.013
2010	64.071	68.308	12.031	15.623	43.996	12.584	1.602	24.392	30.326
Average	**45.847**	**41.862**	**16.927**	**11.893**	**42.942**	**13.294**	**14.257**	**18.425**	
Overall Avg.	**25.681**								
S. D.	**51.873**	**14.560**	**6.167**	**10.786**	**8.800**	**7.031**	**23.400**	**9.244**	
C.V.	**113.143**	**34.781**	**36.438**	**90.700**	**20.492**	**52.895**	**164.134**	**50.173**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.9 shows the company wise Total Saving Deposits to Total Assets Ratio during study period. It reveals from the above table that the ratio of CMC InfoTech Ltd., registered fluctuating trend during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Total Saving Deposits to Total Assets ratio for the institution would be maximum 80 percent. It reveals from the above table that CMC InfoTech Ltd. did not achieve the target in three financial years i.e. 2005-06, 2006-07 and 2008-09 during the period under review. The company achieved the goal which has been laid down by WOCCU in all the selected financial years during the study period except above mentioned three financial years. The ratio ranges from 0.014 percent in financial year 2004-05 to 144.338 percent in financial year 2006-07. It also reveals from the above table that the growth of ratio was slow in first five years compare to rest years under study. The CMC InfoTech Ltd. has got 45.847 percentages as the average for ten years which was lower than the maximum standard laid down by WOCCU which will have positive impact on company's effective financial structure. Comparing company's average with overall average of the industry, it can be concluded that CMC's ratio was much higher than industry average so company need to focus on its ratio. The company's average for ten years was 45.847 percent and industry average during the same period was 25.681 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV is 113.143 percent which shows that the company has got the second highest variability in the said ratio. Finally, it can be concluded company's overall average was lower than the standard lay down by WOCCU.

GTL LIMITED

Table 5.9 reveals Total Saving Deposits to Total Assets ratio of the GTL Ltd. during study period. It can be seen from the above table that the ratio of GTL Ltd., registered fluctuating trend during study period. According to WOCCU, the ideal Total Saving Deposits to Total Assets ratio for the institution would be maximum 80 percent. It reveals from the above table that GTL Ltd. achieved the goal during the period under review. The ratio ranges from 23.745 percent in financial year 2007-08 to 68.308 percent in financial year 2009-10. The Total Saving Deposits to Total Assets ratio

achieved its standard in all the years which was positive sign for the company. It has been observed that the ratio never went above the standard goal so it affects positively to the company's Effective Financial Structure. The GTL Ltd. has got 41.862 percentages as the average for ten years which was much lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that GTL's total Saving Deposits to Total Assets ratio was higher than industry average but lower than standard ratio so company was safe on its financial structure. The company's average for ten years was 41.862 percent and industry average during the same period was 25.681 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 38.782 percent which shows that the company has got the second lowest variability in the said ratio. Finally, it can be concluded that the total Saving Deposits to Total Assets ratio of GTL Ltd, was highly satisfactory during the study period.

HCL INFOSYSTEMS LIMITED

Table 5.9 shows the ratio of Total Saving Deposits to Total Assets for the HCL Info system Limited during the period under review. The ratio showed continuous decreasing trend except financial years 2004-05 and 2007-08 during study period. It ranges between 9.435 in financial year 2003-04 to 27.856 in the financial year 2004-05. This ratio explains the relationship between company's total saving deposits and total assets. Here, the ratio never went beyond its standard level during the study period. Here, WOCCU announced the standard ratio for the institutions is 80% or lower than this level. Comparing company's average with overall industry average, it can be concluded that the company was having very low ratio which has got positive impact on its Financial Structure. Company's average was 16.927 percent and Industry average was 25.681 percent during the period under study. Here, it can be noted that overall average of company during the study period was lower than the standard lay down by WOCCU which would have positive impact on company's financial structure. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 36.468 percent which shows that the company has got moderate variability in the

said ratio. The high CV may be because of continuous decrease in ratio. Finally, it can be concluded that the Total Liquid Investments to Total Assets of HCL Info system Ltd. was under control during the period under study. It also can be concluded that the Financial Structure of HCL Info system Ltd. was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

HCL TECHNOLOGIES

Table 5.9 reveals Total Saving Deposits to Total Assets ratio of the HCL Technologies during study period. It can be seen from the above table that the ratio of HCL Technologies, registered decreasing trend during the first three years of the study period and increasing trend in rest of the years. According to WOCCU, the ideal Total Saving Deposits to Total Assets ratio for the institution would be maximum 80 percent. It reveals from the above table that HCL Technologies achieved the goal during the period under review. The ratio ranges from 1.599 percent in financial year 2002-03 to 34.129 percent in financial year 2008-09. The Total Saving Deposits to Total Assets ratio achieved its standard in all the years which was positive sign for the company. It has been observed that the ratio never went above the standard goal so it affects positively to the company's Effective Financial Structure. The HCL Technologies has got 11.893 percentages as the average for ten years which was much lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's total Saving Deposits to Total Assets ratio was much lower than industry average so company was safe on its financial structure. The company's average for ten years was 11.893 percent and industry average during the same period was 25.681 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 90.700 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded that the total Saving Deposits to Total Assets ratio of HCL Technologies was highly satisfactory during the study period.

INFOSYS

Table 5.9 shows the ratio of Total Saving Deposits to Total Assets for the Infosys during the period under review. The ratio showed continuous increasing trend except financial years 2004-05, 2007-08 and 2009-10 during study period. It ranges between 27.718 percent in financial year 2000-01 to 50.755 in the financial year 2008-09. This ratio explains the relationship between company's total Saving Deposits and total assets. Here, the ratio never went beyond its standard level during the study period. Here, WOCCU announced the standard ratio for the institutions is 80% or lower than this level. Comparing company's average with overall industry average, it can be concluded that the company was having high ratio but lower than standard ratio lay down by WOCCU which has got positive impact on its Financial Structure. Company's average was 42.942 percent and Industry average was 25.681 percent during the period under study. Here, it can be noted that overall average of company during the study period was lower than the standard lay down by WOCCU which would have positive impact on company's financial structure. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 20.493 percent which shows that the company has got the lowest variability in the said ratio among all selected companies. Finally, it can be concluded that the Total Saving Deposits to Total Assets of Infosys was under control during the period under study. It also can be concluded that the Financial Structure of Infosys was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

POLARIS SOFTWARE LAB LIMITED

Table 5.9 reveals Total Saving Deposit to Total Assets ratio of the Polaris Software Lab Ltd. during study period. It can be seen from the above table that the ratio of Polaris Software Lab Ltd., registered fluctuating trend during study period. According to WOCCU, the ideal Total Saving Deposits to Total Assets ratio for the institution would be maximum 80 percent. It reveals from the above table that Polaris Software Lab Ltd. achieved the goal during the period under review. The ratio ranges from 5.564 percent in financial year 2007-08 to 24.237 percent in financial year 2001-02. It has been observed that the ratio was under control and therefore it shows positive sign for the company's Effective Financial Structure. The Polaris Software Lab Ltd. has

got 13.294 percentages as the average for ten years which was highly lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's total Saving Deposits to total assets ratio was lower than industry average. However, company's average was lower than the standard given by WOCCU. The company's average for ten years was 13.294 percent and industry average during the same period was 25.681 percent. Coefficient of variance shows the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 52.895 percent which shows that the company has got high variability in the said ratio. Finally, it can be concluded that the total Saving Deposits to total assets ratio of Polaris Software Lab Ltd. was satisfactory during the study period.

ROLTA INDIA LIMITED

Table 5.9 shows the company wise Total Saving Deposits to Total Assets Ratio during study period. It reveals from the above table that the ratio of Rolta India Ltd. registered continuous decreasing trend except financial years 2002-03, 2003-04 and 2005-06 during the study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Total Saving Deposits to Total Assets ratio for the institution would be maximum 80 percent. It reveals from the above table that Rolta India Ltd. achieved the target in all the years during the period under review. The company achieved the goal which has been laid down by WOCCU in all the financial years. The ratio ranges from 1.602 percent in financial year 2009-10 to 73.859 percent in financial year 2005-06. It also reveals from the above table that the growth of ratio was slow in first four years and it increased later during the study period. The Rolta India Ltd. has got 14.257 percentages as the average for ten years which was much lower than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was much lower than industry average so company need not to focus on its ratio. The company's average for ten years was 14.257 percent and industry average during the same period was 25.681 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 164.135 percent which shows that the company has got the second highest variability in the

said ratio. Finally it can be concluded that overall average of the company's ratio was lower than the standard lay down by the WOCCU. So, company's financial structure was effective.

WIPRO

Table 5.9 shows the company wise Total Saving Deposit to Total Assets Ratio during the study period. It reveals from the above table that the ratio of Wipro Ltd. registered fluctuating trend during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Total Saving Deposits to Total Assets ratio for the institution would be maximum 80 percent. It reveals from the above table that Wipro Ltd. achieved the target in all the financial years during the period under review. The ratio ranges from 8.037 percent in financial year 2003-04 to 38.067 percent in financial year 2007-08. It also reveals from the above table that the growth of ratio was low in first four years and it increased in last three years during the study period. The Wipro has got 18.425 percentages as the average for ten years which was lower than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was lower than industry average so company need not to focus on its ratio. The company's average for ten years was 18.425 percent and industry average during the same period was 25.681 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 50.173 percent which shows that the company has got moderate variability compare to other selected companies in the said ratio. Finally, it can be concluded that Wipro's total saving deposits to total assets ratio was not under control during the period under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.9 shows the company wise Total Saving Deposits to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect CMC Info Tech Ltd., GTL Ltd. and Infosys has got the highest average than the industry average. The industry average during study period was 25.681 percent where as CMC Info Tech Ltd. registered the highest Total Saving Deposit ratio and it

was 45.847 percent, GTL Ltd. recorded the third highest ratio and it was 41.862 percent, HCL Info systems Ltd. 16.927 percent, HCL Technologies registered the lowest ratio and it was 11.893 percent, Infosys recorded the second highest and it was 42.942 percent, Polaris Software Lab Ltd. achieved 13.294 percent, Rolta India Ltd. registered 14.257 percent and Wipro registered 18.425 percent. It clearly reveals that HCL Technologies was having the lowest Total Saving Deposits to Total Assets ratio from not only industry standard but also standard goal lay down by WOCCU. This was positive sign for the company's effective financial structure. Comparing CV of all the selected companies, it reveals that Infosys has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than HCL Technologies comes out as the best performer Information Technology Company in Total Saving Deposits to Total Assets ratio. The second and third rank secured by Polaris Software Lab Ltd. and Rolta India Ltd. respectively. The forth rank onwards to seventh rank secured by HCL Info systems, Wipro, GTL Ltd. and Infosys respectively. CMC Info tech Ltd. was the least rank company in Total Saving Deposits to Total Assets ratio of selected companies during study period as it had the highest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Total Saving Deposits to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Total Saving Deposits to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Total Saving Deposits to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Total Saving Deposits to Total Assets ratio differs significantly within Selected Information Technology Companies.

Table 5.10

Two – Way ANOVA of Total Saving Deposits to Total Assets Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	6645.541	9	738.393	1.679	2.032
Within Companies	15697.955	7	2242.565	5.099	2.159
Error	27709.103	63	439.827		
Total	50052.599	79			

In Table 5.10, the value of the calculated F ratio for the years is 1.679, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 5.099, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[1.679]** < $F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Total Saving Deposits to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[5.099]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Total Saving Deposits to Total Assets ratio within selected Indian Information Technologies Companies during the period under review.

E-6. External Credit to Total Assets Ratio

Purpose: To measure the percentage of total assets financed by external borrowing (i.e., debt obligations with other financial institutions outside of the credit union). Here External Credit may include Borrowed Funds.

Formula: $$\frac{\textbf{Total External Credits}}{\textbf{Total Assets}}$$

The component of above formula will be explained as under.

Here, Total External Credit contains loans taken by the institution for financing its long term or short term requirements. Here, External Credit includes Secured and Unsecured Loans from the third part.

Here, Total Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

This ratio plays key role in deciding Effective Financial Structure of an organization. Here, WOCCU has announced that the ratio must be Maximum 5% or lower than that. The institutions which do not have the said ratio, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Effectiveness of Financial structure of the company. The analysis of this ratio is shown in the following table.

Table No. 5.11

Analysis of Total External Credit to Total Assets Ratio (E – 6)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	0	3.134	17.273	0.145	0	0	41.256	2.224	8.004
2002	0	3.392	22.318	0.157	0	0	46.443	1.043	9.169
2003	0	4.868	24.515	0.251	0	0.210	24.712	2.047	7.075
2004	0	1.150	15.088	4.111	0	0.058	32.105	2.788	6.912
2005	379.341	2.260	15.533	3.268	0	0.522	26.691	1.251	53.608
2006	235.629	17.088	31.630	0.516	0	0.386	0.936	0.773	35.870
2007	71.028	33.160	21.570	1.343	0	0.240	34.454	2.490	20.535
2008	87.034	27.145	25.821	0.782	0	0.148	33.948	43.476	27.294
2009	82.710	32.939	16.690	12.837	0	0.069	37.763	28.604	26.451
2010	0	66.204	20.966	22.064	0	0.585	40.043	23.814	21.709
Average	**85.574**	**19.134**	**21.140**	**4.547**	**0**	**0.222**	**31.835**	**10.851**	
Overall Avg.	**21.663**								
S. D.	**127.215**	**21.047**	**5.247**	**7.266**	**0.000**	**0.212**	**12.684**	**15.364**	
C.V.	**148.660**	**109.997**	**24.820**	**159.791**	**0.000**	**95.427**	**39.843**	**141.586**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.11 shows the company wise Total External Credit to Total Assets Ratio during study period. It reveals from the above table that the ratio of CMC InfoTech Ltd., registered surprising trend during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal solvency ratio for the institution would be maximum 5 percent. It reveals from the above table that CMC InfoTech Ltd. did not achieve the target during the period under review. Here, the External Credit to Total Assets ratio was its peak because of increment in External Credit during the study period. However, the ratio was zero percent as there was no external credit in first four financial years during the study period. The ratio ranges from zero percent to 379.341 percent. It also reveals from the above table that the growth of External Credit to Total Assets ratio was slow in first four years and it increased rapidly in last six years during the study period. The ratio did not achieve its standard in the any financial year during the period under review. The CMC InfoTech Ltd. has got 85.574 percentages as the average for ten years which is higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that CMC's ratio was much higher than industry average so company need to focus on its ratio. The company's average for ten years was 85.574 percent and industry average during the same period was 21.663 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was the highest and it was 148.660 percent which shows that the company has got the highest variability in the said ratio. Finally, it can be concluded that the ratio of CMC InfoTech Ltd, was highly dissatisfactory during the study period.

GTL LIMITED

Table 5.11 reveals External Credit to Total Assets Ratio of the GTL Ltd. during study period. It can be seen from the above table that the ratio of GTL Ltd., registered a continuous increasing trend except financial year 2003-04 and 2007-08 during study period. According to WOCCU, the ideal solvency ratio for the institution would be maximum 5 percent. It reveals from the above table that GTL Ltd. did not achieve the goal in last five years during the period under review i.e. financial year 2005-06 to

2009-10. However, the Solvency ratio of the GTL Ltd. showed positive trend in first five years only. The ratio ranges from 1.150 percent in financial year 2003-04 to 66.204 percent in financial year 2009-10. It also reveals from the above table that the growth of solvency ratio was slow in first five years and it increased rapidly in last five years during the study period. The GTL Ltd. has got 19.134 percentages as the average for ten years which is much higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that GTL's ratio was lower than industry average so company need to focus on its external credit repayment. The company's average for ten years was 19.134 percent and industry average during the same period was 21.663 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 109.997 percent which shows that the company has got higher variability in the said ratio. The variability also exists because of increment in ratio during last five years. Finally, it can be concluded that the External Credit to Total Assets Ratio of GTL Ltd, was moderately satisfactory during the study period.

HCL INFOSYSTEMS LIMITED

Table 5.11 shows the company wise External Credit to Total Assets Ratio during study period. It reveals from the above table that the ratio of HCL Info Systems Ltd., registered a fluctuating trend during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal External Credit to Total Assets ratio for the institution would be maximum 5 percent. It reveals from the above table that HCL Info Systems Ltd. has not achieved the standard ratio in any year during the period under review. The ratio ranges from 15.088 percent in financial year 2003-04 to 31.639 percent in financial year 2005-06. It also reveals from the above table that the growth of solvency ratio was always high during the study period. The HCL Info Systems Ltd. has got 21.140 percentages as the average for ten years which was much higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that HCL's External Credit to Total Assets ratio was almost same to industry average so company need to decrease its ratio. The company's average for ten years was 21.140 percent and

industry average during the same period was 21.663 percent. Coefficient of variance shows the variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 24.820 percent which shows that the company has got the lowest variability in the said ratio which is positive sign for company's ratio. Finally, it can be concluded that the External Credit to Total Assets Ratio of HCL Info Systems Ltd, was less than satisfactory during the study period as the ratio was much higher in every year than the standard ratio during the study period. The company needs to focus on the External Credit part of the said ratio as it is not stable during last ten years.

HCL TECHNOLOGIES

Table 5.11 shows the company wise External Credit to Total Assets Ratio during the study period. It reveals from the above table that the ratio of HCL Technologies registered a continuous increasing trend except financial years 2004-05, 2005-06 and financial year 2007-08 during study period. According to WOCCU, the ideal solvency ratio for the institution would be maximum 5 percent. It reveals from the above table that HCL Technologies did not achieve the target in last two years during the period under review i.e. financial year 2008-09 to 2009-10. Before the financial year 2008-09 the company achieved the goal which has been laid down by WOCCU which is positive sing for company's growth in the said ratio. The ratio ranges from 0.145 percent in financial year 2000-01 to 22.064 percent in financial year 2009-10. It also reveals from the above table that the growth of ratio was very slow in first eight years and it increased gradually in last two years during the study period. The HCL Technologies has got 4.547 percentages as the average for ten years which was lower than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that HCL Technologies's ratio was much lower than industry average and standard ratio laid down by WOCCU so company need not to worry on its External Credits. The company's average for ten years was 4.547 percent and industry average during the same period was 21.663 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 159.791 percent which shows that the company has got the highest variability

in the said ratio. Finally, it can be concluded that the ratio of HCL Technologies was highly satisfactory during the period under study.

POLARIS SOFTWARE LAB LIMITED

Table 5.11 reveals External Credit to Total Assets ratio of the Polaris Software Lab Ltd. during study period. It can be seen from the above table that the solvency ratio of Polaris Software Lab Ltd., registered a continuous decreasing trend except financial year 2004-05 and 2009-10 during study period. According to WOCCU, the ideal ratio for the institution would be maximum 5 percent. It reveals from the above table that Polaris Software Lab Ltd. achieved the goal in all the years during the period under review. The ratio ranges from 0.058 percent in financial year 2003-04 to 0.585 percent in financial year 2009-10. It also reveals from the above table that the growth of ratio was very slow during the study period in last ten years. The Polaris Software Lab Ltd. has got 0.222 percentages as the average for ten years which was much lower than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that Company's External Credit to Total Assets ratio was much lower than industry average so company need not to focus on its liquidity part. The company's average for ten years was 0.222 percent and industry average during the same period was 21.663 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 95.427 percent which shows that the company has got higher variability in the said ratio. The higher variability also exists because of no much increment in ratio during study period. Finally, it can be concluded that the External Credit to Total Assets ratio of Polaris Software Lab Ltd, was highly satisfactory during the study period.

ROLTA INDIA LIMITED

Table 5.11 shows the company wise External Credit to Total Assets ratio analysis during study period. It reveals from the above table that the ratio of Rolta India Ltd., registered a fluctuating trend during study period According to WOCCU, the ideal solvency ratio for the institution would be maximum 5 percent. It reveals from the above table that Rolta India Ltd. has not achieved the standard ratio in any financial

year except financial year 2005-06 during the period under review. The ratio ranges from 0.936 percent in financial year 2005-06 to 46.443 percent in financial year 2001-02. It also reveals from the above table that the growth of ratio was always high except one financial year during the study period. The Rolta India Ltd. has got 31.835 percentages as the average for ten years which was much higher than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that Rolta India's ratio was much higher than industry average so company need to reduce its External Credit. The company's average for ten years was 31.835 percent and industry average during the same period was 21.663 percent. Coefficient of variance shows the variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 39.843 percent which shows that the company has got moderate variability in the said ratio which is positive sign for company's ratio. Finally, it can be concluded that the External Credit to Total Assets Ratio of Rolta India Ltd, has less than satisfactory during the study period as the ratio is much higher in every year than the standard ratio during the study period. The company needs to focus on overall ratio as company has got high average than industry standard.

WIPRO

Table 5.11 shows the company wise External Credit to Total Assets ratio during study period. It reveals from the above table that the ratio of Wipro registered a fluctuating trend during the study period. According to WOCCU, the ideal solvency ratio for the institution would be maximum 5 percent. It reveals from the above table that wipro did not achieve the target in last three fnancial years during the period under review i.e. financial year 2007-08 to 2009-10. Before the financial year 2007-08 the company achieved the goal which has been laid down by WOCCU which was positive sing for company's growth in ratio. The ratio ranges from 0.773 percent in financial year 2005-06 to 43.476 percent in financial year 2007-08. It also reveals from the above table that the growth of External Credit to Total Assets ratio was very slow in last three years during the study period. The Wipro has got 10.851 percentages as the average for ten years which was almost doubled than the maximum standard lay down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that Wipro's ratio was much lower than industry average and

standard ratio laid down by WOCCU so company need to focus on its ratio. The company's average for ten years was 10.851 percent and industry average during the same period was 21.663 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 141.586 percent which shows that the company has got the second highest variability in the said ratio. The high CV may be because of increase in ratio during last two financial years. Finally, it can be concluded that the External Credit to Total Assets ratio of Wipro was not satisfactory during the period under study.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.11 shows the company wise External Credit to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it is being observed that none of the company expect CMC Ltd. and Rolta India Ltd. has got the highest average than the industry average. The industry average during study period was 21.663 percent which was higher than the standard ratio. where as CMC Info Tech Ltd., registered the highest 85.574 percent, GTL Ltd., recorded 19.134 percent, HCL Info systems Ltd., got 21.140 percent, HCL Technologies registered 4.547 percent, Infosys recorded the lowest and it was 0 percent as it was not having any external credit during last ten years, Polaris Software Lab Ltd. achieved 0.222 percent, Rolta India Ltd. registered 31.835 percent and Wipro registered with 10.851 percent. It clearly reveals that Infosys, Polaris Software Lab Ltd. and HCL Technologies were having low External Credit to Total Assets ratio not only from industry standard but also from the standard goal lay down by WOCCU. Comparing CV of all the selected companies, it reveled that HCL Info System Ltd. has got the lowest during period under study. If we rank the selected companies on the basis of their average than Infosys comes out as out performer Information Technology Company as it has not having external credit. The second and third rank secured by Polaris Software Lab Ltd., and HCL Technologies respectively. The forth rank onwards to seventh rank secured by Wipro, GTL Ltd., HCL Info System and Rolta India Ltd. respectively. CMC Ltd. was the least rank company in External Credit to Total Assets ratio of selected companies during study period.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The External Credit to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The External Credit to Total Asses ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The External Credit to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The External Credit to Total Assets ratio differs significantly within Selected Information Technology Companies.

Table 5.12

Two – Way ANOVA of Solvency Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	16410.295	9	1823.366	0.835	2.032
Within Companies	55336.284	7	7905.184	3.621	2.159
Error	137524.011	63	2182.921		
Total	209270.591	79			

In Table 5.12, the value of the calculated F ratio for the years is 0.835, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 3.621, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[0.835]** $< F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in the External Credit to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[3.621]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7, 63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the External Credit to Total Assets ratio within selected Indian Information Technologies Companies during period under review.

E-7. Member Share Capital to Total Assets Ratio

Purpose: To measure the percentage of total assets financed by Member shares.

Formula: $\frac{\textbf{Member Share Capital}}{\textbf{Total Assets}}$ **X 100**

The component of above formula will be explained as under.

Here, Member Share Capital contains Equity Share Capital of the company at the end of the financial year.

Here, Total Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

This ratio plays very important role in deciding Effective Financial Structure of an organization. Here, WOCCU has announced that the ratio must be Maximum 20% or lower than that. The institutions which do not have the said ratio, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Effectiveness of Financial structure of the company. The analysis of this ratio is shown in the following table.

Table No. 5.13

Analysis of Member Share Capital to Total Assets Ratio (E – 7)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	94.063	52.176	4.902	3.410	2.376	13.169	10.531	2.309	22.867
2002	93.942	46.864	5.652	2.796	1.587	17.581	9.676	1.813	22.489
2003	89.279	43.050	7.376	2.558	1.153	7.107	9.304	1.368	20.149
2004	89.108	42.563	6.956	2.480	1.014	12.392	8.470	1.294	20.535
2005	70.334	43.964	6.386	2.213	2.575	12.229	8.857	2.839	18.675
2006	53.233	54.514	5.455	2.548	2.001	10.150	7.626	4.403	17.491
2007	60.624	39.298	3.094	3.762	2.562	9.242	4.469	3.053	15.763
2008	45.578	36.578	2.506	4.166	2.120	8.883	7.873	2.833	13.817
2009	36.331	30.854	2.519	3.361	1.606	9.774	6.100	1.672	11.527
2010	31.794	14.177	2.521	2.175	1.289	11.815	5.128	1.264	8.770
Average	**66.429**	**40.404**	**4.737**	**2.947**	**1.828**	**11.234**	**7.803**	**2.285**	
Overall Avg.	**17.208**								
S. D.	**24.314**	**11.541**	**1.929**	**0.685**	**0.580**	**2.916**	**1.999**	**1.008**	
C.V.	**18.144**	**8.612**	**1.440**	**0.511**	**0.433**	**2.176**	**1.492**	**0.752**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.13 shows the company wise Member Share Capital to Total Assets Ratio during study period. It reveals from the above table that the ratio of CMC InfoTech Ltd., registered continuous decreasing trend except the financial year 2006-07 during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Member Share Capital to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that CMC InfoTech Ltd. did not achieve the target during the period under review. However, the company reached nearest to standard level in last financial year. The ratio ranges from 31.794 percent in financial year 2009-10 to 94.063 percent in financial year 2000-01. It also reveals from the above table that the growth of ratio was decreasing during the study period which will affect positively to company's financial structure. The CMC InfoTech Ltd. has got 66.429 percentages as the average for ten years which was much higher than the maximum standard laid down by WOCCU which will have negative impact on company's effective financial structure. Comparing company's average with overall average of the industry, it can be concluded that CMC's ratio was much higher than industry average so company need to focus on its ratio. The company's average for ten years was 66.249 percent and industry average during the same period was 17.208 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 18.144 percent which shows that the company has got the highest variability in the said ratio. Finally, it can be concluded company's overall average was much higher than the standard lay down by WOCCU.

GTL LIMITED

Table 5.13 reveals Member Share Capital to Total Assets ratio of the GTL Ltd. during study period. It can be seen from the above table that the ratio of GTL Ltd., registered continuous decreasing trend except financial year 2004-05 during study period. According to WOCCU, the ideal Member Share Capital to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that GTL Ltd. did not achieve the goal during the first nine years of the study period. However, it achieved the standard ratio in last financial year. The ratio ranges from 14.177 percent in financial year 2009-10 to 54.514 percent in financial year 2005-06. The

Member Share Capital to Total Assets ratio did not achieve its standard during the period under review except financial year 2009-10 which was negative sign for the company. It has been observed that the ratio never achieved the standard goal so it affects negatively to the company's Effective Financial Structure. The GTL Ltd. has got 40.404 percentages as the average for ten years which was much higher than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that GTL's Member Share Capital to Total Assets ratio was much higher than industry as well as standard ratio so company was not safe on its financial structure. The company's average for ten years was 40.404 percent and industry average during the same period was 17.208 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 8.612 percent which shows that the company has got the second highest variability in the said ratio. Finally, it can be concluded that the Member Share Capital to Total Assets ratio of GTL Ltd, was highly dissatisfactory during the study period.

HCL INFOSYSTEMS LIMITED

Table 5.13 shows the ratio of Member Share Capital to Total Assets for the HCL Info system Limited during the period under review. The ratio showed continuous decreasing trend except financial years 2001-02 and 2002-03 during study period. It ranges between 2.519 in financial year 2008-09 to 7.376 in the financial year 2002-03. This ratio explains the relationship between companies's member share capital and total assets. Here, the ratio never went beyond its standard level during the study period. Here, WOCCU announced the standard ratio for the institutions is 20% or lower than this level. Comparing company's average with overall industry average, it can be concluded that the company was having very low ratio which has got positive impact on its Financial Structure. Company's average was 4.737 percent and Industry average was 17.208 percent during the period under study. Here, it can be noted that overall average of company during the study period was lower than the standard lay down by WOCCU which would have positive impact on company's financial structure. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 1.440

percent which shows that the company has got lower variability in the said ratio. The low CV may be because of continuous decrease in ratio. Finally, it can be concluded that the Member Share Capital to Total Assets of HCL Info system Ltd. was under control during the period under study. It also can be concluded that the Financial Structure of HCL Info system Ltd. was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

HCL TECHNOLOGIES

Table 5.13 reveals Member Share Capital to Total Assets ratio of the HCL Technologies during study period. It can be seen from the above table that the ratio of HCL Technologies, registered decreasing trend except financial year 2005-06 to 2007-08 during the study period According to WOCCU, the ideal Member Share Capital to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that HCL Technologies achieved the goal during the study period. The ratio ranges from 2.175 percent in financial year 2009-10 to 4.166 percent in financial year 2007-08. The Member Share Capital to Total Assets ratio achieved its standard in all the years which was positive sign for the company. It has been observed that the ratio never went above the standard goal so it affects positively to the company's Effective Financial Structure. The HCL Technologies has got 2.947 percentages as the average for ten years which was much lower than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's Member Share Capital to Total Assets ratio was much lower than industry average so company was safe on its financial structure. The company's average for ten years was 2.947 percent and industry average during the same period was 17.208 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 0.511 percent which shows that the company has got the third lowest variability in the said ratio. Finally, it can be concluded that the Member Share Capital to Total Assets ratio of HCL Technologies was highly satisfactory during the study period.

INFOSYS

Table 5.13 shows the ratio of Member Share Capital to Total Assets for the Infosys during the period under review. The ratio showed continuous decreasing trend except financial years 2004-05 and 2006-07 during study period. It ranges between 1.014 percent in financial year 2003-04 to 2.575 in the financial year 2004-05. This ratio explains the relationship between company's Member Share Capital and total assets. Here, the ratio never went beyond its standard level during the study period. Here, WOCCU announced the standard ratio for the institutions is 20% or lower than this level. Comparing company's average with overall industry average, it can be concluded that the company was having lower ratio than standard ratio lay down by WOCCU which has got positive impact on its Financial Structure. Company's average was 1.828 percent and Industry average was 17.208 percent during the period under study. Here, it can be noted that overall average of company during the study period was lower than the standard lay down by WOCCU which would have positive impact on company's financial structure. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 0.433 percent which shows that the company has got the lowest variability in the said ratio among all selected companies. Finally, it can be concluded that the Member Share Capital to Total Assets of Infosys was under control during the period under study. It also can be concluded that the Financial Structure of Infosys was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

POLARIS SOFTWARE LAB LIMITED

Table 5.13 reveals Member Share Capital to Total Assets ratio of the Polaris Software Lab Ltd. during study period. It can be seen from the above table that the ratio of Polaris Software Lab Ltd., registered fluctuating trend during study period. According to WOCCU, the ideal Member Share Capital to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that Polaris Software Lab Ltd. achieved the goal during the period under review. The ratio ranges from 7.107 percent in financial year 2002-03 to 17.581 percent in financial year 2001-02. It has been observed that the ratio was under control and therefore it shows positive sign for the company's Effective Financial Structure. The Polaris Software Lab Ltd. has

got 11.234 percentages as the average for ten years which was lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's Member Share Capital to total assets ratio was lower than industry average. However, company's average was lower than the standard given by WOCCU. The company's average for ten years was 11.234 percent and industry average during the same period was 17.208 percent. Coefficient of variance shows the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 2.176 percent which shows that the company has got low variability in the said ratio. Finally, it can be concluded that the Member Share Capital to total assets ratio of Polaris Software Lab Ltd. was satisfactory during the study period.

ROLTA INDIA LIMITED

Table 5.13 shows the company wise Member Share Capital to Total Assets Ratio during study period. It reveals from the above table that the ratio of Rolta India Ltd. registered continuous decreasing trend except financial years 2004-05 and 2007-08 during the study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Member Share Capital to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that Rolta India Ltd. achieved the target in all the years during the period under review. The company achieved the goal which has been laid down by WOCCU in all the financial years. The ratio ranges from 5.128 percent in financial year 2009-10 to 10.531 percent in financial year 2000-01. It also reveals from the above table that the growth of ratio was slow in first four years and it increased later during the study period. The Rolta India Ltd. has got 7.803 percentages as the average for ten years which was much lower than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was much lower than industry average so company need not to focus on its ratio. The company's average for ten years was 7.803 percent and industry average during the same period was 17.208 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 1.492 percent which shows that the company has got lower variability in the said ratio. Finally it can be concluded that overall

average of the company's ratio was lower than the standard lay down by the WOCCU. So, company's financial structure was effective.

WIPRO

Table 5.13 shows the company wise Member Share Capital to Total Assets Ratio during the study period. It reveals from the above table that the ratio of Wipro Ltd. registered continuous decreasing trend except financial year 2004-05 and 2005-06 during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Member Share Capital to Total Assets ratio for the institution would be maximum 20 percent. It reveals from the above table that Wipro Ltd. achieved the target in all the financial years during the period under review. The ratio ranges from 1.264 percent in financial year 2009-10 to 4.403 percent in financial year 2005-06. It also reveals from the above table that the growth of ratio was low in first four years and it increased in later years during the study period. The Wipro has got 2.285 percentages as the average for ten years which was lower than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was lower than industry average so company need not to focus on its ratio. The company's average for ten years was 2.285 percent and industry average during the same period was 17.208 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 0.752 percent which shows that the company has got low variability compare to other selected companies in the said ratio. Finally, it can be concluded that Wipro's Member Share Capital to total assets ratio was under control during the period under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.13 shows the company wise Member Share Capital to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect CMC Info Tech Ltd. and GTL Ltd. has got the highest average than the industry average. The industry average during study period was 17.208 percent where as CMC Info Tech Ltd. registered the highest Member Share Capital to Total

Assets ratio and it was 66.429 percent, GTL Ltd. recorded the second highest ratio and it was 40.404 percent, HCL Info systems Ltd. 4.737 percent, HCL Technologies registered the third lowest ratio and it was 2.947 percent, Infosys recorded the lowest ratio and it was 1.828 percent, Polaris Software Lab Ltd. achieved 11.234 percent, Rolta India Ltd. registered 7.808 percent and Wipro registered 2.285 percent. It clearly reveals that Infosys was having the lowest Member Share Capital to Total Assets ratio from not only industry standard but also standard goal lay down by WOCCU. This was positive sign for the company's effective financial structure. Comparing CV of all the selected companies, it reveals that Infosys has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than Infosys comes out as the best performer Information Technology Company in Member Share Capital to Total Assets ratio. The second and third rank secured by Wipro and HCL Technologies respectively. The forth rank onwards to seventh rank secured by HCL Info systems, Rolta India Ltd., Polaris Software Lab Ltd. and GTL Ltd. respectively. CMC Info tech Ltd. was the least rank company in Member Share Capital to Total Assets ratio of selected companies during study period as it had the highest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Member Share Capital to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Member Share Capital to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Member Share Capital to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Member Share Capital to Total Assets ratio differs significantly within Selected Information Technology Companies.

Table 5.14

Two – Way ANOVA of Total Saving Deposits to Total Assets Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	1591.300	9	176.811	2.188	2.032
Within Companies	39029.934	7	5575.705	69.010	2.159
Error	5090.115	63	80.795		
Total	45711.348	79			

In Table 5.14, the value of the calculated F ratio for the years is 2.188, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 69.010, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[2.188]** > $F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is significant difference in Member Share Capital to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[69.010]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Member Share Capital to Total Assets ratio within selected Indian Information Technologies Companies during the period under review.

E-8. Institutional Capital to Total Assets Ratio

Purpose: To measure the percentage of total assets financed by Institutional Capital. Here, Institutional Capital is defined as all legal and non-distributable reserves, capital donations and the portion of the current
year's surplus that will be retained as legal or non-distributable reserves. These reserves are not expended and no member may present an individual claim.

Formula: $$\frac{\textbf{Institutional Capital}}{\textbf{Total Assets}} \textbf{ X 100}$$

The component of above formula will be explained as under.

Here, Institutional Capital contains all types of Reserves of the Institution. Here, Reserves include General Reserves, Capital Reserves etc for the Current year.

Here, Total Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

This ratio plays very crucial role in deciding Effective Financial Structure of an organization. Here, WOCCU has announced that the ratio must be Minimum 10% or higher than that. The institutions which do not have the said ratio, should try to achieve the target as soon as possible. There is no uper limit for this ratio. So, the higher the ratio better will be the Effectiveness of Financial structure of the company. The analysis of this ratio is shown in the following table.

Table No. 5.15

Analysis of Institutional Capital to Total Assets Ratio (E – 8)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	10.730	90.917	40.616	111.590	39.813	135.204	61.158	95.448	73.184
2002	9.836	84.623	49.398	97.047	32.212	150.199	60.961	97.125	72.675
2003	10.593	81.535	68.106	97.191	26.809	79.953	62.213	96.579	65.372
2004	10.637	121.527	77.303	93.410	6.148	112.884	59.424	95.920	72.157
2005	7.289	124.198	76.777	94.518	3.625	119.881	64.450	95.884	73.327
2006	6.887	51.704	61.049	96.935	3.509	101.639	89.959	94.651	63.292
2007	8.924	37.885	74.195	94.371	3.386	103.551	59.513	94.421	59.531
2008	8.935	32.065	71.170	95.053	3.314	109.513	55.934	110.499	60.810
2009	9.400	29.030	80.791	83.801	3.268	143.319	55.539	69.716	59.358
2010	10.388	13.447	76.513	75.760	3.503	196.514	55.453	74.914	63.311
Average	**9.362**	**66.693**	**67.592**	**93.967**	**12.559**	**125.266**	**62.460**	**92.516**	
Overall Avg.	**66.302**								
S. D.	**1.378**	**39.369**	**13.294**	**9.286**	**14.425**	**32.721**	**10.120**	**11.693**	
C.V.	**14.720**	**59.031**	**19.669**	**9.882**	**114.865**	**26.121**	**16.202**	**12.639**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.15 shows the company wise Institutional Capital to Total Assets ratio during study period. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered a continuous increasing trend except financial years 2001-02, 2004-05 and 2005-06 during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal ratio for the institution would be minimum 10 percent. It reveals from the above table that CMC InfoTech Ltd. did not achieve the target during the financial years 2004-05 to 2008-09 during the period under review. However, the company achieved the goal which has been laid down by WOCCU in last financial year. The ratio ranges from 6.887 percent in financial year 2005-06 to 10.730 percent in financial year 2000-01. It also reveals from the above table that the growth of ratio was slow in last five years and it increased rapidly in last year during the study period. The Institutional Capital to Total Assets ratio achieved its standard in the financial years 2000-01, 2002-03, 2003-04 and 2009-10. The CMC InfoTech Ltd. has got 9.362 percentages as the average for ten years which was marginally lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that CMC's ratio was lower than industry average so company need to focus on its ratio. The company's average for ten years was 9.362 percent and industry average during the same period was 66.302 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 14.720 percent which shows that the company has got low variability in the said ratio. Finally, it can be concluded that the Institutional Capital to Total Assets ratio of CMC InfoTech Ltd, was not satisfactory during the study period.

GTL LIMITED

Table 5.15 reveals Institutional Capital to Total Assets ratio of the GTL Ltd. during study period. It can be seen from the above table that the ratio of GTL Ltd. registered a continuous decreasing trend except financial year 2003-04 and 2004-05 during study period. According to WOCCU, the ideal ratio for the institution would be minimum 10 percent. It reveals from the above table that GTL Ltd. achieved the goal during the period under review. Here, the Institutional Capital to Total Assets ratio of

the GTL Ltd. showed positive trend. The ratio ranges from 13.447 percent in financial year 2009-10 to 124.198 percent in financial year 2004-05. It also reveals from the above table that the growth of Institutional Capital to Total Assets ratio was slow in last Five years and it was high in first five years during the study period. The ratio achieved its standard in all the financial years during the study period. The GTL Ltd. has got 66.693 percentages as the average for ten years which was higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that GTL's ratio was higher than industry average so company need not to focus on its ratio. The company's average for ten years was 66.693 percent and industry average during the same period was 66.302 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, lower will be the consistency. Here, company's CV was 59.031 percent which shows that the company has got moderate variability in the said ratio. The variability also exists because of decrement in ratio during last four years. Finally, it can be concluded that the solvency of GTL Ltd. was highly satisfactory during the study period.

HCL INFOSYSTEMS LIMITED

Table 5.15 shows the company wise Institutional Capital to Total Assets ratio analysis during study period. It reveals from the above table that the ratio of HCL Info Systems Ltd. registered an increasing trend during first four years of the study period and showed fluctuating trend during last six years of the study period. According to WOCCU, the ideal ratio for the institution would be minimum 10 percent. It reveals from the above table that HCL Info Systems Ltd. has achieved the standard ratio in every year during the period under review. However, the ratio of the HCL Info Systems Ltd. showed fluctuating trend during last six years of the study period. The ratio ranges from 40.616 percent in financial year 2000-01 to 80.791 percent in financial year 2008-09. It also reveals from the above table that the growth of ratio was always slow during the study period. The HCL Info Systems Ltd. has got 67.592 percentages as the average for ten years which was higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that HCL's ratio was slightly higher than industry average and the standard lay down by WOCCU. The company's average for ten years

was 67.592 percent and industry average during the same period was 66.302 percent. Coefficient of variance shows the variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 19.669 percent which shows that the company has got low variability in the said ratio which is positive sign for company's ratio. Finally, it can be concluded that the Institutional Capital to Total Assets ratio of HCL Info Systems Ltd, has more than satisfactory during the study period as the ratio was higher in every year than the standard ratio during the study period. The company needs to focus on the consistency part of the said ratio as it was not stable during last ten years.

HCL TECHNOLOGIES

Table 5.15 shows the company wise Institutional Capital to Total Assets ratio during study period. It reveals from the above table that the ratio of HCL Technologies registered a continuous increasing trend except financial years 2004-05, 2005-06 and financial year 2007-08 during study period. According to WOCCU, the ideal ratio for the institution would be minimum 10 percent. It reveals from the above table that HCL Technologies achieved the target ratio in all the financial years during the period under review. The ratio ranges from 75.760 percent in financial year 2009-10 to 111.590 percent in financial year 2000-01. It also reveals from the above table that the growth of ratio was very slow in first few years and it increased gradually in last years during the study period. The Institutional Capital to Total Assets ratio achieved its standard in the all the financial years. The HCL Technologies has got 93.967 percentages as the average for ten years which was higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that HCL Technologies's ratio was higher than industry average and standard ratio laid down by WOCCU so company need not to focus on its Institutional Capital to Total Assets ratio. The company's average for ten years was 93.967 percent and industry average during the same period was 66.302 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 9.882 percent which shows that the company has got lowest variability in the said ratio among all the companies. Finally, it can be concluded that the solvency of HCL Technologies was highly satisfactory during the period under study.

INFOSYS

Table 5.15 reveals Institutional Capital to Total Assets ratio of the Infosys during study period. It can be seen from the above table that the ratio of Infosys registered a continuous decreasing trend except financial year 2009-10 during study period. According to WOCCU, the ideal Institutional Capital to Total Assets ratio for the institution would be minimum 10 percent. It reveals from the above table that Infosys has achieved the goal of standard ratio during the first three years and then the ratio went below the standard level. It also reveals from the above table that Infosys has got the second lowest ratio during the study period as its ratio was much lower than standard ratio. The ratio ranges from 3.268 percent in financial year 2008-09 to 39.813 percent in financial year 2000-01. It also reveals from the above table that the growth of ratio was very low during the study period. The solvency ratio achieved its standard in the first three financial years only. The Infosys has got 12.559 percentages as the average for ten years which was marginally higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that Infosys's ratio was also much lower than industry average. The company's average for ten years was 12.559 percent and industry average during the same period was 66.301 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 114.864 percent which shows that the company has got the highest variability in the said ratio during the study period. The variability also exists because of continuous decrement in ratio during period under review. Finally, it can be concluded that the solvency of Infosys was not satisfactory during the study period.

POLARIS SOFTWARE LAB LIMITED

Table 5.15 reveals Institutional Capital to Total Assets ratio of the Polaris Software Lab Ltd. during study period. It can be seen from the above table that the ratio of Polaris Software Lab Ltd., registered a continuous increasing trend except financial year 2002-03 and 2005-06 during study period which was positive sign for company's ratio. According to WOCCU, the ideal ratio for the institution would be minimum 10 percent. It reveals from the above table that Polaris Software Lab Ltd. achieved the goal in all ten years during the period under review. The ratio ranges from 79.953

percent in financial year 2002-03 to 196.514 percent in financial year 2009-10. It also reveals from the above table that the growth of solvency ratio was very high during the study period. The Polaris Software Lab Ltd. has got 125.266 percentages as the average for ten years which was much higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that Company's ratio was much higher than industry average so company need not to focus on its Institutional Capital to Total Assets ratio. The company's average for ten years was 125.266 percent and industry average during the same period was 66.302 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 26.121 percent which shows that the company has got lower variability in the said ratio. The lower variability also exists because of no much decrement in ratio during study period. Finally, it can be concluded that the Institutional Capital to Total Assets ratio of Polaris Software Lab Ltd. was highly satisfactory during the study period.

ROLTA INDIA LIMITED

Table 5.15 shows the company wise Institutional Capital to Total Assets ratio analysis during study period. It reveals from the above table that the ratio of Rolta India Ltd. registered a fluctuating trend during the study period starting from 2000-01 to 2009-10. According to WOCCU, the ideal Institutional Capital to Total Assets ratio for the institution would be minimum 10 percent. It reveals from the above table that Rolta India Ltd. has achieved the standard ratio in every year during the period under review. The ratio ranges from 55.453 percent in financial year 2009-10 to 89.959 percent in financial year 2005-06. It also reveals from the above table that the growth of ratio was always high during the study period. The Rolta India Ltd. has got 62.460 percentages as the average for ten years which is higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that Rolta India's solvency ratio was marginally lower than industry average so company need to increase its ratio. The company's average for ten years was 62.460 percent and industry average during the same period was 66.302 percent. Coefficient of variance shows the variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was

16.202 percent which shows that the company has got low variability in the said ratio which is positive sign for company's ratio. Finally, it can be concluded that the Institutional Capital to Total Assets ratio of Rolta India Ltd, has more than satisfactory during the study period as the ratio was much higher in every year than the standard ratio during the study period. The company needs to focus on overall ratio part as company has got low average than industry standard.

WIPRO

Table 5.15 shows the company wise Institutional Capital to Total Assets ratio during study period. It reveals from the above table that the ratio of Wipro registered a fluctuating trend during the study period. According to WOCCU, the ideal Institutional Capital to Total Assets ratio for the institution would be minimum 10 percent. It reveals from the above table that wipro achieved the target ratio during all the financial years under study. The ratio ranges from 69.716 percent in financial year 2008-09 to 110.499 percent in financial year 2007-08. It also reveals from the above table that the growth of Institutional Capital to Total Assets ratio was very high during the study period. The Institutional Capital to Total Assets ratio achieved its standard in the all financial years during the period under review. The Wipro has got 92.516 percentages as the average for ten years which was higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that Wipro's Institutional Capital to Total Assets ratio was much higher than industry average and standard ratio laid down by WOCCU so company need not to focus on its ratio. The company's average for ten years was 92.516 percent and industry average during the same period was 66.302 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 12.639 percent which shows that the company has got lowest variability in the said ratio. The low CV may be because of low change in ratio. Finally, it can be concluded that the Institutional Capital to Total Assets ratio of Wipro was highly satisfactory during the period under study.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.15 shows the company wise Institutional Capital to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it is being observed that none of the company expect CMC Info Systems Ltd. and Infosys has got the lowest average than the industry average. The industry average during study period was 66.302 percent where as CMC Info Tech Ltd., registered the lowest 9.362 percent, GTL Ltd. recorded 66.693 percent, HCL Info systems Ltd. got 67.592 percent, HCL Technologies registered 93.967 percent, Infosys recorded the second lowest and it was 12.559 percent, Polaris Software Lab Ltd., achieved 125.559 percent, Rolta India Ltd. registered 62.460 percent and Wipro registered with 92.516 percent. It clearly reveals that CMC Info System Ltd. and Infosys were having low Solvency ratio not only from industry standard but also standard goal lay down by WOCCU. Comparing CV of all the selected companies, it reveled that HCL Technologies has got the lowest during period under study. If we rank the selected companies on the basis of their average than Polaris Software Lab Ltd. comes out as out performer Information Technology Company in Institutional Capital to Total Assets ratio. The second and third rank secured by HCL Technologies and Wipro respectively. The forth rank onwards to seventh rank secured by HCL Info Systems Ltd., GTL Ltd., Rolta India Ltd. and Infosys respectively. CMC Info System Ltd. was the least rank company in Institutional Capital to Total Assets ratio of selected companies during study period.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Institutional Capital to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Institutional Capital to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Institutional Capital to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Institutional Capital to Total Assets ratio differs significantly within Selected Information Technology Companies.

Table 5.16

Two – Way ANOVA of Institutional Capital to Total Assets Ratio

Source of Variation	***SS***	***df***	***MS***	***F***	***F crit***
Within Years	2517.676	9	279.742	0.641	2.032
Within Companies	110763.667	7	15823.381	36.281	2.159
Error	27476.663	63	436.138		
Total	140758.006	79			

In Table 5.16, the value of the calculated F ratio for the years is 0.641, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 36.281, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[0.641]** $< F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in the Institutional Capital to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{Calculated}$ **[36.281]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7, 63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Institutional Capital to Total Assets ratio within selected Indian Information Technologies Companies during period under review.

E-9. Net Institutional Capital to Total Assets Ratio:

This ratio includes Delinquent loans greater than 12 months which is not there in current study. Current study is related with Information Technology Industry of India and Delinquent Loan is not available in the selected companies' balance sheet as their business does not include sanctioning of loans. Hence, the Net Institutional Capital calculation is not possible. So, this ratio can not be calculated.

5.4 Assets Quality

A non-productive or non-earning asset is one that does not generate income. An excess of non-earning assets affects Institution's earnings in a negative way. The following PEARLS indicators are used to identify the impact of non-earning assets:

A-1. Total Loan Delinquency to Gross Loan Portfolio Ratio

This ratio includes Delinquent loans which are not there in current study. Current study is related with Information Technology Industry of India and Delinquent Loan is not available in the selected companies' balance sheet as their business does not include sanctioning of loans. Hence, this ratio can not be calculated.

A-2. Non-Earning Assets to Total Assets Ratio

Purpose: To measure the percentage of the total assets not producing income.

Formula: $$\frac{\textbf{Non – Earning Assets}}{\textbf{Total Assets}} \textbf{ X 100}$$

The component of above formula will be explained as under.

Here, Non – Earning Assets Includes the Assets of the organization which does not earn any direct Revenue for the institution. Here, Non – Earning Assets contains Cash and Bank Balance, Bills Receivables and Debtors etc. have been taken.

Here, Total Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

This ratio plays key role in deciding Assets Quality of an organization. Here, WOCCU has announced that the ratio must be Maximum 5% or lower than that. The institutions which do not have the said ratio, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Quality of Assets of the company. Here, credit unions are in terrible need of improving their poor physical image, the non-earning asset ratio can increase in the short run. An improved image is more important to the success of aggressive marketing programs than it is to keep a ratio within its limits. As new members join and deposit their savings with the credit union, the non-earning asset ratio begins to decrease as a result of increased public confidence.

The analysis of this ratio is shown in the following table.

Table No. 5.17

Analysis of Non – Earning Assets to Total Assets Ratio (A – 2)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	26.538	56.855	51.209	21.006	49.460	78.373	43.958	52.933	47.542
2002	31.433	52.012	59.144	5.071	53.269	78.754	46.990	36.603	45.409
2003	33.163	42.503	60.744	2.325	64.593	61.657	50.202	35.359	43.818
2004	34.904	61.667	71.728	4.328	69.782	45.712	44.206	37.479	46.226
2005	11.527	74.448	98.521	5.041	52.137	42.542	42.554	39.213	45.748
2006	93.921	42.721	88.409	6.850	69.552	40.019	92.956	43.084	59.689
2007	75.750	54.483	26.902	15.726	69.871	45.109	56.665	46.362	48.858
2008	71.119	34.784	32.326	25.795	70.586	36.478	37.267	77.281	48.204
2009	82.230	38.819	25.957	21.879	69.791	43.368	27.758	49.681	44.935
2010	64.407	7.314	20.077	16.010	58.564	39.729	21.477	44.866	34.055
Average	**52.499**	**46.561**	**53.502**	**12.403**	**62.760**	**51.174**	**46.403**	**46.286**	
Overall Avg.	**46.449**								
S. D.	**28.105**	**18.180**	**27.282**	**8.646**	**8.547**	**15.930**	**19.337**	**12.335**	
C.V.	**53.533**	**39.045**	**50.994**	**69.708**	**13.618**	**31.129**	**41.672**	**26.650**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.17 shows the company wise Non – Earning Assets to Total Assets Ratio during study period. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered fluctuating trend during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Non – Earning Assets to Total Assets ratio for the institution would be maximum 5 percent. It reveals from the above table that CMC InfoTech Ltd. did not achieve the target during the period under review. The ratio ranges from 11.527 percent in financial year 2004-05 to 96.921 percent in financial year 2005-06. It also reveals from the above table that the growth of ratio was very high during the study period which will affect negatively to company's Assets Quality. The CMC InfoTech Ltd. has got 52.499 percentages as the average for ten years which was much higher than the maximum standard laid down by WOCCU which will have negative impact on company's Assets Quality was very low. It also reveals that the company was having almost half non-earning assets. Comparing company's average with overall average of the industry, it can be concluded that CMC's ratio was higher than industry average so company need to focus on its ratio. The company's average for ten years was 52.499 percent and industry average during the same period was 46.449 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 53.533 percent which shows that the company has got the highest variability in the said ratio. Finally, it can be concluded that company's overall average was much higher than the standard lay down by WOCCU. Here, it also can be concluded that company should try to reduce its non-earning assets which would have positive impact on its ratio.

GTL LIMITED

Table 5.17 reveals Non – Earning Assets to Total Assets ratio of the GTL Ltd. during study period. It can be seen from the above table that the ratio of GTL Ltd. registered fluctuating trend during study period. According to WOCCU, the ideal Non – Earning Assets to Total Assets ratio for the institution would be maximum 5 percent. It reveals from the above table that GTL Ltd. did not achieve the goal during the first nine years of the study period. However, it was very near to standard ratio in last financial year. The ratio ranges from 7.314 percent in financial year 2009-10 to 74.448 percent in

financial year 2004-05. The Non – Earning Assets to Total Assets ratio did not achieve its standard during the period under review which was negative sign for the company. It has been observed that the ratio never achieved the standard goal so it affects negatively to the company's Assets Quality. The GTL Ltd. has got 46.561 percentages as the average for ten years which was much higher than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that GTL's Non – Earning Assets to Total Assets ratio was much higher than industry as well as standard ratio so company was not safe on its Assets Quality. The company's average for ten years was 46.561 percent and industry average during the same period was 46.449 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 39.045 percent which shows that the company has got the moderate variability in the said ratio. Finally, it can be concluded that the Non – Earning Assets to Total Assets ratio of GTL Ltd, was highly dissatisfactory during the study period.

HCL INFOSYSTEMS LIMITED

Table 5.17 shows the ratio of Non- Earning Assets to Total Assets for the HCL Info system Limited during the period under review. The ratio showed continuous increasing trend except financial years 2005-06, 2006-07, 2008-09 and 2009-10 during study period. It ranges between 20.077 in financial year 2009-10 to 98.521 in the financial year 2004-05. This ratio explains the relationship between companies's Non – Earning Assets and Total Assets. Here, the ratio was always above its standard level during the study period. Here, WOCCU announced the standard ratio for the institutions is 5 percent or lower than this level. Comparing company's average with overall industry average, it can be concluded that the company was having very high ratio which has got negative impact on its Financial Structure. Company's average was 53.502 percent and Industry average was 46.449 percent during the period under study. Here, it can be noted that overall average of company during the study period was higher than the standard lay down by WOCCU which would have negative impact on company's financial structure. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency.

Here, company's CV was 50.994 percent which shows that the company has got higher variability in the said ratio. The high CV may be because of continuous increase in ratio. Finally, it can be concluded that the Non – Earning Assets to Total Assets of HCL Info system Ltd. was under control during the period under study. It also can be concluded that the Asset's Quality of HCL Info system Ltd. was not under control as the company was not achieving the standard ratio given by WOCCU during the study period.

HCL TECHNOLOGIES

Table 5.1 reveals Non – Earning Assets to Total Assets ratio of the HCL Technologies during study period. It can be seen from the above table that the ratio of HCL Technologies registered fluctuating trend during the study period According to WOCCU, the ideal Non – Earning Assets to Total Assets ratio for the institution would be maximum 5 percent. It reveals from the above table that HCL Technologies achieved the goal during financial years 2001-02 to 2004-05. However, the company could not maintain this achievement and in rest of the years it did not achieve the standard ratio during the study period. The ratio ranges from 2.325 percent in financial year 2002-03 to 25.795 percent in financial year 2007-08. The Non – Earning Assets to Total Assets ratio achieved its standard in some of the years which was positive sign for the company. It has been observed that the ratio went above the standard goal after financial year 2005-06 so it affects negatively to the company's Assets Quality. The HCL Technologies has got 12.403 percentages as the average for ten years which was higher than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's Non – Earning Assets to Total Assets ratio was much lower than industry average so company was safe on its Assets Quality. The company's average for ten years was 12.403 percent and industry average during the same period was 46.449 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 69.708 percent which shows that the company has got the highest variability in the said ratio. Finally, it can be concluded that the Non – Earning Assets to Total Assets ratio of HCL Technologies was dissatisfactory during the study period.

INFOSYS

Table 5.17 shows the ratio of Non – Earning Assets to Total Assets for the Infosys during the period under review. The ratio showed continuous increasing trend except financial years 2004-05, 2008-09 and 2009-10 during study period. It ranges between 49.460 percent in financial year 2000-01 to 70.586 in the financial year 2007-08. This ratio explains the relationship between companies' Non – Earning Assets and Total Assets. Here, the ratio always went beyond its standard level during the study period. Here, WOCCU announced the standard ratio for the institutions is 5 percent or lower than this level. Comparing company's average with overall industry average, it can be concluded that the company was having higher ratio than standard ratio lay down by WOCCU which has got negative impact on its Assets Quality. Company's average was 62.760 percent and Industry average was 46.449 percent during the period under study. Here, it can be noted that overall average of company during the study period was higher than the standard lay down by WOCCU which would have negative impact on company's financial structure. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 0.433 percent which shows that the company has got the lowest variability in the said ratio among all selected companies. Finally, it can be concluded that the Non – Earning Assets to Total Assets of Infosys was not under control during the period under study. It also can be concluded that the Assets Quality of Infosys was not effective as the company was not achieving the standard ratio given by WOCCU during the study period.

POLARIS SOFTWARE LAB LIMITED

Table 5.17 reveals Non – Earning Assets to Total Assets ratio of the Polaris Software Lab Ltd. during study period. It can be seen from the above table that the ratio of Polaris Software Lab Ltd. registered decreasing trend except financial years 2006-07 and 2008-09 during study period. According to WOCCU, the ideal Non – Earning Assets to Total Assets ratio for the institution would be maximum 5 percent. It reveals from the above table that Polaris Software Lab Ltd. did not achieve the goal during the period under review. The ratio ranges from 36.478 percent in financial year 2007-08 to 78.754 percent in financial year 2001-02. It has been observed that the ratio was not under control and therefore it shows negative sign for the company's Assets

Quality. The Polaris Software Lab Ltd. has got 51.174 percentages as the average for ten years which was higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's Non – Earning Assets to total assets ratio was higher than industry average as well as standard ratio given by WOCCU. The company's average for ten years was 51.174 percent and industry average during the same period was 46.449 percent. Coefficient of variance shows the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 31.129 percent which shows that the company has got low variability in the said ratio. Finally, it can be concluded that the Non – Earning Assets to total assets ratio of Polaris Software Lab Ltd. was not satisfactory during the study period.

ROLTA INDIA LIMITED

Table 5.17 shows the company wise Non – Earning Assets to Total Assets Ratio during study period. It reveals from the above table that the ratio of Rolta India Ltd. registered continuous decreasing trend except financial years 2001-02, 2002-03 and 2005-06 during the study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Non – Earning Assets to Total Assets ratio for the institution would be maximum 5 percent. It reveals from the above table that Rolta India Ltd. did not achieve the target in all the years during the period under review. The company was not able to achieve the goal which has been laid down by WOCCU in all the financial years. The ratio ranges from 21.477 percent in financial year 2009-10 to 92.956 percent in financial year 2005-06. It also reveals from the above table that the growth of ratio was slow in first four years and it increased later during the study period. The Rolta India Ltd. has got 46.406 percentages as the average for ten years which was much higher than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was marginally lower than industry average so company need to focus on its ratio. The company's average for ten years was 46.406 percent and industry average during the same period was 46.449 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 41.467 percent which shows that the company has got moderate variability in the said ratio.

Finally it can be concluded that overall average of the company's ratio was higher than the standard lay down by the WOCCU. So, company's Assets Quality was not effective.

WIPRO

Table 5.17 shows the company wise Non – Earning Assets to Total Assets Ratio during the study period. It reveals from the above table that the ratio of Wipro Ltd. registered continuous increasing trend except financial year 2001-02, 2002-03, 2008-09 and 2009-10 during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Non – Earning Assets to Total Assets ratio for the institution would be maximum 5 percent. It reveals from the above table that Wipro Ltd. did not achieve the target in all the financial years during the period under review. The ratio ranges from 35.359 percent in financial year 2002-03 to 77.281 percent in financial year 2007-08. It also reveals from the above table that the growth of ratio was low in first four years and it increased in later years during the study period. The Wipro has got 46.286 percentages as the average for ten years which was higher than the maximum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was slightly lower than industry average so company need to focus on its ratio. The company's average for ten years was 46.286 percent and industry average during the same period was 46.449 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 26.650 percent which shows that the company has got low variability compare to other selected companies in the said ratio. Finally, it can be concluded that Wipro's Non – Earnings Assets to total assets ratio was not under control during the period under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.17 shows the company wise Non – Earning Assets to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect HCL Technologies, Rolta India Ltd. and Wipro has got the lowest average than the industry average. The industry average during study period was

46.449 percent where as CMC Info Tech Ltd. registered the second highest Non – Earning Assets to Total Assets ratio and it was 52.449 percent, GTL Ltd. recorded 46.561 percent, HCL Info systems Ltd. 53.502 percent, HCL Technologies registered the lowest ratio and it was 12.403 percent, Infosys recorded the highest ratio and it was 62.760 percent, Polaris Software Lab Ltd. achieved 51.174 percent, Rolta India Ltd. registered 46.403 percent and Wipro registered 46.286 percent. It clearly reveals that HCL Technologies was having the lowest Non – Earning Assets to Total Assets ratio from industry standard only however it was above the standard goal lay down by WOCCU. This was not positive sign for the company's Assets Quality. Comparing CV of all the selected companies, it reveals that Infosys has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than HCL Technologies comes out as the best performer Information Technology Company in the Non – Earning Assets to Total Assets ratio. The second and third rank secured by Rolta India Ltd. and Wipro respectively. The forth rank onwards to seventh rank secured by GTL Ltd., Polaris Software Lab Ltd., CMC Info Tech Ltd. and HCL Info Systems Ltd. respectively. Infosys was the least rank company in Non – Earning Assets to Total Assets ratio of selected companies during study period as it had the highest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Non – Earning Assets to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Non – Earning Assets to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Non – Earning Assets to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Non – Earning Assets to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Table 5.18

Two – Way ANOVA of Total Saving Deposits to Total Assets Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	2798.513	9	310.946	0.877	2.032
Within Companies	15338.977	7	2191.282	6.182	2.159
Error	22332.542	63	354.485		
Total	40470.032	79			

In Table 5.18, the value of the calculated F ratio for the years is 0.877, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 6.189, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[0.877]** < $F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is significant difference in Non–Earning Assets to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[6.189]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in Non – Earning Assets to Total Assets ratio within selected Indian Information Technologies Companies during the period under review.

A-3. Net Institutional & Transitory Capital + Non Interest-Bearing Liabilities to Non-earning Assets Ratio

Purpose: To measure the percentage of non-earning assets that is financed with institutional capital, transitory capital and liabilities without interest. Transitory Capital includes Monetary, Educational & Social Reserves, Revalued Assets, and Undistributed Income Referred.

Formula: $$\frac{\textbf{Institutional Capital + Non – Interest Bearing Liability}}{\textbf{Non – Earning Assets}} \textbf{ X 100}$$

Here, Institutional Capital contains all types of Reserves of the Institution. Here, Reserves include General Reserves, Capital Reserves etc for the Current year. Non – Interest Bearing Liability includes Creditors, Bills Payable, Out Standing Expenses and other Current Liabilities which do not have any interest burden.

Here, Non – Earning Assets Includes the Assets of the organization which does not earn any direct Revenue for the institution. Here, Non – Earning Assets contains Cash and Bank Balance, Bills Receivables and Debtors etc. have been taken.

This ratio plays very crucial role in deciding Assets Quality of an organization. Here, WOCCU has announced that the ratio must be Minimum 200% or higher than that. The institutions which do not have the said ratio, should try to achieve the target as soon as possible. There is no upper limit for this ratio. So, the higher the ratio better will be the Quality of Assets of the company. The analysis of this ratio is shown in the following table.

Table No. 5.19

Analysis of Institutional & Non Interest-Bearing Liabilities to Non-Earning Assets Ratio (A – 3)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	43.127	162.965	93.641	542.018	174.394	190.605	139.710	195.423	192.735
2002	34.921	165.128	105.093	1991.162	173.923	208.250	130.573	288.270	387.165
2003	33.099	196.668	131.842	4460.319	193.203	156.665	124.724	289.627	698.268
2004	31.934	200.740	132.735	2444.585	114.964	272.458	136.921	274.606	451.118
2005	624.648	183.489	99.843	2124.296	263.391	319.647	156.046	261.185	504.068
2006	67.826	138.911	98.202	1809.456	31.874	296.008	98.472	232.687	346.680
2007	89.857	104.314	554.930	779.352	65.452	267.648	107.057	219.589	273.525
2008	87.140	169.454	482.183	494.127	70.051	366.821	156.265	159.393	248.179
2009	53.952	91.474	643.879	538.473	51.619	403.714	208.062	161.018	269.024
2010	51.450	189.249	667.211	536.885	82.861	617.869	261.465	185.335	324.041
Average	**111.795**	**160.239**	**300.956**	**1572.067**	**122.173**	**309.969**	**151.930**	**226.713**	
Overall Avg.	**369.480**								
S. D.	**181.421**	**37.678**	**251.414**	**1275.038**	**75.319**	**132.667**	**49.020**	**50.393**	
C.V.	**162.280**	**23.514**	**83.538**	**81.106**	**61.649**	**42.800**	**32.265**	**22.228**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.19 shows the company wise Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets Ratio during study period. It reveals from the above table that the ratio of CMC InfoTech Ltd., registered continuous decreasing trend except financial year 2004-05 and 2006-07 during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal ratio for the institution would be minimum 200 percent. It reveals from the above table that CMC InfoTech Ltd. did not achieve the target in all the financial years except financial year 2004-05 during the period under review. The company did not achieve the goal which has been laid down by WOCCU in all the selected financial years during the study period except above mentioned financial year. The ratio ranges from 31.934 percent in financial year 2003-04 to 624.648 percent in financial year 2004-05. It also reveals from the above table that the growth of ratio was slow. The CMC InfoTech Ltd. has got 111.795 percentages as the average for ten years which was lower than the minimum standard laid down by WOCCU which will have negative impact on company's Assets Quality. Comparing company's average with overall average of the industry, it can be concluded that CMC's ratio was much lower than industry average so company need to focus on its ratio. The company's average for ten years was 111.795 percent and industry average during the same period was 369.480 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 162.280 percent which shows that the company has got the highest variability in the said ratio. Finally, it can be concluded company's overall average was lower than the standard lay down by WOCCU.

GTL LIMITED

Table 5.19 reveals Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets Ratio of the GTL Ltd. during study period. It can be seen from the above table that the ratio of GTL Ltd. registered fluctuating trend during study period. According to WOCCU, the ideal ratio for the institution would be minimum 200 percent. It reveals from the above table that GTL Ltd. achieved the goal in the one financial year only i.e. 2003-04 during the period under review. The ratio ranges from 91.474 percent in financial year 2008-09 to 200.740 percent in financial year 2003-04.

The said ratio did not achieve its standard during study period except financial year 2003-04 which was negative sign for the company. It has been observed that the ratio never went up to the standard goal so it affects negatively to the company's Assets Quality. The GTL Ltd. has got 160.239 percentages as the average for ten years which was much lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that GTL's ratio was much lower than industry average and standard ratio so company was not safe on its Assets Quality. The company's average for ten years was 160.239 percent and industry average during the same period was 369.480 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 23.514 percent which shows that the company has got the second lowest variability in the said ratio. Finally, it can be concluded that the ratio of GTL Ltd. was highly dissatisfactory during the study period.

HCL INFOSYSTEMS LIMITED

Table 5.19 shows the ratio of Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets for the HCL Info system Limited during the period under review. The ratio showed fluctuating during study period. It ranges between 93.641 in financial year 2000-01 to 667.211 in the financial year 2009-10. This ratio explains the relationship between companies's Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio. Here, the ratio did not achieve standard during first six years whereas during last four years the ratio achieved its goal. Here, WOCCU announced the standard ratio for the institutions is 200 percent or higher than this level. Comparing company's average with overall industry average, it can be concluded that the company was having low ratio but it achieved its standard ratio which has got positive impact on its Assets Quality. Company's average was 300.956 percent and Industry average was 369.480 percent during the period under study. Here, it can be noted that overall average of company during the study period was higher than the standard lay down by WOCCU which would have positive impact on company's Assets Quality. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 83.538 percent which shows that the company has got high

variability in the said ratio. The high CV may be because of continuous decrease in ratio. Finally, it can be concluded that the ratio of HCL Info system Ltd. was under control during the period under study. It also can be concluded that the Assets Quality of HCL Info system Ltd. was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

HCL TECHNOLOGIES

Table 5.19 reveals Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio of the HCL Technologies during study period. It can be seen from the above table that the ratio of HCL Technologies, registered decreasing trend except financial years 2001-02 and 2002-03 during study period. According to WOCCU, the ideal ratio for the institution would be minimum 200 percent. It reveals from the above table that HCL Technologies achieved the goal during the period under review. The ratio ranges from 494.127 percent in financial year 2007-08 to 4460.319 percent in financial year 2002-03. The ratio achieved its standard in all the years which was positive sign for the company. It has been observed that the Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio never went below the standard goal so it affects positively to the company's Assets Quality. The HCL Technologies has got 1572.067 percentages as the average for ten years which was much higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio was much higher than industry average so company was safe on its Assets Quality. The company's average for ten years was 1572.067 percent and industry average during the same period was 369.480 percent. Coefficient of variance shows the consistency in the ratio. There is a negative relationship between CV and Consistency. The higher the CV, the lower will be the consistency. Here, company's CV was 81.106 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded that the Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio of HCL Technologies was highly satisfactory during the study period.

INFOSYS

Table 5.19 shows the ratio of Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets for the Infosys during the period under review. The ratio showed fluctuating trend during study period. It ranges between 31.874 percent in financial year 2005-06 to 263.391 in the financial year 2004-05. This ratio explains the relationship between company's Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets. Here, the ratio never went beyond its standard level except financial year 2004-05 during the study period. Here, WOCCU announced the standard ratio for the institutions is 200 percent or higher than this level. Comparing company's average with overall industry average, it can be concluded that the company was having low ratio which has got negative impact on its Assets Quality. Company's average was 122.173 percent and Industry average was 369.480 percent during the period under study. Here, it can be noted that overall average of company during the study period was lower than the standard lay down by WOCCU which would have negative impact on company's Assets Quality. Coefficient of variance shows the movement or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 61.649 percent which shows that the company has got the low variability in the Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio among all selected companies. Finally, it can be concluded that the Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets of Infosys was not under control during the period under study. It also can be concluded that the Assets Quality of Infosys was not effective as the company was not achieving the standard ratio given by WOCCU during the study period.

POLARIS SOFTWARE LAB LIMITED

Table 5.19 reveals Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio of the Polaris Software Lab Ltd. during study period. It can be seen from the above table that the ratio of Polaris Software Lab Ltd., registered fluctuating trend during study period. According to WOCCU, the ideal ratio for the institution would be minimum 200 percent. It reveals from the above table that Polaris Software Lab Ltd. achieved the goal except financial year 2002-03 during the period under review. The Institutional and Non – Interest Bearing Liabilities to Non –

Earning Assets ratio ranges from 156.665 percent in financial year 2002-03 to 617.869 percent in financial year 2009-10. It has been observed that the ratio was under control and therefore it shows positive sign for the company's Assets Quality. The Polaris Software Lab Ltd. has got 309.969 percentages as the average for ten years which was higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio was lower than industry average. However, company's average was higher than the standard given by WOCCU. The company's average for ten years was 309.969 percent and industry average during the same period was 369.480 percent. Coefficient of variance shows the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 42.80 percent which shows that the company has got low variability in the said ratio. Finally, it can be concluded that Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio of Polaris Software Lab Ltd. was satisfactory during the study period.

ROLTA INDIA LIMITED

Table 5.19 shows the company wise Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets Ratio during study period. It reveals from the above table that the ratio of Rolta India Ltd. registered continuous increasing trend except financial years 2001-02, 2002-03 and 2005-06 during the study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio for the institution would be minimum 200 percent. It reveals from the above table that Rolta India Ltd. achieved the target in last two financial years during the period under review. The ratio ranges from 98.472 percent in financial year 2005-06 to 261.465 percent in financial year 2009-10. It also reveals from the above table that the growth of ratio was slow in first four years and it increased later during the study period. The Rolta India Ltd. has got 151.930 percentages as the average for ten years which was lower than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was much lower than industry average so company need to focus on its ratio. The company's average for ten years was 151.930 percent and industry average during the

same period was 369.480 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 32.265 percent which shows that the company has got the second lowest variability in the said ratio. Finally it can be concluded that overall average of the company's ratio was lower than the standard lay down by the WOCCU. So, company's Assets Quality was not effective.

WIPRO

Table 5.19 shows the company wise Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets Ratio during the study period. It reveals from the above table that the ratio of Wipro Ltd. registered continuous decreasing trend except financial year 2001-02, 2002-03 and 2009-10 during study period of ten financial years starting from 2000-01 to 2009-10. According to WOCCU, the ideal Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio for the institution would be minimum 200 percent. It reveals from the above table that Wipro Ltd. achieved the target in six financial years during the period under review. The ratio ranges from 159.393 percent in financial year 2007-08 to 289.627 percent in financial year 2002-03. It also reveals from the above table that the growth of ratio was high in first six years and it decreased in last four years during the study period. The Wipro has got 226.713 percentages as the average for ten years which was higher than the minimum standard laid down by WOCCU. Comparing company's average with overall average of the industry, it can be concluded that company's ratio was lower than industry average so company need not to focus on its ratio. The company's average for ten years was 226.713 percent and industry average during the same period was 369.480 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 22.228 percent which shows that the company has got lower variability compare to other selected companies in the said ratio. Finally, it can be concluded that Wipro's Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio was under control during the period under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.19 shows the company wise Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect HCL Technolgoies has got the highest average than the industry average. The industry average during study period was 369.480 percent where as CMC Info Tech Ltd. registered 111.790 percent, GTL Ltd. recorded 160.239 percent, HCL Info systems Ltd. 300.956 percent, HCL Technologies registered the highest Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio and it was 1572.067 percent, Infosys recorded the lowest ratio and it was 122.173 percent, Polaris Software Lab Ltd. achieved 309.969 percent, Rolta India Ltd. registered 151.930 percent and Wipro registered 226.713 percent. It clearly reveals that Infosys was having the lowest ratio from not only industry standard but also standard goal lay down by WOCCU. This was negative sign for the company's Assets Quality. Comparing CV of all the selected companies, it reveals that Wipro has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than HCL Technologies comes out as the best performer Information Technology Company in Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio. The second and third rank secured by Polaris Software Lab Ltd. and HCL Info System Ltd. respectively. The forth rank onwards to seventh rank secured by Wipro, GTL Ltd., Rolta India Ltd. and Infosys respectively. CMC Info tech Ltd. was the least rank company in Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio of selected companies during study period as it had the lowest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o :The Institutional and Non–Interest Bearing Liabilities to Non–Earning Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 :The Institutional and Non–Interest Bearing Liabilities to Non–Earning Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o:The Institutional and Non–Interest Bearing Liabilities to Non–Earning Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 :The Institutional and Non–Interest Bearing Liabilities to Non–Earning Assets ratio differs significantly within Selected Information Technology Companies.

Table 5.20

Two – Way ANOVA of Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	1608233.67	9	178692.63	0.80	2.032
Within Companies	16935072.86	7	2419296.12	10.77	2.159
Error	14155098.90	63	224684.11		
Total	32698405.43	79			

In Table 5.10, the value of the calculated F ratio for the years is 0.80, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 10.77, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$$F_{\text{Calculated}}\,[0.80] < F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}\,[2.032]$$

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Institutional and Non–Interest Bearing Liabilities to Non–Earning Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{Calculated}$ **[10.77]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Institutional and Non–Interest Bearing Liabilities to Non–Earning Assets ratio within selected Indian Information Technologies Companies during the period under review.

5.5 Rates of Return and Costs

The PEARLS system segregates all of the essential components of net earnings to help management calculate investment yields and evaluate operating expenses. In this way, PEARLS demonstrates its value as a management tool.

R-1. Net Operating Profit after Tax to Total Sales and Services Ratio

Purpose: To measure the yield on Sales and Services of the organization.

Formula: $\frac{\text{Net Operating Profit after Tax}}{\text{Total Sales and Services}}$ **X 100**

This formula is modified. Here, Net Operating Profit after Tax (NOPAT) has been taken. This ratio shows the percentage of Net Operating Profit on company's core Sales and Services during a particular year.

Here, Total Sales and Services include total income generated from operations of the business. Here, Sales and Services are taken after deducting the indirect expenses.

This ratio plays very crucial role in deciding Rates of Return of an organization. Here, WOCCU has announced that the ratio must be Maximum. Here, no Standard ratio has been given. The institutions which do not have the high ratio compare to other institutions, should try to achieve the target as soon as possible. There is no upper limit for this ratio. So, the higher the ratio better will be the Rates of Return of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.21

Analysis of Net Operating Profit after Tax to Total Sales and Services Ratio (R– 1)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	2.818	53.194	5.021	58.908	31.786	22.646	31.675	21.600	28.456
2002	4.531	20.489	3.657	55.563	31.003	22.504	29.758	24.025	23.941
2003	4.150	53.579	3.738	35.845	26.442	13.690	29.272	20.728	23.431
2004	8.487	16.399	7.936	28.876	26.108	11.703	26.740	17.395	17.956
2005	2.973	18.949	6.748	22.755	27.099	7.987	29.006	20.402	16.990
2006	5.322	56.182	4.754	21.048	26.817	1.945	30.060	19.466	20.699
2007	6.481	8.650	2.689	21.723	28.770	8.801	29.992	20.341	15.931
2008	9.028	8.694	2.425	16.907	28.566	5.611	21.171	16.449	13.606
2009	12.867	7.469	2.111	21.332	28.716	9.492	21.404	15.267	14.832
2010	18.779	7.730	0.896	10.375	27.696	11.425	16.646	17.062	13.826
Average	**7.544**	**25.134**	**3.998**	**29.333**	**28.300**	**11.580**	**26.572**	**19.273**	
Overall Avg.	**18.967**								
S. D.	**5.028**	**20.692**	**2.167**	**16.169**	**1.891**	**6.664**	**5.030**	**2.687**	
C.V.	**66.656**	**82.329**	**54.197**	**55.122**	**6.682**	**57.550**	**18.929**	**13.943**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.21 shows the company wise Net Operating Profit after Tax to Total Sales and Services Ratio during study period. Here, NOPAT has been taken after considering tax and interest for the current year. Total Sales and Services are taken net of other expenses related to sale and services. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered fluctuating trend during first five years and continuous increasing trend during last five years of study period. According to WOCCU, there is no limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Net Operating Profit after Tax to Total Sales and Services ratio ranges from 2.818 percent in financial year 2000-01 to 18.779 percent in financial year 2009-10. It also reveals from the above table that the growth of ratio was decreasing during the first half i.e. financial years 2000-01 to 2004-05 of the study and it registered an increasing trend in second half i.e. financial years 2005-06 onwards of the study period which will affect positively to company's Profitability. The CMC InfoTech Ltd. has got 7.544 percentages as the average for ten years which was lower than the industry average. The company's average for ten years was 7.544 percent and industry average during the same period was 18.967 percent. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, lower will be the consistency. Here, company's CV was 66.656 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded company's overall average of Net Operating Profit after Tax to Total Sales and Services ratio was lower than the industry average of the selected Information Technology Companies.

GTL LIMITED

Table 5.21 shows the company wise Net Operating Profit after Tax to Total Sales and Services Ratio during study period. Here, NOPAT has been taken after considering tax and interest for the current year. Total Sales and Services are taken net of other expenses related to sale and services. It reveals from the above table that the ratio of GTL Ltd. registered fluctuating trend during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Net Operating Profit after Tax to Total Sales and Services ratio of the company ranges from 7.469 percent in financial year 2008-

09 to 56.182 percent in financial year 2005-06. It also reveals from the above table that the growth of ratio was highly fluctuating during the first half i.e. financial years 2000-01 to 2005-06 of the study period and it registered decreasing trend during financial years 2006-07 during the study period. The GTL Ltd. has got 25.134 percentages as the average for ten years which was higher than the industry average. The company's average for ten years was 25.134 percent and industry average during the same period was 18.967 percent which would positively affect company's profitability. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 82.329 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded company's overall average of Net Operating Profit after Tax to Total Sales and Services ratio was higher than the industry average of the selected Information Technology Companies.

HCL INFOSYSTEMS LIMITED

Table 5.21 shows the company wise Net Operating Profit after Tax to Total Sales and Services Ratio during study period. Here, NOPAT has been taken after considering tax and interest for the current year. Total Sales and Services are taken net of other expenses related to sale and services. It reveals from the above table that the ratio of HCL Info System Ltd. registered continuous decreasing trend except financial year 2003-04 during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Net Operating Profit after Tax to Total Sales and Services ratio of the company ranges from 0.896 percent in financial year 2009-10 to 7.936 percent in financial year 2003-04. It also reveals from the above table that the growth of ratio was highly decreasing during the study period. This decreasing trend would become alarming sing for the company's profitability. The HCL Info Systems Ltd. has got 3.998 percentages as the average for ten years which was the lowest among selected companies during the period under review. The company's average for ten years was 3.998 percent and industry average during the same period was 18.967 percent which would negatively affect company's profitability as company's average was highly lower than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the

consistency. Here, company's CV was 54.197 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded company's overall average of Net Operating Profit after Tax to Total Sales and Services ratio was lower than the industry average of the selected Information Technology Companies.

HCL TECHNOLOGIES

Table 5.21 shows the company wise Net Operating Profit after Tax to Total Sales and Services Ratio during study period. Here, NOPAT has been taken after considering tax and interest for the current year. Total Sales and Services are taken net of other expenses related to sale and services. It reveals from the above table that the ratio of HCL Technologies registered continuous decreasing trend except financial years 2006-07 and 2008-09 during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Net Operating Profit after Tax to Total Sales and Services ratio of the company ranges from 10.375 percent in financial year 2009-10 to 58.908 percent in financial year 2000-01. It also reveals from the above table that the growth of ratio was highly decreasing during the study period. This decreasing trend would become alarming sing for the company's profitability. The HCL Technologies has got 29.333 percentages as the average for ten years which was the highest among selected companies during the period under review. The company's average for ten years was 29.333 percent and industry average during the same period was 18.967 percent which would positively affect company's profitability as company's average was higher than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 55.122 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded company's overall average of Net Operating Profit after Tax to Total Sales and Services ratio was higher than the industry average of the selected Information Technology Companies.

INFOSYS

Table 5.21 shows the company wise Net Operating Profit after Tax to Total Sales and Services Ratio during study period. Here, NOPAT has been taken after considering tax and interest for the current year. Total Sales and Services are taken net of other

expenses related to sale and services. It reveals from the above table that the ratio of Infosys registered fluctuating trend during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Net Operating Profit after Tax to Total Sales and Services ratio of the company ranges from 26.108 percent in financial year 2003-04 to 31.786 percent in financial year 2000-01. It also reveals from the above table that the growth of ratio was highly fluctuating during the study period. This fluctuating trend would become negative sing for the company's profitability. The Infosys has got 26.108 percentages as the average for ten years which was the second highest among selected companies during the period under review. The company's average for ten years was 26.108 percent and industry average during the same period was 18.967 percent which would positively affect company's profitability as company's average was highly above than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 6.682 percent which shows that the company has got the lowest variability in the said ratio. Finally, it can be concluded company's overall average of Net Operating Profit after Tax to Total Sales and Services ratio was higher than the industry average of the selected Information Technology Companies.

POLARIS SOFTWARE LAB LIMITED

Table 5.21 shows the company wise Net Operating Profit after Tax to Total Sales and Services Ratio during study period. Here, NOPAT has been taken after considering tax and interest for the current year. Total Sales and Services are taken net of other expenses related to sale and services. It reveals from the above table that the ratio of Polaris Software Lab Ltd. registered continuous decreasing trend except financial years 2006-07, 2008-09 and 2009-10 during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Net Operating Profit after Tax to Total Sales and Services ratio of the company ranges from 1.945 percent in financial year 2005-06 to 22.646 percent in financial year 2000-01. It also reveals from the above table that the growth of ratio was highly decreasing during the study period. This decreasing trend would become hurdle for the company's profitability. The Polaris

Software Lab Ltd. has got 11.580 percentages as the average for ten years which was highly lower among selected companies during the period under review. The company's average for ten years was 11.580 percent and industry average during the same period was 18.967 percent which would negatively affect company's profitability as company's average was lower than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 57.550 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded company's overall average of Net Operating Profit after Tax to Total Sales and Services ratio was lower than the industry average of the selected Information Technology Companies.

ROLTA INDIA LIMITED

Table 5.21 shows the company wise Net Operating Profit after Tax to Total Sales and Services Ratio during study period. Here, NOPAT has been taken after considering tax and interest for the current year. Total Sales and Services are taken net of other expenses related to sale and services. It reveals from the above table that the ratio of Rolta India Ltd. registered continuous decreasing trend except financial years 2003-04, 2005-06 and 2008-09 during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Net Operating Profit after Tax to Total Sales and Services ratio of the company ranges from 16.646 percent in financial year 2009-10 to 31.675 percent in financial year 2000-01. It also reveals from the above table that the growth of ratio was marginally decreasing during the study period. This decreasing trend would become necessary point of discussion for the company's profitability. The Rolta India Ltd. has got 26.572 percentages as the average for ten years which was much higher than other selected companies during the period under review. The company's average for ten years was 26.572 percent and industry average during the same period was 18.967 percent which would positively affect company's profitability as company's average was higher than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 18.929 percent which shows that the company has got low variability in the said ratio.

Finally, it can be concluded company's overall average of Net Operating Profit after Tax to Total Sales and Services ratio was higher than the industry average of the selected Information Technology Companies.

WIPRO

Table 5.21 shows the company wise Net Operating Profit after Tax to Total Sales and Services Ratio during study period. Here, NOPAT has been taken after considering tax and interest for the current year. Total Sales and Services are taken net of other expenses related to sale and services. It reveals from the above table that the ratio of Wipro registered fluctuating trend during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Net Operating Profit after Tax to Total Sales and Services ratio of the company ranges from 15.267 percent in financial year 2008-09 to 24.025 percent in financial year 2001-02. It also reveals from the above table that the growth of ratio was highly fluctuating during the study period. This unstable trend would become hurdle for the company's profitability. The Wipro has got 19.273 percentages as the average for ten years which was higher than some of the companies during the period under review. The company's average for ten years was 19.273 percent and industry average during the same period was 18.967 percent which would positively affect company's profitability as company's average was marginally higer than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 13.943 percent which shows that the company has got lower variability in the said ratio. Finally, it can be concluded company's overall average of Net Operating Profit after Tax to Total Sales and Services ratio was higher than the industry average of the selected Information Technology Companies.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.21 shows the company wise Net Operating Profit after Tax to Total Sales and Services ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect CMC Info Tech Ltd., HCL Info System Ltd. and Polaris Software Lab Ltd. has got the lowerst average than the industry average. The industry

average during study period was 18.967 percent where as CMC Info Tech Ltd. registered the second Net Operating Profit after Tax to Total Sales and Services ratio and it was 7.544 percent, GTL Ltd. recorded 25.134 percent, HCL Info systems Ltd. recorded with the lowest ratio and it was 3.998 percent, HCL Technologies registered the highest ratio and it was 29.333 percent, Infosys recorded 28.300 percent, Polaris Software Lab Ltd. achieved 11.580 percent, Rolta India Ltd. registered 26.572 percent and Wipro registered 19.273 percent. It clearly reveals that HCL Info System was having the lowest ratio from not only industry standard but also standard goal lay down by WOCCU. This was negative sign for the company's Profitability. Comparing CV of all the selected companies, it reveals that Infosys has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than HCL Technologies comes out as the best performer Information Technology Company in Net Operating Profit after Tax to Total Sales and Services ratio. The second and third rank secured by Infosys and Rolta India Ltd. respectively. The forth rank onwards to seventh rank secured by GTL Ltd., Wipro, Polaris Software Lab Ltd. and CMC Info Tech Ltd. respectively. HCL Infosystems was the least rank company in Net Operating Profit after Tax to Total Sales and Services ratio of selected companies during study period as it had the lowest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Net Operating Profit after Tax to Total Sales and Services ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Net Operating Profit after Tax to Total Sales and Services ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Net Operating Profit after Tax to Total Sales and Services ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Net Operating Profit after Tax to Total Sales and Services ratio differs significantly within Selected Information Technology Companies.

Table 5.22

Two – Way ANOVA of Net Operating Profit after Tax to Total Sales and Services Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	1792.922	9	199.214	2.321	2.032
Within Companies	6996.688	7	999.527	11.644	2.159
Error	5407.924	63	85.840		
Total	14197.534	79			

In Table 5.22, the value of the calculated F ratio for the years is 2.321, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 11.644, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{Calculated}$ **[2.321]** > $F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is significant difference in Net Operating Profit after Tax to Total Sales and Services ratio within years.

Component—I.T. Companies: For this component,

$F_{Calculated}$ **[11.644]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Net Operating Profit after Tax to Total Sales and Services ratio within selected Indian Information Technologies Companies during the period under review.

R-2. Liquid Investment Income to Total Liquid Investments Ratio

Purpose: To measure the yield on all short-term investments (i.e., Bank deposits, etc.).

Formula: $$\frac{\textbf{Liquid Investment Income}}{\textbf{Total Liquid Investment}} \textbf{ X 100}$$

The component of the formula can be explained as under.

Here, Liquid Investment Income for a particular year is taken as numerator. Liquid Investment Income is the income from Current Investments only.

Here, total Liquid Investment will be taken as denominator. The Investments which are of less than one year would form the Total Liquid Investments for current year.

This ratio plays very crucial role in deciding Rates of Return of an organization. Here, WOCCU has announced that the ratio must be Maximum. Here, no Standard ratio has been given. The institutions which do not have the high ratio compare to other institutions, should try to achieve the target as soon as possible. There is no upper limit for this ratio. So, the higher the ratio better will be the Rates of Return of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.23

Analysis of Liquid Investment Income to Total Liquid Investments Ratio (R– 2)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	11.416	10.638	1.285	9.012	0.000	3.163	0.000	2.132	4.706
2002	14.840	7.345	5.483	67.839	0.000	11.486	0.000	6.762	14.219
2003	14.840	0.000	0.444	20.816	0.000	13.616	0.000	0.256	6.247
2004	10.811	0.000	1.223	26.069	1.830	5.776	0.238	4.347	6.287
2005	0.000	2.963	0.116	12.755	3.085	8.493	0.000	3.096	3.814
2006	0.000	2.527	0.009	1.763	10.380	5.280	4.294	2.958	3.401
2007	0.000	27.174	8.338	10.052	0.000	6.890	4.652	5.655	7.845
2008	12.343	31.513	6.843	50.785	0.000	3.091	5.948	10.049	15.071
2009	39.232	12.500	1.684	0.000	0.000	40.750	25.699	14.968	16.854
2010	15.719	32.000	1.799	3.144	2.856	39.441	6.535	4.788	13.285
Average	**11.920**	**12.666**	**2.723**	**20.224**	**1.815**	**13.799**	**4.737**	**5.501**	
Overall Avg.	**9.173**								
S. D.	**11.573**	**12.866**	**3.014**	**22.515**	**3.263**	**14.259**	**7.848**	**4.280**	
C.V.	**97.086**	**101.577**	**110.690**	**111.329**	**179.773**	**103.336**	**165.686**	**77.806**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.23 shows the company wise Liquid Investment Income to Total Liquid Investments Ratio during study period. Here, Interest Income of Liquid Investment has been taken only for the purpose of analysis. Current Investments of the company has taken as Total Liquid Investments. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered continuous increasing trend except financial years 2003-04, 2004-05 and 2009-10 during the study period. According to WOCCU, there is no limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Liquid Investment Income to Total Liquid Investments ratio ranges from 10.811 percent in financial year 2003-04 to 39.232 percent in financial year 2008-09. It also reveals from the above table that the ratio was zero percent during the financial years 2004-05 to 2006-07 during the study period as there were no Liquid Investments during this years which will affect negatively to company's Revenues. The CMC InfoTech Ltd. has got 11.920 percentages as the average for ten years which was fourth highest than the other companies during the period under review. The company's average for ten years was 11.920 percent and industry average during the same period was 9.173 percent which shows that company has got higher average than the industry level. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 97.086 percent which shows that the company has got higher variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Liquid Investment Income to Total Liquid Investments ratio was higher than the industry average of the selected Information Technology Companies.

GTL LIMITED

Table 5.23 shows the company wise Liquid Investment Income to Total Liquid Investments Ratio during study period. Here, Interest Income of Liquid Investment has been taken only for the purpose of analysis. Current Investments of the company has taken as Total Liquid Investments. It reveals from the above table that the ratio of GTL Ltd. registered fluctuating trend during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Liquid Investment Income to Total Liquid

Investments ratio of the company ranges from 2.527 percent in financial year 2005-06 to 31.513 percent in financial year 2007-08. It also reveals from the above table that the growth of ratio was decreasing during the first four years i.e. financial years 2000-01 to 2004-05 of the study period and it registered fluctuating trend during the rest of the financial years during the study period. The GTL Ltd. has got 12.666 percentages as the average for ten years which was third highest than the companies during study period. The company's average for ten years was 12.666 percent and industry average during the same period was 9.173 percent which would positively affect company's revenues. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 101.577 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded company's overall average of Liquid Investment Income to Total Liquid Investments ratio was higher than the industry average of the selected Information Technology Companies.

HCL INFOSYSTEMS LIMITED

Table 5.23 shows the company wise Liquid Investment Income to Total Liquid Investments Ratio during study period. Here, Interest Income of Liquid Investment has been taken only for the purpose of analysis. Current Investments of the company has taken as Total Liquid Investments. It reveals from the above table that the ratio of HCL Info System Ltd. registered fluctuating trend during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Liquid Investment Income to Total Liquid Investments ratio of the company ranges from 0.009 percent in financial year 2005-06 to 8.338 percent in financial year 2006-07. It also reveals from the above table that the growth of ratio was highly fluctuating during the study period. This fluctuating trend would show inconsistency for the company's revenues. The HCL Info Systems Ltd. has got 2.723 percentages as the average for ten years which was low among selected companies during the period under review. The company's average for ten years was 2.723 percent and industry average during the same period was 9.173 percent which would negatively affect company's revenues as company's average was highly lower than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower

will be the consistency. Here, company's CV was 110.690 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded company's overall average of Liquid Investment Income to Total Liquid Investments ratio was lower than the industry average of the selected Information Technology Companies.

HCL TECHNOLOGIES

Table 5.23 shows the company wise Liquid Investment Income to Total Liquid Investments Ratio during study period. Here, Interest Income of Liquid Investment has been taken only for the purpose of analysis. Current Investments of the company has taken as Total Liquid Investments. It reveals from the above table that the ratio of HCL Technologies registered fluctuating trend during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Liquid Investment Income to Total Liquid Investments ratio of the company ranges from 1.763 percent in financial year 2005-06 to 67.839 percent in financial year 2001-02. It also reveals from the above table that the growth of ratio was highly decreasing during the study period. This decreasing trend would become alarming sing for the company's earnings. The HCL Technologies has got 20.224 percentages as the average for ten years which was the highest among selected companies during the period under review. The company's average for ten years was 20.224 percent and industry average during the same period was 9.173 percent which would positively affect company's revenues as company's average was higher than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 111.329 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded company's overall average of Liquid Investment Income to Total Liquid Investments ratio was higher than the industry average of the selected Information Technology Companies.

INFOSYS

Table 5.23 shows the company wise Liquid Investment Income to Total Liquid Investments Ratio during study period. Here, Interest Income of Liquid Investment

has been taken only for the purpose of analysis. Current Investments of the company has taken as Total Liquid Investments. It reveals from the above table that the ratio of Infosys registered fluctuating trend during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Liquid Investment Income to Total Liquid Investments ratio of the company ranges from 1.830 percent in financial year 2003-04 to 10.380 percent in financial year 2005-06. It also reveals from the above table that the growth of ratio was highly fluctuating because in most of the years the company was not having Liquid Investments so during those years the ratio was zero. This fluctuating trend would become negative sing for the company's revenues. The Infosys has got 1.815 percentages as the average for ten years which was the lowest among selected companies during the period under review. The company's average for ten years was 1.815 percent and industry average during the same period was 9.173 percent which would negatively affect company's revenues as company's average was highly below than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 179.773 percent which shows that the company has got the highest variability in the said ratio. Finally, it can be concluded company's overall average of Liquid Investment Income to Total Liquid Investments ratio was lower than the industry average of the selected Information Technology Companies.

POLARIS SOFTWARE LAB LIMITED

Table 5.23 shows the company wise Liquid Investment Income to Total Liquid Investments Ratio during study period. Here, Interest Income of Liquid Investment has been taken only for the purpose of analysis. Current Investments of the company has taken as Total Liquid Investments. It reveals from the above table that the ratio of Polaris Software Lab Ltd. registered fluctuating trend during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Liquid Investment Income to Total Liquid Investments ratio of the company ranges from 3.091 percent in financial year 2007-08 to 40.750 percent in financial year 2008-09. It also reveals from the above table that the growth of ratio was highly unstable during the study period. This instability in trend would become hurdle for the company's revenues. The Polaris

Software Lab Ltd. has got 13.799 percentages as the average for ten years which was highly above among selected companies during the period under review. The company's average for ten years was 13.799 percent and industry average during the same period was 9.173 percent which would positively affect company's revenues as company's average was higher than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 103.336 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded company's overall average of Liquid Investment Income to Total Liquid Investments ratio was higher than the industry average of the selected Information Technology Companies.

ROLTA INDIA LIMITED

Table 5.23 shows the company wise Liquid Investment Income to Total Liquid Investments Ratio during study period. Here, Interest Income of Liquid Investment has been taken only for the purpose of analysis. Current Investments of the company has taken as Total Liquid Investments. It reveals from the above table that the ratio of Rolta India Ltd. was nil in first three financial years as the company was not having liquid investment. The ratio registered continuous increasing trend later during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Liquid Investment Income to Total Liquid Investments ratio of the company ranges from 0.238 percent in financial year 2003-04 to 25.699 percent in financial year 2008-09. It also reveals from the above table that the growth of ratio was marginally increasing during the study period. This low increasing trend would become necessary point of discussion for the company's revenues. The Rolta India Ltd. has got 4.737 percentages as the average for ten years which was much lower than other selected companies during the period under review. The company's average for ten years was 4.737 percent and industry average during the same period was 9.173 percent which would negatively affect company's revenues as company's average was lower than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 165.686 percent which shows that the company has got the highest variability in the said ratio. Finally, it can be concluded company's overall average of Liquid Investment Income to Total Liquid Investments ratio was lower than the industry average of the selected Information Technology Companies.

WIPRO

Table 5.23 shows the company wise Liquid Investment Income to Total Liquid Investments Ratio during study period. Here, Interest Income of Liquid Investment has been taken only for the purpose of analysis. Current Investments of the company has taken as Total Liquid Investments. It reveals from the above table that the ratio of Wipro registered fluctuating trend during study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Liquid Investment Income to Total Liquid Investments ratio of the company ranges from 0.256 percent in financial year 2002-03 to 14.968 percent in financial year 2008-09. It also reveals from the above table that the growth of ratio was highly fluctuating during the study period. This unstable trend would become hurdle for the company's revenues. The Wipro has got 5.501 percentages as the average for ten years which was moderate compare to some of the companies during the period under review. The company's average for ten years was 5.501 percent and industry average during the same period was 9.173 percent which would negatively affect company's profitability as company's average was much lower than the industry average. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 77.806 percent which shows that the company has got higher variability in the said ratio. Finally, it can be concluded company's overall average of Liquid Investment Income to Total Liquid Investments ratio was lower than the industry average of the selected Information Technology Companies.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.23 shows the company wise Liquid Investment Income to Total Liquid Investments ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect CMC Info Tech Ltd., GTL Ltd., HCL Technologies and Polaris Software Lab Ltd. has got the highest average than the industry average. The industry average during study period was 9.173 percent where as CMC Info Tech Ltd. registered Liquid Investment Income to Total Liquid Investments ratio and it was 11.920 percent, GTL Ltd. recorded 12.666 percent, HCL Info systems Ltd. 2.723 percent, HCL Technologies registered the highest ratio and it was 20.224 percent,

Infosys recorded the lowest ratio and it was 1.815 percent, Polaris Software Lab Ltd. achieved 13.799 percent, Rolta India Ltd. registered 4.737 percent and Wipro registered 5.501 percent. It clearly reveals that Infosys was having the lowest ratio from not only industry standard but also standard goal lay down by WOCCU. This was negative sign for the company's revenues. Comparing CV of all the selected companies, it reveals that Wipro has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than HCL Technologies comes out as the best performer Information Technology Company in Liquid Investment Income to Total Liquid Investments ratio. The second and third rank secured by Polaris Software Lab Ltd. and GTL Ltd. respectively. The forth rank onwards to seventh rank secured by CMC Info Tech Ltd., Wipro, Rolta India Ltd. and HCL Info System respectively. Infosys was the least rank company in Liquid Investment Income to Total Liquid Investments ratio of selected companies during study period as it had the lowest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Liquid Investment Income to Total Liquid Investments ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Liquid Investment Income to Total Liquid Investments ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Liquid Investment Income to Total Liquid Investments ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : Liquid Investment Income to Total Liquid Investments ratio differs significantly within Selected Information Technology Companies.

Table 5.24

Two – Way ANOVA Liquid Investment Income to Total Liquid Investments Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	1894.555	9	210.506	1.639	2.032
Within Companies	2921.726	7	417.389	3.251	2.159
Error	8089.367	63	128.403		
Total	12905.648	79			

In Table 5.24, the value of the calculated F ratio for the years is 1.639, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 3.251, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[1.639]** $< F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Liquid Investment Income to Total Liquid Investments ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[3.251]** $> F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Liquid Investment Income to Total Liquid Investments ratio within selected Indian Information Technologies Companies during the period under review.

R-3. Total Financial Investment Income to Total Financial Investments Ratio

Purpose: To measure the yield on all long term investments (i.e., Fixed Deposits, Shares, Securities, etc.)

Formula: $$\frac{\textbf{Financial Investment Income}}{\textbf{Total Financial Investment}} \textbf{ X 100}$$

The component of the formula can be explained as under.

Here, Financial Investment Income for a particular year is taken as numerator. Financial Investment Income is the income received from Mutual Fund Investments, investment in other company's shares and security, etc.

Here, Financial Investments contains Investment done by the company in other company's share and security, investments in Mutual Fund Units, investment in subsidiary companies, etc

This ratio plays very important role in deciding Rates of Return of an organization. Here, WOCCU has announced that the ratio must be Maximum. Here, no Standard ratio has been given. The institutions which do not have the high ratio compare to other institutions, should try to achieve the target as soon as possible. There is no upper limit for this ratio. So, the higher the ratio better will be the Rates of Return of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.25

Analysis of Financial Investment Income to Total Financial Investments Ratio (R– 3)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	2.934	70.737	2.765	20.550	11.765	0.872	6.441	19.438	16.938
2002	3.912	49.393	11.084	21.291	11.364	0.390	8.067	1.045	13.318
2003	1.222	8.660	15.097	10.678	21.212	1.880	17.191	11.668	10.951
2004	1.222	13.942	11.689	7.781	7.984	0.774	13.963	0.827	7.273
2005	1.345	4.443	12.210	3.119	5.422	1.382	11.191	10.530	6.205
2006	2.078	9.493	12.571	4.733	15.068	1.430	4.602	6.100	7.009
2007	2.445	5.450	2.016	6.778	21.692	2.466	14.959	14.064	8.734
2008	8.671	1.967	3.400	28.521	67.427	2.032	6.569	9.836	16.053
2009	7.188	7.318	2.753	3.377	83.184	6.675	2.513	3.747	14.594
2010	1.819	1.523	0.452	22.466	16.717	4.004	6.861	2.829	7.084
Average	**3.284**	**17.293**	**7.404**	**12.929**	**26.184**	**2.190**	**9.236**	**8.008**	
Overall Avg.	**10.816**								
S. D.	**2.611**	**23.385**	**5.552**	**9.346**	**26.662**	**1.880**	**4.840**	**6.138**	
C.V.	**79.501**	**135.231**	**74.992**	**72.284**	**101.829**	**85.842**	**52.400**	**76.646**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.25 shows the company wise Financial Investment Income to Total Financial Investments Ratio during study period. Here, Interest Income of Financial Investment has been taken only for the purpose of analysis. Investments done in Mutual Fund Units, other company's shares, etc. have been taken as Total Financial Investments. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered continuous increasing trend except financial years 2008-09 and 2009-10 during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Financial Investment Income to Total Financial Investments ratio of company ranges from 1.222 percent in financial year 2003-04 to 8.671 percent in financial year 2007-08. It also reveals from the above table that the ratio was stable during the financial years 2002-03 and 2003-04 during the period under review as there was no change in absolute amount for these years. The CMC InfoTech Ltd. has got 3.284 percentages as the average for ten years which was seventh highest than the other companies during the period under review. The company's average for ten years was 3.284 percent and industry average during the same period was 10.816 percent which shows that company has got lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 79.501 percent which shows that the company has got higher variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Financial Investment Income to Total Financial Investments ratio was much lower than the industry average of the selected Information Technology Companies.

GTL LIMITED

Table 5.25 shows the company wise Financial Investment Income to Total Financial Investments Ratio during study period. Here, Interest Income of Financial Investment has been taken only for the purpose of analysis. Investments done in Mutual Fund Units, other company's shares, etc. have been taken as Total Financial Investments. It reveals from the above table that the ratio of GTL Ltd. registered highly fluctuating trend during the study period. According to WOCCU, there is no upper limit for this

ratio for the institution. However, the ratio must be higher than the industry average. The Financial Investment Income to Total Financial Investments ratio of Company ranges from 1.523 percent in financial year 2009-10 to 70.737 percent in financial year 2000-01. It also reveals from the above table that the ratio was not stable during period under review. The GTL Ltd. has got 17.293 percentages as the average for ten years which was second highest than the other companies during the period under review. The company's average for ten years was 17.293 percent and industry average during the same period was 10.816 percent which shows that company has got higher average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 135.231 percent which shows that the company has got the highest variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Financial Investment Income to Total Financial Investments ratio was much higher than the industry average of the selected Information Technology Companies.

HCL INFOSYSTEMS LIMITED

Table 5.25 shows the company wise Financial Investment Income to Total Financial Investments Ratio during study period. Here, Interest Income of Financial Investment has been taken only for the purpose of analysis. Investments done in Mutual Fund Units, other company's shares, etc. have been taken as Total Financial Investments. It reveals from the above table that the ratio of HCL Info systems Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Financial Investment Income to Total Financial Investments ratio of Company ranges from 0.452 percent in financial year 2009-10 to 15.097 percent in financial year 2002-03. It also reveals from the above table that the ratio was not stable during period under review. The HCL Info systems Ltd. has got 7.404 percentages as the average for ten years which was sixth highest than the other companies during the period under review. The company's average for ten years was 7.404 percent and industry average during the same period was 10.816 percent which shows that company has got lower average than the industry level which affects

negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 74.992 percent which shows that the company has got higher variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Financial Investment Income to Total Financial Investments ratio was lower than the industry average of the selected Information Technology Companies.

HCL TECHNOLOGIES

Table 5.25 shows the company wise Financial Investment Income to Total Financial Investments Ratio during study period. Here, Interest Income of Financial Investment has been taken only for the purpose of analysis. Investments done in Mutual Fund Units, other company's shares, etc. have been taken as Total Financial Investments. It reveals from the above table that the ratio of HCL Technologies registered highly fluctuating trend during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Financial Investment Income to Total Financial Investments ratio of Company ranges from 3.119 percent in financial year 2004-05 to 28.521 percent in financial year 2007-08. It also reveals from the above table that the ratio was not stable during period under review. The HCL Technologies has got 12.929 percentages as the average for ten years which was third highest than the other companies during the period under review. The company's average for ten years was 12.929 percent and industry average during the same period was 10.816 percent which shows that company has got higher average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 72.284 percent which shows that the company has got high variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Financial Investment Income to Total Financial Investments ratio was higher than the industry average of the selected Information Technology Companies.

INFOSYS

Table 5.25 shows the company wise Financial Investment Income to Total Financial Investments Ratio during study period. Here, Interest Income of Financial Investment has been taken only for the purpose of analysis. Investments done in Mutual Fund Units, other company's shares, etc. have been taken as Total Financial Investments. It reveals from the above table that the ratio of Infosys registered highly fluctuating trend during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Financial Investment Income to Total Financial Investments ratio of Company ranges from 5.422 percent in financial year 2004-05 to 83.184 percent in financial year 2008-09. It also reveals from the above table that the ratio was not stable during period under review. The Infosys has got 26.184 percentages as the average for ten years which was the highest among other selected companies during the period under review. The company's average for ten years was 26.184 percent and industry average during the same period was 10.816 percent which shows that company has got higher average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 101.829 percent which shows that the company has got higher variability than other companies in the said ratio during the period under review. Finally, it can be concluded company's overall average of Financial Investment Income to Total Financial Investments ratio was much higher than the industry average of the selected Information Technology Companies.

POLARIS SOFTWARE LAB LIMITED

Table 5.25 shows the company wise Financial Investment Income to Total Financial Investments Ratio during study period. Here, Interest Income of Financial Investment has been taken only for the purpose of analysis. Investments done in Mutual Fund Units, other company's shares, etc. have been taken as Total Financial Investments. It reveals from the above table that the ratio of Polaris Software Lab Ltd. registered highly fluctuating trend during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Financial Investment Income to Total Financial Investments

ratio of company ranges from 0.390 percent in financial year 2001-02 to 6.675 percent in financial year 2008-09. It also reveals from the above table that the ratio was not stable during the financial years. The Polaris Software Lab Ltd. has got 2.190 percentages as the average for ten years which was the highest among selected companies during the period under review. The company's average for ten years was 2.190 percent and industry average during the same period was 10.816 percent which shows that company has got lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 85.842 percent which shows that the company has got higher variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Financial Investment Income to Total Financial Investments ratio was much lower than the industry average of the selected Information Technology Companies.

ROLTA INDIA LIMITED

Table 5.25 shows the company wise Financial Investment Income to Total Financial Investments Ratio during study period. Here, Interest Income of Financial Investment has been taken only for the purpose of analysis. Investments done in Mutual Fund Units, other company's shares, etc. have been taken as Total Financial Investments. It reveals from the above table that the ratio of Rolta India Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Financial Investment Income to Total Financial Investments ratio of company ranges from 2.513 percent in financial year 2008-09 to 17.191 percent in financial year 2002-03. It also reveals from the above table that the ratio was not stable during the financial years. The Rolat India Ltd. has got 9.236 percentages as the average for ten years which was fourth highest than the other companies during the period under review. The company's average for ten years was 9.236 percent and industry average during the same period was 10.816 percent which shows that company has got marginally lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the

consistency. Here, company's CV was 52.400 percent which shows that the company has got the lowest variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Financial Investment Income to Total Financial Investments ratio was slightly lower than the industry average of the selected Information Technology Companies.

WIPRO

Table 5.25 shows the company wise Financial Investment Income to Total Financial Investments Ratio during study period. Here, Interest Income of Financial Investment has been taken only for the purpose of analysis. Investments done in Mutual Fund Units, other company's shares, etc. have been taken as Total Financial Investments. It reveals from the above table that the ratio of Wipro registered highly fluctuating trend during the first five years of study period and it registered continuous decreasing trend during the last five years during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The Financial Investment Income to Total Financial Investments ratio of company ranges from 0.827 percent in financial year 2003-04 to 19.438 percent in financial year 2000-01. It also reveals from the above table that the ratio was not stable during the financial years. The Wipro has got 8.008 percentages as the average for ten years which was fifth highest than the other companies during the period under review. The company's average for ten years was 8.008 percent and industry average during the same period was 10.816 percent which shows that company has got lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 76.646 percent which shows that the company has got higher variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Financial Investment Income to Total Financial Investments ratio was lower than the industry average of the selected Information Technology Companies.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.25 shows the company wise Financial Investment Income to Total Financial Investments ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect Infosys, GTL Ltd. and HCL Technologies has got the highest average than the industry average. The industry average during study period was 10.816 percent where as CMC Info Tech Ltd. registered Financial Investment Income to Total Financial Investments ratio and it was 3.284 percent, GTL Ltd. recorded 17.293 percent, HCL Info systems Ltd. 7.404 percent, HCL Technologies registered 12.929 percent, Infosys recorded the highest ratio and it was 26.184 percent, Polaris Software Lab Ltd. achieved the lowest and it was 2.190 percent, Rolta India Ltd. registered 9.236 percent and Wipro registered 8.008 percent. It clearly reveals that Polaris Software Lab Ltd. was having the lowest ratio from not only industry standard but also standard goal lay down by WOCCU. This was negative sign for the company's revenues. Comparing CV of all the selected companies, it reveals that Rolta India Ltd. has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than Infosys comes out as the best performer Information Technology Company in Financial Investment Income to Total Financial Investments ratio. The second and third rank secured by GTL Ltd. and HCL Technologies respectively. The forth rank onwards to seventh rank secured by Rolta India Ltd., Wipro, HCL Info System and CMC Info Tech Ltd. respectively. Polaris Software Lab Ltd. was the least rank company in Financial Investment Income to Total Financial Investments ratio of selected companies during study period as it had the lowest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Financial Investment Income to Total Financial Investments ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Financial Investment Income to Total Financial Investments ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Financial Investment Income to Total Financial Investments ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Financial Investment Income to Total Financial Investments ratio differs significantly within Selected Information Technology Companies.

Table 5.26

Two – Way ANOVA Financial Investment Income to Total Financial Investments Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	1216.182	9	135.131	0.721	2.032
Within Companies	4357.391	7	622.484	3.321	2.159
Error	11810.072	63	187.461		
Total	17383.644	79			

In Table 5.26, the value of the calculated F ratio for the years is 0.721, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 3.321, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[0.721]** $< F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Financial Investment Income to Total Financial Investments ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[3.321]** $> F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Financial Investment Income to Total Financial Investments ratio within selected Indian Information Technologies Companies during the period under review.

R-4. Other Income to Total Income Ratio

Purpose: To measure the yield on all other Income which do not belong to categories R1 and R3. Typically, this is income includes income from sale of Fixed Assets, income from Sale of old other things, etc.

Formula: $$\frac{\textbf{Other Income}}{\textbf{Total Income}} \textbf{ X 100}$$

The component of the formula can be explained as under.

Here, Other Income for a particular year is taken as numerator. Other Income is the income received from other than Mutual Fund Investments, investment in other company's shares and security, etc.

Here, Total Income includes income from Sales and Services and other operations of the business. Here, Sales and Services are taken after deducting the indirect expenses.

This ratio shows the relationship between Other Income to Total Core Income of the organization and it plays very important role in deciding Rates of Return of an organization. Here, WOCCU has announced that the ratio must be Minimum. Here, no Standard ratio has been given. The institutions which do not have the low ratio compare to other institutions, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Rates of Return of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.27

Analysis of Other Income to Total Income Ratio (R– 4)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	3.934	6.511	0.527	14.994	3.010	1.609	1.226	2.248	4.257
2002	5.539	9.398	0.691	18.405	2.536	3.658	0.974	4.478	5.710
2003	4.497	0.417	0.898	12.364	2.733	1.427	1.416	2.936	3.336
2004	4.898	0.180	1.373	13.011	2.668	0.366	2.873	2.413	3.473
2005	8.764	0.233	1.600	8.295	1.851	2.399	2.899	1.276	3.415
2006	3.494	0.782	0.714	3.603	1.595	0.877	1.522	1.468	1.757
2007	5.550	0.164	0.412	7.511	2.852	0.227	1.687	1.955	2.545
2008	1.217	0.056	0.380	4.174	4.365	1.704	1.558	2.091	1.943
2009	2.415	0.272	0.272	5.608	2.477	2.115	5.029	1.895	2.510
2010	2.717	0.165	0.493	1.270	4.347	1.672	1.822	3.225	1.964
Average	**4.302**	**1.818**	**0.736**	**8.924**	**2.843**	**1.605**	**2.101**	**2.399**	
Overall Avg.	**3.091**								
S. D.	**2.102**	**3.311**	**0.438**	**5.559**	**0.908**	**1.006**	**1.211**	**0.942**	
C.V.	**48.859**	**182.141**	**59.582**	**62.294**	**31.931**	**62.689**	**57.636**	**39.284**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.27 shows the company wise Other Income to Total Income Ratio during study period. Here, Other Income of Institution has been taken only for the purpose of analysis. Total Income received from Sales and Services of core business of the company has been taken as Total Income. This Ratio shows the proportion of other income to Core Income of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The Other Income to Total Income ratio of company ranges from 1.217 percent in financial year 2007-08 to 8.764 percent in financial year 2004-05. The CMC InfoTech Ltd. has got 4.302 percentages as the average for ten years which was seventh highest than the other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 4.302 percent and industry average during the same period was 3.091 percent which shows that company has got higher average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 48.859 percent which shows that the company has got moderate variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Other Income to Total Income ratio was higher than the industry average of the selected Information Technology Companies.

GTL LIMITED

Table 5.27 shows the company wise Other Income to Total Income Ratio during study period. Here, Other Income of Institution has been taken only for the purpose of analysis. Total Income received from Sales and Services of core business of the company has been taken as Total Income. This Ratio shows the proportion of other income to Core Income of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of GTL Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than

the industry average. The Other Income to Total Income ratio of company ranges from 0.056 percent in financial year 2007-08 to 9.398 percent in financial year 2001-02. The GTL Ltd. has got 1.818 percentages as the average for ten years which was third highest than the other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 1.818 percent and industry average during the same period was 3.091 percent which shows that company has got lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 181.141 percent which shows that the company has got the highest variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Other Income to Total Income ratio was lower than the industry average of the selected Information Technology Companies.

HCL INFOSYSTEMS LIMITED

Table 5.27 shows the company wise Other Income to Total Income Ratio during study period. Here, Other Income of Institution has been taken only for the purpose of analysis. Total Income received from Sales and Services of core business of the company has been taken as Total Income. This Ratio shows the proportion of other income to Core Income of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of HCL Info System Ltd. registered continuous increasing trend during first five years study period and it registered decreasing trend during last five years. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The Other Income to Total Income ratio of company ranges from 0.272 percent in financial year 2008-09 to 1.600 percent in financial year 2004-05. The HCL Info System Ltd. has got 0.736 percentages as the average for ten years which was having the lowest average among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 0.736 percent and industry average during the same period was 3.091 percent which shows that company has got much lower average than the industry level which affects positively to company's Rates of Return. Coefficient of

variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 59.582 percent which shows that the company has got moderate variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Other Income to Total Income ratio was lower than the industry average of the selected Information Technology Companies.

HCL TECHNOLOGIES

Table 5.27 shows the company wise Other Income to Total Income Ratio during study period. Here, Other Income of Institution has been taken only for the purpose of analysis. Total Income received from Sales and Services of core business of the company has been taken as Total Income. This Ratio shows the proportion of other income to Core Income of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of HCL Technologies fluctuating trend during the period under review. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The Other Income to Total Income ratio of company ranges from 1.270 percent in financial year 2009-10 to 18.405 percent in financial year 2001-02. The HCL Technologies has got 8.924 percentages as the average for ten years which was having the highest average among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 8.924 percent and industry average during the same period was 3.091 percent which shows that company has got much higher average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 62.294 percent which shows that the company has got moderate variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Other Income to Total Income ratio was higher than the industry average of the selected Information Technology Companies.

INFOSYS

Table 5.27 shows the company wise Other Income to Total Income Ratio during study period. Here, Other Income of Institution has been taken only for the purpose of analysis. Total Income received from Sales and Services of core business of the company has been taken as Total Income. This Ratio shows the proportion of other income to Core Income of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of Infosys registered fluctuating trend during the period under review. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The Other Income to Total Income ratio of company ranges from 1.595 percent in financial year 2005-06 to 4.365 percent in financial year 2007-08. The Infosys has got 2.843 percentages as the average for ten years which was the sixth highest average among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 2.843 percent and industry average during the same period was 3.091 percent which shows that company has got lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 31.931 percent which shows that the company has got low variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Other Income to Total Income ratio was lower than the industry average of the selected Information Technology Companies.

POLARIS SOFTWARE LAB LIMITED

Table 5.27 shows the company wise Other Income to Total Income Ratio during study period. Here, Other Income of Institution has been taken only for the purpose of analysis. Total Income received from Sales and Services of core business of the company has been taken as Total Income. This Ratio shows the proportion of other income to Core Income of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of Polaris Software Lab Ltd. registered fluctuating trend during the period under review. According to WOCCU, there is no lower limit for this ratio for the institution.

However, the ratio must be lower than the industry average. The Other Income to Total Income ratio of company ranges from 0.227 percent in financial year 2006-07 to 3.658 percent in financial year 2001-02. The Polaris Software Lab Ltd. has got 1.605 percentages as the average for ten years which was having the second lowest average among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 1.605 percent and industry average during the same period was 3.091 percent which shows that company has got much lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 62.689 percent which shows that the company has got high variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Other Income to Total Income ratio was lower than the industry average of the selected Information Technology Companies.

ROLTA INDIA LIMITED

Table 5.27 shows the company wise Other Income to Total Income Ratio during study period. Here, Other Income of Institution has been taken only for the purpose of analysis. Total Income received from Sales and Services of core business of the company has been taken as Total Income. This Ratio shows the proportion of other income to Core Income of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of Rolta India Ltd. registered fluctuating trend during the period under review. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The Other Income to Total Income ratio of company ranges from 0.974 percent in financial year 2001-02 to 5.029 percent in financial year 2008-09. The Rolta India Ltd. has got 2.101 percentages as the average for ten years which was having the fourth lowest average among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 2.101 percent and industry average during the same period was 3.091 percent which shows that company has got lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the

ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 57.636 percent which shows that the company has got moderate variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Other Income to Total Income ratio was lower than the industry average of the selected Information Technology Companies.

WIPRO

Table 5.27 shows the company wise Other Income to Total Income Ratio during study period. Here, Other Income of Institution has been taken only for the purpose of analysis. Total Income received from Sales and Services of core business of the company has been taken as Total Income. This Ratio shows the proportion of other income to Core Income of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of Wipro registered fluctuating trend during the period under review. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The Other Income to Total Income ratio of company ranges from 1.273 percent in financial year 2004-05 to 4.478 percent in financial year 2001-02. The Wipro has got 2.399 percentages as the average for ten years which was having the fifth lowest average among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 2.399 percent and industry average during the same period was 3.091 percent which shows that company has got much lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 39.284 percent which shows that the company has got low variability in the said ratio during the period under review. Finally, it can be concluded company's overall average of Other Income to Total Income ratio was lower than the industry average of the selected Information Technology Companies.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.27 shows the company wise Other Income to Total Income ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect HCL Technologies and CMC Info Tech Ltd. has got the highest average than the industry average. The industry average during study period was 3.091 percent where as CMC Info Tech Ltd. registered Other Income to Total Income ratio and it was 4.302 percent, GTL Ltd. recorded 1.818 percent, HCL Info systems Ltd. registered the lowest ratio and it was 0.739 percent, HCL Technologies registered the highest ratio and it was 8.724 percent, Infosys recorded 2.843 percent, Polaris Software Lab Ltd. achieved 1.605 percent, Rolta India Ltd. registered 2.101 percent and Wipro registered 2.399 percent. It clearly reveals HCL Technologies was having the highest ratio from not only industry standard but also standard goal lay down by WOCCU. This was negative sign for the company's revenues. Comparing CV of all the selected companies, it reveals that Infosys has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than HCL Info System comes out as the best performer Information Technology Company in Other Income to Total Income ratio. The second and third rank secured by Polaris Software Lab Ltd. and GTL Ltd. respectively. The forth rank onwards to seventh rank secured by Rolta India Ltd., Wipro, Infosys and CMC Info Tech Ltd. respectively. HCL Technologies was the least rank company in Other Income to Total Income ratio of selected companies during study period as it had the lowest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Other Income to Total Income ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Other Income to Total Income ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Other Income to Total Income ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Other Income to Total Income ratio differs significantly within Selected Information Technology Companies.

Table 5.28

Two – Way ANOVA Other Income to Total Income Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	108.251	9	12.028	2.179	2.032
Within Companies	463.817	7	66.260	12.004	2.159
Error	347.747	63	5.520		
Total	919.815	79			

In Table 5.28, the value of the calculated F ratio for the years is 2.179, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 12.004, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[2.179]>** $F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is significant difference in Other Income to Total Income ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[12.004] >** $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Other Income to Total Income ratio within selected Indian Information Technologies Companies during the period under review.

R-5. Total Interest Cost on Savings Deposits to Average Savings Deposits Ratio

This ratio includes Interest Cost on Saving Deposits which is not there in current study. Current study is related with Information Technology Industry of India and Interest Costs are not available in the selected companies' balance sheet. Hence, the calculation and analysis of this ratio is not possible in current study.

R-6. Total Interest Cost on External Credit to Total External Credit Ratio:

Purpose: To measure the yield (cost) of all Borrowed Funds

Formula: $$\frac{\text{Interest Cost on External Credit}}{\text{Total External Credit}} \times 100$$

The component of the formula can be explained as under.

Here, Interest Cost for a particular year is taken as numerator. Interest Cost is the Cost done for getting the external credit from the market for smooth functioning of the business.

Here, Total External Credit contains loans taken by the institution for financing its long term or short term requirements. Here, External Credit includes Secured and Unsecured Loans from the third party.

This ratio shows the relationship between Interest Cost on External Credit to Total External Credit of the organization and it plays very important role in deciding Rates of Return of an organization. Here, WOCCU has announced that the ratio must be Minimum. Here, no Standard ratio has been given. The institutions which do not have the low ratio compare to other institutions, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Rates of Return of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.29

Analysis of Interest Cost on External Credit to Total External Credit Ratio (R– 6)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	0	20.616	1.717	10.400	0	0	1.002	10.515	5.531
2002	0	17.843	10.305	6.061	0	0	2.892	4.869	5.246
2003	0	11.860	10.970	18.182	0	13.158	9.931	4.167	8.538
2004	0	30.534	11.592	5.579	0	47.826	2.912	3.479	12.740
2005	5.568	32.296	8.757	5.812	0	39.234	5.653	8.871	13.273
2006	6.174	13.796	7.596	9.567	0	29.412	6.932	6.188	9.957
2007	22.310	4.068	10.238	31.719	0	6.250	1.230	5.210	10.128
2008	3.595	7.509	13.489	38.689	0	8.537	2.260	3.768	9.730
2009	5.828	10.136	19.687	5.468	0	20.000	1.365	3.925	8.301
2010	0	3.411	7.342	7.246	0	37.143	1.565	1.960	7.333
Average	**4.347**	**15.207**	**10.169**	**13.872**	**0.000**	**20.156**	**3.574**	**5.295**	
Overall Avg.	**9.078**								
S. D.	**6.870**	**10.135**	**4.623**	**11.986**	**0.000**	**17.300**	**2.975**	**2.602**	
C.V.	**158.016**	**66.650**	**45.461**	**86.399**	**0.000**	**85.833**	**83.235**	**49.133**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.29 shows the company wise Interest Cost on External Credit to Total External Credit Ratio during study period. Here, Interest Cost on External Credit of Institution has been taken only for the purpose of analysis. External Credit includes Secured and Unsecured Loans from the third party. This Ratio shows the proportion of Interest Cost on Total Credit to Total External Credit of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered increasing trend except the financial year 2007-08 during the study period. The ratio was nil in four years as there was no External Credit during these years. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 3.595 percent in financial year 2007-08 to 22.310 percent in financial year 2006-07. The CMC InfoTech Ltd. has got 4.347 percentages as the average for ten years which was second lowest than the other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 4.347 percent and industry average during the same period was 9.078 percent which shows that company has got lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 158.016 percent which shows that the company has the highest variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

GTL LIMITED

Table 5.29 shows the company wise Interest Cost on External Credit to Total External Credit Ratio during study period. Here, Interest Cost on External Credit of Institution has been taken only for the purpose of analysis. External Credit includes Secured and Unsecured Loans from the third party. This Ratio shows the proportion of Interest Cost on Total Credit to Total External Credit of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of GTL Ltd. registered fluctuating trend during the study period. According

to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 3.411 percent in financial year 2009-10 to 32.296 percent in financial year 2004-05. The GTL Ltd. has got 15.207 percentages as the average for ten years which was second highest than the other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 15.207 percent and industry average during the same period was 9.078 percent which shows that company has got much higher average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 66.650 percent which shows that the company has moderate variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

HCL INFOSYSTEMS LIMITED

Table 5.29 shows the company wise Interest Cost on External Credit to Total External Credit Ratio during study period. Here, Interest Cost on External Credit of Institution has been taken only for the purpose of analysis. External Credit includes Secured and Unsecured Loans from the third party. This Ratio shows the proportion of Interest Cost on Total Credit to Total External Credit of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of HCL Info System Ltd. registered increasing trend except the financial years 2004-05, 2005-06 and 2009-10 during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 1.717 percent in financial year 2000-01 to 19.687 percent in financial year 2008-09. The HCL Info System Ltd. has got 10.169 percentages as the average for ten years which was third highest than the other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 10.169 percent and industry average during the same period was 9.078 percent which shows that company has got marginally higher average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the

movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 45.461 percent which shows that the company has the lowest variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

HCL TECHNOLOGIES

Table 5.29 shows the company wise Interest Cost on External Credit to Total External Credit Ratio during study period. Here, Interest Cost on External Credit of Institution has been taken only for the purpose of analysis. External Credit includes Secured and Unsecured Loans from the third party. This Ratio shows the proportion of Interest Cost on Total Credit to Total External Credit of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of HCL Technologies registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 5.468 percent in financial year 2008-09 to 38.689 percent in financial year 2007-08. The HCL Technologies has got 13.872 percentages as the average for ten years which was third highest than the other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 13.872 percent and industry average during the same period was 9.078 percent which shows that company has got higher average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 86.399 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

POLARIS SOFTWARE LAB LIMITED

Table 5.29 shows the company wise Interest Cost on External Credit to Total External Credit Ratio during study period. Here, Interest Cost on External Credit of Institution has been taken only for the purpose of analysis. External Credit includes Secured and

Unsecured Loans from the third party. This Ratio shows the proportion of Interest Cost on Total Credit to Total External Credit of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of Polaris Software Lab Ltd. registered increasing trend except the financial years 2005-06 to 2007-08 during the study period. The ratio was nil in first two years as there was no External Credit during these years. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 6.250 percent in financial year 2006-07 to 47.826 percent in financial year 2003-04. The Polaris Software Lab Ltd. has got 20.156 percentages as the average for ten years which was the highest among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 20.156 percent and industry average during the same period was 9.078 percent which shows that company has got higher average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 85.833 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

ROLTA INDIA LIMITED

Table 5.29 shows the company wise Interest Cost on External Credit to Total External Credit Ratio during study period. Here, Interest Cost on External Credit of Institution has been taken only for the purpose of analysis. External Credit includes Secured and Unsecured Loans from the third party. This Ratio shows the proportion of Interest Cost on Total Credit to Total External Credit of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of Rolat India Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 1.002 percent in financial year 2000-01 to 9.931 percent in financial year 2002-03. The Rolta India Ltd. has got 3.574 percentages as the average for ten years

which was laower than the other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 3.574 percent and industry average during the same period was 9.078 percent which shows that company has got much lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 83.235 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

WIPRO

Table 5.29 shows the company wise Interest Cost on External Credit to Total External Credit Ratio during study period. Here, Interest Cost on External Credit of Institution has been taken only for the purpose of analysis. External Credit includes Secured and Unsecured Loans from the third party. This Ratio shows the proportion of Interest Cost on Total Credit to Total External Credit of the company. The Lower the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of Wipro registered continuous decreasing trend except the financial years 2004-05 and 2008-09 during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 1.960 percent in financial year 2009-10 to 10.515 percent in financial year 2000-01. The Wipro has got 5.295 percentages as the average for ten years which was fourth lowest than the other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 4.347 percent and industry average during the same period was 9.078 percent which shows that company has got lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 49.133 percent which shows that the company has moderate variability in the said ratio during the period under review. Finally, it can be concluded that company's

overall average of ratio was lower than the industry average of the selected Information Technology Companies.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.29 shows the company wise Interest Cost on External Credit to Total External Credit ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect GTL Ltd., HCL Info System, HCL Technologies and Polaris Software Lab Ltd. has got the highest average than the industry average. The industry average during study period was 9.078 percent where as CMC Info Tech Ltd. registered Interest on External Credit to Total External Credit ratio and it was 4.347 percent, GTL Ltd. recorded 15.207 percent, HCL Info systems Ltd. registered 10.169 percent, HCL Technologies registered 13.872, Infosys recorded 0 percent as it was not having External Credit during the period under review, Polaris Software Lab Ltd. achieved the highest ratio and it was 20.156 percent, Rolta India Ltd. registered the lowest ratio and it was 3.574 percent and Wipro registered 5.295 percent. It clearly reveals Polaris Software Lab Ltd. was having the highest ratio from not only industry standard but also standard goal lay down by WOCCU. This was negative sign for the company's revenues. Comparing CV of all the selected companies, it reveals that HCL Info System Ltd. has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than Infosys comes out as the best performer Information Technology Company in Interest Cost on External Credit to Total External Credit ratio. The second and third rank secured by Rolta India Ltd. and CMC Info Tech Ltd. respectively. The forth rank onwards to seventh rank secured by Wipro, HCL Info systems, HCL Technologies and GTL Ltd. respectively. Polaris Software Lab Ltd. was the least rank company in Interest Cost on External Credit to Total External Credits of selected companies during study period as it had the highest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o : Interest Cost on External Credit to Total External Credit ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : Interest Cost on External Credit to Total External Credit differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: Interest Cost on External Credit to Total External Credit does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : Interest Cost on External Credit to Total External Credit ratio differs significantly within Selected Information Technology Companies.

Table 5.30

Two – Way ANOVA Interest Cost on External Credit to Total External Credit Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	516.224	9	57.358	0.701	2.032
Within Companies	3338.513	7	476.930	5.831	2.159
Error	5152.600	63	81.787		
Total	9007.336	79			

In Table 5.28, the value of the calculated F ratio for the years is 0.701, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 5.831, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$$F_{\text{Calculated}}\,[0.701] < F_{\alpha\,=\,0.05 \text{ and d.f.} = (9,63)}\,[2.032]$$

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Interest Cost on External Credit to Total External Credit ratio within years.

Component—I.T. Companies: For this component,

$F_{Calculated}$ **[5.831]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Interest Cost on External Credit to Total External Credit ratio within selected Indian Information Technologies Companies during the period under review.

R-7. Proposed Dividend Cost on Equity Share Capital to Total Equity Share Capital Ratio

Purpose: To measure the yield (cost) of Member Shares.

Formula: $$\frac{\textbf{Proposed Dividend}}{\textbf{Total Equity Share Capital}} \times 100$$

The component of the formula can be explained as under.

Here, Proposed Equity Dividend for a particular year is taken as numerator. Proposed Dividend is taken from the Balance sheet of the respective company during the period under review.

Here, Total Equity Share Capital issued by the institution for financing its long term requirements will be taken as denominator for this ratio.

This ratio shows the relationship between Proposed Cost of Equity Dividend to Total Equity Share Capital. It plays very important role in deciding Rates of Return of an organization. Here, WOCCU has announced that the ratio must be Minimum. However the maximum dividend will attract share holders. Here, no Standard ratio has been given. The institutions which do not have the low ratio compare to other institutions, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Rates of Return of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.31

Analysis of Proposed Cost of Equity Dividend to Total Equity Share Capital Ratio (R– 7)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	19.772	3.004	70.000	48.411	196.970	29.918	30.020	25.000	52.887
2002	18.285	0.993	24.984	73.362	396.970	35.002	30.020	50.000	78.702
2003	21.301	1.186	100.000	112.275	290.909	66.149	30.020	50.108	83.993
2004	20.014	3.093	79.295	226.008	2321.212	35.012	30.020	144.540	357.399
2005	45.017	2.740	114.149	196.197	130.370	35.000	34.951	250.036	101.057
2006	50.033	24.275	100.030	196.971	768.841	25.005	40.020	249.965	181.892
2007	80.000	2.651	100.236	116.242	129.720	44.999	49.944	50.000	71.724
2008	110.033	2.992	100.029	148.137	545.105	30.002	30.940	200.000	145.905
2009	150.033	2.998	75.000	49.829	270.280	29.252	30.031	200.000	100.928
2010	200.000	2.089	71.196	49.256	300.000	40.946	32.483	300.034	124.501
Average	**71.449**	**4.602**	**83.492**	**121.669**	**535.038**	**37.129**	**33.845**	**151.968**	
Overall Avg.	**129.899**								
S. D.	**63.313**	**6.955**	**25.573**	**67.523**	**657.564**	**11.757**	**6.514**	**101.710**	
C.V.	**88.614**	**151.116**	**30.629**	**55.498**	**122.901**	**31.666**	**19.246**	**66.929**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.31 shows the company wise Proposed Cost of Equity Dividend to Total Equity Share Capital Ratio during study period. Here, Dividend Cost on Equity Capital of Institution has been taken only for the purpose of analysis. This Ratio shows the proportion of Dividend Cost on Total Equity Capital to Total Equity Capital of the company. The Lower the ratio better will be the Rates of Return of the company. However, it can be concluded that company is not paying proper Dividend to its share holders. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered increasing trend except the financial years 2001-02 and 2003-04 during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 18.285 percent in financial year 2001-02 to 200.00 percent in financial year 2009-10. The CMC InfoTech Ltd. has got 71.449 percentages as the average for ten years which was fourth lowest than the other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 71.449 percent and industry average during the same period was 129.899 percent which shows that company has got lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 88.614 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

GTL LIMITED

Table 5.31 shows the company wise Proposed Cost of Equity Dividend to Total Equity Share Capital Ratio during study period. Here, Dividend Cost on Equity Capital of Institution has been taken only for the purpose of analysis. This Ratio shows the proportion of Dividend Cost on Total Equity Capital to Total Equity Capital of the company. The Lower the ratio better will be the Rates of Return of the company. However, it can be concluded that company is not paying proper Dividend to its share holders. It reveals from the above table that the ratio of GTL Ltd.

registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 0.993 percent in financial year 2001-02 to 24.275 percent in financial year 2005-06. The GTL Ltd. has got 4.602 percentages as the average for ten years which was the lowest among selected companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 4.602 percent and industry average during the same period was 129.899 percent which shows that company has got much lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 151.116 percent which shows that the company has the highest variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

HCL INFOSYSTEMS LIMITED

Table 5.31 shows the company wise Proposed Cost of Equity Dividend to Total Equity Share Capital Ratio during study period. Here, Dividend Cost on Equity Capital of Institution has been taken only for the purpose of analysis. This Ratio shows the proportion of Dividend Cost on Total Equity Capital to Total Equity Capital of the company. The Lower the ratio better will be the Rates of Return of the company. However, it can be concluded that company is not paying proper Dividend to its share holders. It reveals from the above table that the ratio of HCL Info System Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 24.984 percent in financial year 2001-02 to 114.149 percent in financial year 2004-05. The HCL Info System Ltd. has got 83.492 percentages as the average for ten years which was fifth lowest than the other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 82.492 percent and industry average during the same period was 129.899 percent which shows that company has got lower average than the industry level which

affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 30.629 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

HCL TECHNOLOGIES

Table 5.31 shows the company wise Proposed Cost of Equity Dividend to Total Equity Share Capital Ratio during study period. Here, Dividend Cost on Equity Capital of Institution has been taken only for the purpose of analysis. This Ratio shows the proportion of Dividend Cost on Total Equity Capital to Total Equity Capital of the company. The Lower the ratio better will be the Rates of Return of the company. However, it can be concluded that company is not paying proper Dividend to its share holders. It reveals from the above table that the ratio of HCL Technologies registered increasing trend except the financial years 2004-05, 2006-07 and 2008-09 during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 48.411 percent in financial year 2000-01 to 226.008 percent in financial year 2003-04. The HCL Technologies has got 121.669 percentages as the average for ten years which was sixth lowest than the other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 121.669 percent and industry average during the same period was 129.899 percent which shows that company has got marginally lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 55.489 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

INFOSYS

Table 5.31 shows the company wise Proposed Cost of Equity Dividend to Total Equity Share Capital Ratio during study period. Here, Dividend Cost on Equity Capital of Institution has been taken only for the purpose of analysis. This Ratio shows the proportion of Dividend Cost on Total Equity Capital to Total Equity Capital of the company. The Lower the ratio better will be the Rates of Return of the company. However, it can be concluded that company is not paying proper Dividend to its share holders. It reveals from the above table that the ratio of Infosys registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 129.720 percent in financial year 2006-07 to 2321.212 percent in financial year 2009-10. The Infosys has got 535.038 percentages as the average for ten years which was the highest than the other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 71.449 percent and industry average during the same period was 535.038 percent which shows that company has got much higher average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 122.901 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

POLARIS SOFTWARE LAB LIMITED

Table 5.31 shows the company wise Proposed Cost of Equity Dividend to Total Equity Share Capital Ratio during study period. Here, Dividend Cost on Equity Capital of Institution has been taken only for the purpose of analysis. This Ratio shows the proportion of Dividend Cost on Total Equity Capital to Total Equity Capital of the company. The Lower the ratio better will be the Rates of Return of the company. However, it can be concluded that company is not paying proper Dividend to its share holders. It reveals from the above table that the ratio of Polaris Software Lab Ltd. registered fluctuating trend during the study period. According to WOCCU,

there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 25.005 percent in financial year 2005-06 to 66.149 percent in financial year 2002-03. The Polaris Software Lab Ltd. has got 37.129 percentages as the average for ten years which was third lowest than the other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 37.129 percent and industry average during the same period was 129.899 percent which shows that company has got highly lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 31.666 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

ROLTA INDIA LIMITED

Table 5.31 shows the company wise Proposed Cost of Equity Dividend to Total Equity Share Capital Ratio during study period. Here, Dividend Cost on Equity Capital of Institution has been taken only for the purpose of analysis. This Ratio shows the proportion of Dividend Cost on Total Equity Capital to Total Equity Capital of the company. The Lower the ratio better will be the Rates of Return of the company. However, it can be concluded that company is not paying proper Dividend to its share holders. It reveals from the above table that the ratio of Rolat India Ltd. registered Stable ratio in first four financial years during the period under review and it showed fluctuating trend during the rest of the financial years. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 30.020 percent in financial year 2003-04 to 49.944 percent in financial year 2006-07. The Rolat India Ltd. has got 33.845 percentages as the average for ten years which was second lowest than the other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 33.845 percent and industry average during the same period was 129.899 percent which shows that company has got lower average than the industry level which

affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 19.246 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

WIPRO

Table 5.31 shows the company wise Proposed Cost of Equity Dividend to Total Equity Share Capital Ratio during study period. Here, Dividend Cost on Equity Capital of Institution has been taken only for the purpose of analysis. This Ratio shows the proportion of Dividend Cost on Total Equity Capital to Total Equity Capital of the company. The Lower the ratio better will be the Rates of Return of the company. However, it can be concluded that company is not paying proper Dividend to its share holders. It reveals from the above table that the ratio of Wipro registered increasing trend except the financial years 2005-06 and 2006-07 during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 25.00 percent in financial year 2000-01 to 250.036 percent in financial year 2004-05. The Wipro has got 151.968 percentages as the average for ten years which was second highest than the other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 151.968 percent and industry average during the same period was 129.899 percent which shows that company has got higher average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 66.929 percent which shows that the company has moderate variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.31 shows the company wise Dividend Cost on Equity Shares to Total Equity Share Capital ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect Infosys and Wipro has got the highest average than the industry average. Which affects negatively to company's Rates of Return. The industry average during study period was 129.899 percent where as CMC Info Tech Ltd. registered Dividend on Equity Capital to Total Equity Share Capital ratio and it was 71.449 percent, GTL Ltd. recorded the lowest ratio and it was 4.602 percent, HCL Info systems Ltd. registered 83.492 percent, HCL Technologies registered 121.669, Infosys recorded the highest ratio and it was 535.038 percent, Polaris Software Lab Ltd. achieved 37.129 percent, Rolta India Ltd. registered 33.845 percent and Wipro registered 151.968 percent. It clearly reveals that Infosys was having the highest ratio from not only industry standard but also standard goal lay down by WOCCU. This was negative sign for the company's revenues. Comparing CV of all the selected companies, it reveals that Rolta India Ltd. has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than GTL Ltd. comes out as the best performer Information Technology Company in Dividend Cost on Equity Capital to Total Equity Share Capital ratio. The second and third rank secured by Rolta India Ltd. and Polaris Software Lab Ltd. respectively. The forth rank onwards to seventh rank secured by CMC Info Tech Ltd., HCL Info System, HCL Technologies and Wipro respectively. Infosys was the least rank company in Dividend Cost on Equity Shares to Total Equity Share Capital of selected companies during study period as it had the highest average.

Hypothesis with respect to the Years

Null hypothesis,

H_o : Dividend Cost on Equity Capital to Total Equity Share Capital ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : Dividend Cost on Equity Capital to Total Equity Share Capital differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: Dividend Cost on Equity Capital to Total Equity Share Capital ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : Dividend Cost on Equity Capital to Total Equity Share Capital ratio differs significantly within Selected Information Technology Companies.

Table 5.32

Two – Way ANOVA Dividend Cost on Equity Capital to Total Equity Share Capital Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	563678.7	9	62630.96	1.125	2.032
Within Companies	2037941	7	291134.5	5.231	2.159
Error	3505998	63	55650.77		
Total	6107618	79			

In Table 5.32, the value of the calculated F ratio for the years is 1.125, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 5.231, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[1.125]**< $F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Dividend Cost on Equity Capital to Total Equity Share Capital ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[5.231]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Dividend Cost on Equity Capital to Total Equity Share Capital ratio within selected Indian Information Technologies Companies during the period under review.

R-8. Total Gross Income Margin to Total Assets Ratio

Purpose: To measure the gross income margin generated, expressed as a yield on Core income from Sales and Services before subtracting operating expenses, provisions for loan losses, and other extraordinary items.

Formula: $$\frac{\textbf{Total Gross Income}}{\textbf{Total Assets}} \textbf{ X 100}$$

The component of the formula can be explained as under.

Here, Total Gross Income for a particular year is taken as numerator. Total Gross Income includes income from sales and services of the organization during a particular financial year.

Here, Net Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

The ratio plays very important role in deciding Rates of Return of an organization. Here, WOCCU has announced that the ratio must be Maximum. Here, no Standard ratio has been given. The institutions which do not have the high ratio compare to other institutions, should try to achieve the target as soon as possible. There is no upper limit for this ratio. So, the higher the ratio better will be the Rates of Return of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.33

Analysis of Total Gross Income Margin to Total Assets Ratio (R– 8)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	4005.579	6.046	178.615	41.984	141.109	204.618	80.682	153.848	601.560
2002	3863.222	3.538	223.478	34.343	125.144	188.332	69.715	135.478	580.406
2003	3627.377	8.746	381.809	37.547	126.634	109.276	56.031	118.609	558.254
2004	3194.076	43.774	322.154	47.207	146.357	146.778	40.036	145.771	510.769
2005	3601.068	49.046	375.825	48.913	130.866	166.955	49.550	147.844	571.258
2006	2912.122	8.143	385.009	117.075	130.897	141.354	44.260	160.227	487.386
2007	3957.223	46.830	1080.694	199.264	117.801	169.564	33.896	146.181	718.932
2008	2939.801	68.558	920.319	142.505	115.997	168.915	53.296	193.462	575.357
2009	1967.506	63.455	907.652	116.820	113.785	232.086	52.012	145.727	449.880
2010	1448.080	29.656	491.453	191.628	94.934	273.041	48.757	116.876	336.803
Average	**3151.605**	**32.779**	**526.701**	**97.729**	**124.353**	**180.092**	**52.823**	**146.402**	
Overall Avg.	**539.061**								
S. D.	**864.174**	**24.873**	**320.935**	**64.595**	**14.704**	**47.195**	**13.723**	**21.674**	
C.V.	**27.420**	**75.881**	**60.933**	**66.096**	**11.825**	**26.206**	**25.979**	**14.804**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.33 shows the company wise Total Gross Income Margin to Total Assets Ratio during study period. Here, Total Gross Income Margin includes only core income of the organization i.e. income from sales and services. This Ratio shows the proportion of Operational Income to Total Assets of the company. The higher the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered continuous decreasing trend except the financial years 2004-05 and 2006-07 during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 1448.080 percent in financial year 2009-10 to 4005.579 percent in financial year 2000-01. The CMC InfoTech Ltd. has got 3151.605 percentages as the average for ten years which was the highest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 3151.605 percent and industry average during the same period was 539.061 percent which shows that company has got much higher average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 27.420 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

GTL LIMITED

Table 5.33 shows the company wise Total Gross Income Margin to Total Assets Ratio during study period. Here, Total Gross Income Margin includes only core income of the organization i.e. income from sales and services. This Ratio shows the proportion of Operational Income to Total Assets of the company. The higher the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of GTL Ltd. registered continuous increasing trend except the financial years 2001-02, 2005-06, 2008-09 and 2009-10 during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 3.538 percent in

financial year 2001-02 to 668.558 percent in financial year 2007-08. The GTL Ltd. has got 32.779 percentages as the average for ten years which was the lowest among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 32.779 percent and industry average during the same period was 539.061 percent which shows that company has got much lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 75.881 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was much lower than the industry average of the selected Information Technology Companies.

HCL INFOSYSTEMS LIMITED

Table 5.33 shows the company wise Total Gross Income Margin to Total Assets Ratio during study period. Here, Total Gross Income Margin includes only core income of the organization i.e. income from sales and services. This Ratio shows the proportion of Operational Income to Total Assets of the company. The higher the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of HCL Info System Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 178.615 percent in financial year 2000-01 to 1080.694 percent in financial year 2006-07. The HCL Info System Ltd. has got 526.701 percentages as the average for ten years which was the second highest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 526.701 percent and industry average during the same period was 539.061 percent which shows that company has got marginally lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 60.933 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was

marginally lower than the industry average of the selected Information Technology Companies.

HCL TECHNOLOGIES

Table 5.33 shows the company wise Total Gross Income Margin to Total Assets Ratio during study period. Here, Total Gross Income Margin includes only core income of the organization i.e. income from sales and services. This Ratio shows the proportion of Operational Income to Total Assets of the company. The higher the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of HCL Technologies registered continuous increasing trend except the financial years 2001-02, 2007-08 and 2008-09 during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 34.343 percent in financial year 2001-02 to 199.264 percent in financial year 2006-07. The HCL Technologies has got 97.723 percentages as the average for ten years which was the sixth highest among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 97.723 percent and industry average during the same period was 539.061 percent which shows that company has got much lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 66.096 percent which shows that the company has moderate variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was much lower than the industry average of the selected Information Technology Companies.

INFOSYS

Table 5.33 shows the company wise Total Gross Income Margin to Total Assets Ratio during study period. Here, Total Gross Income Margin includes only core income of the organization i.e. income from sales and services. This Ratio shows the proportion of Operational Income to Total Assets of the company. The higher the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of Infosys registered continuous decreasing trend except the financial years 2002-03 and

2003-04 during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 94.934 percent in financial year 2009-10 to 141.109 percent in financial year 2000-01. The Infosys has got 124.353 percentages as the average for ten years which was lower than other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 124.353 percent and industry average during the same period was 539.061 percent which shows that company has got highly lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 11.825 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio highly lower than the industry average of the selected Information Technology Companies.

POLARIS SOFTWARE LAB LIMITED

Table 5.33 shows the company wise Total Gross Income Margin to Total Assets Ratio during study period. Here, Total Gross Income Margin includes only core income of the organization i.e. income from sales and services. This Ratio shows the proportion of Operational Income to Total Assets of the company. The higher the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of Polaris Software Lab Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 109.273 percent in financial year 2002-03 to 273.041 percent in financial year 2009-10. The Polaris Software Lab Ltd. has got 180.092 percentages as the average for ten years which was the third highest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 180.092 percent and industry average during the same period was 539.061 percent which shows that company has got lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the

ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 26.206 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

ROLTA INDIA LIMITED

Table 5.33 shows the company wise Total Gross Income Margin to Total Assets Ratio during study period. Here, Total Gross Income Margin includes only core income of the organization i.e. income from sales and services. This Ratio shows the proportion of Operational Income to Total Assets of the company. The higher the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of Rolta India Ltd. registered continuous decreasing trend except the financial years 2004-05 and 2007-08 during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 33.896 percent in financial year 2006-07 to 80.682 percent in financial year 2000-01. The Rolat India Ltd. has got 52.823 percentages as the average for ten years which was the seventh highest among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 80.682 percent and industry average during the same period was 539.061 percent which shows that company has got much lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 25.979 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

WIPRO

Table 5.33 shows the company wise Total Gross Income Margin to Total Assets Ratio during study period. Here, Total Gross Income Margin includes only core income of the organization i.e. income from sales and services. This Ratio shows the proportion

of Operational Income to Total Assets of the company. The higher the ratio better will be the Rates of Return of the company. It reveals from the above table that the ratio of Wipro registered fluctuating trend during the study period. According to WOCCU, there is no upper limit for this ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 116.976 percent in financial year 2009-10 to 193.462 percent in financial year 2007-08. The Wipro has got 146.402 percentages as the average for ten years which was the fourth highest among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 146.402 percent and industry average during the same period was 539.061 percent which shows that company has got much lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 14.804 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.33 shows the company wise Total Gross Income Margin to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect CMC Info Tech Ltd. has got the highest average than the industry average. Which affects negatively to company's Rates of Return. The industry average during study period was 539.061 percent where as CMC Info Tech Ltd. registered the highest Total Gross Income Margin to Total Assets ratio and it was 3151.605 percent, GTL Ltd. recorded the lowest ratio and it was 32.779 percent, HCL Info systems Ltd. registered 526.701 percent, HCL Technologies registered 97.729, Infosys recorded 124.353 percent, Polaris Software Lab Ltd. achieved 180.092 percent, Rolta India Ltd. registered 52.823 percent and Wipro registered 146.402 percent. It clearly reveals that GTL Ltd. was having the lowest ratio from not only industry standard but also standard goal lay down by WOCCU. This was negative sign for the company's revenues. Comparing CV of all the selected

companies, it reveals that Infosys has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than CMC Info Tech Ltd. comes out as the best performer Information Technology Company in Total Gross Income Margin to Total Assets ratio. The second and third rank secured by HCL Info System Ltd. and Polaris Software Lab Ltd. respectively. The forth rank onwards to seventh rank secured by Wipro, Infosys, HCL Technologies and Rolta India Ltd. respectively. GTL Ltd. was the least rank company in Total Gross Income Margin to Total Assets of selected companies during study period as it had the lowest average among selected companies.

Hypothesis with respect to the Years

Null hypothesis,

H_o : Total Gross Income Margin to Total Assets ratio does not differ significantly within the years.

hypothesis,

H_1 : Total Gross Income Margin to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: Total Gross Income Margin to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : Total Gross Income Margin to Total Assets ratio differs significantly within Selected Information Technology Companies.

Table 5.34

Two – Way ANOVA Total Gross Income Margin to Total Assets Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	744188.879	9	82687.653	0.747	2.032
Within Companies	79680866.788	7	11382980.970	102.814	2.159
Error	6975009.189	63	110714.432		
Total	87400064.856	79			

In Table 5.34, the value of the calculated F ratio for the years is 0.747, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 102.814, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[0.747]** $< F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Total Gross Income Margin to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[102.814]** $> F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Total Gross Income Margin to Total Assets ratio within selected Indian Information Technologies Companies during the period under review.

R-9. Total Operating Expenses to Total Assets Ratio

Purpose: To measure the cost associated with the management of all Credit Union assets. This cost is measured as a percentage of total assets and indicates the degree of operational efficiency or inefficiency.

Formula: $$\frac{\textbf{Total Operating Expenses}}{\textbf{Total Assets}} \textbf{ X 100}$$

The component of the formula can be explained as under.

Here, Total Operating Expenses for a particular year is taken as numerator. Total Operating Expenses includes Expenses for Administration, Selling and Distribution Department of the organization during a particular financial year.

Here, Net Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

The ratio plays very important role in deciding Rates of Return of an organization. Here, WOCCU has announced that the ratio must be Maximum 10 percent or lower than that level. The institutions which do not have the low ratio compare to standard, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Rates of Return of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.35

Analysis of Total Operating Expenses to Total Assets Ratio (R– 9)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	0.501	9.113	29.999	8.738	19.006	38.782	12.972	26.897	18.251
2002	0.356	7.629	33.478	6.581	16.346	34.097	13.604	21.117	16.651
2003	0.191	17.748	38.759	8.670	18.735	17.225	14.358	17.274	16.620
2004	0.255	13.760	33.278	11.141	20.935	24.429	9.475	20.889	16.770
2005	0.232	16.319	39.488	11.101	16.787	40.879	11.542	16.631	19.123
2006	0.246	12.335	39.732	26.091	16.703	29.265	9.351	18.098	18.978
2007	0.320	7.463	41.354	27.360	14.746	39.904	12.939	17.976	20.258
2008	0.271	7.585	42.443	37.820	13.410	42.579	20.866	24.201	23.647
2009	0.168	3.472	49.346	86.688	15.346	51.320	26.305	14.121	30.846
2010	0.105	2.325	28.855	57.425	12.619	62.475	21.111	11.009	24.491
Average	**0.265**	**9.775**	**37.673**	**28.162**	**16.463**	**38.095**	**15.252**	**18.821**	
Overall Avg.	**20.563**								
S. D.	**0.110**	**5.156**	**6.279**	**26.212**	**2.584**	**12.984**	**5.618**	**4.658**	
C.V.	**41.605**	**52.744**	**16.667**	**93.076**	**15.695**	**34.082**	**36.833**	**24.748**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.35 shows the ratio of Total Operating Expense to Total Assets for the CMC InfoTech Limited during the period under review. The ratio showed continuous decreasing trend except financial years 2003-04, 2005-06 and 2006-07 for last ten years. It ranges between 0.105 in financial year 2009-10 to 0.501 in the financial year 2000-01. This ratio shows the total operating expenses to total assets ratio of the company. This ratio explains the company's operational efficiency. Hence, the lower the ratio better will be Operational efficiency of the institutions. Here, WOCCU announced the standard ratio for the institutions is 10 percent or lower than this level. It reveals from the company's analysis that CMC Info Tech Ltd. never had higher ratio than the standard lay down by WOCCU. Comparing company's average with overall industry average, it can be concluded that the company was having low ratio which has got positive impact on its Rates of Return. Company's average was 0.265 percent and Industry average was 20.563 percent during the period under study. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 41.605 percent which shows that the company has got low variability in the said ratio. The low CV may be because of low increase in ratio. Finally, it can be concluded that the Total Operating Expense to Total Assets ratio of CMC Info Tech Ltd. was under control during the period under study. It also can be concluded that the Rates of Return of CMC Info Tech Ltd. was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

GTL LIMITED

Table 5.35 shows the ratio of Total Operating Expense to Total Assets for the GTL Limited during the period under review. The ratio showed fluctuating trend during the period under review. The ratio of Total Operating Expense to Total Assets ranges between 2.325 in financial year 2009-10 to 17.748 in the financial year 2002-03. This ratio shows the total operating expenses to total assets ratio of the company. This ratio explains the company's operational efficiency. Hence, the lower the ratio better will be Operational efficiency of the institutions. Here, WOCCU announced the standard ratio for the institutions is 10 percent or lower than this level. It reveals from the company's analysis that GTL Ltd. did not achieve the standard ratio in for

consecutive year i.e. 2002-03 to 2005-06 during the study period. Comparing company's average with overall industry average, it can be concluded that the company was having low ratio which has got positive impact on its Rates of Return. Company's average was 9.775 percent and Industry average was 20.563 percent during the period under study. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 52.744 percent which shows that the company has got moderate variability in the said ratio. The moderate CV may be because of low increase in ratio. Finally, it can be concluded that the Total Operating Expense to Total Assets ratio of GTL Ltd. was under control during the period under study. It also can be concluded that the Rates of Return of GTL Ltd. was Effective as the company was achieving the standard ratio given by WOCCU during the study period.

HCL INFOSYSTEMS LIMITED

Table 5.35 shows the ratio of Total Operating Expense to Total Assets for the HCL Info Systems Limited during the period under review. The ratio showed continuous increasing trend except the financial years 2003-04 and 2009-10 during the period under review. The ratio of Total Operating Expense to Total Assets ranges between 28.855 in financial year 2009-10 to 49.346 in the financial year 2008-09. This ratio shows the total operating expenses to total assets ratio of the company. This ratio explains the company's operational efficiency. Hence, the lower the ratio better will be Operational efficiency of the institutions. Here, WOCCU announced the standard ratio for the institutions is 10 percent or lower than this level. It reveals from the company's analysis that HCL Info System Ltd. did not achieve the standard ratio during the study period. Comparing company's average with overall industry average, it can be concluded that the company was having high ratio which has got negative impact on its Rates of Return. Company's average was 37.673 percent and Industry average was 20.563 percent during the period under study. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 16.667 percent which shows that the company has got low variability in the said ratio. The low CV may be because of low increase in ratio. Finally, it can be concluded that the Total Operating Expense to Total Assets ratio of HCL Info System Ltd. was not under control during

the period under study. It also can be concluded that the Rates of Return of HCL Info System Ltd. was ineffective as the company was not achieving the standard ratio given by WOCCU during the study period.

HCL TECHNOLOGIES

Table 5.35 shows the ratio of Total Operating Expense to Total Assets for the HCL Technologies during the period under review. The ratio showed continuous increasing trend except the financial years 2001-02, 2004-05 and 2009-10 during the period under review. The ratio of Total Operating Expense to Total Assets ranges between 6.581 in financial year 2001-02 to 86.688 in the financial year 2008-09. This ratio shows the total operating expenses to total assets ratio of the company. This ratio explains the company's operational efficiency. Hence, the lower the ratio better will be Operational efficiency of the institutions. Here, WOCCU announced the standard ratio for the institutions is 10 percent or lower than this level. It reveals from the company's analysis that HCL Technologies did not achieve the standard ratio except first three financial years during the study period. Comparing company's average with overall industry average, it can be concluded that the company was having high ratio which has got negative impact on its Rates of Return. Company's average was 28.162 percent and Industry average was 20.563 percent during the period under study. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 93.076 percent which shows that the company has got high variability in the said ratio. The high CV may be because of increase in ratio. Finally, it can be concluded that the Total Operating Expense to Total Assets ratio of HCL Info System Ltd. was not under control during the period under study. It also can be concluded that the Rates of Return of HCL Technologies was ineffective as the company was not achieving the standard ratio given by WOCCU during the study period.

INFOSYS

Table 5.35 shows the ratio of Total Operating Expense to Total Assets for the Infosys during the period under review. The ratio showed continuous decreasing trend except the financial years 2002-03, 2003-04 and 2008-09 during the period under review. The ratio of Total Operating Expense to Total Assets ranges between 12.619 in

financial year 2009-10 to 20.935 in the financial year 2003-04. This ratio shows the total operating expenses to total assets ratio of the company. This ratio explains the company's operational efficiency. Hence, the lower the ratio better will be Operational efficiency of the institutions. Here, WOCCU announced the standard ratio for the institutions is 10 percent or lower than this level. It reveals from the company's analysis that Infosys did not achieve the standard ratio during the study period. Comparing company's average with overall industry average, it can be concluded that the company was having high ratio which has got negative impact on its Rates of Return. Company's average was 16.463 percent and Industry average was 20.563 percent during the period under study. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 15.695 percent which shows that the company has got low variability in the said ratio. The low CV may be because of low increase in ratio. Finally, it can be concluded that the Total Operating Expense to Total Assets ratio of Infosys was not under control during the period under study. It also can be concluded that the Rates of Return of Infosys was ineffective as the company was not achieving the standard ratio given by WOCCU during the study period.

POLARIS SOFTWARE LAB LIMITED

Table 5.35 shows the ratio of Total Operating Expense to Total Assets for the Polaris Software Lab Limited during the period under review. The ratio showed continuous increasing trend except the financial years 2001-02, 2002-03 and 2005-06 during the period under review. The ratio of Total Operating Expense to Total Assets ranges between 17.225 in financial year 2002-03 to 62.475 in the financial year 2009-10. This ratio shows the total operating expenses to total assets ratio of the company. This ratio explains the company's operational efficiency. Hence, the lower the ratio better will be Operational efficiency of the institutions. Here, WOCCU announced the standard ratio for the institutions is 10 percent or lower than this level. It reveals from the company's analysis that Polaris Software Lab Ltd. did not achieve the standard ratio during the study period. Comparing company's average with overall industry average, it can be concluded that the company was having high ratio which has got negative impact on its Rates of Return. Company's average was 38.094 percent and

Industry average was 20.563 percent during the period under study. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 34.082 percent which shows that the company has got low variability in the said ratio. The low CV may be because of low increase in ratio. Finally, it can be concluded that the Total Operating Expense to Total Assets ratio of Polaris Software Lab Ltd. was not under control during the period under study. It also can be concluded that the Rates of Return of GTL Ltd. was ineffective as the company was not achieving the standard ratio given by WOCCU during the study period.

ROLTA INDIA LIMITED

Table 5.35 shows the ratio of Total Operating Expense to Total Assets for the Rolta India Limited during the period under review. The ratio showed continuous increasing trend except the financial years 2003-04, 2005-06 and 2009-10 during the period under review. The ratio of Total Operating Expense to Total Assets ranges between 9.351 in financial year 2009-10 to 26.305 in the financial year 2008-09. This ratio shows the total operating expenses to total assets ratio of the company. This ratio explains the company's operational efficiency. Hence, the lower the ratio better will be Operational efficiency of the institutions. Here, WOCCU announced the standard ratio for the institutions is 10 percent or lower than this level. It reveals from the company's analysis that Rolta India Ltd. did not achieve the standard ratio except the financial years 2003-04 and 2005-06 during the study period. Comparing company's average with overall industry average, it can be concluded that the company was having low ratio which has got positive impact on its Rates of Return. Company's average was 15.252 percent and Industry average was 20.563 percent during the period under study. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 36.833 percent which shows that the company has got low variability in the said ratio. The low CV may be because of low increase in ratio. Finally, it can be concluded that the Total Operating Expense to Total Assets ratio of Rolta India Ltd. was not under control during the period under study. It also can be concluded that the Rates of Return of GTL Ltd. was ineffective as the company was not achieving the standard ratio given by WOCCU during the study period.

WIPRO

Table 5.35 shows the ratio of Total Operating Expense to Total Assets for the Wipro during the period under review. The ratio showed fluctuating trend during the period under review. The ratio of Total Operating Expense to Total Assets ranges between 11.009 in financial year 2009-10 to 26.897 in the financial year 2000-01. This ratio shows the total operating expenses to total assets ratio of the company. This ratio explains the company's operational efficiency. Hence, the lower the ratio better will be Operational efficiency of the institutions. Here, WOCCU announced the standard ratio for the institutions is 10 percent or lower than this level. It reveals from the company's analysis that Wipro did not achieve the standard ratio during the study period. Comparing company's average with overall industry average, it can be concluded that the company was having low ratio which has got positive impact on its Rates of Return. Company's average was 18.821 percent and Industry average was 20.563 percent during the period under study. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 24.748 percent which shows that the company has got low variability in the said ratio. The low CV may be because of low increase in ratio. Finally, it can be concluded that the Total Operating Expense to Total Assets ratio of HCL Info System Ltd. was not under control during the period under study. It also can be concluded that the Rates of Return of Wipro was ineffective as the company was not achieving the standard ratio given by WOCCU during the study period.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.35 shows the company wise Total Operating Expenses to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it is being observed that none of the company expect HCL Info System Ltd., HCL Technologies and Polaris Software Lab Ltd. has got the highest average than the industry average. The industry average during study period was 20.563 percent where as CMC Info Tech Ltd., registered the lowest ratio and it was 0.265 percent, GTL Ltd. recorded 9.775 percent, HCL Info systems Ltd., got 37.673 percent, HCL Technologies registered 28.162 percent, Infosys recorded 16.463 percent, Polaris Software Lab Ltd. achieved the highest ratio

and it was 38.095 percent, Rolta India Ltd. registered 15.252 percent and Wipro registered with 18.821 percent. It clearly reveals that CMC Info Tech Ltd. was having the lowest Total Operating Expenses to Total Assets ratio from not only industry standard but also standard goal lay down by WOCCU. This was positive sign for the company's effective Rates of Return. Comparing CV of all the selected companies, it reveals that Infosys has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than CMC Info Tech Ltd. comes out as out performer Information Technology Company in Total Operating Expenses to Total Assets ratio. The second and third rank secured by GTL Ltd. and Rolta India Ltd. respectively. The forth rank onwards to seventh rank secured by Infosys, Wipro, HCL Technologies and HCL Info System Ltd. respectively. Polaris Software Lab Ltd. was the least rank company in Total Operating Expenses to Total Assets ratio of selected companies during study period.

Hypothesis with respect to the Years

Null hypothesis,

H_o : The Total Operating Expenses to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : The Total Operating Expenses to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: The Total Operating Expenses to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : The Total Operating Expenses to Total Assets ratio differs significantly within Selected Information Technology Companies.

Table 5.36

Two – Way ANOVA of Total Loans to Total Assets Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	1487.476	9	165.275	1.417	2.032
Within Companies	12343.365	7	1763.338	15.121	2.159
Error	7346.753	63	116.615		
Total	21177.594	79			

In Table 5.4, the value of the calculated F ratio for the years is 1.417, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 15.121, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{Calculated}$ **[1.417]** < $F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in the Total Operating Expenses to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{Calculated}$ **[15.121]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Total Operating Expenses to Total Assets ratio within selected Indian Information Technologies Companies during the period under review.

R-10. Total Loan Loss Provision Expense to Average Total Assets Ratio

This ratio is also not possible to calculate because Loan Losses are not available in Information Technology Companies. This ratio is purely related with Micro Finance Institutions which allow loans to their members and there Loan Provision Expenses may be possible.

R-11. Non-Recurring Expense to Total Assets Ratio

Purpose: To measure the net amount of non-recurring expenses. These items typically should not be a significant amount in the Information Technology Industry.

Formula: $$\frac{\textbf{Non – Recurring Expenses}}{\textbf{Total Assets}} \textbf{ X 100}$$

The component of the formula can be explained as under.

Here, Non – Recurring Expenses include the total expenses done after Research and Development activities, Purchase of Fixed Assets during the financial year, etc.

Here, Net Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

The ratio plays very important role in deciding Rates of Return of an organization. Here, WOCCU has announced that the ratio must be Minimum. Here, no Standard ratio has been given. The institutions which do not have the low ratio compare to other institutions, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Rates of Return of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.37

Analysis of Total Non – Recurring Expenses to Total Assets Ratio (R– 11)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	0.036	0.342	0.638	0.379	33.333	12.051	0.969	0.383	6.016
2002	0.050	1.018	0.957	0.344	15.481	10.224	0.831	1.625	3.816
2003	0.038	0.735	1.503	0.434	7.655	6.180	1.065	6.571	3.023
2004	0.038	1.711	3.809	1.173	13.219	6.090	1.235	7.414	4.336
2005	0.023	2.576	5.110	0.967	15.147	14.096	2.527	8.967	6.177
2006	0.703	1.300	3.740	0.872	15.195	14.877	1.310	9.637	5.954
2007	2.241	1.151	3.648	0.396	12.928	6.681	1.045	3.900	3.999
2008	0.782	1.218	3.014	0.600	10.156	7.019	1.578	5.456	3.728
2009	0.456	1.160	1.633	1.021	6.609	7.040	2.966	8.256	3.642
2010	0.189	0.635	1.590	0.640	2.609	8.279	2.220	4.692	2.607
Average	**0.456**	**1.185**	**2.564**	**0.683**	**13.233**	**9.254**	**1.575**	**5.690**	
Overall Avg.	**4.330**								
S. D.	**0.691**	**0.621**	**1.492**	**0.304**	**8.260**	**3.346**	**0.738**	**3.084**	
C.V.	**151.766**	**52.432**	**58.181**	**44.522**	**62.418**	**36.157**	**46.885**	**54.196**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.37 shows the company wise Total Non – Recurring Expenses to Total Assets Ratio during study period. Here, Total Non – Recurring Expenses includes Research and Development expenses and purchase of Fixed Assets. This Ratio shows the proportion of Non – Recurring Expenses to Total Assets of the company. The lower the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Minimum. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered continuous decreasing trend except the financial years 2001-02, 2005-06 and 2006-07 during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 0.023 percent in financial year 2004-05 to 2.241 percent in financial year 2006-07. The CMC InfoTech Ltd. has got 0.456 percentages as the average for ten years which was the lowest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 0.456 percent and industry average during the same period was 4.330 percent which shows that company has got much lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 151.766 percent which shows that the company has the highest variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

GTL LIMITED

Table 5.37 shows the company wise Total Non – Recurring Expenses to Total Assets Ratio during study period. Here, Total Non – Recurring Expenses includes Research and Development expenses and purchase of Fixed Assets. This Ratio shows the proportion of Non – Recurring Expenses to Total Assets of the company. The lower the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Minimum. It reveals from the above table that the ratio of GTL Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio

must be lower than the industry average. The ratio of company ranges from 0.342 percent in financial year 2000-01 to 2.576 percent in financial year 2004-05. The GTL Ltd. has got 1.185 percentages as the average for ten years which was the third lowest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 1.185 percent and industry average during the same period was 4.330 percent which shows that company has got much lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 52.432 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

HCL INFOSYSTEMS LIMITED

Table 5.37 shows the company wise Total Non – Recurring Expenses to Total Assets Ratio during study period. Here, Total Non – Recurring Expenses includes Research and Development expenses and purchase of Fixed Assets. This Ratio shows the proportion of Non – Recurring Expenses to Total Assets of the company. The lower the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Minimum. It reveals from the above table that the ratio of HCL Info System Ltd. registered continuous increasing trend during the first five years and it registered continuous decreasing trend during the rest of the years. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 0.638 percent in financial year 2000-01 to 5.110 percent in financial year 2004-05. The HCL Info System Ltd. has got 2.564 percentages as the average for ten years which was the fifth lowest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 2.564 percent and industry average during the same period was 4.330 percent which shows that company has got lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV,

the lower will be the consistency. Here, company's CV was 58.181 percent which shows that the company has moderate variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

HCL TECHNOLOGIES

Table 5.37 shows the company wise Total Non – Recurring Expenses to Total Assets Ratio during study period. Here, Total Non – Recurring Expenses includes Research and Development expenses and purchase of Fixed Assets. This Ratio shows the proportion of Non – Recurring Expenses to Total Assets of the company. The lower the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Minimum. It reveals from the above table that the ratio of HCL Technologies registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 0.344 percent in financial year 2001-02 to 1.173 percent in financial year 2003-04. The Technologies has got 0.683 percentages as the average for ten years which was the second lowest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 0.683 percent and industry average during the same period was 4.330 percent which shows that company has got much lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 44.522 percent which shows that the company has moderate variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

INFOSYS

Table 5.37 shows the company wise Total Non – Recurring Expenses to Total Assets Ratio during study period. Here, Total Non – Recurring Expenses includes Research and Development expenses and purchase of Fixed Assets. This Ratio shows the proportion of Non – Recurring Expenses to Total Assets of the company. The lower

the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Minimum. It reveals from the above table that the ratio of Infosys registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 2.609 percent in financial year 2009-10 to 33.333 percent in financial year 2000-01. The Infosys has got 13.233 percentages as the average for ten years which was the highest among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 13.233 percent and industry average during the same period was 4.330 percent which shows that company has got much higher average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 62.418 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

POLARIS SOFTWARE LAB LIMITED

Table 5.37 shows the company wise Total Non – Recurring Expenses to Total Assets Ratio during study period. Here, Total Non – Recurring Expenses includes Research and Development expenses and purchase of Fixed Assets. This Ratio shows the proportion of Non – Recurring Expenses to Total Assets of the company. The lower the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Minimum. It reveals from the above table that the ratio of Polaris Software Lab Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 6.090 percent in financial year 2003-04 to 14.877 percent in financial year 2005-06. The Polaris Software Lab Ltd. has got 9.254 percentages as the average for ten years which was the second highest among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 9.254 percent and industry average during the

same period was 4.330 percent which shows that company has got higher average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 36.157 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

ROLTA INDIA LIMITED

Table 5.37 shows the company wise Total Non – Recurring Expenses to Total Assets Ratio during study period. Here, Total Non – Recurring Expenses includes Research and Development expenses and purchase of Fixed Assets. This Ratio shows the proportion of Non – Recurring Expenses to Total Assets of the company. The lower the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Minimum. It reveals from the above table that the ratio of Rolta India Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 0.831 percent in financial year 2001-02 to 2.966 percent in financial year 2008-09. The Rolta India Ltd. has got 1.575 percentages as the average for ten years which was the fourth lowest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 1.575 percent and industry average during the same period was 4.330 percent which shows that company has got lower average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 46.885 percent which shows that the company has moderate variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

WIPRO

Table 5.37 shows the company wise Total Non – Recurring Expenses to Total Assets Ratio during study period. Here, Total Non – Recurring Expenses includes Research and Development expenses and purchase of Fixed Assets. This Ratio shows the proportion of Non – Recurring Expenses to Total Assets of the company. The lower the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Minimum. It reveals from the above table that the ratio of Wipro registered continuous increasing trend except the financial years 2006-07 and 2009-10 during the study period. According to WOCCU, there is no lower limit for this ratio for the institution. However, the ratio must be lower than the industry average. The ratio of company ranges from 0.383 percent in financial year 2000-01 to 9.637 percent in financial year 2005-06. The Wipro has got 5.960 percentages as the average for ten years which was the third highest among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 5.960 percent and industry average during the same period was 4.330 percent which shows that company has got higher average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 54.196 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.37 shows the company wise Total Non – Recurring Expenses to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect Infosys and Polaris Software Lab Ltd. has got the highest average than the industry average. Which affects positively to company's Rates of Return. The industry average during study period was 4.330 percent where as CMC Info Tech Ltd. registered the lowest Total Non – Recurring Expenses to Total Assets ratio and it was 0.456 percent, GTL Ltd. recorded 1.185 percent, HCL Info systems Ltd. registered

2.564 percent, HCL Technologies registered 0.683, Infosys recorded the highest ratio and it was 13.233 percent, Polaris Software Lab Ltd. achieved 9.254 percent, Rolta India Ltd. registered 1.575 percent and Wipro registered 5.690 percent. It clearly reveals that CMC Info Tech Ltd. was having the lowest ratio from not only industry standard but also standard goal lay down by WOCCU. This was positive sign for the company's revenues. Comparing CV of all the selected companies, it reveals that Polaris Software Lab Ltd. has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than CMC Info Tech Ltd. comes out as the best performer Information Technology Company in Total Non – Recurring Expenses to Total Assets ratio. The second and third rank secured by HCL Technologies and GTL Ltd. respectively. The forth rank onwards to seventh rank secured by Rolat India Ltd., HCL Info System Ltd., Wipro, Polaris Software Lab Ltd. respectively. Infosys was the least rank company in Total Non – Recurring Expenses to Total Assets of selected companies during study period as it had the highest average among selected companies.

Hypothesis with respect to the Years

Null hypothesis,

H_o : Total Non – Recurring Expenses to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : Total Non – Recurring Expenses to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: Total Non – Recurring Expenses to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : Total Non – Recurring Expenses to Total Assets ratio differs significantly within Selected Information Technology Companies.

Table 5.38

Two – Way ANOVA Total Non – Recurring Expenses To Total Assets Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	118.237	9	13.137	1.157	2.032
Within Companies	1542.750	7	220.393	19.402	2.159
Error	715.653	63	11.360		
Total	2376.639	79			

In Table 5.34, the value of the calculated F ratio for the years is 1.157, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 19.402, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[1.157]** $< F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Total Non – Recurring Expenes to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[19.402]** $> F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Total Non – Recurring Expenses to Total Assets ratio within selected Indian Information Technologies Companies during the period under review.

R-12. Net Operating Profit after Tax to Total Assets Ratio

Purpose: To measure the adequacy of earnings and also, the capacity to build Institutional Capital.

Formula: $\frac{\textbf{Net Operating Profit after Tax (NOPAT)}}{\textbf{Total Assets}}$ **X 100**

The component of the formula can be explained as under.

Here, Net Operating Profit after Tax (NOPAT) has been taken. Net Operating Profit is taken after deducting the corporate tax and other expenses during the particular financial year.

Here, Net Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

The ratio plays very important role in deciding Rates of Return of an organization. Here, WOCCU has announced that the ratio must be Maximum. Here, no Standard ratio has been given. The institutions which do not have the high ratio compare to other institutions, should try to achieve the target as soon as possible. There is no higher limit for this ratio. So, the higher the ratio better will be the Rates of Return of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.39

Analysis of Net Operating Profit after Tax to Total Assets Ratio (R– 12)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	112.876	3.216	8.968	24.732	44.852	46.338	25.556	33.231	37.471
2002	175.053	0.725	8.173	19.082	38.798	42.382	20.746	32.548	42.188
2003	150.542	4.686	14.272	13.459	33.485	14.960	16.402	24.585	34.049
2004	271.083	7.179	25.567	13.632	38.211	17.178	10.705	25.356	51.114
2005	107.057	9.294	25.361	11.130	35.464	13.334	14.372	30.163	30.772
2006	154.989	4.575	18.305	24.642	35.102	2.749	13.305	31.190	35.607
2007	256.463	4.051	29.065	43.286	33.892	14.924	10.166	29.734	52.697
2008	265.403	5.960	22.313	24.093	33.136	9.477	11.283	31.823	50.436
2009	253.165	4.740	19.161	24.920	32.674	22.029	11.132	22.249	48.759
2010	271.941	2.292	4.403	19.882	26.293	31.195	8.116	19.942	48.008
Average	**201.857**	**4.672**	**17.559**	**21.886**	**35.191**	**21.456**	**14.178**	**28.082**	
Overall Avg.	**43.110**								
S. D.	**68.158**	**2.428**	**8.359**	**9.156**	**4.829**	**14.200**	**5.384**	**4.680**	
C.V.	**33.765**	**51.977**	**47.607**	**41.834**	**13.723**	**66.180**	**37.974**	**16.665**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.39 shows the company wise Net Operating Profit after Tax to Total Assets Ratio during study period. Here, Net Operating Profit after Tax for a particular financial year is taken for the purpose of analysis and evaluation. This Ratio shows the proportion of company's profit to its total Assets. The higher the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Maximum. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no higher limit for Net Operating Profit after Tax to Total Assets ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 104.057 percent in financial year 2004-05 to 271.941 percent in financial year 2009-10. The CMC InfoTech Ltd. has got 201.857 percentages as the average for ten years which was the highest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 201.857 percent and industry average during the same period was 43.110 percent which shows that company has got much higher average than the industry level which affects positively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 33.765 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

GTL LIMITED

Table 5.39 shows the company wise Net Operating Profit after Tax to Total Assets Ratio during study period. Here, Net Operating Profit after Tax for a particular financial year is taken for the purpose of analysis and evaluation. This Ratio shows the proportion of company's profit to its total Assets. The higher the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Maximum. It reveals from the above table that the ratio of GTL Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no higher limit for Net Operating Profit after Tax to Total Assets ratio for the

institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 0.725 percent in financial year 2001-02 to 9.294 percent in financial year 2004-05. The GTL Ltd. has got 4.672 percentages as the average for ten years which was the lowest among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 4.672 percent and industry average during the same period was 43.110 percent which shows that company has got much lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 51.977 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

HCL INFOSYSTEMS LIMITED

Table 5.39 shows the company wise Net Operating Profit after Tax to Total Assets Ratio during study period. Here, Net Operating Profit after Tax for a particular financial year is taken for the purpose of analysis and evaluation. This Ratio shows the proportion of company's profit to its total Assets. The higher the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Maximum. It reveals from the above table that the ratio of HCL Info system Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no higher limit for Net Operating Profit after Tax to Total Assets ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 4.403 percent in financial year 2009-10 to 29.065 percent in financial year 2006-07. The HCL Info System Ltd. has got 17.559 percentages as the average for ten years which was the sixth highest among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 17.559 percent and industry average during the same period was 43.110 percent which shows that company has got much lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's

CV was 47.607 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

HCL TECHNOLOGIES

Table 5.39 shows the company wise Net Operating Profit after Tax to Total Assets Ratio during study period. Here, Net Operating Profit after Tax for a particular financial year is taken for the purpose of analysis and evaluation. This Ratio shows the proportion of company's profit to its total Assets. The higher the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Maximum. It reveals from the above table that the ratio of HCL Technologies registered continuous decreasing trend except financial years 2005-06 and 2006-07 during the study period. According to WOCCU, there is no higher limit for Net Operating Profit after Tax to Total Assets ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 11.130 percent in financial year 2004-05 to 43.286 percent in financial year 2006-07. The HCL Technologies has got 21.886 percentages as the average for ten years which was the fourth highest among other companies during the period under review. Which affects negatively to company's Rates of Return. The company's average for ten years was 11.130 percent and industry average during the same period was 43.110 percent which shows that company has got much lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 41.834 percent which shows that the company has moderate variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

INFOSYS

Table 5.39 shows the company wise Net Operating Profit after Tax to Total Assets Ratio during study period. Here, Net Operating Profit after Tax for a particular financial year is taken for the purpose of analysis and evaluation. This Ratio shows

the proportion of company's profit to its total Assets. The higher the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Maximum. It reveals from the above table that the ratio of Infosys registered continuous decreasing trend except financial year 2003-04 during the study period. According to WOCCU, there is no higher limit for Net Operating Profit after Tax to Total Assets ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 26.293 percent in financial year 2009-10 to 44.852 percent in financial year 2001-02. The Infosys has got 35.191 percentages as the average for ten years which was the second highest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 35.191 percent and industry average during the same period was 43.110 percent which shows that company has got marginally lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 13.723 percent which shows that the company has the lowest variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

POLARIS SOFTWARE LAB LIMITED

Table 5.39 shows the company wise Net Operating Profit after Tax to Total Assets Ratio during study period. Here, Net Operating Profit after Tax for a particular financial year is taken for the purpose of analysis and evaluation. This Ratio shows the proportion of company's profit to its total Assets. The higher the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Maximum. It reveals from the above table that the ratio of Polaris Software Lab Ltd. registered fluctuating trend during the study period. According to WOCCU, there is no higher limit for Net Operating Profit after Tax to Total Assets ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 2.749 percent in financial year 2005-06 to 46.338 percent in financial year 2000-01. The Polaris Software Lab Ltd. has got 21.456 percentages as the average for ten years which was the fifth highest among other companies during

the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 21.456 percent and industry average during the same period was 43.110 percent which shows that company has got much lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 66.180 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

ROLTA INDIA LIMITED

Table 5.39 shows the company wise Net Operating Profit after Tax to Total Assets Ratio during study period. Here, Net Operating Profit after Tax for a particular financial year is taken for the purpose of analysis and evaluation. This Ratio shows the proportion of company's profit to its total Assets. The higher the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Maximum. It reveals from the above table that the ratio of Rolta India Ltd. registered continuous decreasing trend except financial years 2004-05 and 2007-08 during the study period. According to WOCCU, there is no higher limit for Net Operating Profit after Tax to Total Assets ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 8.116 percent in financial year 2009-10 to 25.556 percent in financial year 2000-01. The Rolta India Ltd. has got 14.178 percentages as the average for ten years which was the seventh highest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 14.178 percent and industry average during the same period was 43.110 percent which shows that company has got much lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 37.974 percent which shows that the company has moderate variability in the said ratio during the period under review.

Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

WIPRO

Table 5.39 shows the company wise Net Operating Profit after Tax to Total Assets Ratio during study period. Here, Net Operating Profit after Tax for a particular financial year is taken for the purpose of analysis and evaluation. This Ratio shows the proportion of company's profit to its total Assets. The higher the ratio better will be the Rates of Return of the company. Here, WOCCU has announced that the ratio should be Maximum. It reveals from the above table that the ratio of Wipro registered fluctuating trend during the study period. According to WOCCU, there is no higher limit for Net Operating Profit after Tax to Total Assets ratio for the institution. However, the ratio must be higher than the industry average. The ratio of company ranges from 19.942 percent in financial year 2009-10 to 33.231 percent in financial year 2000-01. The Wipro has got 28.082 percentages as the average for ten years which was the third highest among other companies during the period under review. Which affects positively to company's Rates of Return. The company's average for ten years was 28.082 percent and industry average during the same period was 43.110 percent which shows that company has got much lower average than the industry level which affects negatively to company's Rates of Return. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 16.665 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average of the selected Information Technology Companies.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.39 shows the company wise Net Operating Profit after Tax to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect CMC Info Tech Ltd. has got the highest average than the industry average. Which affects positively to company's Rates of Return. The industry average during study period was 43.110 percent where as CMC Info Tech Ltd. registered the

highest Net Operating Profit after Tax to Total Assets ratio and it was 201.857 percent, GTL Ltd. recorded the lowest ratio and it was 4.672 percent, HCL Info systems Ltd. registered 17.559 percent, HCL Technologies registered 21.886 percent, Infosys recorded 35.191 percent, Polaris Software Lab Ltd. achieved 21.456 percent, Rolta India Ltd. registered 14.178 percent and Wipro registered 28.082 percent. It clearly reveals that CMC Info Tech Ltd. was having the highest ratio from not only industry standard but also standard goal lay down by WOCCU. This was positive sign for the company's revenues. Comparing CV of all the selected companies, it reveals that Infosys has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than CMC Info Tech Ltd. comes out as the best performer Information Technology Company in Net Operating Profit after Tax to Total Assets ratio. The second and third rank secured by Infosys and Wipro respectively. The forth rank onwards to seventh rank secured by HCL Technologies, Polaris Software Lab Ltd., HCL Info System Ltd. and Rolta India Ltd. respectively. GTL Ltd. was the least rank company in Net Operating Profit after Tax to Total Assets of selected companies during study period as it had the highest average among selected companies.

Hypothesis with respect to the Years

Null hypothesis,

H_o : Net Operating Profit after Tax to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : Net Operating Profit after Tax to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: Net Operating Profit after Tax to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : Net Operating Profit after Tax to Total Assets ratio differs significantly within Selected Information Technology Companies.

Table 5.40

Two – Way ANOVA Total Non – Recurring Expenses To Total Assets Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	4710.631	9	523.403	0.804	2.032
Within Companies	293759.822	7	41965.689	64.456	2.159
Error	41017.855	63	651.077		
Total	339488.308	79			

In Table 5.40, the value of the calculated F ratio for the years is 0.804, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 64.456, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{Calculated}$ **[0.804]**< $F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Net Operating Profit after Tax to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{Calculated}$ **[64.456]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Net Operating Profit after Tax to Total Assets ratio within selected Indian Information Technologies Companies during the period under review.

5.6 Liquidity

The liquidity indicators show whether the Institution is effectively managing its cash so that it can meet uncertainty and liquidity reserve requirements. In addition, idle cash is also measured to insure that this non-earning asset does not unduly affect profitability. Explanation of each ratio under Liquidity is as under.

L-1. Short Term Investments + Liquid Assets – Short Term Payables to Savings Deposits Ratio

Purpose: To measure the adequacy of the liquid cash reserves to satisfy deposit withdrawal requests, after paying all immediate obligations less than 30 days.

Formula: $\frac{\text{S. T. Investment + Liquid Assets – S. T. Payable}}{\text{Total Savings Deposits}}$ **X 100**

The component of the formula can be explained as under.

Here, Short Term Investment includes the current investment of the organization. Liquid Assets include Cash and Bank Balance, Prepaid Expenses, Debtors, etc and Short Term Payables include outstanding expenses, Creditors, etc.

Here, Saving Deposits contains Cash and Bank Balance at the end of the financial year of the company.

The ratio plays very important role in deciding Liquidity of an organization. Here, WOCCU has announced that the ratio must be Minimum 15 percent. The institutions which do not have the high ratio compare to other institutions and standard ratio, should try to achieve the target as soon as possible. There is no higher limit for this ratio. So, the higher the ratio better will be the Liquidity of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.41

Analysis of S. T. Investment + Liquid Assets – S. T. Payable to Total Saving Deposits Ratio (L– 1)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	32.046	36.609	21.568	19.541	18.071	33.932	0.987	27.046	23.725
2002	31.433	35.996	27.505	4.055	31.058	35.857	0.776	25.492	24.021
2003	27.547	23.734	36.994	4.622	35.687	12.650	0.970	33.291	21.937
2004	8.408	41.378	48.178	7.417	61.697	1.898	12.034	55.590	29.575
2005	0.009	48.809	39.612	5.320	39.470	3.237	2.898	28.898	21.032
2006	83.626	24.670	34.843	5.638	45.745	6.180	76.630	30.736	38.508
2007	132.693	20.911	28.364	10.405	38.927	4.221	40.663	14.601	36.348
2008	91.155	-8.892	37.052	15.968	36.664	8.838	25.871	13.175	27.479
2009	104.676	18.317	32.682	28.592	42.293	8.605	5.874	2.043	30.385
2010	101.133	63.890	46.241	14.083	52.748	17.166	2.958	17.095	39.415
Average	**61.273**	**30.542**	**35.304**	**11.564**	**40.236**	**13.258**	**16.966**	**24.797**	
Overall Avg.	**29.242**								
S. D.	**46.423**	**19.742**	**8.264**	**8.004**	**11.846**	**12.276**	**24.755**	**14.507**	
C.V.	**75.765**	**64.640**	**23.407**	**69.214**	**29.442**	**92.587**	**145.910**	**58.504**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.41 shows the company wise Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits Ratio during study period. Here, Short Term Investment includes the current investment of the organization. Liquid Assets include Cash and Bank Balance, Prepaid Expenses, Debtors, etc and Short Term Payables include outstanding expenses, Creditors, etc. The higher the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Minimum 15 percent. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered continuous decreasing trend except financial years 2005-06, 2006-07 and 2008-09 during the period under study. According to WOCCU, there is no higher limit for the ratio. The ratio of company ranges from 0.009 percent in financial year 2004-05 to 104.676 percent in financial year 2008-09. The CMC InfoTech Ltd. has got 61.273 percentages as the average for ten years which was the highest among other companies during the period under review. Which affects positively to company's Liquidity. The company's average for ten years was 61.273 percent and industry average during the same period was 29.242 percent which shows that company has got much higher average than the industry level as well as standard lay down by WOCCU which affects positively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 75.765 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

GTL LIMITED

Table 5.41 shows the company wise Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits Ratio during study period. Here, Short Term Investment includes the current investment of the organization. Liquid Assets include Cash and Bank Balance, Prepaid Expenses, Debtors, etc and Short Term Payables include outstanding expenses, Creditors, etc. The higher the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Minimum 15 percent. It reveals from the above table that the ratio of GTL Ltd. registered fluctuating trend during the period under study. According to WOCCU,

there is no higher limit for the ratio. The ratio of company ranges from negative 8.892 percent in financial year 2007-08 to 63.890 percent in financial year 2009-10. The GTL Ltd. has got 30.542 percentages as the average for ten years which was the fourth highest among other companies during the period under review. Which affects positively to company's Liquidity. The company's average for ten years was 30.542 percent and industry average during the same period was 29.242 percent which shows that company has got marginally higher average than the industry level as well as standard lay down by WOCCU which affects positively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 64.640 percent which shows that the company has moderate variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

HCL INFOSYSTEMS LIMITED

Table 5.41 shows the company wise Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits Ratio during study period. Here, Short Term Investment includes the current investment of the organization. Liquid Assets include Cash and Bank Balance, Prepaid Expenses, Debtors, etc and Short Term Payables include outstanding expenses, Creditors, etc. The higher the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Minimum 15 percent. It reveals from the above table that the ratio of HCL Info System Ltd. registered fluctuating trend during the period under study. According to WOCCU, there is no higher limit for the ratio. The ratio of company ranges from 21.568 percent in financial year 2000-01 to 48.178 percent in financial year 2003-04. The HCL Info System Ltd. has got 35.304 percentages as the average for ten years which was the third highest among other companies during the period under review. Which affects positively to company's Liquidity. The company's average for ten years was 35.304 percent and industry average during the same period was 29.242 percent which shows that company has got higher average than the industry level as well as standard lay down by WOCCU which affects positively to company's Liquidity. Coefficient of variance shows the movement or variability or the

consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 23.407 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average of the selected Information Technology Companies.

HCL TECHNOLOGIES

Table 5.41 shows the company wise Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits Ratio during study period. Here, Short Term Investment includes the current investment of the organization. Liquid Assets include Cash and Bank Balance, Prepaid Expenses, Debtors, etc and Short Term Payables include outstanding expenses, Creditors, etc. The higher the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Minimum 15 percent. It reveals from the above table that the ratio of HCL Technologies registered fluctuating trend during the period under study. According to WOCCU, there is no higher limit for the ratio. The ratio of company ranges from 4.055 percent in financial year 2001-02 to 28.592 percent in financial year 2008-09. The HCL Technologies has got 11.564 percentages as the average for ten years which was the lowest among other companies during the period under review. Which affects negatively to company's Liquidity. The company's average for ten years was 11.564 percent and industry average during the same period was 29.242 percent which shows that company has got lower average than the industry level as well as standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 69.214 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average as well as standard goal lay down by WOCCU of the selected Information Technology Companies.

INFOSYS

Table 5.41 shows the company wise Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits Ratio during study period. Here, Short Term Investment includes the current investment of the organization. Liquid Assets include Cash and Bank Balance, Prepaid Expenses, Debtors, etc and Short Term Payables include outstanding expenses, Creditors, etc. The higher the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Minimum 15 percent. It reveals from the above table that the ratio of Infosys registered continuous increasing trend except financial years 2004-05, 2006-07 and 2007-08 during the period under study. According to WOCCU, there is no higher limit for the ratio. The ratio of company ranges from 18.071 percent in financial year 2000-01 to 61.697 percent in financial year 2003-04. The Infosys has got 40.236 percentages as the average for ten years which was the second highest among other companies during the period under review. Which affects positively to company's Liquidity. The company's average for ten years was 40.236 percent and industry average during the same period was 29.242 percent which shows that company has got much higher average than the industry level as well as standard lay down by WOCCU which affects positively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 29.442 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average as well as standard goal lay down by WOCCU of the selected Information Technology Companies.

POLARIS SOFTWARE LAB LIMITED

Table 5.41 shows the company wise Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits Ratio during study period. Here, Short Term Investment includes the current investment of the organization. Liquid Assets include Cash and Bank Balance, Prepaid Expenses, Debtors, etc and Short Term Payables include outstanding expenses, Creditors, etc. The higher the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Minimum 15 percent. It reveals from the above table that the ratio of Polaris Software

Lab Ltd registered fluctuating trend during the period under study. According to WOCCU, there is no higher limit for the ratio. The ratio of company ranges from 1.898 percent in financial year 2003-04 to 35.857 percent in financial year 2001-02. The Polaris Software Lab Ltd. has got 13.258 percentages as the average for ten years which was the second lowest among other companies during the period under review. Which affects negatively to company's Liquidity. The company's average for ten years was 13.258 percent and industry average during the same period was 29.242 percent which shows that company has got lower average than the industry level as well as standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 92.587 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average as well as standard goal lay down by WOCCU of the selected Information Technology Companies.

ROLTA INDIA LIMITED

Table 5.41 shows the company wise Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits Ratio during study period. Here, Short Term Investment includes the current investment of the organization. Liquid Assets include Cash and Bank Balance, Prepaid Expenses, Debtors, etc and Short Term Payables include outstanding expenses, Creditors, etc. The higher the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Minimum 15 percent. It reveals from the above table that the ratio of Rolta India Ltd. registered fluctuating trend during the period under study. According to WOCCU, there is no higher limit for the ratio. The ratio of company ranges from 0.776 percent in financial year 2001-02 to 76.630 percent in financial year 2005-06. The Rolta India Ltd. has got 16.966 percentages as the average for ten years which was the third lowest among other companies during the period under review. Which affects negatively to company's Liquidity. The company's average for ten years was 16.966 percent and industry average during the same period was 29.242 percent which shows that company has got lower average than the industry level. However it had

marginally high average than standard lay down by WOCCU. which affects positively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 145.910 percent which shows that the company has the highest variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average but higher than standard goal lay down by WOCCU of the selected Information Technology Companies.

WIPRO

Table 5.41 shows the company wise Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits Ratio during study period. Here, Short Term Investment includes the current investment of the organization. Liquid Assets include Cash and Bank Balance, Prepaid Expenses, Debtors, etc and Short Term Payables include outstanding expenses, Creditors, etc. The higher the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Minimum 15 percent. It reveals from the above table that the ratio of Wipro registered fluctuating trend during the period under study. According to WOCCU, there is no higher limit for the ratio. The ratio of company ranges from 2.043 percent in financial year 2008-09 to 55.590 percent in financial year 2003-04. The Wipro has got 24.797 percentages as the average for ten years which was the fifth highest among other companies during the period under review. Which affects positively to company's Liquidity. The company's average for ten years was 24.797 percent and industry average during the same period was 29.242 percent which shows that company has got lower average than the industry level. However the ratio was higher than standard lay down by WOCCU. Which affects positively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 58.504 percent which shows that the company has moderate variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average but higher than standard goal lay down by WOCCU of the selected Information Technology Companies.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.41 shows the company wise Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect CMC Info Tech Ltd., GTL Ltd., HCL Info System Ltd. and Infosys has got the highest average than the industry average. Which affects positively to company's Liquidity. The industry average during study period was 29.242 percent where as CMC Info Tech Ltd. registered the highest ratio and it was 61.273 percent, GTL Ltd. recorded 30.542 percent, HCL Info systems Ltd. registered 35.304 percent, HCL Technologies registered the lowest ratio and it was 11.564 percent, Infosys recorded 40.236 percent, Polaris Software Lab Ltd. achieved 13.258 percent, Rolta India Ltd. registered 16.966 percent and Wipro registered 24.797 percent. It clearly reveals that CMC Info Tech Ltd. was having the highest ratio from not only industry standard but also standard goal lay down by WOCCU. This was positive sign for the company's Liquidity. Comparing CV of all the selected companies, it reveals that HCL Info System Ltd. has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than CMC Info Tech Ltd. comes out as the best performer Information Technology Company in said ratio. The second and third rank secured by Infosys and HCL Info System Ltd. respectively. The forth rank onwards to seventh rank secured by GTL Ltd., Wipro, Rolta India Ltd. and Polaris Software Lab Ltd. respectively. HCL Technologies was the least rank company in Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits ratio of selected companies during study period as it had the lowest average among selected companies.

Hypothesis with respect to the Years

Null hypothesis,

H_o : Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits ratio differs significantly within Selected Information Technology Companies.

Table 5.42

Two – Way ANOVA Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	3382.690	9	375.854	0.770	2.032
Within Companies	19237.041	7	2748.149	5.632	2.159
Error	30741.261	63	487.957		
Total	53360.992	79			

In Table 5.42, the value of the calculated F ratio for the years is 0.770, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 5.632, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$$F_{\text{Calculated}}\,[0.770] < F_{\alpha\,=\,0.05 \text{ and d.f.} = (9,63)}\,[2.032]$$

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits ratio within years.

Component—I.T. Companies: For this component,

$F_{Calculated}$ **[5.632]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits ratio within selected Indian Information Technologies Companies during the period under review.

L-2. Liquidity Reserves to Savings Deposits Ratio

Purpose: To measure compliance with obligatory Central Bank, CFF, or Other Liquidity Reserve Deposit requirements.

Formula: $$\frac{\textbf{Liquidity Reserve}}{\textbf{Total Savings Deposits}} \textbf{ X 100}$$

The component of the formula can be explained as under.

Here, Liquidity Reserve includes all types of reserves such as General Reserve, Capital Reserve and other short term and long term reserve of the institutions.

Here, Saving Deposits contains Cash and Bank Balance at the end of the financial year of the company.

The ratio plays very important role in deciding Liquidity of an organization. Here, WOCCU has announced that the ratio must be Maximum 10 percent. The institutions which do not have the high ratio compare to other institutions and standard ratio, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Liquidity of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.43

Analysis of Liquidity Reserves to Savings Deposits Ratio (L– 2)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	96.774	221.476	249.011	562.211	143.636	560.077	3539.426	429.845	725.307
2002	69.000	220.045	347.631	2414.338	86.788	619.716	3792.533	847.019	1049.634
2003	251.515	279.712	678.976	6078.852	57.410	396.091	3233.789	801.489	1472.229
2004	451.351	231.921	819.345	3066.722	12.210	1633.260	1282.917	1193.448	1086.397
2005	52.333	206.084	275.621	3307.855	12.829	1245.075	1765.524	885.190	968.814
2006	7.396	159.368	259.894	2364.122	7.380	853.933	121.798	745.018	564.864
2007	6.182	86.565	418.367	754.484	6.864	987.218	166.979	488.054	364.339
2008	12.681	135.038	306.283	448.383	6.953	1968.123	439.945	290.275	450.960
2009	11.523	99.978	540.968	245.544	6.439	1963.436	1065.574	277.157	526.327
2010	16.214	19.686	635.980	484.935	7.962	1561.632	3462.026	307.131	811.945
Average	**97.497**	**165.987**	**453.207**	**1972.744**	**34.847**	**1178.856**	**1887.051**	**626.463**	
Overall Avg.	**802.082**								
S. D.	**145.081**	**80.250**	**202.947**	**1861.357**	**47.004**	**581.802**	**1486.192**	**312.085**	
C.V.	**148.805**	**48.347**	**44.780**	**94.354**	**134.887**	**49.353**	**78.757**	**49.817**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.43 shows the company wise Liquidity Reserve to Total Savings Deposits Ratio during study period. Here, Liquidity Reserve includes all types of reserves such as General Reserve, Capital Reserve and other short term and long term reserve of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 10 percent. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 6.182 percent in financial year 2006-07 to 451.351 percent in financial year 2003-04. The company achieved the standard ratio in two financial years only i.e. 2005-06 and 2006-07. The CMC InfoTech Ltd. has got 97.497 percentages as the average for ten years which was the second lowest among other companies during the period under review. The company's average for ten years was 97.497 percent and industry average during the same period was 802.082 percent which shows that company has got much lower average than the industry level but higher than standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 148.805 percent which shows that the company has the highest variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average and standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

GTL LIMITED

Table 5.43 shows the company wise Liquidity Reserve to Total Savings Deposits Ratio during study period. Here, Liquidity Reserve includes all types of reserves such as General Reserve, Capital Reserve and other short term and long term reserve of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 10 percent. It reveals from the above table that the ratio of GTL Ltd. registered continuous decreasing trend except financial years 2002-03 and 2007-08 during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from

19.686 percent in financial year 2009-10 to 279.712 percent in financial year 2002-03. The company did not achieve the standard ratio in any financial years during the study period. The GTL Ltd. has got 165.987 percentages as the average for ten years which was the third lowest among other companies during the period under review. The company's average for ten years was 165.987 percent and industry average during the same period was 802.082 percent which shows that company has got much lower average than the industry level but higher than standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 48.347 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average and standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

HCL INFOSYSTEMS LIMITED

Table 5.43 shows the company wise Liquidity Reserve to Total Savings Deposits Ratio during study period. Here, Liquidity Reserve includes all types of reserves such as General Reserve, Capital Reserve and other short term and long term reserve of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 10 percent. It reveals from the above table that the ratio of HCL Info System Ltd. registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 239.011 percent in financial year 2000-01 to 819.345 percent in financial year 2003-04. The company did not achieve the standard ratio during the study period. The HCL Info System Ltd. has got 453.207 percentages as the average for ten years which was the fourth lowest among other companies during the period under review. The company's average for ten years was 453.207 percent and industry average during the same period was 802.082 percent which shows that company has got much lower average than the industry level but higher than standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was

44.780 percent which shows that the company has the lowest variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average and standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

HCL TECHNOLOGIES

Table 5.43 shows the company wise Liquidity Reserve to Total Savings Deposits Ratio during study period. Here, Liquidity Reserve includes all types of reserves such as General Reserve, Capital Reserve and other short term and long term reserve of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 10 percent. It reveals from the above table that the ratio of HCL Technologies registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 245.544 percent in financial year 2008-09 to 6078.852 percent in financial year 2002-03. The company did not achieve the standard ratio during the study period. The HCL Technologies has got 1972.744 percentages as the average for ten years which was the highest among other companies during the period under review. The company's average for ten years was 1972.744 percent and industry average during the same period was 802.082 percent which shows that company has got much higher average than the industry level and higher than standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 94.354 percent which shows that the company has the lowest variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average and standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

INFOSYS

Table 5.43 shows the company wise Liquidity Reserve to Total Savings Deposits Ratio during study period. Here, Liquidity Reserve includes all types of reserves such as General Reserve, Capital Reserve and other short term and long term reserve of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 10 percent. It reveals from the above table that the ratio of Infosys registered continuous decreasing trend financial years 2004-05, 2007-08 and 2009-10 during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 6.439 percent in financial year 2008-09 to 143.636 percent in financial year 2000-01. The company achieved the standard ratio during last five financial years of the study period. The Infosys has got 34.847 percentages as the average for ten years which was the lowest among other companies during the period under review. The company's average for ten years was 34.847 percent and industry average during the same period was 802.082 percent which shows that company has got much lower average than the industry level but higher than standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 134.887 percent which shows that the company has the highest variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average and standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

POLARIS SOFTWARE LAB LIMITED

Table 5.43 shows the company wise Liquidity Reserve to Total Savings Deposits Ratio during study period. Here, Liquidity Reserve includes all types of reserves such as General Reserve, Capital Reserve and other short term and long term reserve of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 10 percent. It reveals from the above table that the ratio of Polaris Software Lab Ltd. registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 396.091 percent in financial year 2002-03 to

1968.123 percent in financial year 2007-08. The company did not achieve the standard ratio during the study period. The Polaris Software Lab Ltd. has got 1178.856 percentages as the average for ten years which was the third highest among other companies during the period under review. The company's average for ten years was 1178.856 percent and industry average during the same period was 802.082 percent which shows that company has got much higher average than the industry level and standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 49.353 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average and standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

ROLTA INDIA LIMITED

Table 5.43 shows the company wise Liquidity Reserve to Total Savings Deposits Ratio during study period. Here, Liquidity Reserve includes all types of reserves such as General Reserve, Capital Reserve and other short term and long term reserve of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 10 percent. It reveals from the above table that the ratio of Rolta India Ltd. registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 121.798 percent in financial year 2005-06 to 3792.533 percent in financial year 2001-02. The company did not achieve the standard ratio during the study period. The Rolta India Ltd. has got 1887.051 percentages as the average for ten years which was the second lowest among other companies during the period under review. The company's average for ten years was 1887.051 percent and industry average during the same period was 802.082 percent which shows that company has got much higher average than the industry level and standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 78.757 percent which

shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average and standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

WIPRO

Table 5.43 shows the company wise Liquidity Reserve to Total Savings Deposits Ratio during study period. Here, Liquidity Reserve includes all types of reserves such as General Reserve, Capital Reserve and other short term and long term reserve of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 10 percent. It reveals from the above table that the ratio of Wipro registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 277.157 percent in financial year 2008-09 to 1193.448 percent in financial year 2003-04. The company did not achieve the standard ratio during the study period. The Wipro has got 626.463 percentages as the average for ten years which was the fifth lowest among other companies during the period under review. The company's average for ten years was 626.463 percent and industry average during the same period was 802.082 percent which shows that company has got lower average than the industry level but higher than standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 49.817 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average and standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.43 shows the company wise Liquidity Reserve to Total Savings Deposits ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect HCL Technologies, Polaris Software Lab Ltd. and Rolta India Ltd. has got the highest average than the industry average. Which affects negatively to company's Liquidity. The industry average during study period was 802.082 percent where as CMC Info Tech Ltd. 97.497 percent, GTL Ltd. recorded 165.987 percent, HCL Info systems Ltd. registered 453.207 percent, HCL Technologies registered the highest ratio and it was 1972.744 percent, Infosys recorded the lowest ratio and it was 34.847 percent, Polaris Software Lab Ltd. achieved 1178.856 percent, Rolta India Ltd. registered 1187.051 percent and Wipro registered 626.483 percent. It clearly reveals that HCL Technologies was having the highest ratio from not only industry standard but also standard goal lay down by WOCCU. This was negative sign for the company's Liquidity. Comparing CV of all the selected companies, it reveals that HCL Info System Ltd. has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than Infosys comes out as the best performer Information Technology Company in said ratio. The second and third rank secured by CMC Info Tech Ltd. and GTL Ltd. respectively. The forth rank onwards to seventh rank secured HCL Info System Ltd., Wipro, Polaris Software Lab Ltd. and Rolta India Ltd. respectively. HCL Technologies was the least rank company in Liquidity Reserve to Total Savings Deposits ratio of selected companies during study period as it had the lowest average among selected companies.

Hypothesis with respect to the Years

Null hypothesis,

H_o : Liquidity Reserve to Total Savings Deposits ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : Liquidity Reserve to Total Savings Deposits ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: Liquidity Reserve to Total Savings Deposits ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : Liquidity Reserve to Total Savings Deposits ratio differs significantly within Selected Information Technology Companies.

Table 5.44

Two – Way ANOVA Liquidity Reserve to

Total Savings Deposits Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	8577793.3	9	953088.1	1.276	2.032
Within Companies	43318287	7	6188327	8.287	2.159
Error	47043947	63	746729.3		
Total	98940027	79			

In Table 5.44, the value of the calculated F ratio for the years is 1.276, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 8.287, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[1.276]**< $F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Liquidity Reserve to Total Savings Deposits ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[8.287]** > $F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Liquidity Reserve to Total Savings Deposits ratio within selected Indian Information Technologies Companies during the period under review.

L-3. Non-Earning Liquid Assets to Total Assets Ratio

Purpose: To measure the percentage of total assets that is invested in non-earning liquid accounts.

Formula: $$\frac{\text{Non – Earning Liquid Assets}}{\text{Total Assets}} \times 100$$

The component of the formula can be explained as under.

Here, Non – Earning Liquid Assets includes Cash and Bank Balance of the institution during particular financial years.

Here, Net Value of Assets consists of Total Net Block (Gross Block – Depreciation) and Total Net Current Assets (Total Current Assets – Total Current Liabilities). The addition of Total net block and total net current assets will be placed in denominator.

The ratio plays very important role in deciding Liquidity of an organization. Here, WOCCU has announced that the ratio must be Maximum 1 percent. The institutions which do not have the high ratio compare to other institutions and standard ratio, should try to achieve the target as soon as possible. There is no lower limit for this ratio. So, the lower the ratio better will be the Liquidity of the Institution. The analysis of this ratio is shown in the following table.

Table No. 5.45

Analysis of Non – Earning Liquid Assets to Total Assets Ratio (L– 3)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	11.087	41.050	16.311	19.848	27.718	24.140	1.728	22.205	20.511
2002	14.255	38.457	14.210	4.020	37.115	24.237	1.607	11.467	18.171
2003	4.212	29.150	10.031	1.599	46.697	20.185	1.924	12.050	15.731
2004	2.357	52.400	9.435	3.046	50.354	6.912	4.632	8.037	17.146
2005	13.928	60.266	27.856	2.857	28.253	9.628	3.650	10.832	19.659
2006	93.113	32.443	23.490	4.100	47.542	11.902	73.859	12.705	37.394
2007	14.406	43.765	17.734	12.508	49.337	10.489	35.641	19.346	25.403
2008	70.457	23.745	23.237	21.199	47.658	5.564	12.714	38.067	30.330
2009	81.583	29.037	14.935	34.129	50.755	7.299	5.212	25.154	31.013
2010	64.071	68.308	12.031	15.623	43.996	12.584	1.602	24.392	30.326
Average	**36.947**	**41.862**	**16.927**	**11.893**	**42.942**	**13.294**	**14.257**	**18.425**	
Overall Avg.	**24.568**								
S. D.	**35.739**	**14.560**	**6.168**	**10.787**	**8.800**	**7.032**	**23.401**	**9.245**	
C.V.	**96.730**	**34.782**	**36.438**	**90.700**	**20.493**	**52.895**	**164.135**	**50.173**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

CMC INFOTECH LIMITED

Table 5.45 shows the company wise Non – Earning Liquid Assets to Total Assets Ratio during study period. Here, Non – Earning Liquid Assets includes Cash and Bank Balance of the institution during particular financial years of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 1 percent. It reveals from the above table that the ratio of CMC InfoTech Ltd. registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 2.357 percent in financial year 2003-04 to 93.113 percent in financial year 2005-06. The company did not achieve the standard ratio during the period under review. The CMC InfoTech Ltd. has got 36.947 percentages as the average for ten years which was the sixth lowest among other companies during the period under review. The company's average for ten years was 36.847 percent and industry average during the same period was 24.568 percent which shows that company has got much higher average than the industry level and standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 96.730 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average and standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

GTL LIMITED

Table 5.45 shows the company wise Non – Earning Liquid Assets to Total Assets Ratio during study period. Here, Non – Earning Liquid Assets includes Cash and Bank Balance of the institution during particular financial years of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 1 percent. It reveals from the above table that the ratio of GTL Ltd. registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 23.045 percent in financial year 2007-08 to 68.308 percent in financial year 2009-10. The company did not achieve the standard ratio during the

period under review. The GTL Ltd. has got 41.862 percentages as the average for ten years which was the seventh lowest among other companies during the period under review. The company's average for ten years was 41.862 percent and industry average during the same period was 24.568 percent which shows that company has got much higher average than the industry level and standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 34.782 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average and standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

HCL INFOSYSTEMS LIMITED

Table 5.45 shows the company wise Non – Earning Liquid Assets to Total Assets Ratio during study period. Here, Non – Earning Liquid Assets includes Cash and Bank Balance of the institution during particular financial years of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 1 percent. It reveals from the above table that the ratio of HCL Info System Ltd. registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 9.435 percent in financial year 2003-04 to 27.856 percent in financial year 2004-05. The company did not achieve the standard ratio during the period under review. The HCL Info System Ltd. has got 16.927 percentages as the average for ten years which was the fourth lowest among other companies during the period under review. The company's average for ten years was 16.927 percent and industry average during the same period was 24.568 percent which shows that company has got much lower average than the industry level but above than standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 46.438 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that

company's overall average of ratio was lower than the industry average but higher than standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

HCL TECHNOLOGIES

Table 5.45 shows the company wise Non – Earning Liquid Assets to Total Assets Ratio during study period. Here, Non – Earning Liquid Assets includes Cash and Bank Balance of the institution during particular financial years of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 1 percent. It reveals from the above table that the ratio of HCL Technologies registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 1.599 percent in financial year 2002-03 to 34.129 percent in financial year 2008-09. The company did not achieve the standard ratio during the period under review. The HCL Technologies has got 11.893 percentages as the average for ten years which was the lowest among other companies during the period under review. The company's average for ten years was 11.893 percent and industry average during the same period was 24.568 percent which shows that company has got much lower average than the industry level and much higher than standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 90.700 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average but much higher than standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

INFOSYS

Table 5.45 shows the company wise Non – Earning Liquid Assets to Total Assets Ratio during study period. Here, Non – Earning Liquid Assets includes Cash and Bank Balance of the institution during particular financial years of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has

announced that the ratio should be Maximum 1 percent. It reveals from the above table that the ratio of Infosys registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 27.718 percent in financial year 2000-01 to 50.755 percent in financial year 2008-09. The company did not achieve the standard ratio during the period under review. The Infosys has got 42.942 percentages as the average for ten years which was highest among other companies during the period under review. The company's average for ten years was 42.942 percent and industry average during the same period was 24.568 percent which shows that company has got much higher average than the industry level and standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 20.493 percent which shows that the company has low variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was higher than the industry average as well as standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

POLARIS SOFTWARE LAB LIMITED

Table 5.45 shows the company wise Non – Earning Liquid Assets to Total Assets Ratio during study period. Here, Non – Earning Liquid Assets includes Cash and Bank Balance of the institution during particular financial years of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 1 percent. It reveals from the above table that the ratio of Polaris Software Lab Ltd. registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 5.564 percent in financial year 2007-08 to 24.237 percent in financial year 2001-02. The company did not achieve the standard ratio during the period under review. The Polaris Software Lab Ltd. has got 13.294 percentages as the average for ten years which was the second lowest among other companies during the period under review. The company's average for ten years was 13.294 percent and industry average during the same period was 24.568 percent which shows that company has got much lower average than the industry level but

much higher than standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 52.895 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average but much higher than standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

ROLTA INDIA LIMITED

Table 5.45 shows the company wise Non – Earning Liquid Assets to Total Assets Ratio during study period. Here, Non – Earning Liquid Assets includes Cash and Bank Balance of the institution during particular financial years of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 1 percent. It reveals from the above table that the ratio of Rolta India Ltd. registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 1.602 percent in financial year 2009-10 to 73.859 percent in financial year 2005-06. The company did not achieve the standard ratio during the period under review. The Rolta India Ltd. has got 14.257 percentages as the average for ten years which was the third lowest among other companies during the period under review. The company's average for ten years was 14.257 percent and industry average during the same period was 24.568 percent which shows that company has got much lower average than the industry level but much higher than standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 164.135 percent which shows that the company has high variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average but much higher than standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

WIPRO

Table 5.45 shows the company wise Non – Earning Liquid Assets to Total Assets Ratio during study period. Here, Non – Earning Assets includes Cash and Bank Balance of the institution during particular financial years of the institutions. The lower the ratio better will be the Liquidity of the company. Here, WOCCU has announced that the ratio should be Maximum 1 percent. It reveals from the above table that the ratio of Wipro registered fluctuating trend during the period under study. According to WOCCU, there is no lower limit for the ratio. The ratio of company ranges from 8.037 percent in financial year 2003-04 to 38.067 percent in financial year 2007-08. The company did not achieve the standard ratio during the period under review. The Wipro has got 18.425 percentages as the average for ten years which was the fifth lowest among other companies during the period under review. The company's average for ten years was 18.425 percent and industry average during the same period was 24.568 percent which shows that company has got much lower average than the industry level but much higher than standard lay down by WOCCU which affects negatively to company's Liquidity. Coefficient of variance shows the movement or variability or the consistency in the ratio. The higher the CV, the lower will be the consistency. Here, company's CV was 50.173 percent which shows that the company has moderate variability in the said ratio during the period under review. Finally, it can be concluded that company's overall average of ratio was lower than the industry average but much higher than standard lay down by WOCCU of the selected Information Technology Companies which affects negatively to company's Liquidity.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.45 shows the company wise Non – Earning Liquid Assets to Total Assets ratio during study period. Comparing average ratio of all the companies during study period with overall average of the industry, it was being observed that none of the company expect CMC Info Tech Ltd., GTL Ltd., and Infosys has got the highest average than the industry average. Which affects negatively to company's Liquidity. The industry average during study period was 24.568 percent where as CMC Info Tech Ltd. recorded 36.947 percent, GTL Ltd. recorded 41.862 percent, HCL Info systems Ltd. registered 16.927 percent, HCL Technologies registered the lowest ratio

and it was 11.893 percent, Infosys recorded the highest ratio and it was 42.942 percent, Polaris Software Lab Ltd. achieved 13.294 percent, Rolta India Ltd. registered 14.257 percent and Wipro registered 18.425 percent. It clearly reveals that Infosys was having the highest ratio from not only industry standard but also standard goal lay down by WOCCU. This was negative sign for the company's Liquidity. Comparing CV of all the selected companies, it reveals that Infosys has got the lowest during period under study. If we rank the selected companies on the basis of their average ratio than HCL Technologies comes out as the best performer Information Technology Company in said ratio. The second and third rank secured by Polaris Software Lab Ltd. and Rolta India Ltd. respectively. The forth rank onwards to seventh rank secured HCL Info System Ltd., Wipro, CMC Info Tech Ltd. and GTL Ltd. respectively. Infosys was the least rank company in Non – Earning Liquid Assets to Total Assets ratio of selected companies during study period as it had the highest average among selected companies.

Hypothesis with respect to the Years

Null hypothesis,

H_o : Non – Earning Liquid Assets to Total Assets ratio does not differ significantly within the years.

Alternate hypothesis,

H_1 : Non – Earning Liquid Assets to Total Assets ratio differs significantly within the years.

Hypothesis with respect to selected Information Technology Companies

Null hypothesis,

H_o: Non – Earning Liquid Assets to Total Assets ratio does not differ significantly within Selected Information Technology Companies.

Alternate hypothesis,

H_1 : Non – Earning Liquid Assets to Total Assets ratio differs significantly within Selected Information Technology Companies.

Table 5.46

Two – Way ANOVA Non – Earning Liquid Assets

To Total Assets Ratio

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Within Years	3902.096	9	433.566	1.541	2.032
Within Companies	12801.323	7	1828.760	6.498	2.159
Error	17730.429	63	281.435		
Total	34433.848	79			

In Table 5.46, the value of the calculated F ratio for the years is 1.541, whereas its table value with the significance level of 5% and degrees of freedom (9, 63) is 2.032. The calculated F ratio for the Selected Information Technology Companies is 6.498, whereas its table value with the significance level of 5% and degrees of freedom (7, 63) is 2.159.

Component—Years: For this component,

$F_{\text{Calculated}}$ **[1.541]** $< F_{\alpha = 0.05 \text{ and d.f.} = (9,63)}$ **[2.032]**

Hence, the null hypothesis, H_o should be accepted

Inference: This means that there is no significant difference in Non – Earning Liquid Assets to Total Assets ratio within years.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[6.498]** $> F_{\alpha = 0.05 \text{ and d.f.} = (7,63)}$ **[2.159]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant difference in the Non – Earning Liquid Assets to Total Assets ratio within selected Indian Information Technologies Companies during the period under review.

5.7 Sings of Growth

The only successful way to maintain asset values is through strong, accelerated growth of assets, accompanied by sustained profitability. Growth by itself is insufficient. The advantage of the PEARLS system is that it links growth to profitability, as well as to the other key areas by evaluating the strength of the system as a whole.

The indicators of this section measure the percentage of growth in each of the most important accounts on the financial statement, as well as growth in membership.

Here, the growth in Loans to Members, Growth in Liquid Investments, Growth in Financial Investments, Growth in Non-Financial Investments, Growth in Savings Deposits, Growth in External Credit, Growth in Share Capital, Growth in Institutional Capital, Growth in Net Institutional Capital, Growth in Membership and Growth in Total Assets will be considered for the purpose of analysis. Growth in some of the above mentioned items will positively affects the Profitability of the company while growth in other items will affects negatively to company's profitability. The same formula has been used to find out growth for each of the items.

Formula:

$$\left[\frac{\text{Current Year Balance}}{\text{Previous Year Balance}} \right] \text{ X 100 - 100}$$

The analysis and calculation of each component of Growth Ratio will be explained as under.

There are no Non - Financial Investments, Net Institutional Capital and Members in Selected Information Technology Companies. So, the growth in these items was not measured.

Table No. 5.47

Analysis of Growth in Loans (S– 1)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	2.619	2.250	-2.554	1.667	21.670	1.267	0.871	-19.733	1.007
2002	7.657	7.580	8.495	4.869	56.788	-7.826	16.151	124.473	27.273
2003	8.621	35.541	-6.903	42.676	41.248	294.304	6.940	3.611	53.255
2004	8.730	31.344	-23.545	71.502	12.459	83.860	3.887	-27.783	20.057
2005	48.723	44.159	-13.921	24.526	7.210	2.093	-2.505	-7.455	12.854
2006	43.804	70.930	-7.696	-43.531	22.909	-0.439	-26.227	48.803	13.569
2007	26.877	109.501	-33.281	-50.695	7.384	8.217	38.363	63.158	21.190
2008	19.704	48.731	-25.899	22.020	60.191	34.593	42.242	68.496	33.760
2009	14.607	29.484	-16.837	15.826	51.771	18.294	16.146	59.384	23.584
2010	10.147	32.403	27.149	149.153	20.157	-7.578	42.072	34.564	38.508
Average	**19.149**	**41.192**	**-9.499**	**23.801**	**30.179**	**42.678**	**13.794**	**34.752**	
Overall Avg.	**24.506**								
S. D.	**15.878**	**30.922**	**17.733**	**57.100**	**20.506**	**92.590**	**22.119**	**47.644**	
C.V.	**82.917**	**75.068**	**-186.684**	**239.903**	**67.948**	**216.948**	**160.350**	**137.098**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.47 shows the company wise Growth of Loans taken by the institution during study period. Here, the lower the growth better will be profitability of the company. Growth of CMC Info Tech Company shows continuous increasing trend during first four years of the study and it showed continuous decreasing trend during the rest of the years. Average of the company during the study period was 19.149 percent which was lower than industry average. Growth of GTL Ltd. registered 41.192 percent which was higher than industry average. Here, the growth of loan was higher which affects negatively to company's profitability. HCL Info System Ltd. shows negative average during the study period which was 9.499 percent. Negative average affects positively to company's Profitability. Growth of HCL Technologies showed fluctuating trend during the study period. The average growth of company during the ten years was 23.801 percent which was marginally lower than industry average during the period under review. Growth in Loan of Infosys was very high during the study period. It recorded 30.179 percent which was higher than industry standard. This higher ratio affects negatively to company's profitability. Growth of Polaris Software Lab Ltd. registered the highest average growth during the study period which was 42.678 percent. Growth in Loans of Rolta India Ltd. showed the second least average during the period under review. Growth in loans of Wipro Ltd. registered 34.752 percent during the study period. If we rank the selected companies on the basis of their average ratio than HCL Info System Ltd. comes out as the best performer Information Technology Company in said ratio. The second and third rank secured by Rolta India Ltd. and CMC Info Tech Ltd. respectively. The forth rank onwards to seventh rank secured HCL Technologies, Infosys, Wipro and GTL Ltd. respectively. Polaris Software Lab Ltd. was the least rank company in growth of Loan.

Table No. 5.48

Analysis of Growth in Liquid Investments (S– 2)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	16.800	51.613	71.904	3.647	1.083	0.027	-9.877	-6.133	16.133
2002	0.000	-24.681	85.176	130.825	-43.229	0.270	230.148	183.769	70.285
2003	0.000	128.814	36.536	1.102	-71.256	-9.706	-45.812	89.360	16.130
2004	-74.658	-24.444	56.840	70.555	25.619	-35.384	37.214	130.564	23.288
2005	472.072	32.353	-52.869	-15.720	-41.388	-32.532	-27.439	15.288	43.721
2006	41.260	36.790	12.222	7.568	567.982	31.027	-25.049	41.800	89.200
2007	-44.259	-66.787	12.185	-72.767	-53.732	7.737	185.130	1.239	-3.907
2008	91.200	158.696	57.600	-63.178	25.970	279.816	188.545	-52.334	85.789
2009	25.314	-15.966	26.923	223.485	39.392	-70.031	-87.426	6.481	18.521
2010	63.022	137.500	228.307	72.832	-12.284	60.060	55.578	99.022	88.004
Average	**59.075**	**41.389**	**53.482**	**35.835**	**43.816**	**23.128**	**50.101**	**50.906**	
Overall Avg.	**44.717**								
S. D.	**152.898**	**77.846**	**72.761**	**90.742**	**187.968**	**97.117**	**112.241**	**72.645**	
C.V.	**258.820**	**188.085**	**136.046**	**253.223**	**428.996**	**419.906**	**224.030**	**142.706**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.48 shows the company wise Growth of Liquid Investments of the company during the study period. Here, the higher the growth better will be profitability of the company. Average Growth in Liquid Investments of CMC Info Tech Company registered 59.075 percent during the study period. Average of the company was higher than industry average. The Industry average during the study period was 44.717 percent. Growth of GTL Ltd. registered 41.389 percent which was lower than industry average which affects negatively to company's profitability. HCL Info System Ltd. shows the second highest average during the study period which was 53.482 percent which would affect positively to company's profitability. Growth in Liquid Investments of HCL Technologies showed fluctuating trend during the study period. The average growth of company during the ten years was 35.835 percent which was lower than industry average during the period under review. Growth in Liquid Investments of Infosys was marginally lower during the study period. It recorded 43.816 percent. Growth in Liquid Investments of Polaris Software Lab Ltd. registered the lowest average growth during the study period which was 23.128 percent. Growth in Liquid Investments of Rolta India Ltd. showed the fourth highest average during the period under review and it was 50.101 percent. Growth of Wipro Ltd. registered 50.906 percent during the study period. If we rank the selected companies on the basis of their average ratio than CMC Info Tech Ltd. comes out as the best performer Information Technology Company in said ratio. The second and third rank secured by HCL Info System Ltd. and Wipro respectively. The forth rank onwards to seventh rank secured Rolta India Ltd., Infosys, GTL Ltd. and HCL Technologies respectively. Polaris Software Lab Ltd. was the least rank company in growth of Liquid Investments during the period under review.

Table No. 5.49

Analysis of Growth in Financial Investments (S– 3)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	12.828	0.463	4.654	45.235	30.769	15.712	3.126	29.328	17.764
2002	0.244	13.825	60.800	34.468	29.412	14.283	-30.676	192.421	39.347
2003	1.829	220.243	55.758	44.613	-25.000	-5.048	75.251	201.150	71.100
2004	1.198	-34.260	31.805	17.903	3012.121	-0.564	15.793	70.473	389.309
2005	4.142	224.615	-56.247	17.966	29.309	90.287	-1.325	16.429	40.647
2006	4.545	17.328	10.279	-28.136	-34.036	-28.593	184.714	20.972	18.384
2007	3.261	-8.281	106.647	4.251	-4.224	36.488	-62.572	-65.345	1.278
2008	9.263	111.285	-23.147	-9.629	14.899	-10.122	188.545	33.650	39.343
2009	23.314	-5.120	28.407	-68.692	4.253	-74.814	-87.426	227.163	5.886
2010	58.906	155.170	230.022	296.872	361.294	59.541	55.578	71.058	161.055
Average	**11.953**	**69.527**	**44.898**	**35.485**	**341.880**	**9.717**	**34.101**	**79.730**	
Overall Avg.	**78.411**								
S. D.	**17.915**	**99.354**	**79.286**	**98.336**	**945.122**	**46.041**	**94.017**	**95.748**	
C.V.	**149.874**	**142.901**	**176.592**	**277.119**	**276.449**	**473.825**	**275.702**	**120.090**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.49 shows the company wise Growth of Financial Investments of the company during the study period. Here, the higher the growth better will be profitability of the company. Average Growth in Financial Investments of CMC Info Tech Company registered 11.953 percent during the study period. Average of the company was much lower than industry average. The Industry average during the study period was 78.441 percent. Growth of GTL Ltd. registered 69.527 percent which was lower than industry average which affects negatively to company's profitability. HCL Info System Ltd. shows the fourth highest average during the study period which was 44.898 percent which would affect negatively to company's profitability. Growth in Financial Investments of HCL Technologies showed fluctuating trend during the study period. The average growth of company during the ten years was 35.485 percent which was lower than industry average during the period under review. Growth in Financial Investments of Infosys was the highest among other companies during the study period. It recorded 341.880 percent. Growth of Polaris Software Lab Ltd. registered the lowest average growth during the study period which was 9.717 percent. Growth in Financial Investments of Rolta India Ltd. showed the sixth highest average during the period under review and it was 34.101 percent. Growth of Wipro Ltd. registered 79.730 percent during the study period. If we rank the selected companies on the basis of their average ratio than Infosys comes out as the best performer Information Technology Company in said ratio. The second and third rank secured by Wipro and GTL Ltd. respectively. The forth rank onwards to seventh rank secured HCL Info System Ltd., Rolat India Ltd. and CMC Info Tech Ltd. respectively. Polaris Software Lab Ltd. was the least rank company in growth of Financial Investments during the period under review.

Table No. 5.50

Analysis of Growth in Savings Deposits (S– 5)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	3.333	5.417	10.990	13.208	54.000	45.967	2.051	89.431	28.050
2002	29.032	4.614	-24.439	-75.280	100.519	12.584	1.244	-34.237	1.755
2003	-67.000	-17.053	-45.910	-56.159	73.057	107.546	24.480	39.591	7.319
2004	-43.939	24.500	2.835	96.067	22.605	-62.767	164.465	-29.216	21.819
2005	710.811	14.788	226.877	16.145	-9.585	41.630	-24.634	85.103	132.642
2006	783.333	-25.708	-0.363	25.660	121.404	49.274	2848.495	53.316	481.926
2007	36.113	112.824	33.485	258.633	67.948	-2.865	-17.446	124.690	76.673
2008	-35.071	-43.351	63.638	80.312	16.742	-44.762	-59.335	112.362	11.317
2009	45.260	45.203	-36.038	98.846	40.597	19.223	-47.054	12.279	22.290
2010	-10.259	417.444	44.150	-27.558	8.386	43.051	-63.400	28.465	55.035
Average	**145.161**	**53.868**	**27.522**	**42.987**	**49.567**	**20.888**	**282.887**	**48.179**	
Overall Avg.	**83.882**								
S. D.	**319.741**	**134.873**	**78.281**	**96.916**	**41.827**	**49.227**	**903.819**	**55.376**	
C.V.	**220.265**	**250.377**	**284.426**	**225.454**	**84.385**	**235.670**	**319.499**	**114.939**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.50 shows the company wise Growth of Savings Deposits of the company during the study period. Here, the higher the growth better will be profitability of the company. Average Growth in Savings Depostis of CMC Info Tech Company registered 145.161 percent during the study period. Average of the company was much higher than industry average. The Industry average during the study period was 83.882 percent. Growth of GTL Ltd. registered 53.868 percent which was lower than industry average which affects negatively to company's profitability. HCL Info System Ltd. shows the seventh highest average during the study period which was 27.522 percent which would affect negatively to company's profitability. Growth in Savings Deposits of HCL Technologies showed fluctuating trend during the study period. The average growth of company during the ten years was 42.987 percent which was lower than industry average during the period under review. Growth in Savings Deposits of Infosys was sixth the highest among other companies during the study period. It recorded 49.567 percent. Growth of Polaris Software Lab Ltd. registered the lowest average growth during the study period which was 20.888 percent. Growth in Savings Deposits of Rolta India Ltd. showed the second highest average during the period under review and it was 282.887 percent. Growth of Wipro Ltd. registered 48.179 percent during the study period. If we rank the selected companies on the basis of their average ratio than CMC Info Tech Ltd. comes out as the best performer Information Technology Company in said ratio. The second and third rank secured by Rolat India Ltd. and GTL Ltd. respectively. The forth rank onwards to seventh rank secured Infosys, Wipro, HCL Technologies and HCL Info System Ltd. respectively. Polaris Software Lab Ltd. was the least rank company in growth of Financial Investments during the period under review.

Table No. 5.51

Analysis of Growth in External Credit (S– 6)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	64.516	68.800	9.594	108.333	0.000	-20.000	15.712	74.609	40.196
2002	114.118	20.853	12.064	32.000	0.000	15.385	22.516	-40.268	22.083
2003	858.608	57.059	-15.830	76.667	0.000	26.667	-44.660	160.674	139.898
2004	26.060	-83.645	-32.711	1584.906	0.000	-69.737	42.703	44.540	189.014
2005	23.841	96.183	13.975	-1.568	0.000	808.696	-20.496	-38.370	110.283
2006	-17.929	943.580	140.610	-86.162	0.000	-10.526	-94.889	-19.194	106.936
2007	-73.531	206.152	20.574	205.605	0.000	-31.551	6196.330	375.050	862.329
2008	62.986	-14.529	49.502	-38.053	0.000	-35.938	12.324	1784.454	227.593
2009	19.219	44.087	-35.675	1928.148	0.000	-57.317	43.665	11.793	244.240
2010	3.334	342.089	124.787	172.009	0.000	600.000	26.287	10.297	159.850
Average	**108.122**	**168.063**	**28.689**	**398.189**	**0.000**	**122.568**	**619.949**	**236.359**	
Overall Avg.	**210.242**								
S. D.	**268.496**	**297.067**	**60.564**	**725.987**	**0.000**	**311.921**	**1959.815**	**558.108**	
C.V.	**248.327**	**176.760**	**211.106**	**182.322**	**0.000**	**254.489**	**316.125**	**236.128**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.51 shows the company wise Growth of External Credit of the company during the study period. Here, the lower the growth better will be profitability of the company. Average Growth in External Credit of CMC Info Tech Company registered 108.122 percent during the study period. Average of the company was much lower than industry average. The Industry average during the study period was 210.242 percent. Growth of GTL Ltd. registered 168.063 percent which was lower than industry average which affects positively to company's profitability. HCL Info System Ltd. shows the second lowest average during the study period which was 28.689 percent which would affect positively to company's profitability. Growth in External Credit of HCL Technologies showed fluctuating trend during the study period. The average growth of company during the ten years was 398.189 percent which was higher than industry average during the period under review. Growth in External Credit of Infosys was nil as company was not having any External Credit during the study period. Growth of Polaris Software Lab Ltd. registered the lowest average growth during the study period which was 122.568 percent. Growth in External Credit of Rolta India Ltd. showed the highest average during the period under review and it was 619.949 percent. Growth of Wipro Ltd. registered 236.359 percent during the study period. If we rank the selected companies on the basis of their average ratio than Infosys comes out as the best performer Information Technology Company in said ratio. The second and third rank secured by HCL Info System Ltd. and CMC Info Tech Ltd. respectively. The forth rank onwards to seventh rank secured Polaris Software Lab Ltd., GTL Ltd., Wipro and HCL Technologies respectively. Rolta India Ltd. was the least rank company in growth of External Credits during the period under review.

Table No. 5.52

Analysis of Growth in Share Capital (S– 7)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	0	0	0	0	0	0	0	0	0
2002	0.228	0.299	0.000	0.085	0.000	49.707	0.000	0.000	6.290
2003	6.146	0.525	0.000	0.832	0.000	0.743	0.000	0.216	1.058
2004	0.000	-31.526	3.103	-0.236	0.000	89.596	0.000	0.430	7.671
2005	8.292	3.093	1.642	10.515	309.091	0.328	0.000	201.285	66.781
2006	0.000	71.120	0.927	0.825	2.222	0.224	25.467	102.701	25.436
2007	0.000	13.733	0.267	73.553	107.246	0.367	0.250	2.314	24.716
2008	0.000	-2.816	1.153	17.795	0.000	0.081	100.836	0.171	14.653
2009	0.000	0.159	0.058	-0.333	0.000	0.000	0.068	0.239	0.024
2010	0.000	1.066	79.060	2.416	0.350	0.304	0.118	0.205	10.440
Average	**1.467**	**5.565**	**8.621**	**10.545**	**41.891**	**14.135**	**12.674**	**30.756**	
Overall Avg.	**15.707**								
S. D.	**3.074**	**25.712**	**24.770**	**22.932**	**99.719**	**30.734**	**31.990**	**67.995**	
C.V.	**209.633**	**462.002**	**287.316**	**217.460**	**238.045**	**217.432**	**252.407**	**221.077**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.52 shows the company wise Growth of Share Capital of the company during the study period. Here, the higher the growth better will be profitability of the company. Average Growth in Share Capital of CMC Info Tech Company registered 1.476 percent during the study period. Average of the company was much lower than industry average. The Industry average during the study period was 15.707 percent. Growth of GTL Ltd. registered 5.565 percent which was lower than industry average which affects negatively to company's profitability. HCL Info System Ltd. shows the sixth highest average during the study period which was 8.621 percent which would affect negatively to company's profitability. Growth in Share Capital of HCL Technologies showed fluctuating trend during the study period. The average growth of company during the ten years was 10.545 percent which was lower than industry average during the period under review. Growth in Share Capital of Infosys was the highest among other selected companies, which was 41.891. Here, this average was higher than industry average also. Growth of Polaris Software Lab Ltd. registered marginally lower average growth during the study period which was 14.135 percent. Growth in Share Capital of Rolta India Ltd. showed 12.674 as average growth during the period under review. Growth of Wipro Ltd. registered 30.756 percent during the study period. If we rank the selected companies on the basis of their average ratio than Infosys comes out as the best performer Information Technology Company in said ratio. The second and third rank secured by Wipro and Polaris Software Lab Ltd. respectively. The forth rank onwards to seventh rank secured Rolta India Ltd., HCL Technologies, HCL Info System Ltd. and GTL Ltd. respectively. CMC Info Tech Ltd. was the least rank company in growth of Share Capital during the period under review.

Table No. 5.53

Analysis of Growth in Institutional Capital (S– 8)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	25.000	19.355	7.614	20.450	1.282	41.820	20.999	40.050	22.071
2002	-8.000	3.938	5.486	6.159	21.157	24.572	8.484	29.587	11.423
2003	20.290	5.439	5.646	10.383	14.478	32.653	6.141	32.088	15.890
2004	0.602	3.228	24.095	-1.086	-73.924	53.530	4.919	5.399	2.095
2005	-5.988	2.000	9.959	25.277	-5.000	7.968	3.717	37.293	9.403
2006	24.841	-42.549	-6.049	-10.191	27.368	2.380	103.407	29.038	16.031
2007	13.776	15.601	114.878	14.454	56.198	12.296	13.177	47.192	35.947
2008	33.184	-11.630	19.798	7.158	18.254	10.122	7.142	26.304	13.792
2009	31.987	7.503	12.972	8.892	30.201	18.939	28.239	7.205	18.242
2010	26.276	1.885	69.468	43.068	34.021	13.777	18.911	42.359	31.220
Average	**16.197**	**0.477**	**26.387**	**12.456**	**12.404**	**21.806**	**21.514**	**29.652**	
Overall Avg.	**17.611**								
S. D.	**15.402**	**17.259**	**37.203**	**14.721**	**34.833**	**16.333**	**29.876**	**13.925**	
C.V.	**95.097**	**3618.599**	**140.992**	**118.182**	**280.834**	**74.901**	**138.869**	**46.963**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.53 shows the company wise Growth of Institutional Capital (Reserves) of the company during the study period. Here, the higher the growth better will be profitability of the company. Average Growth in Institutional Capital of CMC Info Tech Company registered 16.197 percent during the study period. Average of the company was marginally lower than industry average. The Industry average during the study period was 17.611 percent. Growth of GTL Ltd. registered 0.477 percent which was much lower than industry average which affects negatively to company's profitability. HCL Info System Ltd. shows the second highest average during the study period which was 26.387 percent which would affect positively to company's profitability. Growth in Institutional Capital of HCL Technologies showed fluctuating trend during the study period. The average growth of company during the ten years was 12.456 percent which was lower than industry average during the period under review. Growth in Institutional Capital of Infosys was the second lowest among other selected companies, which were 12.404. Here, this average was lower than industry average also. Growth of Polaris Software Lab Ltd. registered third highest average growth during the study period which was 21.806 percent. Growth in Institutional Capital of Rolta India Ltd. showed 21.514 as average growth during the period under review. Growth of Wipro Ltd. registered 29.652 percent during the study period. If we rank the selected companies on the basis of their average ratio than Wipro comes out as the best performer Information Technology Company in said ratio. The second and third rank secured by HCL Info System Ltd. and Polaris Software Lab Ltd. respectively. The forth rank onwards to seventh rank secured Rolta India Ltd., CMC Info Tech Ltd., HCL Technologies and Infosys respectively. GTL Ltd. was the least rank company in growth of Reserves during the period under review.

Table No. 5.54

Analysis of Growth in Total Assets (S– 11)

(Figures are in Percentage)

Year	Selected Information Technology Companies								
	CMC	**GTL**	**HCL Info.**	**HCL Tech.**	**Infosys**	**Polaris**	**Rolta**	**Wipro**	**Average**
2001	11.129	31.279	4.012	4.023	10.766	26.463	8.658	5.979	12.789
2002	0.358	11.668	-13.267	22.067	49.748	12.136	8.835	27.350	14.862
2003	11.689	9.431	-23.375	10.219	37.548	149.202	4.005	32.833	28.944
2004	0.191	-30.742	9.332	2.918	13.702	8.741	9.843	6.124	2.513
2005	37.197	-0.193	10.712	23.808	61.144	1.667	-4.370	37.345	20.914
2006	32.126	38.002	18.155	-12.430	31.572	20.754	45.727	30.718	25.578
2007	-12.193	57.770	76.806	17.564	61.838	10.222	71.077	47.552	41.330
2008	33.013	4.410	24.890	6.389	20.856	4.127	13.997	7.926	14.451
2009	25.451	18.740	-0.481	23.512	32.016	-9.115	29.152	69.919	23.649
2010	14.269	119.958	78.942	58.253	25.038	-17.022	19.096	32.481	41.377
Average	**15.323**	**26.032**	**18.573**	**15.632**	**34.423**	**20.717**	**20.602**	**29.823**	
Overall Avg.	**22.641**								
S. D.	**16.392**	**40.708**	**34.272**	**18.825**	**18.213**	**46.929**	**22.593**	**20.031**	
C.V.	**106.976**	**156.373**	**184.530**	**120.423**	**52.909**	**226.520**	**109.664**	**67.168**	

Source: Calculated from the Annual Reports of Selected Companies during study under review.

COMPARATIVE ANALYSIS OF SELECTED COMPANIES

Table 5.54 shows the company wise Growth of Total Assets of the company during the study period. Here, the higher the growth better will be profitability of the company. Average Growth in Total Assets of CMC Info Tech Company registered 15.323 percent during the study period. Average of the company was lower than industry average. The Industry average during the study period was 22.641 percent. Growth of GTL Ltd. registered 26.032 percent which was marginally higher than industry average which affects positively to company's profitability. HCL Info System Ltd. shows the sixth highest average during the study period which was 18.573 percent which would affect negatively to company's profitability. Growth in Total Assets of HCL Technologies showed fluctuating trend during the study period. The average growth of company during the ten years was 15.632 percent which was lower than industry average during the period under review. Growth in Institutional Capital of Infosys was the highest among other selected companies, which was 34.423. Here, this average was higher than industry average also. Growth of Polaris Software Lab Ltd. registered fourth highest average growth during the study period which was 20.717 percent. Growth in Institutional Capital of Rolta India Ltd. showed 20.602 as average growth during the period under review. Growth of Wipro Ltd. registered 29.823 percent during the study period. If we rank the selected companies on the basis of their average ratio than Infosys comes out as the best performer Information Technology Company in said ratio. The second and third rank secured by Wipro and GTL Ltd. respectively. The forth rank onwards to seventh rank secured Polaris Software Lab Ltd., Rolta India Ltd., HCL Info System Ltd. and HCL Technologies respectively. CMC Info Tech Ltd. was the least rank company in growth of Total Assets during the period under review.

References

1. Annual Reports of CMC Info Tech Ltd. during the financial year 2000-01 to 2009-10.
2. Annual Reports of GTL Ltd. during the financial year 2000-01 to 2009-10.
3. Annual Reports of HCL Info System Ltd. during the financial year 2000-01 to 2009-10.
4. Annual Reports of HCL Technologies during the financial year 2000-01 to 2009-10.
5. Annual Reports of Infosys during the financial year 2000-01 to 2009-10.
6. Annual Reports of Polaris Software Lab Ltd. during the financial year 2000-01 to 2009-10.
7. Annual Reports of Rolta India Ltd. during the financial year 2000-01 to 2009-10.
8. Annual Reports of Wipro Ltd. during the financial year 2000-01 to 2009-10.

6.1 Introduction

Monitoring the performance of the Institution is the most important use of the PEARLS system. It is designed as a management tool that goes beyond the simple identification of problems. It helps managers find meaningful solutions to serious institutional deficiencies. For example, the PEARLS system is capable of identifying a credit union with a weak capital base, and can also identify the probable causes (e.g., insufficient gross income, excessive operating expenses, or high delinquency losses).

Use of the system permits managers to quickly and accurately pinpoint troubled areas, and to make the necessary adjustments before problems become serious. In essence, PEARLS is an "early warning system" that generates invaluable management information. In total 45 financial ratios are available for analysis and evaluation. Current study is related to Indian Information Technology Industry, certain ratios were not possible to calculate so, and current study covers the analysis of 31 PEARLS ratios calculation and analysis. This chapter or section of analysis includes the interrelationships of these 31 calculated ratios. Here, interrelationships will be find out with the help Multiple Correlation, One Way ANOVA and Tukey's HSD test. Current section of analysis explains the Company wise degree of interrelationships among all 31 calculated ratios.

6.2 Interrelationship of PEARLS Ratios in CMC Info Tech Ltd.

Table 6.1 reveals the consolidated ratios of CMC Info Tech Ltd. during the period under review. Here, total 31 ratios have been calculated. The interrelationship of each of the ratios with other ratios has been explained with the help of multiple correlations. Table 6.2 shows the multiple correlations among all the calculated ratios. It reveals from the table that out of total six ratios of Protection only P6 can be calculated. P6 explains the Solvency of the institution. Solvency ratio was highly positively correlated with Total Interest Cost on Shares to Total Equity Share Capital. The correlation between these two ratios was 0.96 which was the highest correlation among all the calculated ratios. The Solvency ratio was highly negatively correlated

with Total Equity Share Capital to Total Assets ratio. The Correlation between these two ratios was -0.98 which was the lowest correlation among all the calculated ratios. The correlation between Net Loans to Total Assets ratio and Savings Deposits to Total Assets ratio registered the highest i.e. 0.90 during the period under review. Financial Investments to Total Assets ratio and Net Loans to Total Assets ratio were negatively correlated during the period under review. The Correlation between these two ratios was highly negative i.e. -0.79. The correlation among E2 i.e. Liquid Investment to Total Assets ratio and E8 i.e. Institutional Capital to Total Assets ratio and R2 i.e. Total Liquid Investment Income to Total Financial Investments was the highest during the study period. The Correlation recorded the highest which was 0.67. The Liquid Investment to Total Assets ratio shows the lowest correlation with External Credit to Total Assets Ratio. The Financial Investment to Total Assets ratio was highly positively correlated with Total Equity Share Capital to Total Assets ratio where as it registered negative correlation with Savings Deposits to Total Assets ratio. The Savings Deposits to Total Assets ratio of CMC Info Tech Ltd. registered the highest positive correlation with Short Term Investments and Liquid Assets to Savings Deposits ratio during the study period. The Savings Deposits to Total Assets ratio showed the lowest correlation with E7 i.e. Total Equity Share Capital to Total Assets ratio. The E6 i.e. External Credit to Total Assets ratio and S1 i.e. Growth in Loans to Members were highly positively correlated with each other where as E6 and E8 were having high negative correlation with each other. The Total Equity Share Capital to Total Assets ratio and Total Gross Income Margin to Total Assets ratio were having high positive correlation with each other. The E8 and S1 ratios were negatively correlated with each other. The table showed that the ratio of Non-Earning Assets to Total Assets and Short Term Investments and Liquid Assets to Total Savings Deposits ratio was highly positively correlated. The A2 ratio was having highly negative correlation with R4 ratio during the period under review. Table 6.2 showed that A3 and S2 i.e. Net Institutional and Transitory Capital to Non-earning Assets with Growth in Liquid Assets were highly positively correlated with each other. The R1 ratio of CMC Info Tech Ltd. was highly positively correlated with R7 ratio during the period under review whereas the R1 ratio was highly negatively correlated with R8 ratio during the study period. The Total Liquid Investment Income to Total Liquid Investments ratio and Total Financial Investment Income to Total Financial Investments ratio were having the highest correlation between them during

the period under review. The R3 ratio was highly negatively correlated with R4 of CMC Info Tech Ltd. The R4 ratio i.e. Total Non-Financial Investment Income to Total Non-Financial Investments ratio showed the highest correlation with Growth in share capital ratio of the CMC Info Tech Ltd. whereas R4 was highly negatively correlated with L3 i.e. Non-Earning Liquid Assets to Liquid Assets ratio. The Total Interest Cost on External Credit to Total External Credit ratio (R6) was having the highest correlation with The Non-Recurring Income or Expense to Total Assets ratio (R11). The ratio of R7 and S3 were highly positively correlated with each other whereas it highly negatively correlated with R8. The Total Gross Income Margin to Total Assets ratio and R9 were having the highest positive correlation between each other whereas R8 and L1 were highly negatively correlated with each other. The Total Operating Expenses to Total Assets ratio was negatively related with other ratios. This ratio was highly negatively correlated with S3. The Non-recurring Expenses to Total Assets ratio was recorded highly positive correlation with L1, whereas it had highly negative correlation with L2. The Net Income to Total Assets ratio was highly positively correlated with Short term Investment and Liquid Investment to Total Saving Deposits ratio during the period under review. The L1 ratio was highly negatively correlated with L2 and it was highly positively correlated with S8 during the period under review. The L2 ratio i.e. Liquidity Reserve to Saving Deposits ratio was related with other ratios almost negatively. It had the highest negative correlation with L3 during the period under review. The Non-Earning Liquid Assets to Total Assets ratio of CMC Info Tech Ltd during the study period registered high correlation with S3 and it showed the highest negative correlation with S7. The growth of Loans to Members related highly positive with S5, whereas the growth in Liquid Investments related highly positive with S11. The growth of Financial Investments showed negatively with S5, S6 and S7 during the period under review. The growth in Savings Deposits affects positively to S11, whereas the growth of External Credit affects negatively with S11. The growth in Share Capital affects positively to S11 and negatively to S8 which was -0.39.

Hypothesis with respect to the CMC Info Tech Ltd.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of CMC Info Tech Ltd. during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of CMC Info Tech Ltd. during the period under review.

Table 6.3

One – Way ANOVA of CMC Info Tech Ltd

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	93873190	30	3129106	93.68	1.50
Within Groups	9318324	279	33399.01		
Total	103191514	309			

In Table 6.3, the value of the calculated F ratio for the years is 93.68, whereas its table value with the significance level of 5% and degrees of freedom (30, 279) is 1.50.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[93.68]** > $F_{\alpha = 0.05 \text{ and d.f.} = (30, 279)}$ **[1.50]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of CMC Info Tech Ltd. during the period under review.

With the help of One - Way ANOVA the HSD test can be tested as under.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of CMC Info Tech Ltd. during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of CMC Info Tech Ltd. during the period under review.

Table 6.4

Calculation of Tukey's HSD test

MSE	33399.01	HSD	3339.901
Sample Size	31	SQRT	57.79188
No. of Treatments	10	**HSD-cal**	**258.3297**
Alpha	0.05		
DOF	279		
Value of $q_{(0.05,10,279)}$	**4.47**		

$HSD_{\text{Calculated}}$ **[258.3297]** > $F_{\alpha = 0.05 \text{ and d.f.} = (10, 279)}$ **[4.47]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of CMC Info Tech Ltd. during the period under review.

Here, there is an overall significant difference in interrelationship among all the PEARLS ratios not only with the help of One – Way ANOVA but also with the help of HSD test. Because the calculated value of HSD is much higher than tabulated value, the null hypothesis has rejected. By studying the magnitudes of the individual ratios with means, the Indian Information Technology companies can have high degree of interrelationship among all the calculated ratios of PEARLS.

6.3 Interrelationship of PEARLS Ratios in GTL Ltd.

Table 6.5 reveals the consolidated ratios of GTL Ltd. during the period under review. Here, total 31 ratios have been calculated. The interrelationship of each of the ratios with other ratios has been explained with the help of multiple correlations. Table 6.6 shows the multiple correlations among all the calculated ratios. It reveals from the table that out of total six ratios of Protection only P6 can be calculated. P6 explains the Solvency of the GTL Ltd. Solvency ratio was highly positively correlated with External Credit to Total Assets ratio of the company. The correlation between these two ratios was 0.96 which was the highest correlation among all the calculated ratios. The Solvency ratio was highly negatively correlated with Total Equity Share Capital to Total Assets ratio. The Correlation between these two ratios was -0.91 which was the lowest correlation among all the calculated ratios. The correlation between Net Loans to Total Assets ratio and Total Gross Income Margin to Total Assets ratio registered the highest i.e. 0.81 during the period under review. Financial Investments to Total Assets ratio and Total Financial Investment Income to Total Financial Investments ratio were negatively correlated during the period under review. The Correlation between these two ratios was highly negative i.e. -0.76. The correlation among E2 i.e. Liquid Investment to Total Assets ratio and E3 i.e. Financial Investments to Total Assets ratio and R6 i.e. Total Interest Cost on External Credit to Total External Credit was the highest during the study period. The Correlation

recorded the highest which was 0.59. The Liquid Investment to Total Assets ratio shows the lowest correlation with Growth in Institutional Capital. The Financial Investment to Total Assets ratio was highly positively correlated with Total Gross Income Margin to Total Assets ratio where as it registered negative correlation with Financial Investments to Total Assets ratio. The Savings Deposits to Total Assets ratio of GTL Ltd. registered the highest positive correlation with Non - Earning Liquid Assets to Total Assets ratio during the study period. The Savings Deposits to Total Assets ratio showed the lowest correlation with E7 i.e. Total Equity Share Capital to Total Assets ratio. The E6 i.e. External Credit to Total Assets ratio and S11 i.e. Growth in Total Assets were highly positively correlated with each other whereas E6 and L2 were having high negative correlation with each other. The Total Equity Share Capital to Total Assets ratio and Non – Earning Assets to Total Assets ratio were having high positive correlation with each other. The E8 and R2 ratios were negatively correlated with each other. The table showed that the ratio of Non-Earning Assets to Total Assets ratio and Total Interest Costs on External Credit to Total External Credit ratio was highly positively correlated. The A2 ratio was having highly negative correlation with R2 ratio during the period under review. Table 6.2 showed that A3 and S2 & S3 i.e. Net Institutional and Transitory Capital to Non-earning Assets with Growth in Liquid Assets and Growth in Financial Investments were highly positively correlated with each other. The R1 ratio of GTL Ltd. was highly positively correlated with L2 ratio during the period under review whereas the R1 ratio was highly negatively correlated with R8 ratio during the study period. The Total Liquid Investment Income to Total Liquid Investments ratio and Total Gross Income Margin to Total Assets ratio were having the highest correlation between them during the period under review. The R3 ratio was highly negatively correlated with R8 of GTL Ltd. The R4 ratio i.e. Total Non-Financial Investment Income to Total Non-Financial Investments ratio showed the highest correlation with Liquidity Reserves to Savings Deposits ratio of the GTL Ltd. whereas R4 was highly negatively correlated with R12 i.e. Net Income to Total Assets ratio. The Total Interest Cost on External Credit to Total External Credit ratio (R6) was having the highest correlation with Liquidity Reserves to Total Savings Deposits ratio (L2). The ratio of R7 and S6 were highly positively correlated with each other whereas it highly negatively correlated with S8. The Total Gross Income Margin to Total Assets ratio and R12 were having the highest positive correlation between each other whereas R8 and L2 were highly

negatively correlated with each other. The Total Operating Expenses to Total Assets ratio was highly positively correlated with Liquidity Reserve to Savings Deposits ratios. This ratio was highly negatively correlated with S12. The Non-recurring Expenses to Total Assets ratio was recorded highly positive correlation with R12, whereas it had highly negative correlation with S12. The Net Income to Total Assets ratio was highly positively correlated with Growth in Financial Investment during the period under review. The L1 ratio was highly negatively correlated with S1 and it was highly positively correlated with L3 during the period under review. The L2 ratio i.e. Liquidity Reserve to Saving Deposits ratio was related with other ratios almost negatively. It had the highest negative correlation with S12 during the period under review. The Non-Earning Liquid Assets to Total Assets ratio of GTL Ltd during the study period registered high correlation with S6 and it showed the highest negative correlation with S7. The growth of Loans to Members related highly positive with S7, whereas the growth in Liquid Investments related highly positive with S3. The growth of Financial Investments negatively correlated with S6, S7 and S8 during the period under review. The growth in Savings Deposits affects positively to S12, whereas the growth of External Credit affects negatively with S8. The growth in Share Capital affects positively to S11 and negatively to S8 which was -0.72.

Hypothesis with respect to the GTL Ltd.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of GTL Ltd. during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of GTL Ltd. during the period under review.

Table 6.7

One – Way ANOVA of GTL Ltd

Source of Variation	***SS***	***df***	***MS***	***F***	***F crit***
Between Groups	1156904	30	38563.47	6.65	1.50
Within Groups	1616980	279	5795.627		
Total	2773884	309			

In Table 6.3, the value of the calculated F ratio for the years is 6.65, whereas its table value with the significance level of 5% and degrees of freedom (30, 279) is 1.50.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[6.65]** > $F_{\alpha = 0.05 \text{ and d.f.} = (30, 279)}$ **[1.50]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of GTL Ltd. during the period under review.

With the help of One - Way ANOVA the HSD test can be tested as under.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of GTL Ltd. during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of GTL Ltd. during the period under review.

Table 6.8

Calculation of Tukey's HSD test

MSE	5795.627	HSD	579.5627
Sample Size	31	SQRT	24.07411
No. of Treatments	10	**HSD-cal**	**107.6113**
Alpha	0.05		
DOF	279		
Value of $q_{(0.05,10,279)}$	**4.47**		

$HSD_{\text{Calculated}}$ **[107.6113]** > $F_{\alpha = 0.05 \text{ and d.f.} = (10, 279)}$ **[4.47]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of GTL Ltd. during the period under review.

Here, there is an overall significant difference in interrelationship among all the PEARLS ratios not only with the help of ANOVA but also HSD test. Because the calculated value of HSD is much higher than tabulated value. By studying the magnitudes of the individual ratios with means, the Indian Information Technology companies can have interrelationship among all the calculated ratios of PEARLS.

6.4 Interrelationship of PEARLS Ratios in HCL Info System Ltd.

Table 6.9 reveals the consolidated ratios of HCL Info System Ltd. during the period under review. Here, total 31 ratios have been calculated. The interrelationship of each of the ratios with other ratios has been explained with the help of multiple correlations. Table 6.10 shows the multiple correlations among all the calculated ratios. It reveals from the table that out of total six ratios of Protection only P6 can be calculated. P6 explains the Solvency of the HCL Info System Ltd. Solvency ratio was highly positively correlated with Net Loans to Total Assets ratio of the company. The correlation between these two ratios was 0.37 which was the highest correlation among all the calculated ratios. The Solvency ratio was highly negatively correlated with Institutional Capital to Total Assets ratio. The Correlation between these two ratios was -0.98 which was the lowest correlation among all the calculated ratios. The correlation between Net Loans to Total Assets ratio and Total Equity Share Capital to Total Assets ratio registered the highest i.e. 0.92 during the period under review. Financial Investments to Total Assets ratio and (E5) Savings Deposits to Total Assets & (L3) Non-Earning Liquid Assets to Total Assets ratio were negatively correlated during the period under review. The Correlation between these two ratios was highly negative i.e. -0.68. The correlation among E2 i.e. Liquid Investment to Total Assets ratio and E3 i.e. Financial Investments to Total Assets ratio was the highest during the study period. The Correlation recorded the highest which was 0.93. The Liquid Investment to Total Assets ratio shows the lowest correlation with Savings Deposits to Total Assets Ratio. The Financial Investment to Total Assets ratio was highly positively correlated with Liquidity Reserve to Savings Deposits ratio where as it registered negative correlation with Financial Investments to Total Assets ratio. The Savings Deposits to Total Assets ratio of HCL Info System Ltd. registered the highest positive correlation with Non - Earning Liquid Assets to Total Assets ratio during the study period. The Savings Deposits to Total Assets ratio showed the lowest correlation with L2 i.e. Liquidity Reserve to Total Savings Deposits ratio. The E6 i.e. External Credit to Total Assets ratio and S6 i.e. External Credit to Total Assets were highly positively correlated with each other whereas E6 and R1 and R4 were having high negative correlation with each other. The Total Equity Share Capital to Total Assets ratio and Total Financial Investment Income to Total Financial Investments

ratio were having high positive correlation with each other. The E8 and S1 ratios were negatively correlated with each other. The table showed that the ratio of Non-Earning Assets to Total Assets ratio and Total Financial Investment Income to Total Financial Investments ratio was highly positively correlated. The A2 ratio was having highly negative correlation with A3 ratio during the period under review. Table 6.10 showed that A3 and R8 i.e. Net Institutional and Transitory Capital to Non-earning Assets with Total Gross Income Margin to Total Assets ratio highly positively correlated with each other. The R1 ratio of HCL Info System Ltd. was highly positively correlated with R4 ratio during the period under review whereas the R1 ratio was highly negatively correlated with R8 ratio during the study period. The Total Liquid Investment Income to Total Liquid Investments ratio and Total Gross Income Margin to Total Assets ratio were having the highest correlation between them during the period under review. The R3 ratio was highly negatively correlated with S11 of HCL Info System Ltd. The R4 ratio i.e. Total Non-Financial Investment Income to Non-Recurring Expenses to Total Assets ratio showed the highest correlation during the period under review whereas R4 was highly negatively correlated with R8 i.e. Total Gross Income Margin to Total Assets ratio. The Total Interest Cost on External Credit to Total External Credit ratio (R6) was having the highest correlation with Total Operating Expenses to Total Assets ratio (R9). The ratio of R7 and R11 were highly positively correlated with each other whereas it highly negatively correlated with S1. The Total Gross Income Margin to Total Assets ratio and R9 were having the highest positive correlation between each other whereas R8 and S1 were highly negatively correlated with each other. The Total Operating Expenses to Total Assets ratio was highly positively correlated with Net Income to Total Assets ratio. This ratio was highly negatively correlated with S1. The Non-recurring Expenses to Total Assets ratio was recorded highly positive correlation with R12, whereas it had highly negative correlation with S2. The Net Income to Total Assets ratio was highly positively correlated with Non-Earning Liquid Assets to Total Assets ratio during the period under review. The L1 ratio was highly negatively correlated with L3 and it was highly positively correlated with L2 during the period under review. The L2 ratio i.e. Liquidity Reserve to Saving Deposits ratio was related with other ratios almost positively except L3, S3 and S5. It had the highest negative correlation with L3 during the period under review. The Non-Earning Liquid Assets to Total Assets ratio of HCL Info System Ltd during the study period registered high correlation with S5 and it

showed the highest negative correlation with S3. The growth of Loans to Members related highly positive with S2, whereas the growth in Liquid Investments related highly positive with S7. The growth of Financial Investments positively correlated with all ratios except S5 during the period under review. The growth in Savings Deposits affects positively to all the growth ratios during the study period, whereas the growth of External Credit affects positively with S7. The growth in Share Capital affects positively to S11 and S8.

Hypothesis with respect to the HCL Info System Ltd.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of HCL Info System Ltd. during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of HCL Info System Ltd. during the period under review.

Table 6.11

One – Way ANOVA of HCL Info System Ltd

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	4824429.64	30	160814.3	21.13	1.50
Within Groups	2123673.40	279	7611.73		
Total	6948103.04	309			

In Table 6.11, the value of the calculated F ratio for the years is 21.13, whereas its table value with the significance level of 5% and degrees of freedom (30, 279) is 1.50.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[21.13]** > $F_{\alpha = 0.05 \text{ and d.f.} = (30, 279)}$ **[1.50]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of HCL Info System Ltd. during the period under review.

With the help of One - Way ANOVA the HSD test can be tested as under.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of HCL Info System Ltd. during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of HCL Info System Ltd. during the period under review.

Table 6.12

Calculation of Tukey's HSD test

MSE	7611.733	HSD	761.1733
Sample Size	31	SQRT	27.58937
No. of Treatments	10	**HSD-cal**	**123.3245**
Alpha	0.05		
DOF	279		
Value of $q_{(0.05,10,279)}$	**4.47**		

$$HSD_{\text{Calculated}} [123.3245] > F_{\alpha = 0.05 \text{ and d.f.} = (10, 279)} [4.47]$$

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of HCL Info System Ltd. during the period under review.

Here, there is an overall significant difference in interrelationship among all the PEARLS ratios not only with the help of ANOVA but also with the help of HSD test. Because the calculated value of HSD is much higher than tabulated value. By studying the magnitudes of the individual ratios with means, the Indian Information Technology companies can have interrelationship among all the calculated ratios of PEARLS.

6.5 Interrelationship of PEARLS Ratios in HCL Technologies

Table 6.13 reveals the consolidated ratios of HCL Technologies during the period under review. Here, total 31 ratios have been calculated. The interrelationship of each of the ratios with other ratios has been explained with the help of multiple correlations. Table 6.14 shows the multiple correlations among all the calculated ratios. It reveals from the table that out of total six ratios of Protection only P6 can be calculated. P6 explains the Solvency of the HCL Technologies. Solvency ratio was highly positively correlated with External Credit to Total Assets ratio of the company. The correlation between these two ratios was 0.93 which was the highest correlation among all the calculated ratios. The Solvency ratio was highly negatively correlated with Institutional Capital to Total Assets ratio. The Correlation between these two ratios was -0.99 which was the lowest correlation among all the calculated ratios. The correlation between Net Loans to Total Assets ratio and Liquid Investments to Total Assets ratio registered the highest i.e. 0.83 during the period under review. Financial Investments to Total Assets ratio and (E5) Savings Deposits to Total Assets & (L3) Non-Earning Liquid Assets to Total Assets ratio were negatively correlated during the period under review. The Correlation between these two ratios was highly negative i.e. -0.88. The correlation among E2 i.e. Liquid Investment to Total Assets ratio and E3 i.e. Financial Investments to Total Assets ratio was the highest during the study period. The Correlation recorded the highest which was 0.82. The Liquid Investment to Total Assets ratio shows the lowest correlation with Non-Earning Liquid Assets to Total Assets Ratio. The Financial Investment to Total Assets ratio was highly positively correlated with Total Interest Cost on shares to Total Equity Share Capital ratio where as it registered negative correlation with Saving Deposits to Total Assets and Non-Earning Assets to Total Assets ratio. The Savings Deposits to Total Assets ratio of HCL Technologies registered the highest positive correlation with Short Term Investments and Liquid Assets to Total Savings Deposits ratio during the study period. The Savings Deposits to Total Assets ratio showed the lowest correlation with L2 i.e. Liquidity Reserve to Total Savings Deposits ratio. The E6 i.e. External Credit to Total Assets ratio and S11 i.e. Growth in Total Assets were highly positively correlated with each other whereas E6 and E8 were having high negative correlation with each other. The Total Equity Share Capital to Total Assets ratio and Non-

Earning Assets to Total Assets & Total Gross Income Margin to Total Assets ratio were having high positive correlation with each other. The E8 and R9 ratios were negatively correlated with each other. The table showed that the ratio of Non-Earning Assets to Total Assets ratio and Non-Earning Liquid Assets to Total Liquid Assets ratio was highly positively correlated. The A2 ratio was having highly negative correlation with A3 and L2 ratios during the period under review. Table 6.14 showed that A3 and L2 i.e. Net Institutional and Transitory Capital to Non-earning Assets with Liquidity Reserves to Total Savings Deposits ratio highly positively correlated with each other. The R1 ratio of HCL Technologies was highly positively correlated with R4 ratio during the period under review whereas the R1 ratio was highly negatively correlated with R8 ratio during the study period. The Total Liquid Investment Income to Total Liquid Investments ratio and Total Financial Investment Income to Total Financial Investments ratio were having the highest correlation between them during the period under review. The R3 ratio was highly negatively correlated with R7 of HCL Technologies. The R4 ratio i.e. Total Non-Financial Investment Income to Total Non-Financial Investments ratio has registered the highest correlation during the period under review whereas R4 was highly negatively correlated with R8 i.e. Total Gross Income Margin to Total Assets ratio. The Total Interest Cost on External Credit to Total External Credit ratio (R6) was having the highest correlation with Net Income to Average Total Assets (R12). The ratio of R7 and R11 were highly positively correlated with each other whereas it highly negatively correlated with L3. The Total Gross Income Margin to Total Assets ratio and R12 were having the highest positive correlation between each other whereas R8 and L2 were highly negatively correlated with each other. The Total Operating Expenses to Total Assets ratio was highly positively correlated with Non-Earning Liquid Assets to Total Assets ratio. This ratio was highly negatively correlated with L2. The Non-recurring Expenses to Total Assets ratio was recorded highly positive correlation with R12, whereas it had highly negative correlation with S6. The Net Income to Total Assets ratio was highly positively correlated with Growth in Share Capital ratio during the period under review. The L1 ratio was highly negatively correlated with L2 and it was highly positively correlated with L3 during the period under review. The L2 ratio i.e. Liquidity Reserve to Saving Deposits ratio was related with other ratios almost negatively except S1. It had the highest negative correlation with L3 during the period under review. The Non-Earning Liquid Assets to Total

Assets ratio of company during the study period registered high correlation with S6 and it showed the highest negative correlation with S3. The growth of Loans to Members related highly positive with S2, whereas the growth in Liquid Investments related highly positive with S6. The growth of Financial Investments highly positively correlated with S8 during the period under review. The growth of External Credit affects positively with S11. The growth in Share Capital affects positively to S11 and S8.

Hypothesis with respect to the HCL Technologies

Null hypothesis,

H_o : There is no significance interrelationships among ratios of HCL Technologies during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of HCL Technologies during the period under review.

Table 6.15

One – Way ANOVA of HCL Technologies

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	58496569.34	30	1949886	10.68	1.50
Within Groups	50942335.74	279	182589		
Total	109438905.1	309			

In Table 6.15, the value of the calculated F ratio for the years is 10.68, whereas its table value with the significance level of 5% and degrees of freedom (30, 279) is 1.50.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[10.68]** > $F_{\alpha = 0.05 \text{ and d.f.} = (30, 279)}$ **[1.50]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of HCL Technologies during the period under review.

With the help of One - Way ANOVA the HSD test can be tested as under.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of HCL Technologies during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of HCL Technologies during the period under review.

Table 6.16

Calculation of Tukey's HSD test

MSE	182589	HSD	18258.9
Sample Size	31	SQRT	135.1255
No. of Treatments	10	**HSD-cal**	**604.011**
Alpha	0.05		
DOF	279		
Value of $q_{(0.05,10,279)}$	**4.47**		

$$HSD_{\text{Calculated}}\ [604.011] > F_{\alpha\ =\ 0.05 \text{ and d.f.} =\ (10,\ 279)}\ [4.47]$$

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of HCL Technologies during the period under review.

Here, there is an overall significant difference in interrelationship among all the PEARLS ratios not only with the help of ANOVA but also with the help of HSD test. Because the calculated value of HSD is much higher than tabulated value. By studying the magnitudes of the individual ratios with means, the Indian Information Technology companies can have interrelationship among all the calculated ratios of PEARLS.

6.6 Interrelationship of PEARLS Ratios in Infosys

Table 6.17 reveals the consolidated ratios of Infosys during the period under review. Here, total 31 ratios have been calculated. The interrelationship of each of the ratios with other ratios has been explained with the help of multiple correlations. Table 6.18 shows the multiple correlations among all the calculated ratios. It reveals from the table that out of total six ratios of Protection only P6 can be calculated. P6 explains the Solvency of the Infosys during the study period. Solvency ratio was highly positively correlated with Short Term Investments and Liquid Assets to Savings Deposits ratio of the company. The correlation between these two ratios was 0.64 which was the highest correlation among all the calculated ratios. The Solvency ratio was highly negatively correlated with Institutional Capital to Total Assets ratio. The Correlation between these two ratios was -0.96 which was the lowest correlation among all the calculated ratios. The correlation between Net Loans to Total Assets ratio and Operating Expenses to Total Assets ratio registered the highest i.e. 0.78 during the period under review. Financial Investments to Total Assets ratio and Growth in Loans to Members & Growth in Institutional Capital ratio were negatively correlated during the period under review. The Correlation between these two ratios was highly negative i.e. -0.62. The correlation among E2 i.e. Liquid Investment to Total Assets ratio and E3 i.e. Financial Investments to Total Assets ratio was the highest during the study period. The Correlation recorded the highest which was 0.98. The Liquid Investment to Total Assets ratio shows the lowest correlation with Growth in Institutional Capital, which was -0.68. The Financial Investment to Total Assets ratio was highly positively correlated with Short Term Investments and Liquid Assets to Total Savings Deposit ratio where as it registered negative correlation with Growth in Loans to Members and Growth in Institutional Capital. The Savings Deposits to Total Assets ratio of Infosys registered the highest positive correlation with Non-Earning Liquid Assets to Total Savings Deposits ratio during the study period. The Savings Deposits to Total Assets ratio showed the lowest correlation with A3 i.e. Net Institutional Capital to Non – Earning Assets ratio. The E6 i.e. External Credit to Total Assets ratio was nil during the period under review in Infosys because there was no External Credit was available in the staid company. The Total Equity Share Capital to Total Assets ratio and Growth in Share Capital were having high positive correlation with each other. The E8 and L1 ratios were negatively correlated with

each other. The table showed that the ratio of Non-Earning Assets to Total Assets ratio and Non-Earning Liquid Assets to Total Liquid Assets ratio was highly positively correlated. The A2 ratio was having highly negative correlation with A3 and A3 ratios during the period under review. Table 6.18 showed that A3 and S7 i.e. Net Institutional and Transitory Capital to Non-earning Assets with Growth in Share Capital highly positively correlated with each other. The R1 ratio of Infosys was highly positively correlated with L2 i.e. Liquidity Reserves to Saving Deposits ratio during the period under review whereas the R1 ratio was highly negatively correlated with L1 ratio during the study period. The Total Liquid Investment Income to Total Liquid Investments ratio and Growth in Liquid Investments were having the highest correlation between them during the period under review. The R3 i.e. Total Financial Investment Income to Total Financial Investment ratio was highly negatively correlated with R9 of Infosys. The R4 ratio i.e. Total Non-Financial Investment Income to Growth in Loans to Members has registered the highest correlation during the period under review whereas R4 was highly negatively correlated with R8 i.e. Total Gross Income Margin to Total Assets ratio. The Total Interest Cost on External Credit to Total External Credit ratio (R6) was nil as there was no Interest Income of the External Credit, rather to say that company was not having External Credit so it does not have its Interest. The ratio of R7 and S3 were highly positively correlated with each other whereas it highly negatively correlated with S8. The Total Gross Income Margin to Total Assets ratio and R9 were having the highest positive correlation between each other whereas R8 and S8 were highly negatively correlated with each other. The Total Operating Expenses to Total Assets ratio was highly positively correlated with Non Income to Total Assets ratio. This ratio was highly negatively correlated with S8. The Non-recurring Expenses to Total Assets ratio was recorded highly positive correlation with R12, whereas it had highly negative correlation with L1. The Net Income to Total Assets ratio was highly positively correlated with Liquidity Reserve to Total Savings Deposits ratio during the period under review. The L1 ratio was highly negatively correlated with L2 and it was highly positively correlated with S3 during the period under review. The L2 ratio i.e. Liquidity Reserve to Saving Deposits ratio was related with other ratios almost negatively except S1 and S5. It had the highest negative correlation with L3 during the period under review. The Non-Earning Liquid Assets to Total Assets ratio of company during the study period registered high correlation with S3 and it showed

the highest negative correlation with S7. The growth of Loans to Members related highly positive with S8, whereas the growth in Liquid Investments related highly positive with S5. The growth of Financial Investments highly positively correlated with S8 during the period under review. The growth in Share Capital affects positively to S11 and S8.

Hypothesis with respect to the Infosys

Null hypothesis,

H_o : There is no significance interrelationships among ratios of Infosys during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of Infosys during the period under review.

Table 6.19

One – Way ANOVA of Infosys

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	19375323.2	30	645844.1	10.32	1.50
Within Groups	17466748.3	279	62604.8		
Total	36842071.5	309			

In Table 6.19, the value of the calculated F ratio for the years is 10.68, whereas its table value with the significance level of 5% and degrees of freedom (30, 279) is 1.50.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[10.32]** > $F_{\alpha = 0.05 \text{ and d.f.} = (30, 279)}$ **[1.50]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of Infosys during the period under review.

With the help of One - Way ANOVA the HSD test can be tested as under.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of Infosys during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of Infosys during the period under review.

Table 6.20

Calculation of Tukey's HSD test

MSE	62604.83	HSD	6260.483
Sample Size	31	SQRT	79.12321
No. of Treatments	10	**HSD-cal**	**353.6808**
Alpha	0.05		
DOF	279		
Value of $q_{(0.05,10,279)}$	**4.47**		

$$HSD_{\text{Calculated}} [353.6808] > F_{\alpha = 0.05 \text{ and d.f.} = (10, 279)} [4.47]$$

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of Infosys during the period under review.

Here, there is an overall significant difference in interrelationship among all the PEARLS ratios not only with the help of ANOVA but also with the help of HSD test. Because the calculated value of HSD is much higher than tabulated value. By studying the magnitudes of the individual ratios with means, the Indian Information Technology companies can have interrelationship among all the calculated ratios of PEARLS.

6.7 Interrelationship of PEARLS Ratios in Polaris Software Lab Ltd.

Table 6.21 reveals the consolidated ratios of Polaris Software Lab Ltd. during the period under review. Here, total 31 ratios have been calculated. The interrelationship of each of the ratios with other ratios has been explained with the help of multiple correlations. Table 6.22 shows the multiple correlations among all the calculated ratios. It reveals from the table that out of total six ratios of Protection only P6 can be calculated. P6 explains the Solvency of the Polaris Software Lab Ltd. during the study period. Solvency ratio was highly positively correlated with Growth in Total Assets of the company. The correlation between these two ratios was 0.78 which was the highest correlation among all the calculated ratios. The Solvency ratio was highly negatively correlated with Institutional Capital to Total Assets ratio. The Correlation between these two ratios was -0.94 which was the lowest correlation among all the calculated ratios. The correlation between Net Loans to Total Assets ratio and Net Institutional and Non Interest bearing Liabilities to Non Earning Assets ratio registered the highest i.e. 0.91 during the period under review. Financial Investments to Total Assets ratio and Total Financial Investment Income to Total Financial Investments ratio were negatively correlated during the period under review. The Correlation between these two ratios was highly negative i.e. -0.71. The correlation among E2 i.e. Liquid Investment to Total Assets ratio and L1 i.e. Short Term Investments and Liquid Investments to Total Savings Deposits ratio was the highest during the study period. The Correlation recorded the highest which was 0.94. The Liquid Investment to Total Assets ratio shows the lowest correlation with Total Interest Cost on External Credit to Total External Credit ratio, which was -0.67. The Financial Investment to Total Assets ratio was highly positively correlated with Non-Earning Assets to Total Assets ratio where as it registered negative correlation with Total Financial Investment Income to Total Financial Investments ratio. The Savings Deposits to Total Assets ratio of Polaris Software Lab Ltd. registered the highest positive correlation with Non-Earning Assets to Total Assets ratio during the study period. The Savings Deposits to Total Assets ratio showed the lowest correlation with R3 i.e. Total Financial Investment Income to Total Financial Investments ratio. The E6 i.e. External Credit to Total Assets ratio was highly positively correlated with S6 i.e. Growth in External Credit, which was 0.81 and it had highly negatively correlated

with Growth in Institutional Capital which was -0.81. The Total Equity Share Capital to Total Assets ratio and Net Income to Total Assets ratio were having high positive correlation with each other. The E8 and S1 ratios were negatively correlated with each other. The table showed that the ratio of Non-Earning Assets to Total Assets ratio and R1 i.e. Net Loan Income and L3 i.e. Non-Earning Liquid Assets to Total Assets ratio was highly positively correlated. The A2 ratio was having highly negative correlation with L2 ratios during the period under review. Table 6.22 showed that A3 and R9 i.e. Net Institutional and Transitory Capital to Non-earning Assets with Total Operating Expenses to Total Assets ratio highly positively correlated with each other. The R1 ratio of Polaris Software Lab Ltd. was highly positively correlated with R12 i.e. Net Income to Total Assets ratio during the period under review whereas the R1 ratio was highly negatively correlated with L2 ratio during the study period. The Total Liquid Investment Income to Total Liquid Investments ratio and Total Financial Investment Income to Total Financial Investments ratio were having the highest correlation between them during the period under review. The R3 i.e. Total Financial Investment Income to Total Financial Investment ratio was highly negatively correlated with L3 of Polaris Software Lab Ltd. The R4 ratio i.e. Total Non-Financial Investment Income to Non-Financial Investments with L3 i.e. Non – Earning Liquid Assets to Total Assets ratio has registered the highest correlation during the period under review whereas R4 was highly negatively correlated with R6 i.e. Total Interest Cost on External Credit to Total External Credit ratio whereas it had highly positive correlation with L1 i.e. Short Term Investments and Liquid Assets to Total Savings Deposits ratio. The ratio of R7 and S1 were highly positively correlated with each other whereas it highly negatively correlated with R11. The Total Gross Income Margin to Total Assets ratio and R9 were having the highest positive correlation between each other whereas R8 and S1 were highly negatively correlated with each other. The Total Operating Expenses to Total Assets ratio was highly positively correlated with Liquidity Reserve to Savings Deposits ratio. This ratio was highly negatively correlated with S11. The Non-recurring Expenses to Total Assets ratio was recorded highly positive correlation with S6, whereas it had highly negative correlation with S1. The Net Income to Total Assets ratio was highly positively correlated with Short Term Investments and Liquid Assets to Total Savings Deposits ratio during the period under review. The L1 ratio was highly negatively correlated with L2 and it was highly positively correlated with L3 during the period under

review. The L2 ratio i.e. Liquidity Reserve to Saving Deposits ratio was related with other ratios almost negatively except S2, S6 and S7. It had the highest negative correlation with L3 during the period under review. The Non-Earning Liquid Assets to Total Assets ratio of company during the study period registered high correlation with S5 and it showed the highest negative correlation with S2. The growth of Loans to Members related highly positive with S11, The growth of Financial Investments highly positively correlated with S6

Hypothesis with respect to the Polaris Software Lab Ltd.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of Polaris Software Lab Ltd. during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of Polaris Software Lab Ltd. during the period under review.

Table 6.23

One – Way ANOVA of Polaris Software Lab Ltd

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	13692740	30	456424.7	29.14	1.50
Within Groups	4369316	279	15660.63		
Total	18062056	309			

In Table 6.23, the value of the calculated F ratio for the years is 29.14, whereas its table value with the significance level of 5% and degrees of freedom (30, 279) is 1.50.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[29.14]** > $F_{\alpha = 0.05 \text{ and d.f.} = (30, 279)}$ **[1.50]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of Polaris Software Lab Ltd. during the period under review.

With the help of One - Way ANOVA the HSD test can be tested as under.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of Polaris Software Lab Ltd. during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of Polaris Software Lab Ltd. during the period under review.

Table 6.24

Calculation of Tukey's HSD test

MSE	15660.63	HSD	1566.063
Sample Size	31	SQRT	39.57351
No. of Treatments	10	**HSD-cal**	**176.8936**
Alpha	0.05		
DOF	279		
Value of $q_{(0.05,10,279)}$	**4.47**		

$$HSD_{\text{Calculated}} [176.8936] > F_{\alpha = 0.05 \text{ and d.f.} = (10, 279)} [4.47]$$

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of Polaris Software Lab Ltd. during the period under review.

Here, there is an overall significant difference in interrelationship among all the PEARLS ratios not only with the help of ANOVA but also with the help of HSD test. Because the calculated value of HSD is much higher than tabulated value. By studying the magnitudes of the individual ratios with means, the Indian Information Technology companies can have interrelationship among all the calculated ratios of PEARLS.

6.8 Interrelationship of PEARLS Ratios in Rolta India Ltd.

Table 6.25 reveals the consolidated ratios of Rolta India Ltd. during the period under review. Here, total 31 ratios have been calculated. The interrelationship of each of the ratios with other ratios has been explained with the help of multiple correlations. Table 6.26 shows the multiple correlations among all the calculated ratios. It reveals from the table that out of total six ratios of Protection only P6 can be calculated. P6 explains the Solvency of the Rolta India Ltd. during the study period. Solvency ratio was highly positively correlated with Growth in Loans to Members of the company. The correlation between these two ratios was 0.87 which was the highest correlation among all the calculated ratios. The Solvency ratio was highly negatively correlated with Institutional Capital to Total Assets ratio. The Correlation between these two ratios was -0.94 which was the lowest correlation among all the calculated ratios. The correlation between Net Loans to Total Assets ratio and Member Share Capital to Total Assets ratio registered the highest i.e. 0.83 during the period under review. Financial Investments to Total Assets ratio and External Credit to Total Assets ratio were negatively correlated during the period under review. The Correlation between these two ratios was highly negative i.e. -0.82. The correlation between E2 i.e. Liquid Investment to Total Assets ratio and S7 i.e. Growth in Share Capital ratio was the highest during the study period. The Correlation recorded the highest which was 0.79. The Liquid Investment to Total Assets ratio shows the lowest correlation with Liquidity Reserves to Savings Deposits ratio, which was -0.63. The Financial Investment to Total Assets ratio was highly positively correlated with Growth in Share Capital where as it registered negative correlation with External Credit to Total Assets ratio. The Savings Deposits to Total Assets ratio of Rolta India Ltd. registered the highest positive correlation with Non-Earning Liquid Assets to Total Assets ratio during the study period. The Savings Deposits to Total Assets ratio showed the lowest correlation with E6 i.e. Total External Credit to Total Assets ratio. The E6 i.e. External Credit to Total Assets ratio was highly positively correlated with S1 i.e. Growth in Loans to Members, which was 0.65 and it had highly negatively correlated with Institutional Capital to Total Assets ratio which was -0.88. The Total Equity Share Capital to Total Assets ratio and Net Income to Total Assets ratio were having high positive correlation with each other. The E8 and S5 ratios were highly negatively

correlated with each other. The table showed that the ratio of Non-Earning Assets to Total Assets ratio and R1 i.e. Net Loan Income and L3 i.e. Non-Earning Liquid Assets to Total Assets ratio was highly positively correlated. The A2 ratio was having highly negative correlation with A3 ratios during the period under review. Table 6.26 showed that A3 and R9 i.e. Net Institutional and Transitory Capital to Non-earning Assets with Total Operating Expenses to Total Assets ratio highly positively correlated with each other. The R1 ratio of Rolta India Ltd. was highly positively correlated with R12 i.e. Net Income to Total Assets ratio during the period under review whereas the R1 ratio was highly negatively correlated with R9 ratio during the study period. The Total Liquid Investment Income to Total Liquid Investments ratio and Total Operating Expenses to Total Assets ratio were having the highest correlation between them during the period under review. The R3 i.e. Total Financial Investment Income to Total Financial Investment ratio was highly negatively correlated with R9 and S8 of Rolta India Ltd. The R4 ratio i.e. Total Non-Financial Investment Income to Non-Financial Investments with R11 i.e. Non – recurring Expenses to Total Assets ratio has registered the highest correlation during the period under review whereas R4 was highly negatively correlated with S2 i.e. Growth in Liquid Investments ratio. The R6 ratio had highly positive correlation with S3 i.e. Growth in Financial Investments whereas it had highly negative correlation with S1 i.e. Growth in Loans to Members ratio during the period under review. The ratio of R7 and S6 were highly positively correlated with each other whereas it highly negatively correlated with R8. The Total Gross Income Margin to Total Assets ratio and R12 were having the highest positive correlation between each other whereas R8 and S11 were highly negatively correlated with each other. The Total Operating Expenses to Total Assets ratio was highly positively correlated with Non-Recurring Expenses to Total Assets ratio. This ratio was highly negatively correlated with L3. The Non-recurring Expenses to Total Assets ratio was recorded highly positive correlation with S1, whereas it had highly negative correlation with R12. The Net Income to Total Assets ratio was highly positively correlated with Liquidity Reserves to Total Savings Deposits ratio during the period under review. The L1 ratio was highly negatively correlated with L2 and it was highly positively correlated with L3 during the period under review. The L2 ratio i.e. Liquidity Reserve to Saving Deposits ratio was related with other ratios almost negatively except S1. It had the highest negative correlation with L3 during the period under review. The Non-Earning Liquid

Assets to Total Assets ratio of company during the study period registered high correlation with S5 and it showed the highest negative correlation with S1. The growth of Loans to Members related highly positive with S2, The growth of Financial Investments related highly positive correlation with S7. The Growth in Savings Deposits and Growth in Institutional Capital related highly positively with each other during the period under review. The S6 related highly positively with S11 where as there was no correlation between S7 and S11 during the study period.

Hypothesis with respect to the Rolta India Ltd.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of Rolta India Ltd. during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of Rolta India Ltd. during the period under review.

Table 6.27

One – Way ANOVA of Rolta India Ltd

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	36639863	30	1221329	5.49	1.50
Within Groups	62068182	279	222466.6		
Total	98708045	309			

In Table 6.24, the value of the calculated F ratio for the years is 5.49, whereas its table value with the significance level of 5% and degrees of freedom (30, 279) is 1.50.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[5.49]** > $F_{\alpha = 0.05 \text{ and d.f.} = (30, 279)}$ **[1.50]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of Rolta India Ltd. during the period under review.

With the help of One - Way ANOVA the HSD test can be tested as under.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of Rolta India Ltd. during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of Rolta India Ltd. during the period under review.

Table 6.28

Calculation of Tukey's HSD test

MSE	222466.6	HSD	22246.66
Sample Size	31	SQRT	149.1531
No. of Treatments	10	**HSD-cal**	**666.7145**
Alpha	0.05		
DOF	279		
Value of $q_{(0.05,10,279)}$	**4.47**		

$$HSD_{\text{Calculated}} [666.7145] > F_{\alpha = 0.05 \text{ and d.f.} = (10, 279)} [4.47]$$

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of Rolta India Ltd. during the period under review.

Here, there is an overall significant difference in interrelationship among all the PEARLS ratios not only with the help of ANOVA but also with the help of HSD test. Because the calculated value of HSD is much higher than tabulated value. By studying the magnitudes of the individual ratios with means, the Indian Information Technology companies can have interrelationship among all the calculated ratios of PEARLS.

6.8 Interrelationship of PEARLS Ratios in Wipro

Table 6.29 reveals the consolidated ratios of Wipro during the period under review. Here, total 31 ratios have been calculated. The interrelationship of each of the ratios with other ratios has been explained with the help of multiple correlations. Table 6.30 shows the multiple correlations among all the calculated ratios. It reveals from the table that out of total six ratios of Protection only P6 can be calculated. P6 explains the Solvency of the Wipro during the study period. Solvency ratio was highly positively correlated with Growth in Total Assets of the company. The correlation between these two ratios was 0.67 which was the highest correlation among all the calculated ratios. The Solvency ratio was highly negatively correlated with Institutional Capital to Total Assets ratio. The Correlation between these two ratios was -0.99 which was the lowest correlation among all the calculated ratios. The correlation between Net Loans to Total Assets ratio and Total Non-Financial Investment Income to Total Non-Financial Investments ratio registered the highest i.e. 0.89 during the period under review. Financial Investments to Total Assets ratio and E5 i.e. Savings Deposits to Total Assets and L3 i.e. Non-Earning Liquid Assets to Total Liquid Assets ratio were negatively correlated during the period under review. The Correlation between these two ratios was highly negative i.e. -0.62. The correlation between E2 i.e. Liquid Investment to Total Assets ratio and E3 i.e. Financial Investments to Total Assets and L2 Liquidity Reserve to Savings Deposits ratio was the highest during the study period. The Correlation recorded the highest which was 0.77. The Liquid Investment to Total Assets ratio shows the lowest correlation with E5 i.e. Savings Deposits to Total Assets and L3 i.e. Non-Earning Liquid Assets to Total Liquid Assets ratio, which was -0.67. The Financial Investment to Total Assets ratio was highly positively correlated with Non Recurring Expenses to Total Assets Ratio. The Savings Deposits to Total Assets ratio of Wipro registered the highest positive correlation with Non-Earning Assets to Total Assets ratio during the study period. The Savings Deposits to Total Assets ratio showed the lowest correlation with A3 i.e. Net Institutional Capital and Non Interest bearing Liability to Total Non-Earning Assets ratio. The E6 i.e. External Credit to Total Assets ratio was highly positively correlated with L3 i.e. Non-earning Liquid Assets to Total Assets ratio, which was 0.89 and it had highly negatively correlated with Net Institutional Capital and Non-interest bearing Liability to Non-earning Assets ratio

which was -0.79. The Total Equity Share Capital to Total Assets ratio and Net Income to Total Assets ratio were having high positive correlation with each other. The E8 and S11 ratios were highly negatively correlated with each other. The table showed that the ratio of Non-Earning Assets to Total Assets ratio and L3 i.e. Non-Earning Liquid Assets to Total Assets ratio was highly positively correlated. The A2 ratio was having highly negative correlation with A3 ratios during the period under review. Table 6.30 showed that A3 and L2 i.e. Liquidity Reserve to Saving Deposit ratio highly positively correlated with each other. The R1 ratio of Wipro was highly positively correlated with R12 i.e. Net Income to Total Assets ratio during the period under review whereas the R1 ratio was highly negatively correlated with R7 ratio during the study period. The Total Liquid Investment Income to Total Liquid Investments ratio and Non Earning Liquid Assets to Total Assets ratio were having the highest correlation between them during the period under review. The R3 i.e. Total Financial Investment Income to Total Financial Investment ratio was highly negatively correlated with S2 of Wipro. The R4 ratio i.e. Total Non-Financial Investment Income to Non-Financial Investments and S2 ratio has registered the highest correlation during the period under review whereas R4 was highly negatively correlated with R11 and S5. The R6 ratio had highly positive correlation with R12 i.e. Net Income to Total Assets whereas it had highly negative correlation with S1, S2 and S3. The ratio of R7 and R11 were highly positively correlated with each other whereas it highly negatively correlated with R9. The Total Gross Income Margin to Total Assets ratio and S6 were having the highest positive correlation between each other whereas R8 and S2 were highly negatively correlated with each other. The Total Operating Expenses to Total Assets ratio was highly positively correlated with Net Income to Total Assets ratio. This ratio was highly negatively correlated with S11. The Non-recurring Expenses to Total Assets ratio was recorded highly positive correlation with S7, whereas it had highly negative correlation with R12. The Net Income to Total Assets ratio was highly positively correlated with Growth in Savings Deposits during the period under review. The L1 ratio was highly negatively correlated with L3 and it was highly positively correlated with L2 during the period under review. The L2 ratio i.e. Liquidity Reserve to Saving Deposits ratio was related with other ratios almost negatively except S2, S3 and S7. It had the highest negative correlation with L3 during the period under review. The Non-Earning Liquid Assets to Total Assets ratio of company during the study period registered high correlation

with S6 and it showed the highest negative correlation with S2. The growth of Loans to Members related highly positive with S11, The growth of Financial Investments related highly positive correlation with S11. The Growth in Savings Deposits and Growth in Institutional Capital related highly positively with each other during the period under review. The S6 related highly negatively with S11 where as there was very low correlation between S7 and S11 during the study period.

Hypothesis with respect to the Wipro

Null hypothesis,

H_o : There is no significance interrelationships among ratios of Wipro during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of Wipro during the period under review.

Table 6.31

One – Way ANOVA of Wipro

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	4313789.77	30.00	143792.99	9.92	1.50
Within Groups	4044163.33	279.00	14495.21		
Total	8357953.1	309			

In Table 6.31, the value of the calculated F ratio for the years is 9.92, whereas its table value with the significance level of 5% and degrees of freedom (30, 279) is 1.50.

Component—I.T. Companies: For this component,

$F_{\text{Calculated}}$ **[9.92]** > $F_{\alpha = 0.05 \text{ and d.f.} = (30, 279)}$ **[1.50]**

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of Wipro during the period under review.

With the help of One - Way ANOVA the HSD test can be tested as under.

Null hypothesis,

H_o : There is no significance interrelationships among ratios of Wipro during the period under review.

Alternate hypothesis,

H_1 : There is significance interrelationships among ratios of Wipro during the period under review.

Table 6.32

Calculation of Tukey's HSD test

MSE	14495.21	HSD	1449.521
Sample Size	31	SQRT	38.07258
No. of Treatments	10	**HSD-cal**	**170.1844**
Alpha	0.05		
DOF	279		
Value of $q_{(0.05,10,279)}$	**4.47**		

$$HSD_{\text{Calculated}} [170.1844] > F_{\alpha = 0.05 \text{ and d.f.} = (10, 279)} [4.47]$$

Hence, the null hypothesis, H_o should be rejected

Inference: This means that there is a significant interrelationship among the ratios of Wipro during the period under review.

Here, there is an overall significant difference in interrelationship among all the PEARLS ratios not only with the help of ANOVA but also with the help of HSD test. Because the calculated value of HSD is much higher than tabulated value. By studying the magnitudes of the individual ratios with means, the Indian Information Technology companies can have interrelationship among all the calculated ratios of PEARLS.

7.1 SUMMARY

Research in common talk refers to a search for knowledge. One can also define research as a scientific and systematic search for pertinent information on a specific topic. The purpose of research is to discover answers to questions through the application of scientific procedures. The main aim of research is to find out the truth which is hidden and which has not been discovered as yet. Accounting also is an area of research. However, in accountancy, new ideas, new thoughts and new concepts are time base factors. Different Performance Measurement tools are also available such as Accounting Ratio Analysis, CAMEL, PEARLS, etc. Here, the current study is based on PEARLS analysis of selected Indian Information Technology Company.

The Indian **Information Technology industry** accounts for a 7.3% of the country's GDP and export earnings as of financial year 2011, while providing employment to a significant number of its tertiary sector workforce. More than 2.5 million people are employed in the sector either directly or indirectly, making it one of the biggest job creators in India and a mainstay of the national economy. In 2010-11, annual revenues from IT-BPO sector is estimated to have grown over US$76 billion compared to China with $35.76 billion and Philippines with $8.85 billion. India's outsourcing industry is expected to increase to US$225 billion by 2020. The Information Technology Industry is thus, very important industry for Nation’s development and growth. The companies fall under this industry will have to be assessed to have proper industry picture. We had an example of “Satyam Saga” which was the black spot for this developing industry. Here, researcher will try to assess the financial stability of the selected companies using PEARLS technique developed by WOCCU.

PEARLS is A tool for Financial Stabilization, Monitoring and Evaluation. PEARLS is a financial performance monitoring system designed to offer management guidance for institutions. PEARLS is also a supervisory tool for regulators. PEARLS can be used to compare and rank institutions; it can provide comparisons among peer institutions in one country or across countries.

PEARLS is a set of financial ratios or indicators that help to standardize terminology between institutions. In total, there are 44 quantitative financial indicators that

facilitate an integral analysis of the financial condition of any institution. The purpose for including a myriad of indicators is to illustrate how change in one ratio has ramifications for numerous other indicators. Each indicator has a prudential norm or associated goal. The target goal, or standard of excellence for each indicator is put forth by the World Council of Credit Unions, Inc. (WOCCU). PEARLS, primarily a management tool for institutions, can also be used as a supervisory tool by regulators. As a management tool, PEARLS signals problems to managers before the problems become detrimental. For boards of directors, PEARLS provides a tool to monitor management's progress toward financial goals. For regulators, PEARLS offers indicators and standards to supervise the performance of institutions.

PEARLS is a system of financial ratios which the World Council of Credit Unions (WOCCU) employs. Standing for Protection, Effective Financial Structure, Asset Quality, Rates of Return, Liquidity, and Signs of Growth, the PEARLS system was originally designed and implemented with Guatemalan credit unions in the late 1980s. WOCCU now uses it worldwide to monitor the performance of Institutions.

Present study covers the PEARLS analysis of selected Indian Information Technology companies listed on National Stock Exchange for ten consecutive financial years. The period of the study will start from 1st April, 2000 to 31st March, 2010. Researcher has selected the base year 2000 - 01. This year was normal for the purpose of analysis & evaluation.

7.2 FINDINGS

CHAPTER – 1

Information technology industry: an overview

1.1 The Indian Information Technology industry accounts for a 7.3% of the country's GDP and export earnings as of financial year 2011.

1.2 More than 2.5 million people are employed in the sector either directly or indirectly, making it one of the biggest job creators in India.

1.3 In 2010-11, annual revenues from IT-BPO sector is estimated to have grown over US$76 billion compared to China with $35.76 billion and Philippines with $8.85 billion.

1.4 India's outsourcing industry is expected to increase to US$225 billion by 2020.

1.5 The Indian Software and Services Industry (excluding hardware) is estimated to grow by 19%.

1.6 The compounded annual growth rate of the Indian IT services industry has been over 50%.

1.7 The software export from Indian IT industry is likely to reach 80 billion US dollars in the year 2012.

1.8 The share of technology industry in India's GDP is expected to reach 7.5% in 2012.

1.9 The study of NASSCOM has revealed that the growth of India's IT industry has prompted the growth of Indian exports by almost 36%.

CHAPTER – 2

Review of liteRatuRe

This chapter includes the Review of Literature related to current study. A literature review constitutes an essential chapter of this research work. Here, collected literature reviews are secondary sources, and as such, do not report any new or original

experimental work. The researcher has presented various study related to current Study.

CHAPTER – 3

ReseaRch methodology

The title of the present study is **"AN ASSESSMENT OF INDIAN INFORMATION TECHNOLOGY COMPANIES LISTED ON NATIONAL STOCK EXCHANGE BY PEARLS ANALYSIS: AN ANALYTICAL STUDY"** which covers the period of the ten years from 2000-01 to 2009-10. The study is based on secondary data published by the selected Information Technology Companies in their Annual Reports and Accounts. The main objective of the present study is to measure the Financial Stability using PEARLS Analysis of selected units. Various statistical measures like One-way ANOVA, Two-way ANOVA, Mean, Standard Deviation, C. V., Tukey's HSD Test have been applied to test the validity of two hypothesis namely (1) Null Hypothesis and (2) Alternative Hypothesis. Finally the limitations of present study have also been presented.

CHAPTER – 4

ConCeptual framework of pearls analysis

This chapter has included the conceptual Framework of PEARLS given by WOCCU. This chapter also includes the formula of each of the component of Protection, Effective Financial Structure, Assets Quality, Rates of Return and Costs, Liquidity and Sign of Growth with its proper meaning and explanation. This chapter also contains the comparison of PEARLS Monitoring System with CAMEL system. It includes limitations and advantages of PEARLS.

CHAPTER – 5

ANALYSIS OF selected Information technology companies through pearls analysis

This chapter includes the analysis of selected I. T. Companies in detail. The major findings of this study are as under.

5.1 Infosys stood the best Information Technology Company in the Solvency ratio.

5.2 There is a significant difference in the Solvency ratio within selected Indian Information Technologies Companies during period under review.

5.3 HCL Technologies stood first Information Technology Company in Total Loans to Total Assets ratio during the period under study.

5.4 GTL Ltd. stood the best performer Information Technology Company in Total Liquid Investments to Total Assets ratio and secured the first rank. The second and third rank secured by HCL Technologies Ltd and Rolta India Ltd. respectively.

5.5 HCL Technologies again stood first in Total Financial Investments to Total Assets ratio out of selected companies.

5.6 The Liquid Investments to Total Assets ratio differs significantly within Selected Information Technology Companies as the calculated value of F-test two way ANOVA is greater than tabulated value.

5.7 Infosys comes out as out performer Information Technology Company as it has not having external credit.

5.8 Infosys again stood first among selected I. T. companies in Member Share Capital to Total Assets ratio. The second and third rank secured by Wipro and HCL Technologies respectively.

5.9 Polaris Software Lab Ltd. secured first rank in Institutional Capital to Total Assets ratio during the study period.

5.10 The Total Saving Deposits to Total Assets ratio differs significantly within Selected Information Technology Companies during the period under review.

5.11 HCL Technologies stood first among selected Information Technologies companies in the Non – Earning Assets to Total Assets ratio during the period under review.

5.12 HCL Technologies comes out as the best performer Information Technology Company in Institutional and Non – Interest Bearing Liabilities to Non – Earning Assets ratio.

5.13 HCL Technologies has the highest Net Operating Profit after Tax to Total Sales and Services ratio.

5.14 HCL Technologies again comes out as the best performer Information Technology Company in Liquid Investment Income to Total Liquid Investments ratio.

5.15 Infosys stood first in Financial Investment Income to Total Financial Investments ratio.

5.16 HCL Info System secured the first rank in Other Income to Total Income ratio during the period under review. The second and third rank secured by Polaris Software Lab Ltd. and GTL Ltd. respectively.

5.17 Infosys comes out as the best performer Information Technology Company in Interest Cost on External Credit to Total External Credit ratio.

5.18 The Institutional Capital to Total Assets ratio does not differ significantly within the years.

5.19 GTL Ltd. comes out as the best performer Information Technology Company in Dividend Cost on Equity Capital to Total Equity Share Capital ratio.

5.20 CMC Info Tech Ltd. secured first rank in Total Gross Income Margin to Total Assets ratio.

5.21 CMC Info Tech Ltd. again comes out as out performer Information Technology Company in Total Operating Expenses to Total Assets ratio. The second and third rank secured by GTL Ltd. and Rolta India Ltd. respectively.

5.22 CMC Info Tech Ltd. again secured first rank in Total Non – Recurring Expenses to Total Assets ratio.

5.23 CMC Info Tech Ltd. consecutively fourth time stood first Information Technology Company in Net Operating Profit after Tax to Total Assets ratio.

5.24 GTL Ltd. was the least rank company in Net Operating Profit after Tax to Total Assets of selected companies during study period as it had the highest average among selected companies.

5.25 CMC Info Tech Ltd. again stood first Information Technology Company in Short Term Investments and Liquid Assets to Total Savings Deposit ratio and HCL Technologies was the least rank company in Short Term Investment + Liquid Assets – Short Term Payable to Total Saving Deposits ratio of selected companies during study period as it had the lowest average among selected companies.

5.26 Infosys comes out as the best performer Information Technology Company in Liquidity Reserves to Total Savings Deposit ratio. The second and third rank secured by CMC Info Tech Ltd. and GTL Ltd. respectively.

5.27 HCL Technologies was the least rank company in Liquidity Reserve to Total Savings Deposits ratio of selected companies during study period as it had the lowest average among selected companies.

5.28 HCL Technologies secured the first and Infosys was the least rank company in Non – Earning Liquid Assets to Total Assets ratio of selected companies during study period as it had the highest average among selected companies.

5.29 HCL Info System Ltd. comes out as the best performer Information Technology Company in Growth in Loans. The second and third rank secured by Rolta India Ltd. and CMC Info Tech Ltd. respectively. The forth rank onwards to seventh rank secured HCL Technologies, Infosys, Wipro and GTL Ltd. respectively. Polaris Software Lab Ltd. was the least rank company in growth of Loan.

5.30 CMC Info Tech Ltd. stood first in Growth in Liquid Investments during the period under review.

5.31 Infosys secured first rank in Growth in Financial Investments. The second and third rank secured by Wipro and GTL Ltd. respectively. The forth rank onwards to seventh rank secured HCL Info System Ltd., Rolat India Ltd. and CMC Info Tech Ltd. respectively. Polaris Software Lab Ltd. was the least rank company in growth of Financial Investments during the period under review.

5.32 Polaris Software Lab Ltd. was the least rank company in growth of Financial Investments during the period under review.

5.33 Infosys secured first rank in Growth in External Credit.

5.34 Infosys stood first and CMC Info Tech Ltd. was the least rank company in growth of Share Capital during the period under review.

5.35 Wipro comes out as the best performer Information Technology Company in growth of Institutional Capital. The second and third rank secured by HCL Info System Ltd. and Polaris Software Lab Ltd. respectively. The forth rank onwards to seventh rank secured Rolta India Ltd., CMC Info Tech Ltd., HCL Technologies and Infosys respectively.

5.36 GTL Ltd. was the least rank company in growth of Reserves during the period under review.

5.37 Infosys secured first rank and CMC Info Tech Ltd. was the least rank company in growth of Total Assets during the period under review.

CHAPTER – 6

Interrelationship of pearls analysis

This chapter includes the interrelationship of PEARLS ratios. Company wise interrelationship has been found out with the help of multiple correlations. The major findings of this chapter are as under.

→ CMC Info Tech Ltd.

6.1 The Solvency ratio was highly positively correlated with Total Interest Cost on Shares to Total Equity Share Capital.

6.2 The Solvency ratio was highly negatively correlated with Total Equity Share Capital to Total Assets ratio.

6.3 Financial Investments to Total Assets ratio and Net Loans to Total Assets ratio were negatively correlated during the period under review.

6.4 The correlation between Net Loans to Total Assets ratio and Savings Deposits to Total Assets ratio registered the highest i.e. 0.90 during the period under review.

6.5 The correlation among E2 i.e. Liquid Investment to Total Assets ratio and E8 i.e. Institutional Capital to Total Assets ratio and R2 i.e. Total Liquid Investment Income to Total Financial Investments was the highest during the study period.

6.6 The Savings Deposits to Total Assets ratio showed the lowest correlation with E7 i.e. Total Equity Share Capital to Total Assets ratio. The E6 i.e. External Credit to Total Assets ratio and S1 i.e. Growth in Loans to Members were highly positively correlated with each other where as E6 and E8 were having high negative correlation with each other.

6.7 The A2 ratio was having highly negative correlation with R4 ratio during the period under review.

6.8 The R1 ratio of CMC Info Tech Ltd. was highly positively correlated with R7 ratio during the period under review whereas The R1 ratio of CMC Info Tech Ltd. was highly positively correlated with R7 ratio during the period under review

6.9 The R3 ratio was highly negatively correlated with R4 of CMC Info Tech Ltd.

6.10 The Total Interest Cost on External Credit to Total External Credit ratio (R6) was having the highest correlation with The Non-Recurring Income or Expense to Total Assets ratio (R11).

6.11 The Total Gross Income Margin to Total Assets ratio and R9 were having the highest positive correlation between each other whereas R8 and L1 were highly negatively correlated with each other.

6.12 The L1 ratio was highly negatively correlated with L2 and it was highly positively correlated with S8 during the study period.

→ GTL Ltd.

6.13 The Solvency ratio was highly positively correlated with External Credit to Total Assets ratio of the company.

6.14 The correlation between Net Loans to Total Assets ratio and Total Gross Income Margin to Total Assets ratio registered the highest i.e. 0.81 during the period under review.

6.15 Financial Investments to Total Assets ratio and Total Financial Investment Income to Total Financial Investments ratio were negatively correlated.

6.16 The correlation among E2 i.e. Liquid Investment to Total Assets ratio and E3 i.e. Financial Investments to Total Assets ratio and R6 i.e. Total Interest Cost on External Credit to Total External Credit was the highest during the study period.

6.17 The Liquid Investment to Total Assets ratio shows the lowest correlation with Growth in Institutional Capital.

6.18 The Financial Investment to Total Assets ratio was highly positively correlated with Total Gross Income Margin to Total Assets ratio where as it registered negative correlation with Financial Investments to Total Assets ratio.

6.19 The Savings Deposits to Total Assets ratio showed the lowest correlation with E7 i.e. Total Equity Share Capital to Total Assets ratio.

6.20 The E6 i.e. External Credit to Total Assets ratio and S11 i.e. Growth in Total Assets were highly positively correlated with each other whereas E6 and L2 were having high negative correlation with each other.

6.21 The Total Equity Share Capital to Total Assets ratio and Non – Earning Assets to Total Assets ratio were having high positive correlation with each other.

6.22 The A2 ratio was having highly negative correlation with R2 ratio during the period under review.

6.23 The A3 and S2 & S3 i.e. Net Institutional and Transitory Capital to Non-earning Assets with Growth in Liquid Assets and Growth in Financial Investments were highly positively correlated with each other.

6.24 The R1 ratio of GTL Ltd. was highly positively correlated with L2 ratio during the period under review whereas the R1 ratio was highly negatively correlated with R8 ratio during the study period.

6.25 The R4 ratio i.e. Total Non-Financial Investment Income to Total Non-Financial Investments ratio showed the highest correlation with Liquidity Reserves to Savings Deposits ratio.

6.26 The Total Gross Income Margin to Total Assets ratio and R12 were having the highest positive correlation between each other whereas R8 and L2 were highly negatively correlated with each other.

→ HCL Info System Ltd.

6.27 Solvency ratio was highly positively correlated with Net Loans to Total Assets ratio of the company.

6.28 The correlation between Net Loans to Total Assets ratio and Total Equity Share Capital to Total Assets ratio registered the highest i.e. 0.92 during the period under review.

6.29 Financial Investments to Total Assets ratio and (E5) Savings Deposits to Total Assets & (L3) Non-Earning Liquid Assets to Total Assets ratio were negatively correlated.

6.30 The correlation among E2 i.e. Liquid Investment to Total Assets ratio and E3 i.e. Financial Investments to Total Assets ratio was the highest during the study period.

6.31 The Financial Investment to Total Assets ratio was highly positively correlated with Liquidity Reserve to Savings Deposits ratio where as it registered negative correlation with Financial Investments to Total Assets ratio.

6.32 The Savings Deposits to Total Assets ratio showed the lowest correlation with L2 i.e. Liquidity Reserve to Total Savings Deposits ratio.

6.33 The E6 i.e. External Credit to Total Assets ratio and S6 i.e. External Credit to Total Assets were highly positively correlated with each other whereas E6 and R1 and R4 were having high negative correlation with each other.

6.34 The A2 ratio was having highly negative correlation with A3 ratio during the period under review.

6.35 The Total Liquid Investment Income to Total Liquid Investments ratio and Total Gross Income Margin to Total Assets ratio were having the highest correlation between them during the period under review.

6.36 Total Non-Financial Investment Income to Non-Recurring Expenses to Total Assets ratio showed the highest correlation during the period under review.

6.37 The Total Interest Cost on External Credit to Total External Credit ratio (R6) was having the highest correlation with Total Operating Expenses to Total Assets ratio (R9).

6.38 The Total Operating Expenses to Total Assets ratio was highly positively correlated with Net Income to Total Assets ratio.

6.39 The Non-recurring Expenses to Total Assets ratio was recorded highly positive correlation with R12.

6.40 The L1 ratio was highly negatively correlated with L3 and it was highly positively correlated with L2 during the study period.

→ HCL Technologies

6.41 Solvency ratio was highly positively correlated with External Credit to Total Assets ratio of the company.

6.42 The correlation between Net Loans to Total Assets ratio and Liquid Investments to Total Assets ratio registered the highest.

6.43 Financial Investments to Total Assets ratio and (E5) Savings Deposits to Total Assets & (L3) Non-Earning Liquid Assets to Total Assets ratio were negatively correlated during the period under review.

6.44 The correlation among E2 i.e. Liquid Investment to Total Assets ratio and E3 i.e. Financial Investments to Total Assets ratio was the highest during the study period.

6.45 The Financial Investment to Total Assets ratio was highly positively correlated with Total Interest Cost on shares to Total Equity Share Capital ratio.

6.46 The Savings Deposits to Total Assets ratio showed the lowest correlation with L2 i.e. Liquidity Reserve to Total Savings Deposits ratio.

6.47 The E6 i.e. External Credit to Total Assets ratio and S11 i.e. Growth in Total Assets were highly positively correlated with each other whereas E6 and E8 were having high negative correlation with each other.

6.48 The Total Equity Share Capital to Total Assets ratio and Non-Earning Assets to Total Assets & Total Gross Income Margin to Total Assets ratio were having high positive correlation with each other.

6.49 Net Institutional and Transitory Capital to Non-earning Assets with Liquidity Reserves to Total Savings Deposits ratio highly positively correlated with each other.

6.50 The Total Liquid Investment Income to Total Liquid Investments ratio and Total Financial Investment Income to Total Financial Investments ratio were having the highest correlation between them during the period under review.

6.51 The R4 ratio i.e. Total Non-Financial Investment Income to Total Non-Financial Investments ratio has registered the highest correlation during the period under review whereas R4 was highly negatively correlated with R8 i.e. Total Gross Income Margin to Total Assets ratio.

6.52 The Total Interest Cost on External Credit to Total External Credit ratio (R6) was having the highest correlation with Net Income to Average Total Assets (R12).

6.53 The ratio of R7 and R11 were highly positively correlated with each other whereas it highly negatively correlated with L3.

6.54 The Total Gross Income Margin to Total Assets ratio and R12 were having the highest positive correlation between each other whereas R8 and L2 were highly negatively correlated with each other.

6.55 The Total Operating Expenses to Total Assets ratio was highly positively correlated with Non-Earning Liquid Assets to Total Assets ratio.

6.56 The Non-recurring Expenses to Total Assets ratio was recorded highly positive correlation with R12, whereas it had highly negative correlation with S6.

6.57 The Net Income to Total Assets ratio was highly positively correlated with Growth in Share Capital ratio during the period under review.

6.58 The L1 ratio was highly negatively correlated with L2 and it was highly positively correlated with L3 during the period under review.

→ Infosys

6.59 The Solvency ratio was highly negatively correlated with Institutional Capital to Total Assets ratio.

6.60 Financial Investments to Total Assets ratio and Growth in Loans to Members & Growth in Institutional Capital ratio were negatively correlated during the period under review.

6.61 The correlation among E2 i.e. Liquid Investment to Total Assets ratio and E3 i.e. Financial Investments to Total Assets ratio was the highest during the study period.

6.62 The Financial Investment to Total Assets ratio was highly positively correlated with Short Term Investments and Liquid Assets to Total Savings Deposit ratio.

6.63 The Savings Deposits to Total Assets ratio of Infosys registered the highest positive correlation with Non-Earning Liquid Assets to Total Savings Deposits ratio during the study period.

6.64 The Savings Deposits to Total Assets ratio showed the lowest correlation with A3 i.e. Net Institutional Capital to Non – Earning Assets ratio.

6.65 The E6 i.e. External Credit to Total Assets ratio was nil during the period under review in Infosys because there was no External Credit was available in the staid company.

6.66 The E8 and L1 ratios were negatively correlated with each other. The table showed that the ratio of Non-Earning Assets to Total Assets ratio and Non-Earning Liquid Assets to Total Liquid Assets ratio was highly positively correlated.

6.67 The A2 ratio was having highly negative correlation with A3 and A3 ratios during the period under review.

6.68 The R1 ratio of Infosys was highly positively correlated with L2 i.e. Liquidity Reserves to Saving Deposits ratio during the period under review whereas the R1 ratio was highly negatively correlated with L1 ratio during the study period.

6.69 The Total Liquid Investment Income to Total Liquid Investments ratio and Growth in Liquid Investments were having the highest correlation between them during the period under review.

6.70 The R3 i.e. Total Financial Investment Income to Total Financial Investment ratio was highly negatively correlated with R9 of Infosys.

6.71 The R4 ratio i.e. Total Non-Financial Investment Income to Growth in Loans to Members has registered the highest correlation during the period under review.

6.72 The ratio of R7 and S3 were highly positively correlated with each other whereas it highly negatively correlated with S8.

6.73 The Total Operating Expenses to Total Assets ratio was highly positively correlated with Non Income to Total Assets ratio. This ratio was highly negatively correlated with S8.

6.74 The Net Income to Total Assets ratio was highly positively correlated with Liquidity Reserve to Total Savings Deposits ratio during the period under review.

6.75 The L1 ratio was highly negatively correlated with L2 and it was highly positively correlated with S3 during the period under review.

→ Polaris Software Lab Ltd.

6.76 The Solvency ratio was highly positively correlated with Growth in Total Assets of the company.

6.77 The correlation between Net Loans to Total Assets ratio and Net Institutional and Non Interest bearing Liabilities to Non Earning Assets ratio registered the highest.

6.78 Financial Investments to Total Assets ratio and Total Financial Investment Income to Total Financial Investments ratio were negatively correlated during the period under review.

6.79 The correlation among E2 i.e. Liquid Investment to Total Assets ratio and L1 i.e. Short Term Investments and Liquid Investments to Total Savings Deposits ratio was the highest during the study period.

6.80 The Liquid Investment to Total Assets ratio shows the lowest correlation with Total Interest Cost on External Credit to Total External Credit ratio.

6.81 The Savings Deposits to Total Assets ratio of Polaris Software Lab Ltd. registered the highest positive correlation with Non-Earning Assets to Total Assets ratio during the study period.

6.82 The Savings Deposits to Total Assets ratio showed the lowest correlation with R3 i.e. Total Financial Investment Income to Total Financial Investments ratio.

6.83 The Total Equity Share Capital to Total Assets ratio and Net Income to Total Assets ratio were having high positive correlation with each other.

6.84 The A2 ratio was having highly negative correlation with L2 ratios during the period under review.

6.85 The R1 ratio of Polaris Software Lab Ltd. was highly positively correlated with R12 i.e. Net Income to Total Assets ratio during the period under review whereas the R1 ratio was highly negatively correlated with L2 ratio during the study period.

6.86 The R3 i.e. Total Financial Investment Income to Total Financial Investment ratio was highly negatively correlated with L3 of Polaris Software Lab Ltd.

→ Rolta India Ltd.

6.87 The correlation between Net Loans to Total Assets ratio and Member Share Capital to Total Assets ratio registered the highest.

6.88 Financial Investments to Total Assets ratio and External Credit to Total Assets ratio were negatively correlated during the period under review.

6.89 The correlation between E2 i.e. Liquid Investment to Total Assets ratio and S7 i.e. Growth in Share Capital ratio was the highest during the study period.

6.90 The Financial Investment to Total Assets ratio was highly positively correlated with Growth in Share Capital.

6.91 The Savings Deposits to Total Assets ratio of Rolta India Ltd. registered the highest positive correlation with Non-Earning Liquid Assets to Total Assets ratio during the study period.

6.92 The E6 i.e. External Credit to Total Assets ratio was highly positively correlated with S1 i.e. Growth in Loans to Members.

6.93 The Total Equity Share Capital to Total Assets ratio and Net Income to Total Assets ratio were having high positive correlation with each other.

6.94 The A2 ratio was having highly negative correlation with A3 ratios during the period under review.

6.95 The R1 ratio of Rolta India Ltd. was highly positively correlated with R12 i.e. Net Income to Total Assets ratio during the period under review.

6.96 The Total Liquid Investment Income to Total Liquid Investments ratio and Total Operating Expenses to Total Assets ratio were having the highest correlation between them during the period under review.

6.97 The R4 ratio i.e. Total Non-Financial Investment Income to Non-Financial Investments with R11 i.e. Non – recurring Expenses to Total Assets ratio has registered the highest correlation during the period under review.

6.98 The ratio of R7 and S6 were highly positively correlated with each other whereas it highly negatively correlated with R8.

6.99 The Total Operating Expenses to Total Assets ratio was highly positively correlated with Non-Recurring Expenses to Total Assets ratio.

6.100 The L1 ratio was highly negatively correlated with L2 and it was highly positively correlated with L3 during the period under review.

→ Wipro

6.101 The Solvency ratio was highly negatively correlated with Institutional Capital to Total Assets ratio.

6.102 The correlation between Net Loans to Total Assets ratio and Total Non-Financial Investment Income to Total Non-Financial Investments ratio registered the highest.

6.103 Financial Investments to Total Assets ratio and E5 i.e. Savings Deposits to Total Assets and L3 i.e. Non-Earning Liquid Assets to Total Liquid Assets ratio were negatively correlated during the period under review.

6.104 The correlation between E2 i.e. Liquid Investment to Total Assets ratio and E3 i.e. Financial Investments to Total Assets and L2 Liquidity Reserve to Savings Deposits ratio was the highest during the study period.

6.105 The Liquid Investment to Total Assets ratio shows the lowest correlation with E5 i.e. Savings Deposits to Total Assets and L3 i.e. Non-Earning Liquid Assets to Total Liquid Assets ratio.

6.106 The Financial Investment to Total Assets ratio was highly positively correlated with Non Recurring Expenses to Total Assets Ratio.

6.107 The Savings Deposits to Total Assets ratio of Wipro registered the highest positive correlation with Non-Earning Assets to Total Assets ratio during the study period.

6.108 The Savings Deposits to Total Assets ratio showed the lowest correlation with A3 i.e. Net Institutional Capital and Non Interest bearing Liability to Total Non-Earning Assets ratio.

6.109 The Total Equity Share Capital to Total Assets ratio and Net Income to Total Assets ratio were having high positive correlation with each other.

6.110 The A2 ratio was having highly negative correlation with A3 ratios during the period under review.

6.111 The R1 ratio of Wipro was highly positively correlated with R12 i.e. Net Income to Total Assets ratio during the period under review whereas the R1 ratio was highly negatively correlated with R7 ratio during the study period.

6.112 The Total Liquid Investment Income to Total Liquid Investments ratio and Non Earning Liquid Assets to Total Assets ratio were having the highest correlation between them during the period under review.

6.113 The R4 ratio i.e. Total Non-Financial Investment Income to Non-Financial Investments and S2 ratio has registered the highest correlation during the period under review whereas R4 was highly negatively correlated with R11 and S5.

6.114 The R6 ratio had highly positive correlation with R12 i.e. Net Income to Total Assets whereas it had highly negative correlation with S1, S2 and S3.

6.115 The Total Gross Income Margin to Total Assets ratio and S6 were having the highest positive correlation between each other whereas R8 and S2 were highly negatively correlated with each other.

6.116 The Total Operating Expenses to Total Assets ratio was highly positively correlated with Net Income to Total Assets ratio.

6.117 The Non-recurring Expenses to Total Assets ratio was recorded highly positive correlation with S7, whereas it had highly negative correlation with R12.

6.118 The Net Income to Total Assets ratio was highly positively correlated with Growth in Savings Deposits during the period under review.

6.119 The L1 ratio was highly negatively correlated with L3 and it was highly positively correlated with L2 during the period under review.

6.120 The L2 ratio i.e. Liquidity Reserve to Saving Deposits ratio was related with other ratios almost negatively except S2, S3 and S7.

7.3 SUGGESTIONS

Major suggestions to selected Information Technology Companies are given as under.

- I. T. companies should increase growth spread (R7) by means of adjustments to the savings and loan interest rates. This will allow an increase in the allocations (R9) without affecting net earnings.
- I. T. companies should set the optimal level of this indicator in terms of cash equivalents (E4) and the return on this investment (R3) with regard to other investment alternatives (R1, R3-R4).
- Each company should Liquidate non-earning assets (A5) and invest them in earning assets.
- Selected I. T. companies should minimize idle (L3) and less profitable liquidity (L1).

- Each I. T. Company should promote savings protection mechanisms: insurance, cash reserves and others that might arise.
- I. T. companies should use any excess cash equivalents (E4) returning (R2) less than the savings rates on loans to pay off these loans in advance.
- Information Technology companies should not allow the percentage of institution capital growth (S5) to be greater than the percentage of growth in total assets (S1).
- I. T. companies should review and evaluate the provisions accumulated and transfer the excess to the undistributed reserve.
- Indian Information Technology companies should make write-offs on a quarterly basis, taking into account loans delinquent over 12 months at the date of the write-off and do not wait until the end of the year.
- Each I. T. Company should follow the strategies mentioned in E8 - Institutional capital, to increase this item.
- Optimize the financial structure (E1-E8) and returns (R1-R7).
- Information Technology companies eliminate superfluous expenses and establish discipline in expenses of leadership and employee bodies.
- Indian I. T. companies should be conservative in building provisions, i.e., expect higher delinquency and establish higher allocations than what is necessary during the year so that at the end of the year the adjustment of the operating statement will be facilitated to eliminate unnecessary allocations and meet recommended financial disciplines.
- Indian Information Technology companies' should optimize the financial structure (E1-E8).

7.4 SCOPE FOR FURTHER STUDY

PEARLS is a set of financial ratios or indicators that help to standardize terminology between institutions. In total, there are 44 quantitative financial indicators that facilitate an integral analysis of the financial condition of any financial institution. The purpose for including a myriad of indicators is to illustrate how change in one ratio has ramifications for numerous other indicators. Each indicator has a prudential norm or associated goal. The target goal, or standard of excellence for each indicator is put forth by the World Council of Credit Unions, Inc. Here the researcher has applied the PEARLS system to Indian Information Technology Companies. To the best of researcher's knowledge and based on the review of literature it can be said that this is the first attempt to implement the PEARLS system in India and in the Information Technology Companies. It was found in the literature that the PEARLS system has been mostly used in Financial Institutions. The review of literature also reveals that this system has been utilized in South Africa, Bangladesh, Shrilanka, United States, Australia, etc. As far as India is concern the PEARLS system has been implemented first time.

There is also a further scope for research on PEARLS in India. The further study can be carried out under following areas.

- To Implement the PEARLS monitoring system to Indian Commercial Banks and comparative study of Private and Public Sector banks can be done.
- To implement the PEARLS system to Indian Non-Banking Financial Companies.
- To apply this system to Micro Finance Institutes of India and comparative study of Indian MFIs with other country's MFIs can be done.
- PEARLS monitoring system can be applied to other industry and intra industry as well as inter industry analysis can be done.

7.5 CONCLUSION

The IT industry has emerged as one of the most important industries in the Indian economy contributing significantly to the growth of the economy. The IT industry of India got a major boost from the liberalization of the Indian economy. India's software exports have grown at an annual average rate of more than 50% since 1991. The structure of the IT industry is quite different from other industries in the Indian economy. The IT industry of India is hugely dependant on skilled manpower. Primarily a knowledge based industry, the IT industry of India has reordered significant success due to the huge availability of skilled personnel in India. The Information Technology Industry is thus, very important industry for Nation's development and growth. PEARLS is a financial performance monitoring system designed to offer management guidance for credit unions and other savings institutions. PEARLS is also a supervisory tool for regulators. The companies fall under Information Technology Industry will have to be assessed to have proper industry picture. The study reveals that selected companies have been working well during the study period. It is also observed that Infosys does not have any external credit so its creditworthiness is the highest amongst selected companies during the period under review. It was also found that GTL and CMC faced problem in many ratios and has to solve this problem. It can also be concluded that the financial performance of all the selected companies is comparatively good.

B I B L I O G R A P H Y

1. A. Vijiaykumar & A. Venkatachalm: "Working Capital and Profitability – An Empirical Analysis", the Management Accountant, October – 2009
2. Agarwal N. P: Analysis of Financial Statements, National Publishing House, New Delhi, 1982
3. Agarwal V. S.: Internal Auditing, Professional Book Publisher, New Delhi, Edition 1988.
4. Anthony Robert N. Reece James: Accounting Principles Richard D. Irwin, Inc. Homewood Unions Edition, 1989
5. Anthony, Robert N.: Management Accounting, Text and Cases, Third Edition, 1964.
6. Baisnab: Elements of Profitability and Statistics, Tata McGraw Hill, 2004
7. Barnes & Noble: Credit Risk, Capital Structure and the Pricing of Equity Options, Amazon Books, New York, 2007
8. Batty J: Management Accounting, Mac Donald and Evans Limited London, Edition 1967.
9. Bernstein Reopard A: Financial Statement Analysis, Theory Application and Interpretations, Irwin Richard D. Revised Edition, 1998
10. Bhalla V. K: International Financial Management, Text & Cases, Anmol Publishing House, 4th Edition, 2004
11. Bhattacharya S. K.: Accounting for Management, Text and Cases, Vikas Publishing New Delhi, 2nd Repeat Edition, 2002
12. Bhayani S. J: Practical Financial Statements Analysis, Raj Book Enterprises, Jaipur, 2004
13. Branat Loviak: Analysis of Financial Management, Engle Wood Cliffs, New Jersy, 2004
14. Chaudhary S. B: Analysis of Company Financial Statements, Asia Publishing House, Mumbai, 1994
15. Chauhan P. L: Financial Statement Analysis and Evaluation, Raj Book Entriprises, Jaipur, 2007
16. Dyekman. Thomas R., David H. Downes & Robert P. Magee: Efficient Capital Market & Accounting-A critical analysis , Englewood cliffs, New Jersy: Prentice Hall, 1975.

17. E. Wilfort J. E. & others: The Stock Market, McGraw Hill co., New York,2000.
18. Ean Cheol S. & Resnick Bruce: International Financial Management Tata McGraw Hill Publishing, New Delhi, 3rd Edition, 2003
19. Edward I. Actman: Handbook of Corporate Finance, New York, John Wiely and Sons, 1986
20. Edwards, Robert D., & John Magee: Technical Analysis of stock trend, Springfield, mass, 1966.
21. Elleman David K & Others: Multinational Business Finance, Pearson Education, 10th Edition, 2004
22. Eltan,E.G modern portfolio theory & Investment Analysis, john wilay & sons, New York, 2004.
23. Elton Edwin J. & Martin J. Gruber: international capital Markets, Amsterday : North Holland Publishing Company 1999.
24. Fama, E.F. "Stock Returns, Real Activity, Inflation & Money", American Economic Review,1981
25. Firth Michael: Investment Analysis, London, Happer and Row, 2004
26. Firth Michael: The Valuation of Shares & the Efficient Market Theory, Macmillan Press Ltd., London 1999
27. Francis, Jack Clark & Archer H. Stephen: Portfolio Analysis, Englewood Cliffs, New Jersey, Prentice – Hall, 2006
28. Fred N. Kerlinger, Foundation of Behavioral Research, New York: Holt, Reinhart and Winston, 1973.
29. Gole V. L. Filzerald: Analysis and Interpretation of Financial Statement, Butter worths. Edition 1966
30. Gulerian R.C: Statistics for Decision Making, Mahajan Publishing House, Bombay, 1997
31. Gupta L. C: The Changing Structure of Industrial Finance in India, London: Oxford University Press, 1969
32. Gupta O. P.: "An Empirical Test of Random – Walk Model on the Indian Stock Market", Management and Change, April 2007
33. Gupta R. K: Profitability Financial Structure & Liquidity, Jaipur, Printwell Publishers, 1990
34. Gupta U. L: Working of Stock Exchanges in India, New Delhi, Thomson Press Ltd., 1992

35. Gupta, S. P., Statistical Methods, Sultan Chand & Sons, New Delhi, 13th Edition, 2001.
36. Harghen Robert A: Modern Investment Theory, New Delhi, Dorling Kindersely, 2007.
37. Helfert Erieh A: Techniques of Financial Analysis, New Delhi, Tata McGraw Hill, 2004.
38. Hron ,Edwin j. & Martn J.Graber ,ed. Security Evaluation & Portfolio Analysis, Engiawood Cliffs ,New Jersoy Printle –Hall inc.2001
39. Jain C. P: Profit Planning is the Central Motto, National Publishing House, 1st Edition, Jaipur, 2009
40. Jawahar Lal: Corporate Financial Reporting – Theory and Practice, Taxmann Allied Services Pvt. Ltd., New Delhi, 2006
41. Jenkins G. M. & D. G. Watts: Spectral Analysis & its Applications, San Francisco, California, Holden Day Inc., 1998
42. K. Krishamurthy: "Private Investment Behaviour in India : A Macro Time Series Study", Arthaniti, January 1964
43. Kalekar Prajaktas: "Time Series Forecasting Using Hole Winners Exponential Smoothing", Dissertation on Information Technology, 2004
44. Kennedy R. D. & S. Y. McMillen: Financial Statement – Analysis and Interpretation, Richard D. Irwin, Home Wood, Illinois, 2005
45. Khan & Jain: Management Accounting, Tata McGraw Hill, New Delhi, 2007
46. Khan M Y & Jain P K., Financial Management, Tata McGraw-Hill, New Delhi, 3rd Ed., 2002, p. 4.1.
47. Kothari C. R: Research Methodology – Methods & Techniques, 2nd Edition, New Age International Publishers, New Delhi 2006.
48. Lories, James H. & Marry T. Hamilton: The Stock Market – Theories and Evidence, Homewood, Illinois, 2003
49. Machiraju H. R. Problem of Liquity of Thinly Traded Shares, The Stock Exchange, Bombay, 2009
50. Machiraju H. R: The working of Stock Exchanges in India, 2nd Editon, Wiley Navyug, 2008
51. Mansukhani G. R: Golden Investment Strategy, Bombay, Lalwani Publishing House, 1968

52. Mathur Richard J: 100 World – Famous stock Market Techniques, New Delhi, Vision Books, 1996
53. McHessich & Richard: Accounting and Analytical Methods, Richard D. Erwin Inc., 1964
54. Michael V. P: Research Methodology, McMillan Publishing house, London, 2001
55. Myer J. N: Financial Statement Analysis, Prentice Hall of India (P) Ltd., New Delhi, 1972
56. Om Prakash: Ratio Analysis for Management in New Perspective, Bombay Himalaya Publishing House, 1987
57. Pandey J. M: Financial Management, Vikash Publication, New Delhi, 8th Edition, 2005
58. Panneerselvam, R., Research Methodology, Prentice-Hall of India Private Ltd., 6th Printing, 2008.
59. Paul E. Green And Donald S. Tull, Research for Marketing Decisions, New Jersy: Prentice Hall, 1970
60. Pramod Kumar: Analysis of Financial Statements of Indian Industries, Kanishka Publishing House, New Delhi, 2001
61. Prasanna Chandra: Valuation of Equity Shares in India, New Delhi, Sultan Chand & Sons, 2000
62. Rajeshwar K. Rao & R. Sadanandam: "Impact of Capital Structure Decision", The Chartered Accountant, March – 2010
63. Rama Murthy S: Shares Prices & Economic Activity in India, A Multiple Regression Approach
64. Raw B. R: Balance Sheet Analysis & Credit Appraisal for Bankers Progressive Corporation, Bombay, 2004
65. Reily Frank K & Keith C. Brown: Investment Analysis Portfolio Management, 2006
66. Roy Chowdhary A. B: Analysis & Interpretation of Financial Statement through Financial Ratios, Orient Longmans, 2007
67. Ruzbeh J. Bodharwala: "Learning Financial Management using Financial Modeling", Taxeman Publication House, 2004
68. S. K. Srivastava, R. S. nigam, Sahai, banerjee: Industrial Economics, S. Chand &Co. Delhi,1967
69. S. Saha: Business Statistics, New Central Book Agency, Calcutta, 1998

70. Sancheti, D. C., and V. K. Kapoor, Statistics (Theory, Methods & Application), Sultan Chand & Sons, New Delhi, 7th Edition, 1991.
71. Sharav Vyuptabkesh: International Financial Management, Prentic Hill, 3rd Edition, 2005
72. Sharma K. R: Research Methodology, McGraw Hill Publication, 2010
73. Singh & Kumar: Financial Analysis for Business Decisions, New Delhi, Allied Publishers, 1970
74. Sprecher C. Ronalld: Introduction to Investment Management, Boston, Houghton Mifflin Company, 2005
75. Srinivastawa R. M: Financial Decision Making, New Delhi, Sterling Publishing (P) Ltd., 2004
76. Srivastava R. M: Essentials of Business Finance, Himalaya Publishing House, 2009
77. Verma B. L: Analysis of Financial Statements, Arihant Publishers, Jaipur, 1988
78. Walker & Burghan: Financial Planning & Policy, Harper International Student, New York, 2004
79. Walls W. A. & H. V. Robert: Statistics – A New Approach, Free Press, Golden – II, 2006
80. Wessel Robert H: Principle of Financial Analysis, New York, MacMillan, 2001
81. William J. Goode and Paul K. Hart, Methods in Social Research, New York: Mc graw Hill Book Company, Inc.1952.
82. Wilson, Richard M. S: Financial Analysis – A Managerial Introduction, London, Chassell Educational Ltd., 1997

WEBLIOGRAPHY

1. www.nseindia.com
2. www.cmc.com
3. www.bseindia.com
4. www.gtl.com
5. www.infosys.com
6. www.polaris.com
7. www.hclinfosystem.com
8. www.hcltechnologies.com
9. www.roltaindia.com

10. www.wipro.com
11. www.valueresearch.com
12. www.capitalmarket.com
13. www.economywatch.com
14. www.finmin.gov.in

JOURNALS

1. Abhigyan, Published by foundation of Organizational Research and Education, Delhi.
2. Advances in Management, an International research journal, Published by School of Management, Pune.
3. Anvesak, Published by Sardar Patel Institute of Economics and Social Research, Amdavad.
4. Anvesh, a Journal of Research, Published by IEAS institute of Management Studies, Mumbai.
5. Applied Finance, The ICFAI Journal, Hydrabad.
6. ASCI Journal of Management, Published by Administrative Staff College of India, Hyderabad.
7. Asian Economics Review, Published by The Indian Institute of Economics, Hyderabad.
8. Charted Accountant, Published by Institute of Charted Accountants of India, Delhi.
9. Charted Financial Analyst, Published by Institute of Charted Financial Analysts of India, Hyderabad.
10. Charted Secretary, Published by the Institute of Company Secretaries of India, Delhi.
11. Economics and Political Journal, Published by Sameeksha Trust, Mumbai.
12. Finance India, Published by Indian Institute of Finance, Delhi.
13. Indian Economics Journal, Published by Indian Economics Association, Mumbai.
14. Indian Journal of Finance, Published by Indian Institute of Finance, Delhi
15. Journal of Managerial Finance and Research, Published by Institute of Public Enterprises, Hyderabad.
16. Mirror, a research journal, Published by college of Management, Kerala.
17. Money and Finance, Published by ICRA Ltd., Delhi.
18. Quest, a journal of research, Published by Tolani Institute of Management Studies, Adipur.
19. RBI Bulletin, Published by Reserve Bank of India, Mumbai.

20. Research Lines, a multidisciplinary research journal, Published by Deva Matha College of Management, Kottayam, Kerala.
21. Sarvekshana, Published by National Sample Organization, Delhi.
22. The Management Accountant, a research journal, Published by ICWAI, Kolkata.
23. Vikalpa, Published by Indian Institute of Management, Amdavad.

NEWS PAPERS AND OTHERS

1. The Economic Times, Published from Mumbai.
2. The Times of India, Published from Delhi.
3. Financial Express, Published from Mumbai
4. Financial Times, Published from Delhi
5. Business Standard, Published from Mumbai
6. Sandesh (Guj) Published from Rajkot.
7. Gujarat Samachar (Guj), Published from Amdavad.
8. Divya Bhaskar (Guj), Published from Rajkot.
9. Pulchhab (Guj), Published from Rajkot.
10. Nobat (Guj), Published from Jamnagar.

Appendices

Financial Results of CMC Limited

` Lakhs

Particulars	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Total Assets	1398	1403	1567	1570	2154	2846	2499	3324	4170	4765
Share Capital	1315	1318	1399	1399	1515	1515	1515	1515	1515	1515
Reserves and Surplus	150	138	166	167	157	196	223	297	392	495
Total Loan	431	464	504	548	815	1172	1487	1780	2040	2247
Financial Investment	818	818	818	818	818	818	818	1038	1280	2034
Cash and Bank Balance	15	20	0.66	37	0.3	2650	3607	2342	3402	3053
Bills Receivables & Debtors	356	421	519	511	248	23	24	22	27	16
Creditors	10	16	6	8	1394	1617	1478	1763	1458	1084
Sales & Services	55998	54201	56841	50147	77567	82879	98891	97719	82045	69001
Profit after Tax	1578	2456	2359	4256	2306	4411	6409	8822	10557	12958
Liquid Investment	438	438	438	111	0	0	0	956	1198	1953
Other Income	2203	3002	2556	2456	6798	2896	5488	1189	1981	1875
Financial Investment	818	818	818	818	818	818	818	1038	1280	2034
Financial Investment Income	24	32	10	10	11	17	20	90	92	37
Proposed Dividend	260	241	298	280	682	758	1212	1667	2273	3030
Total Indirect Expenditure	7	5	3	4	5	7	8	9	7	5
Capital Expenditure	0.5	0.7	0.6	0.6	0.5	20	56	26	19	9
Current Liability	5	17	7	16	0.1	270	291	268	235	187

Financial Results of GTL Limited

` Millions

Particulars	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Total Assets	13464	15035	16453	11395	11373	15695	24762	25854	30699	67525
Share Capital	7025	7046	7083	4850	5000	8556	9731	9457	9472	9573
Reserves and Surplus	12241	12723	13415	13848	14125	8115	9381	8290	8912	9080
Total Loan	8997	9679	13119	17231	24840	42459	88952	132299	171306	226814
Financial Investment	434	494	1582	1040	3376	3961	3633	7676	7283	18584
Cash and Bank Balance	5527	5782	4796	5971	6854	5092	10837	6139	8914	46125
Bills Receivables & Debtors	2128	1948	2197	1541	1613	1613	2654	2854	3003	337
Creditors	234	190	338	258	1411	1199	4692	6949	1989	267
Sales & Services	814	532	1439	4988	5578	1278	11596	17725	19480	20025
Profit after Tax	433	109	771	818	1057	718	1003	1541	1455	1548
Liquid Investment	235	177	0	0	405	554	184	476	400	950
Other Income	53	50	6	9	13	10	19	10	53	33
Financial Investment	434	494	1582	1040	3376	3961	3633	7676	7283	18584
Financial Investment Income	307	244	137	145	150	376	198	151	533	283
Proposed Dividend	211	70	84	150	137	2077	258	283	284	200
Total Indirect Expenditure	1227	1147	2920	1568	1856	1936	1848	1961	1066	1570
Capital Expenditure	46	153	121	195	293	204	285	315	356	429
Current Liability	833	547	891	1256	1708	1774	5843	8914	3691	3933

Financial Results of HCL Info system

` Lakhs

Particulars	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Total Assets	65073	56440	43247	47283	52348	61852	109358	136577	135920	243218
Share Capital	3190	3190	3190	3289	3343	3374	3383	3422	3424	6131
Reserves and Surplus	26430	27880	29454	36551	40191	37760	81138	97202	109811	186094
Total Loan	22967	24918	23198	17736	15267	14092	9402	6967	5794	7367
Financial Investment	8500	13668	21289	28060	12277	13539	27978	21502	27610	91119
Cash and Bank Balance	10614	8020	4338	4461	14582	14529	19394	31736	20299	29261
Bills Receivables & Debtors	22709	25361	21932	29454	36992	40154	10025	12414	14982	19569
Creditors	4774	7201	5181	8466	11302	15940	82117	115682	117356	139705
Sales & Services	116230	126131	165121	152324	196737	238136	1181825	1256944	1233681	1195301
Profit after Tax	5836	4613	6172	12089	13276	11322	31785	30475	26044	10710
Liquid Investment	5525	10231	13969	21909	10326	11588	13000	20488	26004	85373
Other Income	612	871	1482	2091	3148	1701	4873	4775	3360	5890
Financial Investment	8500	13668	21289	28060	12277	13539	27978	21502	27610	91119
Financial Investment Income	235	1515	3214	3280	1499	1702	564	731	760	412
Proposed Dividend	2233	797	3190	2608	3816	3375	3391	3423	2568	4365
Total Indirect Expenditure	19521	18895	16762	15735	20671	24575	45224	57968	67071	70181
Capital Expenditure	415	540	650	1801	2675	2313	3989	4116	2219	3866
Current Liability	2104	2727	2308	3590	4172	4566	1376	1620	1882	2167

Financial Results of HCL Technologies Limited

` Lakhs

Particulars	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Total Assets	172563	210643	232169	238943	295831	259058	304558	324015	400197	633325
Share Capital	5885	5890	5939	5925	6548	6602	11458	13497	13452	13777
Reserves and Surplus	192563	204422	225647	223196	279613	251117	287413	307985	335371	479809
Total Loan	6100	6397	9127	15653	19492	11007	5427	6622	7670	19110
Financial Investment	9815	13198	19086	22503	26546	19077	19888	17973	5627	22332
Cash and Bank Balance	34251	8467	3712	7278	8453	10622	38094	68688	136583	98943
Bills Receivables & Debtors	1998	2214	1686	3064	6459	7124	9800	14892	2084	2451
Creditors	3913	8254	15121	29623	37162	69989	85850	105006	136116	64560
Sales & Services	72449	72341	87173	112798	144701	303292	606874	461739	467509	1213629
Profit after Tax	42678	40195	31247	32572	32927	63838	131831	78065	99731	125919
Liquid Investment	3695	8529	8623	14707	12395	13333	3631	1337	0	7475
Other Income	10863	13314	10778	14676	12003	10929	45585	19272	26220	15412
Financial Investment	9815	13198	19086	22503	26546	19077	19888	17973	5627	22332
Financial Investment Income	2017	2810	2038	1751	828	903	1348	5126	190	5017
Proposed Dividend	2849	4321	6668	13391	12847	13004	13319	19994	6703	6786
Total Indirect Expenditure	15079	13863	20130	26621	32841	67590	83326	122542	346922	363685
Capital Expenditure	654	724	1008	2803	2861	2260	1207	1944	4086	4053
Current Liability	4225	8455	1605	4262	5111	9350	10035	18286	22159	17224

Financial Results of Infosys

` Crore

Particulars	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Total Assets	1389	2080	2861	3253	5242	6897	11162	13490	17809	22268
Share Capital	33	33	33	33	135	138	286	286	286	287
Reserves and Surplus	553	670	767	200	190	242	378	447	582	780
Total Loan	685	1074	1517	1706	1829	2248	2414	3867	5869	7052
Financial Investment	34	44	33	1027	1328	876	839	964	1005	4636
Cash and Bank Balance	385	772	1336	1638	1481	3279	5507	6429	9039	9797
Bills Receivables & Debtors	302	336	512	632	1252	1518	2292	3093	3390	3244
Creditors	94	97	237	430	464	610	861	1209	1188	1763
Sales & Services	1960	2603	3623	4761	6860	9028	13149	15648	20264	21140
Profit after Tax	623	807	958	1243	1859	2421	3783	4470	5819	5855
Liquid Investment	0	0	0	929	1167	684	0	0	0	3712
Other Income	59	66	99	127	127	144	375	683	502	919
Financial Investment	34	44	33	1027	1328	876	839	964	1005	4636
Financial Investment Income	4	5	7	82	72	132	182	650	836	775
Proposed Dividend	65	131	96	766	176	1061	371	1559	773	861
Total Indirect Expenditure	264	340	536	681	880	1152	1646	1809	2733	2810
Capital Expenditure	463	322	219	430	794	1048	1443	1370	1177	581
Current Liability	134	126	315	560	579	808	1162	1483	1507	1763

Financial Results of Polaris Software Lab Limited

` Lakhs

Particulars	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Total Assets	12970	14544	36244	39412	40069	48385	53331	55532	50470	41879
Share Capital	1708	2557	2576	4884	4900	4911	4929	4933	4933	4948
Reserves and Surplus	17536	21845	28978	44490	48035	49178	55225	60815	72333	82298
Total Loan	4076	3757	14814	27237	27807	27685	29960	40324	47701	44086
Financial Investment	5391	6161	5850	5817	11069	7904	10788	9696	2442	3896
Cash and Bank Balance	3131	3525	7316	2724	3858	5759	5594	3090	3684	5270
Bills Receivables & Debtors	7034	7929	15031	15292	13188	13604	18463	17167	18204	11368
Creditors	1839	2008	6032	4596	6452	8138	9163	13492	16032	20503
Sales & Services	26539	27391	39606	57848	66897	68394	90430	93802	117134	114347
Profit after Tax	6010	6164	5422	6770	5343	1330	7959	5263	11118	13064
Liquid Investment	3699	3709	3349	2164	1460	1913	2061	7828	2346	3755
Other Income	427	1002	565	212	1605	600	205	1598	2477	1912
Financial Investment	5391	6161	5850	5817	11069	7904	10788	9696	2442	3896
Financial Investment Income	47	24	110	45	153	113	266	197	163	156
Proposed Dividend	511	895	1704	1710	1715	1228	2218	1480	1443	2026
Total Indirect Expenditure	5030	4959	6243	9628	16380	14160	21281	23645	25901	26164
Capital Expenditure	1563	1487	2240	2400	5648	7198	3563	3898	3553	3467
Current Liability	2429	2019	6080	4140	4021	4682	5404	6010	1687	1836

Financial Results of Rolta India Limited

` Lakhs

Particulars	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Total Assets	60478	65821	68457	75195	71909	104791	179273	204366	263943	314346
Share Capital	6369	6369	6369	6369	6369	7991	8011	16089	16100	16119
Reserves and Surplus	36987	40125	42589	44684	46345	94269	106691	114311	146591	174313
Total Loan	9962	11571	12374	12855	12533	9246	12793	18197	21135	30027
Financial Investment	6598	4574	8016	9282	9159	26077	9760	28162	3541	5509
Cash and Bank Balance	1045	1058	1317	3483	2625	77398	63895	25983	13757	5035
Bills Receivables & Debtors	25540	29871	33050	29758	27975	20012	37690	50178	59509	62478
Creditors	155	260	275	830	1405	1653	2063	4702	5848	2210
Sales & Services	48795	45887	38357	30105	35631	46380	60767	108919	137281	153267
Profit after Tax	15456	13655	11228	8050	10335	13942	18225	23059	29383	25513
Liquid Investment	0	0	0	6294	0	3423	9760	28162	3541	5509
Other Income	598	447	543	865	1033	706	1025	1697	6904	2793
Financial Investment	6598	4574	8016	9282	9159	26077	9760	28162	3541	5509
Financial Investment Income	425	369	1378	1296	1025	1200	1460	1850	89	378
Proposed Dividend	1912	1912	1912	1912	2226	3198	4001	4978	4835	5236
Total Indirect Expenditure	7845	8954	9829	7125	8300	9799	23197	42643	69431	66363
Capital Expenditure	586	547	729	929	1817	1373	1873	3224	7829	6980
Current Liability	448	547	653	728	541	520	757	1273	1795	1245

Financial Results of Wipro

` Millions

Particulars	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Total Assets	20099	25596	34000	36082	49557	64780	95584	103160	175288	232224
Share Capital	464	464	465	467	1407	2852	2918	2923	2930	2936
Reserves and Surplus	19184	24860	32837	34610	47517	61315	90251	113991	122204	173968
Total Loan	7204	16171	16755	12100	11198	16663	27187	45809	73012	98248
Financial Investment	1636	4784	14407	24560	28595	34592	11988	16022	52418	89665
Cash and Bank Balance	4463	2935	4097	2900	5368	8230	18492	39270	44092	56643
Bills Receivables & Debtors	6176	6434	7925	10623	14065	19680	25823	40453	42992	47547
Creditors	1607	2148	1982	2525	3239	3628	7060	13082	18017	19133
Sales & Services	30922	34677	40327	52597	73267	103795	139726	199575	255442	271414
Profit after Tax	6679	8331	8359	9149	14948	20205	28421	32829	38999	46310
Liquid Investment	1454	4126	7813	18014	20768	29449	29814	14211	15132	30116
Other Income	695	1553	1184	1269	935	1524	2732	4174	4840	8753
Financial Investment	1636	4784	14407	24560	28595	34592	11988	16022	52418	89665
Financial Investment Income	318	50	1681	203	3011	2110	1686	1576	1964	2537
Proposed Dividend	116	232	233	675	3518	7129	1459	5846	5860	8809
Total Indirect Expenditure	5406	5405	5873	7537	8242	11724	17182	24966	24752	25565
Capital Expenditure	77	416	2234	2675	4444	6243	3728	5628	14471	10897
Current Liability	481	536	591	856	11815	17768	34350	39890	55643	47060