



Strategic Management, Core Competence and Flexibility : Learning Issues for Select Pharmaceutical Organizations

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Abstract

An organization's ability to survive and grow is based on advantages that stem from core competencies. In the longer run the only source for being ahead of competitors is to learn faster than its competition. The climate of openness is a facilitating factor to create new knowledge continuously that will be required to meet the future competitive environmental changes. The notion of flexibility in strategic management is highly relevant as it is important for surviving in present economic scenario of globalization and liberalization. Strategic flexibility provides a congenial environment for the development of core competence and plays a pivotal role to define where an organization must excel in order to maintain leadership. The organizational core competence provides basis for generating sustainable competitive advantage, which in turn leads to corporate success. The long-range strategies must address the present and future needs of the customers.

The case studies of two pharmaceutical organizations have been developed to find out the issues related to core competence development, organizational learning, strategy formulation with core competence, and role of flexibility in strategy formulation. The study is based on Flexible Systems Methodology and has been conducted through interviews. The case studies highlight that organizations need new strategic imperative stressing on nurturing core competencies which form the foundation of a sustainable competitive advantage. The less imitable the core competencies, the more they become the factors responsible for corporate success, and greater is the economic return.

Keywords: core competence, corporate success, flexibility, organizational learning, sustainable competitive advantage

Introduction

In view of the globalization of trade and liberalization of economies, all organizations are trying their level best to gear themselves up for the competition. Any organization that aims at capturing a disproportionate share of profits from tomorrow's market needs to build its competencies. The core competence helps in providing added customer value, competitor differentiation and extendibility. The area of core competence is emerging, and it needs a lot of attention in order to describe the capabilities that may be responsible for leadership in a range of products or services. Core competence is part of a collective knowledge gain in the organization. It is a process of imparting information, harmonizing streams of technologies and involvement of people from all functions. It is the latest paradigm of strategy. There has been a shift of paradigms in various disciplines and strategy has also moved from the trend of competing for the product leadership to the recent trend of competing for core competence leadership. At top management level, the core competence has to be a primary factor for strategy formulation as it is an important source of profitability. The above average returns can be delivered only from assets and skills that are hard to imitate. These skills need to be developed overtime as they make organizations immune to competition through investment and information exchange by the organizations human capital. The management must peep inside their organizations for precious, unique and costly to imitate

resources, and then exploit these resources to create an edge over its competitors.

This research paper analyses the processes that lead to core competence development, generation of sustainable competitive advantage, profitability and growth of three pharmaceutical organizations. The Situation–Actor–Process–Learning–Action–Performance (SAP-LAP) paradigm has been used to analyze the cases and learning issues are synthesized. The main aim of the study is to identify the strategy formulation practices in these organizations with the help of core competence and flexibility perspective.

Methodology

The case studies of Eli Lilly & Company and Pharmacia & Upjohn have been prepared in order to understand the core competence perspective in pharmaceutical organizations. A brief past history of the organizations has been obtained to understand the backgrounds, and cases have been prepared based on interviews and observations. The interviewing method consisted of an interview schedule prepared on the basis of SAP-LAP Model of inquiry (Sushil, 2000) as shown in Figure 1. The interviews have been conducted at senior management level in the select organizations. The cases are analyzed applying the Situation–Actor–Process–Learning–Action–Performance (SAP-LAP) paradigm (Sushil, 1997) to bring about the finer issues.

The combination methodology covered the following

attributes: history of the organizations, human resources, sales and marketing functions, in-house R&D, financial performance, core competence, global tie-ups, flexibility, globalization, processes leading to generate competitive advantage, technology absorption and implementation processes, core competence development process etc. The SAP-LAP analysis was used to have know-how about the core competence function in the organizations. In each case the context of situation has been identified. The current situation of the organization and the operating environment has also been described. The capabilities of the main actors involved have also been covered. The various learning issues have been brought out, possible actions have been suggested, and expected performance has been envisaged.

Exhibit 1: SAP-LAP Model of Inquiry

Situation

1. How does the accurate business environmental assessment help in improving corporate performance?
2. Is your improved corporate performance a result of your diversification?
3. How does your organizational flexibility help in diversification?
4. In what way does diversification aids in the growth of the organization?
5. How does the capacity utilization contribute towards the competitive advantage?
6. What relevance has customer value got with the product differentiation in your organization?
7. How is consistency and effective time factor responsible for generating competitive advantage?
8. Is cost advantage a main factor for deriving a sustainable competitive advantage in your organization?
9. How does customer consciousness help in technology assimilation?
10. How does the technology leadership help in developing core competence?
11. What are the major guidelines for hiring the key people in your organization?

The capabilities exhibited by the management to develop the core competencies include corporate strategic planning, strategic alliances, huge investments in R&D and training and development.

Actor

1. What are your main organizational core competencies?
2. Does your organization have tie-ups with global companies?
3. Does it believe in diversification?
4. Has it got faith in its in-house R&D?
5. What capabilities are exhibited by the management to develop core competencies?
6. In what domains freedom of choice is available to the managers?
7. Has the concept of core competence been communicated properly to people in the organization?
8. Are management flexibilities resonating with situation flexibilities?

9. Do management flexibilities resonate with process flexibilities?
10. How does top management encourage the development of core competence in the organization?

Processes

1. How is corporate performance related to the strategic and operational change?
2. Does the process of globalization lead to corporate success?
3. To what extent do the coordinated actions of all functions lead to competitive edge / advantage?
4. How does economies of scale contribute towards the generation of competitive advantage in your organization?
5. How is product differentiation created so far as your organization is concerned?
6. Does the assistance from technology providers make the absorption and implementation of new technology easier?
7. How is the collective learning responsible for developing core competence?
8. What are the dominating processes that lead to development of skills in your organization?
9. How does your in-house technology development contribute towards core competence?
10. What are the various organizational processes that help in developing your organizational core competence?
11. How is competence at the level of people developed / created in your organization?

Learning

1. What are the key issues related to situation?
 - Environmental assessment - Diversification
 - Organizational flexibility - Customer consciousness
 - Technology leadership - Hiring the people
 - Capacity utilization - Customer value
 - Cost advantage - Time factor
2. What are the key issues related to the processes?
 - Link between strategic and operational change - llobalization
 - Coordinated actions of all functions - Collective learning
 - In-house technology development - Organizational processes
 - Competence at the level of people - Development of skills
3. What is your understanding about the core competence of the organization?
4. What are the potentials to develop the core competence in your organization?
5. What is the existing strategy formulation pattern?

6. Where lays the essence of core competence in strategy formulation and implementation?

Action

1. What should be done to improve the situation?
2. What ought to be done to improve / implement the processes?
3. How to initiate a process that leads towards the core competence development?
4. What role does your organizational core competence play in staying ahead of the competitor?
5. How does your organization achieve corporate success with the help of a sustainable competitive advantage?

Performance

1. What are the key performance indicators?
2. What is the impact of your performance on the situation?
3. How will the performance of the processes be effected?
4. How is core competence affecting key performance indicators in your organization?
5. How to look ahead of the competition?

The customer value is of greater importance as it forms the basis for the continual search for innovation through the creative combination of scientific discovery and the application of information technology.

Case of Eli Lilly and Company- Outgrow Competition Through Constant Innovation

Background

Eli Lilly and Company is a global, high technology company founded by Colonel Eli Lilly in 1876 in Indianapolis, in the Midwestern section of United States. The company is a research based Pharmaceutical Corporation dedicated to creating and delivering innovative pharmaceutical based health care solutions that enable people to live longer, healthier and more active lives. Through its internal scientific programs and dozens of research based partnerships worldwide, it is targeting solutions for many of the world’s most urgent, unmet medical needs. Its deep research and clinical expertise has prepared it to take advantage of this golden age of discovery in the life sciences on behalf of patients who are dependent on medical innovation.

Lilly is focusing on the discovery and development of the most effective pharmaceutical based health care solutions for its diverse customers throughout the world. It is dramatically accelerating its drug discovery and development processes and, thus, the speed at which its new products achieve regulatory approval and reach patients. As the central effort of this company is to provide customers with the best clinical and economic outcomes, it seeks constant innovation through the creative combination of scientific discovery and the application of information technology. This continual search for innovation underpins its efforts not only in the laboratory but also throughout the entire Lilly organization. The employees of the organization stay focused on the following priorities:

- Enhance scientific innovation
- Optimize the launch of its newer products
- Grow operating income by increasing sales and restraining costs

The goal of the company is to create an innovation engine that is open to the world. It has identified the best sources of learning, tries to improve everything it does and seeks innovation wherever it is available. It is a research and development organization capable of consistently and rapidly discovering and developing truly innovative medicines. Its current pipeline and growing portfolio show some of the progress it is making. The different divisions of the company are Lilly Research Laboratories, Elanco Animal Health and Health Systems Division.

Lilly’s Mission and Values

Mission

- To provide innovative pharmaceutical-based solutions for the unmet medical needs of the customers around the globe
- To expect nothing less than restoring Lilly to the top level of the pharmaceutical industry in growing shareholder value

Values

- Respect for people, that includes its concern for the interests of all the people worldwide who touch or are touched by Lilly, i.e., customers, employees, shareholders, partners and communities
- Integrity that embraces the very highest standards of honesty, ethical behavior and exemplary moral character
- Excellence that is reflected in its continuous search for new ways to improve the performance of its business in order to become the best at what it delivers

Human Resources

At Lilly, people are the source of all its abilities, and all its successes. Its failure depends on its global community of employees whose varied perspectives; experience and training fuel the creativity and energy to pioneer pharmaceutical innovation. Lilly employees more than 29,000 people worldwide and the split of human resources is as under:

Indianapolis	8,959
Indiana (excluding Indianapolis)	2,885
U.S. (excluding Indiana)	2,593
Outside U.S.	15,406
Worldwide total	29,843

The company respects its employees and all people worldwide who are touched by the company. Its actions and behavior demonstrate its respect for each other and each other's contributions. Each employee is personally responsible and accountable for ensuring that his/her actions and behavior reflect the diversity policy, i.e., to develop and utilize the diverse talents and energies of all the employees worldwide. The people are encouraged to become involved in their communities, lending their voluntary support to programs that enrich the quality of life and opportunities for all citizens.

Sales and Marketing

Eli Lilly and Company is a global pharmaceutical corporation with its market presence in 161 countries. It has acquired information resources and capabilities beyond most of its competitors. The company has undertaken a broad-scale effort to redefine its approach to marketing and sales in order to ensure its lead in the marketplace of the future. A subset of this approach is the ongoing effort to globalize. If the company is to achieve growth, it must tap the huge potential of markets around the world. The biggest challenge is to build critical mass in those markets where its innovation would be most welcome. The turnover of Eli Lilly and Company for last three years presented in Table1.

The core competence development processes enable the organization to pour its growing stream of innovation into the global market and create new competitive space to stake its capabilities out ahead of the competition.

Table 1: Turnover of Eli Lilly and Company

Year	Turnover (Dollars in millions)
1999-2000	10002.9
2000-2001	10862.2
2001-2002	11542.5

Research and Development

Eli Lilly and Company has been at the forefront of many of the most significant breakthroughs in modern medicine. Research and development facilities are located in Australia, Belgium, Canada, England, Germany, Japan, Singapore, Spain, and United States. The R&D of the company has an objective to reduce key steps that have historically taken five years or more down to 500 days. Its new goal is to go from identifying a lead compound to introducing an innovative product in two-thirds of the world market in 3,000 days to 500 days for discovery plus 2500 days for development and regulatory approval.

Lilly's internal research efforts are focused on five therapeutic areas: neuroscience, endocrinology, infectious diseases, oncology and cardiovascular diseases. Through its research programs, the company has made a substantial commitment to the preservation of women's health. The company's philosophy is to pursue innovative science and technology from external as well as internal sources.

Therefore, an important and expanding aspect of Lilly's research and development strategy is in the area of alliances and partnerships. Innovation has been the driving force that contributed to the upward climb of the company. Lilly has launched five major products in a span of three years. The newer products have been the keys to its performance, and the success story is not merely how many products it has launched but how it has launched them. The company is strengthening its ability to identify high potential drug candidates by improving its research and development processes, investing in new research technologies and expanding its research team. Lilly Research Laboratories has completed a major effort to restructure its discovery and development functions so as to promote and enhance the sense of innovation.

Financial Performance

The performance of Eli Lilly & Company has been satisfactory for last three years. The financial ratios, as shown in Table 2 for the said years are quite high. The organization's performance for 2001-2002 reflect the impact of several significant transactions that include 11% increase in world wide research and development expenditures in support of the company's strong pipeline. The late stage pipeline includes up to 10 potential new products for a wide range of serious, unmet medical needs that are expected to be completed by 2005. The flow of the constant stream of innovation, at regular intervals of time, enables the organization to have a competitive edge in the market. The growth as well as profitability is high but the organization is focusing more on growth as compared to profitability.

Table 2: Table of Financial Ratios for Eli Lilly & Company

Ratios	Fiscal year*		
	2001-02	2000-01	99-2000
Net Profit Ratio	24.08	28.15	27.20
Rate of return on fixed assets	61.33	73.21	68.34
Rate of return on total assets	16.91	20.81	21.21
Rate of return on capital employed	31.62	39.65	36.50
Rate of return on shareholders' Equity	39.13	50.56	54.27
D/P Ratio	0.04	0.03	0.03

* Annual Reports of Eli Lilly and Company, based on global operations

SAP – LAP Analysis

Situation

- Eli Lilly and Company is dedicated to the discovery and development of products of the highest quality that improves the health and well being of people around the world.

- It has a global presence so far as sales, manufacturing and research is are concerned.
- It ranks among the top 10 pharmaceutical companies in the world with its products available in over 106 countries.
- It is committed to the research and development of innovative products.
- The ability to continually learn helps it to evolve and adapt to an ever-changing environment.
- It is emerging as an industry leader in forging productive alliances.

Main Actors' Capability

Core competence

The pharmaceutical business has been the core of Lilly for more than 100 years. Eli Lilly is a customer-oriented company and provides innovative pharmaceutical solutions for the unmet medical needs of the customers around the globe. The resources and capabilities of the company reflect its unique personality, experiences and relationships that it has achieved for more than ten decades. The company believes in the fact that products can be copied and technology can be duplicated, but no one can imitate core competencies as otherwise they will be at a cost disadvantage.

The core competencies of the organization are R&D and Marketing. The concept of core competence has been properly communicated to the

The core competence of the organization enables it to deliver a set of customer benefits at lower cost than its competitors.

people in the organization. The top management facilitates the development of core competencies by providing full support. The capabilities exhibited by the management to develop the core competencies include corporate strategic planning, strategic alliances, huge investments in R&D and, training and development. It ensures that every part of the company plays a role in strengthening its position, thus bureaucratic walls crumble and the spirit of cross-functional teamwork begins to take hold, adding value to the products in numerous ways.

Global tie-ups

Lilly is involved in more than hundred research and development collaborations. No single organization has all the expertise to produce the medical innovations that the customers want. It has entered into a number of research alliances worldwide to gain access to new research capabilities and additional high-potential drug candidates. To progress beyond incremental improvements, it is not only continuing to build its internal expertise but also collaborating with partners whose capabilities augment its own. The collaborations have enabled the company to strengthen its entire R&D value chain.

An alliance with Logan Pharmaceuticals, for example, gives Lilly exclusive rights not only to several potential oral

therapies for diabetes but also to a proprietary technology that may help its scientists to make additional discoveries in diabetes, obesity and certain cardiovascular diseases. Lilly has become the first company to collaborate with Millennium Bio Therapeutics, which has a unique technology to help identify proteins that may be useful as medicines. It has also entered into agreements with other companies, e.g., Thera Tech, Inhale and Emisphere, that are each working on drug delivery approaches, which may one day supplant injections of protein products. It has created a dedicated organization to accelerate and integrate its biotech efforts from discovery through manufacturing, and it is pursuing alliances to help it apply the revolutionary advances in the life sciences to the discovery of novel therapies.

In-house R&D

Innovation is the foundation of Lilly's success and, since the early 1990's, its colleagues in Lilly Research Laboratories have thoroughly reengineered the company's capacity to discover, develop and acquire high-potential new products. They have recognized the way they do research, streamlined processes and prioritized projects. As a result, the time period has been cut nearly in half. It takes about 2,500 days to move a compound through development to global markets. The company has launched five new products in three years. In pharmaceutical industry,

any company aspiring to lead must deliver that constant stream of innovation with a volume and flow rate. Lilly, having an abundance of scientific ideas, has accepted the challenge to outgrow all

competitors and hold a lead through a constant flow of innovations and marketing expertise.

Flexibility

The mission of Lilly's work program is to provide the tools necessary for the company to pursue the highest level of effectiveness within the context of a changing work environment. The company strives to create an environment that enables individuals to optimize their contribution by reducing barriers to productivity that can be caused by conflicts between work and personal life. The management is flexible and resonates (check word) with the situation and the processes. As a part of flexible management approach, Lilly provides its employees with numerous programs and options, which may vary with job and location. These include flexible work options, on-site convenience, health and welfare programs etc.

In pharmaceutical industry, it is understood that a large part of the potential demand for medicine goes unrealized due to a variety of faulty connections along the chain. Patients may suffer symptoms for years without ever seeking treatment; others may receive wrong diagnosis, representing unfilled potential. This presents an enormous problem of information management and poor communication. The managers at Lilly make sure that the information is shared

within the organization and in particular between groups, functions and geographical locations. The company has adapted to new channels, new media and new applications of information technology to restore order in this new world.

Processes

Process of globalization

The focus of the company's business is to enlarge its competitive capabilities and truly globalize its operations. The company is doing business in nearly 160 countries around the world. True globalization involves building a perspective that transcends the limitations of nationality. The process of globalization is initiated with an idea, not only to bring Lilly to the world but also to bring the world into the Lilly, particularly at its senior management ranks. It has 10 out of 19 members of operations committee who do not belong to U.S. It has strengthened its roster in other ways as well by recruiting a number of world class leaders to complement those already on board in key management and technical positions throughout the organization.

Despite the climate of turmoil and rapid environmental changes in the industry, flexibility has great power to illuminate the path of excellence and success.

Processes leading towards competitive advantage

The products of Eli Lilly and company address the unmet needs; they also often reduce the cost of medicine, thereby providing significant economic benefits for patients, providers, and payers. The company focuses its collective energies on validating the potential of its products in the clinic and optimizing its benefit in the market place. The expanding breadth of the scientific reach combined with formidable marketing capabilities is responsible for citing Lilly as a leader both in accelerating discovery and speeding innovative new products to patients.

In keeping with its commitment to provide customers with effective results and lower costs, Lilly encourages a process of transition from traditionally component-based health care to a comprehensive integrated approach to health care delivery. It believes that the best approach to treatment is to consider the whole patient and to use combination of interventions and therapies to produce optimal clinical and economic results.

The differentiation is created by means of perceived value through services. With newly available information technology, it seeks to use its expertise in disease management and integrated care to link all the participants in the healthcare chain, i.e., physicians, pharmacists, payers, providers and patients. This patient focused and process oriented approach offers the best health care at the most affordable cost. The customer value is of greater importance as it forms the basis for the continual search for innovation through the creative combination of scientific discovery and the application of information technology. As Lilly is a research based pharmaceutical company, it keeps on creating and delivering innovative products at regular intervals of time. The time factor and consistency is responsible for

generating competitive advantage as the organization is quite ahead of the competitors so far as introduction of new products is concerned.

The coordinated actions of all the functions in the company lead to the generation of competitive advantage. In every part of the organization, in every place where it operates, nothing has been as impressive as the reawakening of the spirit of its people. The employees have the confidence that they can control their own destination and the destiny of the shared enterprise.

Technology absorption and implementation process

Lilly is a leader in researching and developing superior pharmaceutical health care solutions. It has got core competence in the area of research and development that enables it to address the unmet needs of the customers. This continued excellence hinges on its ability to utilize the promising technological advances. The new technologies hold the key for its researchers to unlock a better understanding of complex disease processes and to develop new therapeutic approaches aimed at preventing, treating and curing diseases. Lilly makes full use of all promising technological advances that include the process of exploring strategic partnerships with academic research institutions and biotechnology firms. The whole process facilitates its application of new technologies in the drug discovery path and helps in progressing beyond incremental improvements.

The assistance from technology providers makes the absorption and implementation of new technology easier. Collaborating with partners to produce the medical innovations that customers want strengthens the internal expertise. With the help of technological advances, the discovery of new products contributes to the upward climb of the organization. The process of innovation is the driving force by which a new thing gets adopted, implemented and finally chosen by customers to replace whatever they are using currently.

Processes leading towards core competence development

Lilly's research and development efforts target health solutions that address urgent, unmet medical needs, replace more expensive and invasive medical treatment, and bring to market several important new products quite ahead of the competitors. The organization's core competence in R&D and marketing plays an important role in introducing new products, acquiring high potential drug candidates and help the customers to get the maximum benefits from its products.

The various organizational processes that help in developing organizational core competence are:

- Timely Introduction of New Products and Other Technologies (TINPOT)
- Creative Employee Suggestion Schemes (CESS)

- Training and development
- Cross functional exposure

The collective learning and strategic exercises are responsible for developing core competencies. The cross-functional teamwork behind the launch of each new product helps the organization to bring to market in record time the new discoveries. The core competence development processes enable the organization to pour its growing stream of innovation into the global market and create new competitive space to stake its capabilities out ahead of the competition.

The top management is the important actor to carry out the task of building and nurturing core competencies.

Learning

The learning issues in case of Eli Lilly and Company are out lined in Table 3. The key issues related to the situation are: environmental assessment, organizational flexibility, hiring the key people, customer value, and time factor. The issues related to the processes are: link between strategic and operational change, coordinated actions of all functions, in-house technology development, competence at the level of people, globalization, collective learning, organizational

Table 3: Learning Issues in Case of Eli Lilly and Company

Key issues related to situation	Environment assessment, organizational flexibility, hiring the people, customer value, time factor
Key issues related to processes	Link between strategic and operational change, coordinated functions of all functions, in-house technology development, competence at the level of people, collective learning, globalization, organizational processes, development of skills.
Global tie-ups	More than 100 research and development collaborations.
Core competence	R&D (to address unmet medical needs), and Marketing
Understanding of core competence	Good
Processes leading towards core competence development	TINPOT,CESS, HRD, Training and development
Product differentiation	It is created by perceived value through services. It provides value to the customer by addressing their unmet medical needs at lower costs.
Customer consciousness	Customer consciousness helps in developing those medicines that are needed and suggested by physicians.
Coordinated actions	It leads to validating the potential of its products and optimizing their benefits in the market place.
Economies of scale and scope	Economies of scale provide cost advantage while as economies of scope provides product differentiation.
Capacity utilization	Reduces input cost
Time factor	The introduction of new products ahead of the competitors provides a competitive advantage.
Capabilities of management	Management is cooperative in acquiring and investing in the core competencies.
Organizational learning	The organizational learning and cross-functional teamwork enhances the superior performance of the organization, and development of its core competencies.
Organizational flexibility	Flexibility helps to continually learn in order to evolve and adapt to an ever-changing environment.

processes, and development of skills.

Core competence

Lilly is a worldwide leader in pharmaceutical based integrated health care and recognizes the importance of understanding a wide array of domestic and global unmet medical needs of the people. It is engaged in more than 100 R&D agreements and has tapped the huge potential of markets around the world. The core competence of the organization enables it to deliver a set of customer benefits at lower cost than its competitors. The core competencies of the organization have qualified for the tests of core competence as shown in Table 4.

Table 4: Tests of Core Competence for Eli Lilly and Company

Tests	Conformance to tests of core competence
Customer value	• Reduce the cost of medicine by providing effective results.
Competitor differentiation	• Adopts patient focused and process oriented approach.
Extendibility	• Enables the organization to pour its growing stream into global markets and create new competitive space.

The concept of core competence has been introduced in the organization. The management believes that the process involving everything from new gene discoveries to new delivery technologies, is an evolving core competence for Lilly and it needs to be enhanced for going forward. The R&D and marketing competencies are embedded in the people and assets of the organization. The organization is committed to developing and utilizing the diverse talents and energies of all its employees worldwide. People are the source of all the abilities that the organization exhibits in its superior performance. Lilly is a globalized corporation and its success depends on the employees who provide fuel and energy for the creativity that is important for pharmaceutical innovation.

Strategy formulation and implementation with core competence

The key to core competence based approach to strategy formulation is to understand the relationship between the resources, capabilities and the processes through which a competitive advantage can be sustained overtime. Lilly believes that getting to the top is one thing and staying there is another. It has challenged itself to outgrow its competition through constant innovation and global marketing. The managers work hard to optimize every resource and capability and have succeeded in combining intelligently their competencies with strategic alliances worldwide. This combination of powerful innovation and ongoing optimization lead to improved returns on capital and better responsiveness to customer needs at lower costs.

The existing strategy formulation pattern is based on 4-

column model: Market definition, SWOT analysis, Developmental plans and Action plans. The strategy significantly focuses on enlarging its competitive capabilities and truly globalizing its operations. The core competence in the area of R&D, and marketing enable the organization to shift its orientation outward on customers and their unmet medical needs. Lilly has implemented a strategy to more fully leverage its historic strengths as one of the world's leading biotechnology companies. It has created a dedicated organization to accelerate and integrate its biotech efforts, from discovery through manufacturing, and is pursuing alliances to help it apply the revolutionary advances in the real life sciences to the discovery of novel therapies.

The climate of flexibility in the organization is a facilitating factor for creating a working environment where the talents are developed to the benefit of the company.

Role of flexibility in strategy formulation

The situation in pharmaceutical industry is changing rapidly with a wide range of scientific advances. The question that faces the strategic decision-maker is not what Lilly should do tomorrow but what it has to do today to be ready for an uncertain tomorrow. The flexibility is depicted in the spirit of cross-functional teamwork that allows seeing every part of organization is responsible for its superior performance. The flexible approach in the strategy formulation views the company's employees as its most valuable assets. The broader effort to unleash and engage all the extraordinary talents of its employees is a big part of the story of Lilly's revitalization. Despite the rapid environmental changes in the industry, flexibility could lead to success.

The flexibility in strategy formulation addresses two characteristics of organizational effectiveness as keys to winning in the future. One is speed; speed in finding the best new discoveries wherever they may emerge; speed in developing new medicines, testing them and bringing them to market; speed in every aspect of the business will increasingly be what separates leaders from laggards. The other trait is flexibility which emphasizes that there is no single strategy that is right for all eventualities and so a capability of any successful organization must be the ability to continually learn in order to evolve and adapt to an ever-changing environment.

Action

The organization is already looking ahead, working to further improve its capabilities, effectiveness and speed. It has created new teams to accelerate innovation and to ensure that customers and patients worldwide get the full value of its innovative products. Eli Lilly and Company can take certain actions to strengthen its area of marketing and R&D further, so as to reach successfully to the next level of performance.

- Evaluate the existing products, identify the new business opportunities, define the objectives and formulate the strategy for reaching those objectives.

- Analyze the situation in which organization is functioning and realize the potential that the core competencies create in getting new products and expanding markets.
- To strengthen the area of core competence and, apply and synthesize it in new products so as to generate a sustainable advantage.
- To identify the sources of leading technologies to build its internal expertise and accelerate the discovery of new products
 - To rigorously control costs and expenses and to reallocate resources to those parts of the business that are critical to its ongoing success, especially R&D and marketing.

Performance

The key performance indicators are:

- Sales
- Profitability
- Growth and retention of people
- New product launches
- The impact of company's performance on the situation is to outgrow all its competitors through a constant stream of innovation.
- The performance of process is affected by core competence by optimizing every resource from the laboratory innovation and marketing activities.
- Core competencies lead to cost advantage and greater economic returns.
- The company looks ahead of the competition by providing superior health care solutions based on innovative medicines at affordable costs, and the ladder for its upward climb is its innovation.

Case Study of Pharmacia and Upjohn—Building a Winning Strategy

Background

The enormous growth and expansion of scientific knowledge, and advances in the understanding of the underlying causes of major diseases provide an unprecedented opportunity and incentive for Pharmacia & Upjohn. The organization has accelerated the discovery and development of improved therapies that help alleviate suffering, reduce disease and improve the role of primary care. The company seeks innovation, speed and flexibility in meeting the demands of today's rapidly changing health care environment. Confronting cancer, degenerative brain disease, depression, AIDS, glaucoma, bacterial infections and new emerging disease areas, it will continue to invest in important new pharmaceutical products, priority research and development projects, and external alliances to

strengthen their core capabilities. This focus on healthier future requires an aggressive innovative search for superior solutions to some of the world's most vexing and still unanswered medical problems.

The company's discovery, research and product development activities, encompassing its own multidisciplinary global organization together with external alliances, are oriented and directed to achieve optimum intellectual and creative critical mass in the pursuit of its goals.

Pharmacia & Upjohn is a global, innovation driven pharmaceutical and health care company. Its products, services, and employees demonstrate the company's commitment to improve wellness and quality of life for people around the world. Its global headquarter is in Bridgewater, New Jersey, USA. The core business is prescription pharmaceuticals, which is organized into five business groups each focused on common customer needs and approaches. The other businesses include consumer health, animal health, diagnostics, and pharmaceutical commercial services.

The process of collective learning encourages the core competence development and makes it easier for employees to share knowledge and ideas.

**Pharmacia & Upjohn
Mission, Vision and Values**

Mission

- To help people to live longer, healthier and fuller lives by meeting their medical needs through innovative research and development.
- For customers and patients, Pharmacia & Upjohn develop superior health care solutions; for its corporate associates, it provides rewarding employment; for its shareholders, it generates top-tier returns; for the environment and the communities, in which it operates, it acts responsibly.

Vision

- To intend to become one of the World's leading pharmaceutical company, by being one of the best companies.
- To become one of the top companies with this growth supported by its strong culture of working together.
- To hold leadership positions in all its key areas and medical technologies, and in every major market.
- To set the standard for creativity, and innovation in all areas of its business, creating value through the generation of breakthroughs that satisfy unmet medical needs.
- To surpass all competitors in its primary areas of competence by every meaningful measure.

Values

Pharmacia & Upjohn is a responsible and caring corporation. It recognizes that it is important to value individuals in order to generate both effectiveness and efficiency.

Human Resources

At Pharmacia & Upjohn, employees are considered to be the most valuable assets. It is committed to offer employees a working environment where they can develop and exercise their talents to the benefit of the company, clients and ultimately themselves. It considers the employees to be the source of generating competitive advantage. It is considered a business imperative that its relationship with employees be established in an atmosphere of mutual trust, respect for the individual and their wishes, and be conducted in an atmosphere which encourages open communication. Management accepts its responsibility to conduct its day to day relationships with employees in a way that respects their individuality, merits trust and confidence and makes collective learning necessary.

The organization has more than 30,000 employees worldwide. It seems to grow to become one of the top companies in the industry by the support of employees' strong culture of working together. The organization actively works to maximize its global synergies and talents. It encourages its associates to achieve their fullest potential through empowerment.

The organization is working to build the kind of team spirit that drives a winner. Its operating structure encourages global teamwork, and makes it easier for employees to share knowledge and ideas. All the employees are expected to share a unified strategic direction to generate the enthusiasm and spirit necessary to fulfill the objectives the organization has set for the present and future times to come.

Sales and Distribution

The company has a globalized marketing and supply chain that provides a better platform for developing and delivering novel new products. Pharmacia & Upjohn controls more than half of the U.K market, and has strong market shares in other European countries, particularly Spain, Germany, Italy and Scandinavia. It has been successful in achieving good penetration in Mexico & Columbia. The organization conducts clinical development, manufacturing and marketing at locations around the world. With a pivotal presence in Japan, Asia Pacific, Europe, and North and South America, the company is working each day to deliver better care solutions for society. The turnover of Pharmacia & Upjohn for last three years is given in Table 5.

Table 5: Turnover of Pharmacia & Upjohn

Year	Turnover (Dollars in millions)
1999-2000	13737
2000-2001	16425
2001-2002	18144

Research and Development

Pharmacia & Upjohn believes that discovery with courage always leads to excellence. The company has major research

centres in Italy, Sweden and the United States. There is an annual investment of more than \$ 1.2 billion in research and development. The strong, innovative R&D base enables the company to develop superior health care solutions for its customers and patients. The company's discovery research and product development activities are directed in such a way that the goals set are fulfilled in the most desired manner. There is a continuous process of aggressive innovative search for superior solutions for the medical problems that are still unanswered in the world. The organization is committed to bring innovative medicines to the society based on the efforts of its R&D employees.

Innovation is critical to driving sustainable competitive advantage in the organization. It is that what continues to separate the winners from the losers in the pharmaceutical industry. During 1997, Pharmacia & Upjohn gained regulatory approval of five significant new chemical entities;

- Detrol / Detrusitol in Sweden
- Edronax in the United States
- Mirapex and Rescriptor in the United States (for the treatment of HIV positive patients)
- Vistide in Europe (for the infection of Retina, often a complication of AIDS)

This achievement is remarkable, but the company recognizes that it must continue to identify and bring to market other novel drugs to be successful in the world markets. To do this, the company is trying to combine its strong platform in chemistry and biotechnology with the resources of its research partners, including its unique alliances with Sweden's Karolinska Institute, to leverage its scientific skills. It is also using technologies such as combinational chemistry, high throughput screening, genomics and bioinformatics to find new combinations of chemicals that may be effective in attacking disease targets. It has a number of promising projects in early discovery research, including compounds for diabetics, bacterial infections and viral infections.

Financial Performance

The financial ratios of the organization for three fiscal years are in Table 6. The year-to-year earnings comparison is significantly affected by the restructuring of the company. The restructuring activity reflects the ongoing transformation of the organization from two unique operations into an effective, well-integrated global enterprise. The financial ratios for the year 2000-2001 are decreasing, the reason being that the company took additional strategic steps, focusing its core competencies during the last three years, which have, affected the earnings comparability. Also in 2000-2001, the organization purchased exclusive worldwide commercialization rights to a research compound and terminated certain future plans resulting in a huge charge. The restructuring and other

The competence at the level of people enables the organization to identify new areas where its existing core competencies can be applied.

charges with the global turnaround program is designed to achieve simplified infrastructure and improved efficiency. Being a foreign origin organization, it stresses more on growth than profitability.

Table 6: Financial Ratios for Pharmacia & Upjohn

Ratios	Fiscal year*		
	2001-02	2000-01	99-2000
Net Profit Ratio	3.95	8.39	2.63
Rate of return on fixed assets	4.75	9.21	2.40
Rate of return on total assets	2.69	5.07	1.36
Rate of return on capital employed	6.7	9.48	4.44
Rate of return on shareholders' Equity	6.01	12.63	3.42
D/P Ratio	0.07	0.07	.07

* Annual Reports Pharmacia & Upjohn for global operations

SAP-LAP Analysis

Situation

- Pharmacia & Upjohn is dedicated to making people's lives better
- It has a tremendous human focus that distinguishes it from other pharmaceutical companies
- It has a globalized R&D, marketing and supply chain for developing and delivering novel new products
- It focuses on innovation search for solutions to world's unanswered medical problems
- It offers employees a working environment where they develop and exercise their talents to the benefit of the company
- Flexibility and speed helps in meeting the demands of today's rapidly changing health care environment

Main Actors' Capability

Core competence

The core competence of Pharmacia & Upjohn can be used to define its growth path. The skilled and expert individuals in the organization are identified and given the authority to translate their functional expertise in innovative ways. The top management is the important actor to carry out the task of building and nurturing core competencies.

The organizational core competencies are Basic Research and Development, and Dedicated Manpower.

The concept of core competence has been communicated properly in the organization. It educates people; trains them and then monitors the training implementation. The capabilities exhibited by the management to develop core competencies include training and development of manpower and huge expenditure in R&D. It gives full support with the investment of its inputs, time and money.

The organization believes that the growth and strengthening of core competencies depend to a great extent on the people who are involved in the organization. It exploits its core competencies in basic research and development as a competitive weapon to provide a means to create competitive advantage. It has installed new business controls to improve its planning and management capabilities. It is upgrading the skills and the quality of execution throughout the company, with an emphasis on operational excellence. There has been enhancement in its scientific capabilities to discover and develop products faster and more efficiently.

Global tie-Ups

Pharmacia & Upjohn is a worldwide pharmaceutical company with a global culture, sharing common values and beliefs. It is continuing to undergo a transition from two mid-sized multinational companies to a large, global competitor. The company is aggressively seeking in-licensing opportunities and business partnerships with other companies, and with independent and university laboratories. This highlighted focus on licensing in new compounds will help the organization to shore up its product pipeline. The recent agreement of the company with Genentech for worldwide rights to Thrombopoietin is but an example of the benefits of this effort.

The company has accomplished the strategic objective of regaining rights to its important product, Genotropin, (a recombinant human growth hormone), in the Japanese market. To strengthen its position in Japan, agreement has been reached with Sumitomo Pharmaceuticals Company Limited, Japan to retrieve sales and marketing rights to the product which has been sold in Japan since 1988 under a licensing agreement. In August 1997, the company merged its biotechnology supply business, Pharmacia Biotech, with Amersham Life Science, a division of Amersham International. The merger created a new company, Amersham Pharmacia Biotech Ltd.

The company has a unique alliance with Sweden’s Karolinska Institute, to leverage its scientific skills. The company’s discovery research and product development activities together with external alliances focus to achieve optimum innovative level and returns in the pursuit of its goals.

In-house R&D

To be successful the organization has created a culture of innovation. The company has 48 product candidates, including 40 in clinical development. Its strong R&D is capable of anticipating a steady stream of significant new antibiotics on the market through the year 2010. It is trying to create a culture of innovation, not just in R&D but in everything it does, including the way it manufactures and markets its products, and in all other functions of the corporation.

The company is developing an integrated flow system that will help ensure a smooth, coordinated process

throughout the development of each project. It begins with early identification of promising new compounds and includes the implementation of integrated strategies for research and development, registration and marketing for each new product. The integrated product flow system in R&D is shown in Figure 1.

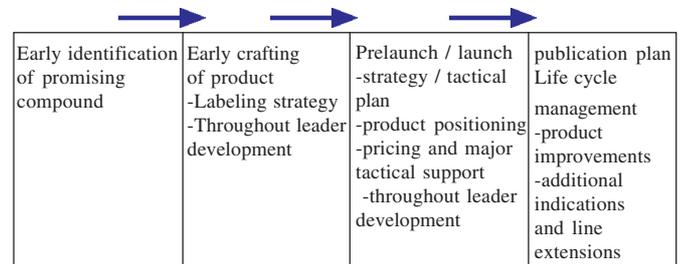


Figure 1: Integrated Product Flow System in R&D

Flexibility

The climate of flexibility in the organization is a facilitating factor for creating a working environment where the talents are developed to the benefit of the company. Managers are creative and flexible enough to tailor the organizational systems that confront them. Each manager is independent autonomous to take autonomous business decisions within the flexible framework of policy guidelines. This capacity helps the organization for surviving in present day economic environment of globalization and liberalization. The flexible approach of the organization aids in innovation and speed in meeting the demands of today’s rapidly changing health care environment. It also encourages the employees to achieve their fullest potential in order to generate both effectiveness and efficiency.

Flexibility plays an important role in directing the organizational activities to achieve an optimum intellectual level in the pursuit of its goals. All the people in the organization have a primary responsibility for learning from customers, competitors, and suppliers. The management flexibilities at Pharmacia & Upjohn are resonating with situation as well as the process flexibilities.

Processes

Process of globalization

The process of globalization is depicted in company’s activities in functions like R&D, marketing and its supply chain. It gives an opportunity to expand, appreciate and capture markets. It also helps to increase market presence and turnover, which are definitely the signs of success. The process is affected by strengthening the enabling functions, especially finance, human resources, legal, information technology and public affairs to ensure that the company becomes a strong global competitor. The company has developed a global purchasing system that reduces the number of suppliers and helps it manage the costs more effectively. To gain faster market penetration of new products and to strengthen presence in the global market, the company hires the best talent available.

Processes leading to competitive advantage

Pharmacia & Upjohn has been building itself for the long term so as to enter the 21st century with growing competitive strength. The company is developing people, products and programs that will lead it to the desired position. While growth is priority, it is also working to reduce the cost base by deploying resources properly so as to achieve a sustainable competitive advantage. As the times have changed, cost is not the main factor for driving a sustainable advantage. Customers are ready to pay higher but definitely need to get quality and aesthetics.

The coordinated actions of all functions lead to competitive advantage as it makes the minimum loss of time, energy and investment. It can take place only when everybody is in the same frequency and objectivity. At Pharmacia & Upjohn, product differentiation is created with respect to presentations, forms and end use. The customer value has got utmost relevance in the organization because of the fact that the product mix is driven by customer value appreciation only. The consistency and time factor are two important factors that directly affect the customer. The organization is well aware of these factors and takes it into account for all practical purposes.

Technology absorption and implementation process

The process of transforming of technical knowledge into useful products involves knowledge that is non-technical and embedded in the core competence of the organization. Such knowledge is used to deliver products and services that are consistent with the customer desires. At Pharmacia & Upjohn, the successful technology acquisition is a managerial responsibility and is done with efficiency to improve the organizational performance. With the progress of science and technology, customers have become aware of all the developments and this helps in the absorption of technology easily.

The successful management of technology involves the integration of functional and specialist groups for the implementation of innovations. The managers identify the source of technology, evaluate the same, select, adopt, train manpower, and finally implement it.

The company is a global, innovation-driven pharmaceutical organization and tries to bring to market novel new drugs. It uses the resources of its research partners to leverage its scientific skills. It is also using technologies that may be effective in attacking serious disease targets.

Processes leading towards core competence development

Pharmacia & Upjohn is an organization that wants to be one of the world's leading pharmaceutical company by virtue of its core competencies in the area of basic R&D, and dedicated manpower. The processes that lead to core competence development are education, training, and development.

The company has enjoyed leadership by providing products and services to improve wellness and quality of

life for people around the world. It has got core competence in pursuing fundamental research so whatever it invents is due to the skills and technologies embedded in the organizational team. The success of core competence is in the team effort, thus Pharmacia & Upjohn is trying to build the team spirit so that everybody is on the same plane. The process of collective learning encourages the core competence development and makes it easier for employees to share knowledge and ideas. The support from the top management helps the organization to build solid and sustainable growth by nurturing and developing the organizational core competencies.

Learning

The learning issues for the organization are outlined in Table 7. The key issues related to situation are: environmental assessment, technology leadership, time factor and customer consciousness. The main issues related to processes are: link between strategic and operational change,

Table 7: Learning Issues in Case of Pharmacia & Upjohn

Key issues related to situation	Environment assessment, technology leadership, customer consciousness, hiring the people, time factor
Key issues related to processes	Link between strategic and operational change, coordinated functions of all functions, in-house technology development, competence at the level of people, collective learning
Global tie-ups	Sumitomo Pharmaceuticals Co. Ltd. Japan, Amersham Life Science, alliances with independent and university laboratories
Core competence	R&D (innovative new therapies), Dedicated manpower
Understanding of core competence	Good
Processes leading towards core competence development	Training and development, Hiring key people
Product differentiation	Product differentiation is driven by customer value and helps in generating competitive advantage, as customers are ready to pay higher. It is created with respect to presentations, forms and end use.
Customer consciousness	Customer consciousness helps in technology absorption.
Coordinated actions	It makes the minimum loss of time, energy, and investment, thus reduces cost and leads to competitive advantage
Economies of scale and scope	An economy of scale is a fundamental understanding of optimal being the best. While as economies of scope is created by providing superior solutions to some of the worlds most vexing and unanswered medical problems.
Capacity utilization	Reduces the input cost, thus makes the product cost effective.
Time factor	Consistency and time factor directly affect the customer.
Capabilities of management	Identify core competencies, evaluate the same, provide support in training manpower, invest in development, and reap the results.
Organizational learning	Success of core competence is in organizational learning and team effort. Collective learning is important for everyone to be on the same plane.
Organizational flexibility	Climate of flexibility facilitates creating working environment where the talents are developed to benefit the company.

coordinated actions of all functions, in-house technology development, competence at the level of people, and collective learning.

Core competence

The company has made good progress towards installing a more aligned and performance driven team, which helps it to develop an accountable and transparent culture throughout its global operations. Since the organization has got competence in the area of basic research and development, and dedicated manpower, the major guidelines for hiring the key people are qualification and experience with respect to the existing environment. The top management selects and trains manpower, invests in development and then reap the results.

The potential to develop core competencies is to get involved in an ongoing process of basic research. The competence at the level of people enables the organization to identify new areas where its existing core competencies can be applied. It also takes into account the time factor, i.e., with the passage of time, some of the core competencies become obsolete, so new ones are identified, nurtured and adopted. Around the world people are demanding and taking more responsibility for their health care. This continuing trend presents significant opportunities for the company, and encourages it to invest in basic research and developmental projects, and external alliances to strengthen its area of core competencies. The core competencies of the organization have qualified the tests of core competence as shown in Table 8.

Table 8: Tests of Core Competence for Pharmacia and Upjohn

Tests	Conformance to tests of core competence
Customer value	● Provides products to improve wellness and quality of life.
Competitor differentiation	● Aggressive innovative search for superior solutions to some of the world’s most vexing problems.
Extendibility	● Capable of anticipating a steady stream of significant new therapies to provide an unprecedented opportunity.

Strategy formulation with core competencies

The organizational core competencies in basic research and development, and dedicated manpower enables the organization to help people live longer, healthier and fuller lives by providing superior health care solutions. Strategy is formulated by the board members to match the internal resources and skills to the opportunities and risks created by the external environment. While formulating the pattern, the identified core competencies are highlighted and given due place to get the best. The core competencies are the major resources of the organization. The failure of managers to deal effectively with core competence issue is the main cause of the strategic oversights. Pharmacia & Upjohn describe the strategy as a way to exploit the unique characteristics of the organization in facing the challenges of the environment. It has targeted five main goals for

building the winning strategy with the help of its core competencies:

- **Make the merger work:** The most important of the goals is to make sure that the merger works. The company tries to unlock its potential for operating more efficiently. Its dedicated manpower ensures aggressive support for introduction and penetration of key new products in the key markets. The company enters business partnerships with the companies in order to strengthen its product pipeline.
- **Top-line growth:** The organization is taking steps to drive top line growth by registering and launching key products in key markets. The top line growth is the company’s priority, and it is trying to reduce its cost base by putting resources where they need to be. The proper resource allocation and cost reduction enables the organization to achieve sustainable growth by rapidly registering key products with good margins, that address unmet medical needs, and to focus on selling those products in key markets. The early performance of the new products reaffirms the confidence in the developed strategy.
- **Use innovation as a driving strategy:** Innovation is very important in pharmaceutical industry as it separates the leaders from the followers. The company has core competence in basic research and development, and keeps on innovating new products to satisfy unmet medical needs of the people. The company is trying to develop a culture of innovation in every function so as to be successful.
- **Build team spirit:** The people in the organization are the most important assets and the competence at the level of people enables to deliver superior performance in the given job. The process of building the team spirit in the organization makes it easier to share the knowledge base of the individuals. All the employees of the organization work together with a spirit to fulfill the objectives already set.
- **Focus on essentials:** The Company is actively working on cutting costs through eliminating redundancies and unnecessary work. It is upgrading the skills and quality of execution. One of its initiatives is to improve the productivity of its sales force by increasing sales calls per day and products discussed per call. The company has installed new business controls to manage it better.

Role of flexibility in strategy formulation

The organizational flexibility allows more scope for improvement. There is least resistance to change, thus all the energies move in the direction of achieving corporate goals. The company continues to set high standards in developing new consumer products and strengthening its product portfolio by pursuing the responsible switching of prescription medicines to non-prescription status. This flexible approach addresses already defined customer needs, deliver valuable preventive and treatment options for the

advancement of good health.

The organization has got very high individual flexibility and is trying to incorporate more changes that will help it to become a stronger company, more fit to compete in the global arena. Some of the changes are difficult for the employees but they are always patient, understanding and ready to undergo a challenging transition. The organization is determined to become one that sees opportunities in change. There exists a culture that is more open to change, more willing to learn, and focused on delivering results. The employees of the organization are understanding and aligned with its strategy for growth.

Action

- In order to improve the situation, the pitfalls need to be identified. A turnaround program, that involves all aspects of the operations, to increase revenues, and cut costs through redundancies and unnecessary work.
- To identify the efficient and workable processes, remove obsolete ones and incorporate the new ones for managing the company better.
- To initiate a process that leads towards the core competence development, .e, training and development, upgradation of skills and quality of execution.
- In order to be ahead of competition, core competence of the organization needs to be focused so that it provides the best potential for growth.
- To achieve the corporate success, there has to be a consistent and uninterrupted flourishing of acquired technology, training, and market presence.

Performance

The key performance indicators are:

- Profitability
- Social appreciation

Global presence

- The impact of performance on the situation creates stir in the environment
- The core competence of the organization effects the performance as it changes the soul and strength of the organization leading towards profitability
- It looks ahead of the competition by assessing environment with an action plan to face it.

Conclusion

Two cases have been discussed; both are of the foreign origin. The main core competence issues that have been addressed in these case studies include those pertaining to understanding of core competence function, core competence and technology management, flexibility in strategy formulation, and, essence of core competence and

flexibility in strategy formulation and implementation. Table 9 gives the comparison of various issues covered in two select organizations. In pharmaceutical industry the basic research and development decides the future of the organization. In this study both the organizations have core competence on the front of research and development. With the help of core competencies, the organizations are capable of achieving objectives and executing strategies effectively. The core competencies play an important during the technology acquisition, assimilation and implementation process. The study has provided an insight that core competence is responsible for generating a competitive advantage, which in turn leads to corporate success.

Table 9: Comparison of Learning Issues (Pharmaceutical Organizations)

Issues	Eli Lilly & Company	Pharmacia & Upjohn
Origin	Foreign	Foreign
Understanding of Core Competence	Fairly Good	Good
Core Competence	<ul style="list-style-type: none"> • R&D (To address unmet medical needs) • Marketing 	<ul style="list-style-type: none"> • R&D (innovative new therapies) • Dedicated manpower
Potentials to develop	<ul style="list-style-type: none"> • Talented people provide fuel core competence and energy for the creativity important for pharmaceutical innovations 	<ul style="list-style-type: none"> • People get involved into an ongoing process of basic research and development
Processes leading towards core competence	<ul style="list-style-type: none"> • Training & development • TINPOT • CESS 	<ul style="list-style-type: none"> • Training & development
Technology and core competence	Pump growing stream of innovation into global markets	Creation of new technologies and its absorption into new products quickly and effectively
Flexibility	Create an environment that enable individuals to optimize their contributions	Encourages the employees to achieve their fullest potential for effectiveness and efficiency
Strategy and core competence	To outgrow its competition through constant innovation and global marketing	To provide superior health care solutions with the help of R&D and its dedicated manpower

References

Kak A. and Sushil (2002) Strategy based on Core Competence and Flexibility: Learning Issues for Four Indian Organizations, *Global Journal of Flexible Systems Management*, 3(2&3), 55-70.

Kak A. and Sushil (2000) Core Competence based Strategy in Sushil, *Cornerstones of Enterprise Flexibility*, Global Institute of Flexible Systems Management, Vikas Publishing House, New Delhi.

Kak A. (2000) *Strategy Formulation with Core Competence and Flexibility: A Study of Select Organizations*, Unpublished theses, IIT Delhi.

Sushil (2000) SAP-LAP Model of Inquiry, *Management Decision*, 38(5), 347-353.

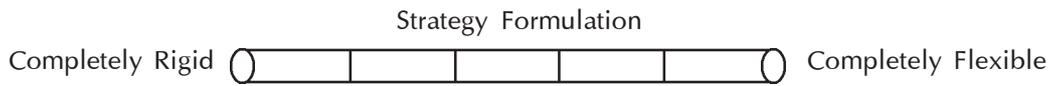
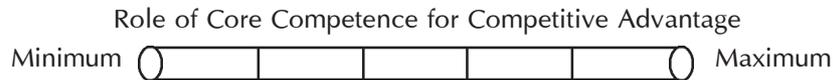
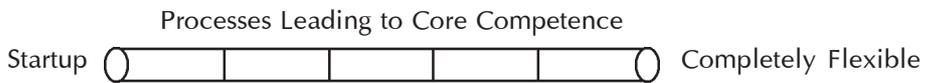
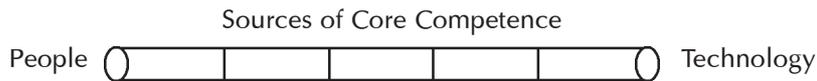
Sushil (1997) Flexible Systems Management: An Evolving Paradigm, *Systems Research and Behavioural Science*, 14(4), 259-275.

Hamel G. and Prahalad C.K. (1994) *Competing for the Future*, Harvard Business School Press Boston, Massachusetts.



Flexibility Mapping : Practitioner's Perspective

- Which variants of flexibility do you envision in a practical situation of identifying “core competence and strategic flexibility” on the following planes:
 - Flexibility in terms of “options”
 - Flexibility in terms of “change mechanisms”
 - Flexibility in terms of “freedom of choice” to participating actors.
- Identify and delineate the types of flexibility pertinent to establishing a regime for long range strategy based on core competence and flexibility appropriate to your organization. On which planes the flexibility needs to be enhanced?
- Attempt mapping core competence of your organization on the following continua. (Please tick mark the appropriate box(es)).



- Develop a SAP-LAP (Situation Actor Process- Learning Action Performance) model of core competence and strategic flexibility appropriate to your organization.

Reflecting Applicability in Real Life

- Implement the methodology of identifying “capabilities of main actors” for developing core competence in your organization.
- Identify at least six organizational processes that help in developing the core competence of your organization.



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Technological Capability Development in a Telecommunication Firm: A Case study of Sri Lanka Telecom Before and After Privatization

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Abstract

This paper presents a framework to examine the development of technological capability in a telecommunications firm after its privatization. The framework is based on the value chain concept, which identifies the primary and support activities of a telecommunication service provider, and uses a three-step procedure to analyze the technological capability needs in these activities and to develop indicators to measure the extent to which such technology capabilities have developed after privatization. The components of each capability, its elements, and indicators for assessment of each indicator have been developed with three complementary research processes: extensive research of the technology, processes and management of telecommunication firms; literature review of technological capabilities; and in-depth interviews with experts at International Telecommunication Union, and senior experts-practioners at two leading telecommunications firms in Thailand. The research identifies the following technological capabilities in the primary and support activities: creation, design and engineering, marketing and selling, servicing, acquisition, human resource development, information technology and strategic planning. The elements of each capability and the indicators for assessment of the elements were determined from a thorough and in-depth understanding of the technical, managerial and operational processes in telecommunication firms.

The framework outlined above is then applied to Sri Lanka Telecom. Information on the technological capabilities in Sri Lanka Telecom was collected through in-depth interviews with top and middle management personnel. This information was then analyzed for comparison of technological capabilities before and after privatisation. Based on the comparison, we find that technological capability development in Sri Lanka Telecom progressed quite substantially after privatization.

The paper concludes with how the framework and procedure developed here could be applied in other contexts in identifying the technological capability needs, and the capability elements and indicators for their assessment.

Keywords: capability assessment, privatization, technological capability, value chain

List of Acronyms

ACC Acquisition Capability	NTT Nippon Telegraph and Telecommunication Company
ADSL Asymmetric Digital Subscriber Line	MSC Marketing and Selling Capability
APT Asia Pacific Telecommunity	OPMC Outside Plant Maintenance Centre
ATM Asynchronous Transfer Mode	PDH Plesiochronous Digital Hierarchy
CDMA Code Division Multiple Access	PSTN Public Switched Telephone Network
CEO Chief Executive Officer	SDH Synchronous digital hierarchy
COO Chief Operating Officer	SLT Sri Lanka Telecom
CRC Creation Capability	SLTCLI Sri Lanka Telecom Caller Line Identification
DEC Design and Engineering Capability	SLTPLUS Sri Lanka Telecom Plus
HDC Human Resources Development Capability	SPC Strategic Planning Capability
IDD International Direct Dialling	SVC Servicing Capability
ISDN Integrated Services Digital Network	TOT Telephone Organization of Thailand
ITC Information Technology Capability	TT&T Thai Telephone and Telecommunications Public Company Ltd.
ITU International Telecommunication Union	VMS Voice Mail Service
LAN Local Area Network	WAN Wide Area Network

Introduction

Telecommunication is an important basic infrastructure for expansion and development of the national economy and has been recognized as a catalyst for competitiveness and investments. The telecommunications sector is undergoing tremendous technical and structural changes, while at the same time experiencing major growth. Many telecommunication service providers in the world are in the midst of fundamental changes in organizational design and management practices. A shift towards greater flexibility generates challenges for management. One of the challenges posed by this flexibility is the ability of service providers to survive in a world of rapidly evolving technological possibilities. Telecommunications service providers are under extreme pressure to reduce operational expenses, time-to-market of new services, and dramatically improve customer service, thus they need to have the flexibility to bring new voice, text, internet based services to their customers faster, easier and at a lower cost while substantially reducing the

complexity of application and business process integration.

There are two primary factors driving the telecommunications sector: the increasingly liberal policy environment and the rapid technological advancements. The liberal policy environment is generally being achieved through privatization of the public telecommunications service providers and also through introducing competition to the sector. With privatization, the ownership changes from the public to the private sector and both local and foreign investments are encouraged. The introduction of competition changes the industry structure from one monopoly firm to many service providers. Since privatization is the cornerstone in a liberal policy environment, it is interesting to examine whether it has a positive impact on firm performance. Many authors have suggested that privatization has a significant impact on performance of the telecommunications sector. Most of the studies conducted so far are concerned with telecommunications service providers in Latin America, Africa and Europe. Ramamurti (1996), after focusing on the privatization of the telecommunications industry in Jamaica, Mexico, Argentina and Venezuela, found that privatization improved fiscal positions, labor productivity and quality of service, and led to rapid network expansion. Wallsten (1999) examined the effect of privatization on telecommunications firms in 30 African and Latin American countries from 1984 to 1997 and found that there was a positive impact on performance measures such as service quality, number of telephone connections and labor productivity. Ros and Banerjee (2000) found that privatization of telecommunications firms in Latin America improved efficiency and increased network expansion.

Noll (2000) reviewed reforms in the telecommunications sector in developing countries in Latin America, Middle East, Africa, Asia and Eastern Europe and concluded that privatization had improved service in general. After examining 31 national telecommunications firms in 25 countries in Latin America, Canada, Europe, Eastern Europe, Africa, and the Asia Pacific, Bortolotti et al. (2002) also found that the financial and operating performance of telecommunications companies improved significantly after privatization. Li and Xu (2002) used the comprehensive World Bank-Stanford dataset to study telecommunications reforms in 166 countries around the world covering the period from 1981 to 1998. They examined the impact of privatization and competition in the telecommunications sectors in these countries and concluded that privatization indeed contributed substantially to network expansion, and improvement of labor productivity as well as total factor productivity as defined in (Rushdi, 2000). Although a number of studies on the effect of privatization of the telecommunications sectors in the developing countries are reported in the literature, no such study is reported in the context of Sri Lanka.

Two primary factors drive the telecommunications sector: the increasingly liberal policy environment and the rapid technological advancements.

The second factor driving the telecommunications sector is the rapid technological advancements taking place in the industry. Technological advancements coupled with globalization of trade and investment has increased the importance of technological capabilities as a source of competitiveness for enterprises. Praest (1998) suggested that development of technological capabilities in a telecommunications firm enabled it to develop new products and processes and improved the overall performance. Bischoff (2003) suggested that technological capability development in telecommunications sector contributed significantly towards increasing the performance and competitiveness of individual firms as well as enhanced their existing comparative advantages. In a rapidly changing business environment, unless the firms take timely action in developing their technological capability, their very survival may be at stake.

Though there are reported theoretical and empirical studies on the impact of privatization and technological capability separately with respect to performance, no work on the question of how privatization leads to technological capability development of a telecommunications firm has been reported so far. This paper examines the extent of technological capability development in Sri Lanka Telecom after privatization.

This paper reviews literature on various technological capabilities and presents a value-chain based conceptual framework to identify primary and support activities in a telecommunication service provider. It describes the research methodology and presents a procedure for technological capability assessment of telecommunication service providers. This also applies the developed procedure to Sri Lanka Telecom. Based on the analysis of technological capabilities, several recommendations for further improvements in technological capabilities are made in consultation with top management. Lastly, some concluding remarks are made.

Literature Review

Because of the significant role of technological capability in the competitive advantage, interest in carrying out research on firm level technological capability assessment began early (Seki, 1992). However, not many studies with an in-depth analysis of technological capability at the firm level have been reported. The older studies also have a number of weaknesses ranging from a narrow definition of technological capability to a lack of systematic methodology for assessment. Additionally, almost all the studies on technological capability deal with firms in the manufacturing sector, with very few examples in the service sector.

Historically, studies on technological capability, specifically related to developing countries, date back to the 1960s, when focus was largely on the problems associated with the unsuccessful technology transfer from the

industrialized countries to the poorer countries (Fransman and King, 1984). During this early period, the technological capability of a country was associated with the ability of its firms to effectively manage international technology transfer.

From the late seventies, and well into the eighties, the focus of attention started shifting to what happened to technology as it was imported and assimilated. (Rosenberg 1976, Dahlman and Ross-Larson 1987). Technology development thus began to be interpreted as the ability to not only manage international technology transfer but also to master the transferred technology in the sense of making it operative, as effectively as possible, in the specific situation. The work of Rosenberg (1976), Pavitt and Bell (1992) and Sharif (1994) led to a new and broad definition of technological capabilities in developing countries. Their definition referred to the ability of a firm to buy, understand (assimilate), use and adapt (or change), and improve or create technology.

To assess the technological capability of electric utility companies, Panda and Ramanathan (1995) defined technological capability as a set of functional abilities, reflected in the firm's performance through various technological activities and whose ultimate purpose is firm level value management by developing difficult to copy organizational abilities. The technological capabilities they identified in their study were creation, design and engineering, construction, production, marketing and selling, servicing, acquiring, supportive and steering capabilities.

However, none of the above authors considered information technology (IT) capability, which is essential in the telecommunications sector. IT capability was first defined by Ross et al. (1996) as the "ability to control IT-related costs, deliver systems when needed and affect business objectives through IT implementations". Bharadwaj (2000) further discussed this technological capability and stated that high IT capability leads to improved firm performance.

The reported studies on technological capability in the telecommunications sector have a number of weaknesses. The first and foremost is the definition itself. The definitions are context specific and the level of detail used by authors differs substantially. Second, the methodologies do not specify any systematic manner by which all the technological activities performed by a firm could be listed and corresponding capabilities could be identified.

Praest (1998) defined technological capability as the specific capacity of the R&D departments of firms in the telecommunications sector to translate their efforts into marketable products, processes, or services. The number of patents was used as an indicator of technological capabilities.

Garrone and Rossini (1998) mentioned that technological capabilities of a firm in the telecommunications sector encompass the following activities: development, planning, installation, operation and management of the network; controlling and metering the traffic; interconnecting to other networks; and managing the network.

Marcelle (2002), based on study of twenty-six firms in the telecommunications sector of four developing countries in Africa, concluded that these firms could improve their technological capability by focusing on supplier or vendor management.

Although a small number of studies have been reported on technological capability in the telecommunications sector, there are no reported studies on technological capability assessment in this sector. Most of the above reported studies concentrate on overall aggregate measures of technological capabilities or technical details. This paper reports a detailed analysis of technological capabilities needed identifying the elements of these capabilities and indicators for assessment of these elements and capabilities in a telecommunications firm.

Technological capability is defined as a set of functional abilities, reflected in the firm's performance through various technological activities and whose ultimate purpose is firm level value management by developing difficult to copy organizational abilities.

Conceptual Framework

To develop a systematic procedure for technological capability assessment, it is necessary to identify the activities performed by a firm in the telecommunications sector. The value chain concept, developed by Porter (1985), becomes a useful tool for identifying the activities performed by such a firm. Panda and Ramanathan (1995) extended Porter's value chain concept by broadly categorizing the value addition activities performed by a firm into primary value addition activities and support value addition activities. Activities, which result in long-term competitive advantage, are called primary value addition activities, and these are performed in stages. The term primary is used to signify their lasting and dominating influence on the firm's business strategy. Activities that support the primary value addition activities are called support value addition activities.

Figure 1 shows the primary and support value addition

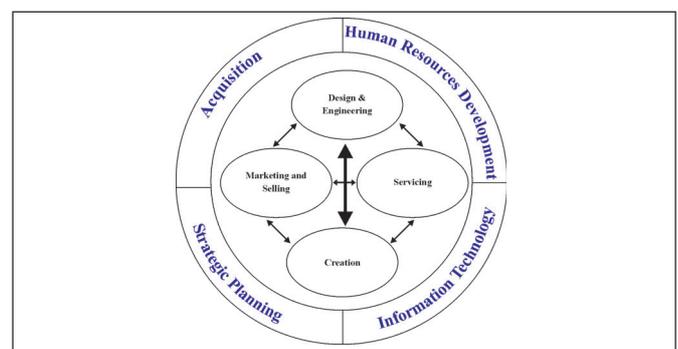


Figure 1. Primary and Support Value Addition Activities of a Telecommunication Service Provider

activities of a telecommunications service provider. The primary value addition activities are in the core and they continuously interact with each other, and with the support value addition activities, which are in the periphery.

The major activities under the primary value addition stages in a telecommunications service provider are design and engineering, creation, marketing and selling, and servicing. Technological capabilities in each of the primary value addition stages determine how well the firm could perform the activities in these stages. Design and engineering capability is concerned with network expansion and modernization, and designing new services. Creation capability is concerned with improvement in an existing product/process, creation of new organization structure and formation of joint ventures. The marketing and selling capability is concerned with identifying corporate and non-corporate customers, building rapport with them, identification of dealer networks and distribution channels, planning, monitoring and coordinating the logistics, marketing research and the public relations activities. The servicing technological capability represents the ability to provide high quality service/after sales services, disaster preparedness and security planning.

The major activities under the supporting activities are acquisition, human resources development, information technology and strategic planning. The acquisition capability refers to the capability to acquire technology, finance, raw materials, as well as planning, monitoring and coordinating the resource acquisition process. The human resources development capability determines the ability of the telecommunication service provider to recruit and retain high-level professionals who expect more challenges than merely routine work for a fixed rate of pay. The strategic planning capability is responsible for the development of long-term core competence of the firm. The information technology capability is concerned with the billing system, customer churn and, computer information networking in the service provider.

Each of the technological capabilities in the primary and support activities has a number of elements. To assess each technological capability it is necessary to assess all its elements. Assessment of each element necessitates identification of indicators of the element. Experts and practitioners then rate these indicators. The ratings of all indicators are then aggregated to obtain the overall rating of an element. The ratings of all elements then give an indication of the level of the concerned technological capability. In this paper, we represent the level of technological capabilities using hub-and-spoke polygons whose spokes represent the levels of the elements. At an aggregate level of overall technological capability, the spokes represent the various capabilities such as creation,

design and engineering, acquisition, etc.

Methodology

Qualitative research is used in this study since it is best suited for understanding the complex socio-economic phenomena in the telecommunications sector. Out of the many types of qualitative research, the case study approach is used for this study as it is best suited to the empirical inquiry that investigates bounded contemporary phenomena within the real life context (Creswell, 1997). This is especially useful when the boundaries between phenomenon and context are not clearly evident (Yin, 1994), as in this case where the object of the study is technological capability development focusing on mostly organizational and management issues and processes rather than technical issues. The interviews and discussions carried out with the personnel in the telecommunication service provider offered the convenience of combining both 'exploratory' and 'descriptive' methodologies, usually used in case study research, together. A case study gives a holistic view of the happenings around a topic, such as the one under investigation in this research, to examine technological capability development in telecommunication service providers, by going in-depth through interviews by the use of "why; how; who; what and when" questions (Wallace, 1984; Yin, 1994; and Zikmund, 1997). A number of other researchers have demonstrated the usefulness of the case method in

technological capability analysis, though in contexts other than the telecommunications sector (McCutcheon and Meredith 1993, Greenwalt 1994, Simon, Sohal and Brown 1994, McGuire 1995 and Corbett and Cutler 2000).

The research reported here is an outcome of the learning of the researchers from the research process. The socio-economic-technological system of a telecommunications firm presented a challenge to the researchers to delve in-depth into concerned managerial-technological issues. The researchers gained substantive knowledge of the telecommunications sector from the literature, from experts in the International Telecommunication Union and some rapidly developing companies, and observations of performance in the case company. This knowledge was then utilized in developing the detailed procedure for analysis and assessment of technological capabilities in a telecommunications firm.

Participant Selection

The International Telecommunication Union (ITU) is a repository of experts with extensive experience in telecommunications development, telecommunication standardization and regulatory affairs through out the world. Five experts in the ITU Asia and Pacific Regional office were invited to participate in identifying the technological capabilities, the elements of the technological capabilities,

Value addition activities performed by a firm can be broadly categorized into primary value addition activities and support value addition activities. Primary activities result in long-term competitive advantage.

and the indicators for assessment of each element. These experts had over 25 years experience in the ITU, and covered all aspects of telecommunication, from setting standards to adopting operational procedures for the vast and growing array of telecommunication services, and programs to improve telecommunications infrastructure in the region. Another eight senior experts at the Telephone Organization of Thailand (TOT), and the Thai Telephone and Telecommunication Public Company Limited (TT&T) were invited to examine the relevance of the indicators, and for pilot testing of the questionnaire for assessment of the indicators. Most of these practitioners-experts had over 20 years experience in the telecommunications sector, especially in corporate affairs, data services, telecommunication operations, network services and finance.

Twenty-two Sri Lanka Telecom (SLT) senior employees served as respondents for pilot testing the questionnaire and collecting data on technological capabilities. The respondents were Deputy General Managers (Heads of Groups in Customer Service, Human Resources, Network Planning and Engineering, Corporate Strategy, Billing and Collection, Budget, Project Budget and Finance, Business Development, Marketing, Information Technology, New Connections, Training, Maintenance and Quality Assurance). In addition to the above, face-to-face in-depth interviews were carried out with the Chief Executive Officer, the Chief Financial Officer (representatives of Nippon Telegraph and Telecommunication Company, NTT) and the Chief Operating Officer. The main idea of these verbal interchanges was to gain insight into the current and future developments at SLT. The Chief Executive Officer and the Chief Financial Officer had over 25 years of experience in telecommunications at NTT while the Chief Operating Officer had over 30 years of experience having worked earlier with the Department of Posts and Telecommunication, later at Sri Lanka Telecom Corporation and finally at SLT.

Data Collection and Analysis

Information for technology capability element and indicator development was collected through in-depth interviews with the ITU experts, and also through relevant published materials such as ITU handbooks (ITU-T, 1993, 2002), ITU operational bulletins and telecommunication handbooks (Minoli, 1991).

A questionnaire was used in gathering data for the case study from senior employees at SLT. The questionnaire comprised of both open format and closed format questions. Each of the closed format questions required answers from respondents for each of the 12 years from 1991 to 2002 and, in cases where answers could not be gathered for each year, for two epochs, 1991-1996 (pre privatization) and 1997-2002 (post privatization). A closed format multiple choice question was used in a situation where respondents only

needed to select one answer from a limited set of possible pre-determined answers. Sufficient choices were given to fully cover the range of answers. Using closed format questions allowed the researcher to filter out extreme answers that might occur in an open format question. Open format questions were used where greater breadth of understanding of the issues on various technological capability elements were necessary and also in instances where there were no predetermined set of responses. Through these questions, it was possible to solicit subjective data. The variety of responses was wider and reflected more truly the opinions of the respondents and increased the likelihood of receiving insightful suggestions. Information was also gathered from published materials such as annual reports, corporate plans, annual business plans and various advertising brochures of SLT. The dearth of reliable quantitative information especially for the pre-privatization period also influenced the choice of in-depth interviews and published materials. Moreover, the perspectives of the constituents could be evinced from the in-depth interviews.

For the purpose of analysis of data, the conventional pre-versus post-privatization comparisons were used (Kelly 1999, Bortolotti et al. 2002). Information was separated into two epochs from 1991 to 1996 (pre-privatization) and 1997 to 2002 (post-privatization). The post-privatization data were collected until end of 2002 assuming that the impact of privatization on the technological capability development would have diminished very substantially after five years. The data on elements and indicators of technological capabilities collected were analyzed to determine the levels of various technological capabilities pre- and post-privatization, using the assessment criteria presented in Appendix A.

Issues of Validity and Reliability

A preliminary list of the technological capability elements and indicators were discussed at length with senior managers at TOT and TT&T for validity and applicability. In the same manner, the questionnaire was pilot tested first with three experts at TOT and then with five SLT senior managers to provide feedback regarding wording, understandability, and applicability. In addition to the in-depth interviews with the SLT managers, information was also gathered from SLT's published materials to confirm some of the responses. Using multiple sources, like sizable number of respondents, and secondary sources such as annual reports and corporate plans of SLT, for data and information is likely to provide more convincing and accurate assessment of technological capabilities (Yin, 1994).

Respondent/participant feedback on the procedure, the technological capabilities, their elements and the indicators for assessment were regularly used throughout the study to ensure robustness of the procedure. The final results of the values of the indicators were discussed with relevant

Major activities under the primary value addition stages in a telecommunications service provider are design and engineering, creation, marketing and selling, and servicing.

departmental/divisional managers at SLT to ensure the relevance and applicability of the assessment.

Technological Capability Assessment

A three-step procedure is used in assessing the technological capability of telecommunication service providers (Figure 2). The first step in this procedure is identification of the value addition stages. At this step, the technological capability elements are identified. Possible indicators for each of the technological capability elements are identified at Step 2. The criteria for different levels (high, low, medium) of the indicators are determined at Step 3. These levels are used for assessment of the technological capability elements. Below it is described how assessed ordinal values of indicators are combined to determine the assessed value of a technological capability element.

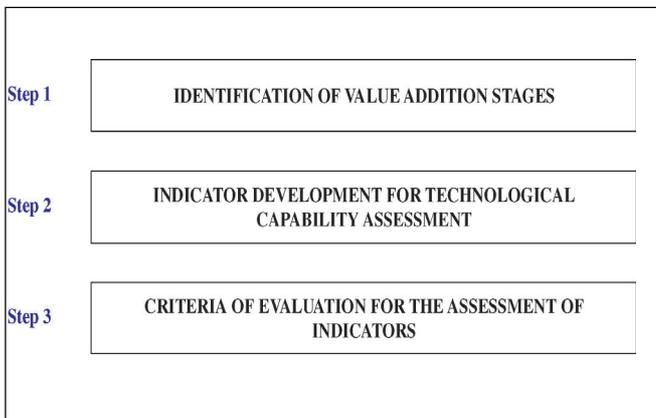


Figure 2. A Procedure for Technological Capability Assessment of a Telecommunication Service Provider

Identification of Value Addition Stages

In the telecommunications sector, it is rare for a single service provider to perform all the primary value addition stages. The relative importance of the primary value addition stages and support activities with respect to their contribution towards the overall value creation is used to identify the technological capability elements where technological capability assessment needs to be carried out.

Major activities under the supporting activities are acquisition, human resources development, information technology and strategic planning.

Indicator Development for Technological Capability Assessment

Considering the existence and interaction of many qualitative factors, a number of objective and subjective indicators may be used for the measurement of technological capability elements. The number of indicators needed may vary depending on the capability element being assessed. Fig. 3 and Appendix A, Table A-6 show an example, where several indicators were identified for each capability element, in this case of human resource development capability. The indicators for assessment of capability elements must be measurable from available data, and also satisfy the criteria for reliability and validity.

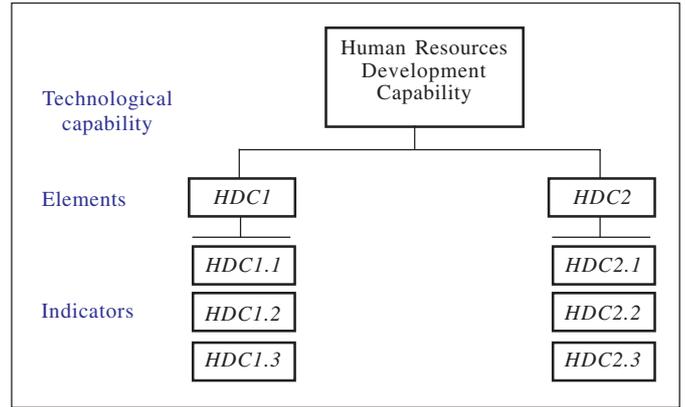


Figure 3. Schematic Representation of the Indicators for Assessing Human Resource Development Capability

Appendix A (Tables A-1 to A-8) shows a set of possible indicators for assessing the technological capability of a telecommunication service provider in the primary value and support addition activities (creation, design and engineering, marketing and selling, servicing, acquisition, human resources development, information technology and strategic planning). Several surrogate indicators of different categories are needed for a comprehensive assessment of each element of technological capability.

First, the input indicators measure the inputs in absolute terms, e.g., total training hours used. Second, the output indicators measure the output or final achievements, normally specified in the form of output per unit time, such as the number of telephone connections given during a particular period. Third, the productivity indicators show the resource utilization efficiency, and include labor productivity, capital productivity, material productivity etc. Fourth, the effectiveness indicators refer to doing the right

things rather than focusing only on doing things right. These indicators represent how effectively an activity

is performed. The diversity of the R&D planning group, extent and strength of linkages among R&D, academia and industry; availability of critical mass in R&D funding are some possible examples of these indicators. These indicators, while difficult to develop, attempt to assess whether capabilities are available or are being used to do the right things.

Table 1. Selected Performance Indicators for Pre- and Post-Privatization Periods

Performance Indicator	Pre-Privatization Period (1991 – 1996)	Post-Privatization Period (1997 – 2002)
Average Annual Revenue (in SL Rs. Million)	6675	19,585
Average Number of Subscribers	204,350	768,620
Average Number of Subscribers for Enhanced Services (SLT PLUS)	Nil	24, 694

Criteria of Evaluation for the Assessment of Indicators

In order to analyze the levels of various technological capability elements, the evaluation criteria have been decided for “low”, “medium” and “high” ratings as given in Tables A-1 to A-8. These ratings are based on industry norms (based on extensive discussions with experts at ITU, TOT & TT&T, and number of handbooks published by ITU). The “low”, “medium” and “high” ratings in Tables A-1 to A-8 refer to the indicator values. Most of the indicators given in Tables A-1 to A-8 have a positive meaning. When arriving at the level of the capability elements, the ratings and levels of indicators will have the same meaning. However, in some instances indicators with a negative meaning (for example, degree of dependence) have been used. In such instances, when arriving at the level of the capability element, the inverse meaning has to be taken (e.g., low degree of dependence means a high capability). Not all the proposed indicators will be relevant for all telecommunications service providers.

Case Study - Sri Lanka Telecom

In this section, the procedure suggested in the previous section is applied to Sri Lanka Telecom (SLT) in order to examine whether or not technological capability development occurred after privatization. Before proceeding with the analysis of technological capability, a brief description of the company is presented below.

Sri Lanka Telecom (SLT) is the premier telecom service provider in the country and has a customer base of over 750,000. SLT services range from basic voice to advance data transmission services which include internet services both on leased lines and dial up, data circuits, frame relay solutions, total solutions of combination of multiple services etc. Its fully digital transmission network consists of optical fibre rings and digital microwave transmission links.

SLT's digital transport network consists of digital microwave radio systems and optical fibre network operating on synchronous digital hierarchy (SDH) connecting over 500 digital switching nodes scattered in every corner of the island. A fibre optic SDH backbone transmission ring of 700km covering four provinces, with nodes in fourteen major cities, has also been deployed. SDH fibre optic transmission links operations cover whole of Greater Colombo area. The company extends its connectivity through its three international gateways.

Two digital fibre optic cables: SEA-ME-WE II and SEA-ME-WE-III complement the three digital satellite earth stations. With these facilities, SLT is able to provide a reliable, high quality International Direct Dialing (IDD) service to 219 countries and international Integrated Services Digital Network (ISDN) service to major destinations. SLT's international links to major destinations are on Consultative Committee on International Telegraphy and Telephony No

7 signalling.

SLT was privatized with the collaboration of Nippon Telegraph and Telecommunication Company (NTT) in 1997. Government of Sri Lanka owns 61.5 % shares and NTT owns 35.2%, while the employees and the public own 3.3%. With a share holding of more than 35%, NTT assumed management control.

Technological Capabilities

As a telecommunication service provider SLT is actively engaged in some primary (in design and engineering, servicing, marketing and selling, but not in creation) and all the support (acquisition, human resources development, information technology, strategic planning) value addition activities.

Some explanation is essential regarding the determination of the ordinal value for each capability element, which is derived by combining the values of a set of constituent qualitative and/ or quantitative indicators. As an example for the element ACC4 (Capability to assess, negotiate and finalize the terms of finances - in Table A-5. under the Acquisition Capability), there are two quantitative indicators ACC4.1 (percentage of financial packages identified, assessed and negotiated without any external support) and ACC4.3 (number of projects sponsored through bilateral and multilateral agencies) and one qualitative indicator ACC4.2 (degree of dependence for the procurement of finance). For the pre-privatization period, the first indicator ACC4.1 was rated ‘low’ (L) reflecting low ACC4. The second (ACC4.2) and the third (ACC4.3) indicators were rated ‘medium’, reflecting medium ACC4. Thus, there were two indicators that showed a ‘medium’ (M) level of ACC4 and one, which showed a ‘low’ (L) level of ACC4. The overall level of ACC4 for pre-privatization period was thus considered to be between ‘low’ and ‘medium’. The respondents adopted this procedure for determining the state point of all capability elements, practically giving equal weights to all indicators of an element.

In most cases, there was only one respondent to assess each element, who rated all indicators of the element. In instances where there were more than one respondent from the same group or division assessing a particular element with a number of indicators, a consensus was reached among the respondents regarding the indicator ratings.

In the case study, certain elements have an “insignificant” rating. This “insignificant” rating lies between the point of origin and “low” rating. Certain elements are “non-existent”. In such instances it is considered to lie at the point of origin. Assessment of each of the eight capabilities and their elements is discussed in more detail below. Figures 4 to 11 show graphically the relevant technological capabilities for both pre- and post-

In the study, the level of technological capabilities is represented using hub-and-spoke polygons whose spokes represent the levels of the elements.

privatization periods. The increase in the area of the polygon represents the extent of technological capability development.

Creation Capability (CRC)

The assessment of the four elements of the creation capability for both pre- and post-privatization periods is as follows:

CRC1. Capability to adapt and modify existing process, applications, service and communication infrastructure

CRC1 was non-existent during the pre-privatization period, since SLT did not carry out any major R&D. During the post-privatization period, CRC1 was considered to be insignificant by the Chief Operating Officer, since the engineers only worked with the suppliers in modifying existing processes, applications and communication infrastructure to suit the needs of Sri Lanka.

CRC2. Capability to create new organizational structure

During the pre-privatization period, the respondents rated CRC2 as insignificant. The reason pointed out was that SLT had hardly any changes to its organizational structure except for becoming a corporation in 1991. During the post-privatization period, CRC2 was rated to be medium. During this period SLT underwent major restructuring of privatization with the collaboration of NTT of Japan. The merger was a major organizational change. In the year 2000, the organizational structure went through a further major change with the introduction of new groups, and divisions. SLT management introduced a flat organizational structure (with few levels such as heads of groups, heads of regions and heads of divisions, provinces and sections). With the flat structure in place, the SLT management was of the view that they were able to eliminate many administrative functions to quicken budget, performance, overtime analyses and actions. With the elimination of many levels of hierarchy, senior managers stated that communications significantly improved through increased interaction among staff, and top-level management as well as between internal groups.

Case study approach is used in the study as it is best suited to the empirical inquiry that investigates bounded contemporary phenomena within the real life context.

CRC3. Capability to plan, monitor and control R&D projects

Since SLT did not carry out R&D work, the respondents rated CRC3 as non-existent for both pre- and post-privatization periods.

CRC4. Capability to manage joint venture partnerships

During the pre-privatization period, CRC4 was rated as non-existent since there were no joint venture partnerships. During the post-privatization period, CRC4 was rated as medium. The reasons pointed were related to the seemingly successful joint venture of NTT of Japan and SLT, which transformed SLT into a high performing firm with transfer of technology and management skills from NTT.

The creation capability is at a very insignificant level at SLT and thus in Figure 4, its ratings are shown for both pre-

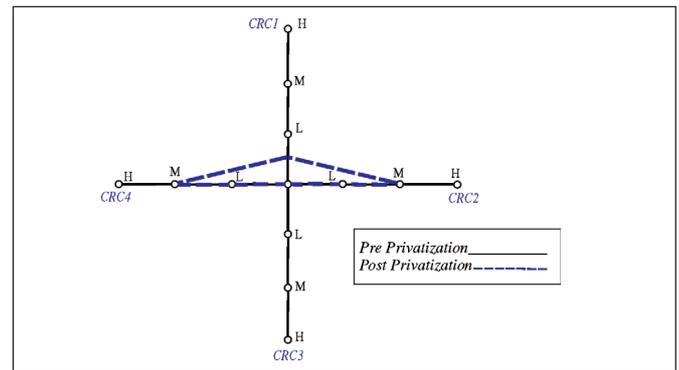


Figure 4. Creation Capability Before and After Privatization

and post-privatization periods, merely to indicate that almost all the elements are insignificant or non-existent, and have yet to be developed.

Design and Engineering Capability (DEC)

The assessment of the five elements of the design and engineering capability for both pre- and post-privatization periods is discussed below.

DEC1. Capability to carry out network expansion or facility planning

During the pre-privatization period the respondents rated DEC1 to be at a low level. The reason for this is because all the projects that were carried out by SLT during this period were with the full assistance of external consultants. During the post-privatization period DEC1 was rated to be at a medium level. During this period out of the twelve projects that were carried out by SLT, eight projects were performed without any external assistance and for the other four projects external assistance was necessary. The eight projects were carried out entirely by the staff of network planning and engineering group. The staff has been trained on evolving telecom networks from 1998 September. The staff has adequate and reasonable experience on multiple access schemes, such as Code Division Multiple Access (CDMA), network infrastructure, cell planning, development of Synchronous Digital Hierarchy (SDH) over Plesiochronous Digital Hierarchy (PDH), Asynchronous Transfer Mode (ATM) introduction, integrated services digital network (ISDN), network termination equipment, etc.

DEC2. Capability to carry out network modernization

During the pre-privatization period DEC2 was rated as medium. The reason for this is during this period, digital switching, digital transmission, PDH, copper and optical fibre access as well as digital radio access were used. During the post-privatization period, DEC2 was rated to have reached a high level with the introduction of new technology for network modernization. With NTT bringing in the required

capital and technical know-how, SLT was able to invest heavily in upgrading and strengthening the main telecom infrastructure such as SDH multi-service transmission systems and third party data equipment with fibre-optic cable installations. ISDN was introduced in 2000 and according to the Chief Executive Officer; SLT became the pioneer service provider in South Asia to offer this service to its customers.

DEC3. Capability to implement new services

During the pre-privatization period DEC3 was rated as low since very few new services such as payphone (coin and card), fax and paging were introduced. During the post-privatization period, DEC3 was rated as medium. Various new services such as Internet, e-mail, e-fax, and frame relay, Asymmetric Digital Subscriber Line (ADSL) as well as ISDN were introduced by SLT during this period.

DEC4. Capability to prepare technical master plan

During the pre-privatization period, the respondents rated DEC4 to be at a low level. During this period, technical master plan was mainly prepared on a turnkey basis with funding coming from a World Bank contract through the assistance of external agencies such as SOFRECOM. SOFRECOM is a company in the France Telecom Group. During the post-privatization period, DEC4 was rated as medium. With the privatization, the Telecom Training Centre (of SLT) teamed up with Asia Pacific Network Information Centre to train engineers on network planning. Currently SLT carries out most of their network planning without external assistance.

DEC5. Capability for representation in ITU/ other international standards organization

During both pre- and post-privatization periods, DEC5 was rated to be at a low level. The respondents mentioned that even though SLT is a member of ITU, not a single SLT staff member served in ITU or other international standards organization such as Asia Pacific Telecommunity (APT).

The comparative picture of design and engineering capabilities of SLT during pre and post privatization periods is presented in Figure 5. From this figure it is clear that for almost all elements of design and engineering capability SLT's level of capability has reached a higher level during the post-privatization period.

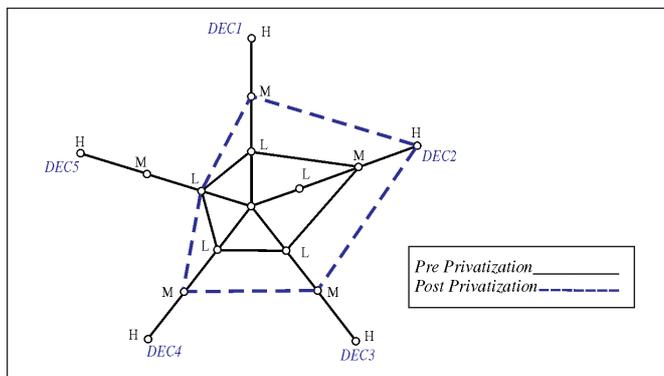


Figure 5. Design and Engineering Capability Before and After Privatization

Marketing and Selling Capability (MSC)

There are eleven elements of the marketing and selling capability. The assessment of these elements for pre- and post-privatization periods is described below.

MSC1. Capability to identify customers, and bid and negotiate the terms of sales

During the pre-privatization period, the respondents rated the overall MSC1 to be insignificant. The first indicator MSC1.1 (Total revenue increase) from all telecom services during the period amounted to less than 5% and therefore rated as insignificant. This was mainly due to the political unrest in the early 90's, economic downturn due to power outages during 1995 and also due to less number of expansion projects in the country. The second indicator, MSC1.2 (Teledensity – number of telephones per 100 people) during the period was 0.74 and this was also rated as insignificant. During the post-privatization period, the overall MSC1 was rated as between low and medium. Total revenue increase from all telecom services surged immediately after the privatization, from a mere 10% in 1996 to 32% in 1997. The average total revenue increase during the post privatization period was 15.6%. The total revenue increased from Rs. 13.7 billion in 1997 to Rs. 22.1 billion in 2002. Thus during this period, MSC1.1 was rated as medium. Teledensity rose to 3.9 by the end of 2002. Compared to industrial countries such as US, with a Teledensity of over 70, the Sri Lankan figure is low. Thus, the respondents rated MSC1.2 to be at a low level.

MSC2. Capability to develop and maintain the transmission channel for the service

During the pre-privatization period the overall MSC2 was rated to be low. All the major transmission projects were carried out on a turnkey basis, therefore external support was necessary for design, engineering and construction, thus MSC2.1 was rated as low. Developing and maintaining the transmission channel including the quality of transmission, were carried out with the use of copper cables and existing facilities, therefore MSC2.2 was also rated as low. During the post-privatization period the overall MSC2 was rated as medium. According to the Head of the Marketing Group, for some transmission projects external support was necessary. Assistance was necessary for construction, construction supervision and for project management tasks of the transmission projects. Thus MSC2.1 was rated as medium. Developing and maintaining the transmission including the quality of transmission were carried out through SDH, PDH, and ATM etc., and MSC2.2 was rated as medium.

MSC3. Capability to provide service to customers, as per contract

During the pre-privatization period MSC3 was rated as low since the waiting time for a telephone connection extended beyond 3 years and the service was never delivered on time. During the post-privatization period respondents rated MSC3 to be between medium and high. During this period,

the time taken to deliver the service is less than one month. Especially in all locations in the Colombo Metro region and other major cities, telephone connections are available over the counter. The waiting time for a telephone connection has been completely eliminated in those areas. Even in rural areas, SLT has been able to meet the demand if a network is available.

MSC4. Capability to plan, monitor and coordinate marketing and selling activities

During the pre-privatization period the overall MSC4 was rated as low. For most of the major projects, the cost over-run was more than 20%. The major reason for the cost over-run was poor planning, and monitoring of projects. The Gampaha expansion project carried out by SUMITOMO Corporation had a delay of 14 months, thus MSC4.1 was rated as low. MSC4.2 (actual revenue as a proportion of planned revenue) recorded a figure of less than 1; therefore MSC4.2 was rated as low. MSC4.3 (the average delay in making payments) was more than 11 months and it was rated as low. During the post-privatization period, the overall MSC4 was rated as medium. The cost over-run during this period was between 5% and 20%, therefore MSC4.1 was rated as medium. Actual revenue as a proportion of planned revenue recorded a figure between 0.9 and 1; therefore MSC4.2 was rated as medium. The debt holding ratio improved from 11.6 months in 1996 to 3.67 months in 2001; therefore MSC4.3 was also rated as medium.

Sizable level of the improvement in the service provider may have resulted from changes in the regulatory conditions in the country as well as improvements in the telecommunications technology worldwide rather than from privatization alone.

MSC5. Capability to carry out marketing research

During the pre-privatization period, since marketing research was not carried out the respondents rated MSC5 as non-existent. The senior managers were of the view that due to the monopoly situation enjoyed by SLT, the need and necessity in carrying out marketing research was not felt. During the post-privatization period, MSC5 was rated as high because with the privatization of SLT, the management set up the Marketing Planning Division. The SLT staff now carries out marketing research to evaluate and plan for launching of new products. In addition, they also measure SLT's market position within the corporate/business and general customer segments.

MSC6. Capability to carry out customer need analysis

During the pre-privatization period, since customer need analysis was not carried out, the respondents rated MSC6 as non-existent. During the post-privatization period MSC6 was rated as high. SLT staff carry out customer need analysis to know what its customer needs are especially in the case of Voice Mail Service (VMS), SLT CLI (Sri Lanka Telecom caller line identification).

MSC7. Capability to increase the number of subscribers for enhanced services

During the pre-privatization period, since enhanced services were not available, the respondents rated MSC7 as non-existent. During the post-privatization period, this was rated as medium. The reasons were that after privatization, and also losing the monopoly status, SLT faced competition from other telecommunication service providers. SLT then had to introduce enhanced services such as SLTPLUS (Sri Lanka Telecom PLUS), which is a package with call forwarding, call waiting, conference call (3 party calling), hotlines, absentee services, abbreviated dialing, all for a fee of less than a dollar per month. According to the Head of Marketing Group, the customer base for SLTPLUS had surged from 338 in 2000 to 24,694 accounts in December 2002.

MSC8. Capability to introduce different user packages

During the pre-privatization period MSC8 was rated as non-existent since SLT did not introduce different user packages.

During the post-privatization period MSC8 was rated as medium. Several user packages such as heavy to low International Direct Dialing (IDD) for business users, heavy to low domestic IDD user packages, SLT Net, which includes Public Switched Telephone Network (PSTN) dial up at 56 kbps, 128 kbps, and 512 kbps and 2 Mbps, client mail server installation, and web hosting were offered. SLT's ISDN customer base grew by 353 new customers to reach 1167 at the end of 2002.

MSC9. Capability in public relations activities

During the pre-privatization period MSC9 was rated as insignificant since major advertising activities were not carried out, other than sponsoring some sports events. During the post-privatization period MSC9 was rated as medium. The advertising cost as percent of operational expenses was between 0.75% and 1%. SLT in association with Directories Lanka (Pvt.) Limited (DLPL), the official publishers of The Sri Lanka Telephone Directory and the 'Yellow Pages', continued to promote and upgrade artistic talents and creative expressions among the youth through the "Directory Cover Painting Competition".

MSC10. Capability to maintain a customer database

During the pre-privatization period, MSC10 was rated as non-existent since such a database was not maintained. During the post-privatization period, MSC10 was rated as low. Even though a customer database is not maintained at present, according to the Head of Information Technology Division, through the computerized billing system, certain reports could be obtained.

MSC11. Capability to identify corporate customers or high volume business users

During the pre-privatization period MSC11 was rated as non-existent. During this period, the corporate customers were only considered as business customers and they had to pay more for all the services and there were no special privileges granted to them. During the post-privatization period MSC11 was rated as low. With the setting up of the Corporate Marketing Unit, SLT started thinking critically about the corporate customer churn and considered taking them into a long-term revenue commitment. Initiatives have been adopted by SLT to win corporate customers, by giving priority to service, offering tailor-made service packages, bulk discounts, and installation of digital data access equipment in key locations and increasing access bandwidth to accommodate ISDN and offering frame relay solutions. From 2000, SLT, “go the extra mile” for their blue chip clientele.

The comparative picture of the marketing and selling capabilities of SLT for both pre- and post- privatization periods is presented in Figure 6. It is remarkable to see the post privatization polygon showing an increase in almost all the elements.

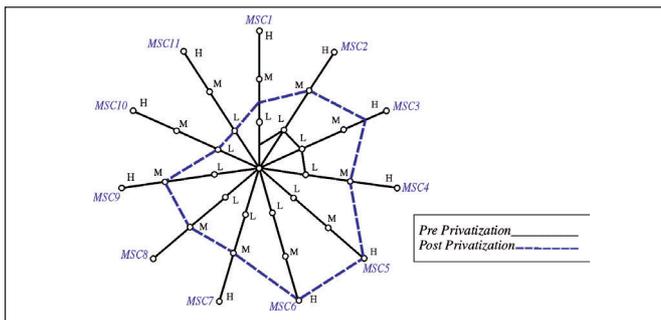


Figure 6. Marketing and Selling Capability Before and After Privatization

Servicing Capability (SVC)

The assessment of the three elements of the servicing capability is as follows:

SVC1. Capability to provide quality service to customers

During the pre-privatization period the overall SVC1 was rated as low. The response time to install a new line (SVC1.1) exceeded 3 years; in some instances people had to wait for more than 10 years to obtain a telephone connection, because very few expansion projects were implemented. The average time taken to provide an installation cost estimate (SVC1.2) was between 5-6 months. The fault clearance rate (SVC1.3) was remarkably low during this period. The percentage of calls that failed during the busy hour due to network congestion (SVC1.4) was more than 20%. Data was not available during the pre-privatization period for the total number of faults reported (SVC1.5). Therefore, all four indicators of this element were rated as low during the pre-privatization period.

During the post-privatization period the overall SVC1 was rated between medium and high. According to the Head of New Connections Division, especially in Colombo Central, Colombo Metro and Havelock Town, the response time for a new line was less than a day, while at other places the response time (SVC1.1) was more than two weeks, and therefore, was rated as medium. The installation cost estimate (SVC1.2) was provided over the counter in the areas mentioned earlier while the overall time taken in other areas of the country was less than a week, and this indicator was rated as medium. SLT has achieved a 96% rate of fault clearance (SVC1.3) within twenty-four hours in the Colombo Metropolitan area and 83% in the whole island. The ‘121’ fault reporting centers were introduced in 1998 and this was further strengthened during 2000 and 2001. By contacting just one number ‘121’ a fault can be reported. This is a charge free number, and accesses a fully computerized system permitting automated data transfer from the ‘121’ center to all regional maintenance centers. Therefore, this indicator was rated as high. The percentage of calls that failed during the busy hour due to network congestion (SVC1.4) was less than 8%, and thus was rated as low. The total number of faults reported (SVC1.5) was 7.3%. The regions have been provided with adequate resources and new resource management systems, which have contributed significantly to a dramatic improvement in their faults clearance ratios. Therefore SVC1.5 was rated as high.

SVC2. Capability to adhere to high standards of safety and security

During the pre-privatization period the overall SVC2 was rated between low and medium. No measures were taken to implement ISO standards, thus SVC2.1 was rated as insignificant. However, the level of the protection system for telephone switching (SVC2.2) was high, thus SVC2.2 was rated as high. During the post-privatization period, the overall SVC2 was rated as medium. Some measures have been taken by SLT in implementing ISO standards with the setting up of a Quality Assurance Division. Head of the Quality Assurance Division, together with the staff in that division are now in the process of implementing 5S system. Thus SVC2.1 was rated as low. According to the Head of the Quality Assurance Division, a high level of the protection system for telephone switching is maintained, thus SVC2.2 was rated as high.

SVC3. Capability to have a disaster recovery plan

During the pre-privatization period SVC3 was rated as insignificant. There were no specific mechanisms in terms of a time frame within which to initiate restoration work. Normal engineering calculations were used in dimensioning the system, which included certain redundancy factors. In the event of a disaster, SLT responded in normal government fashion; it purchased replacement equipment outside normal procurement rules; threw practically unlimited labor resources at the problem and restored the service as quickly as possible. During the post-privatization period, the respondents rated SVC3 as low. With the privatization, the

Telecommunication Regulatory Commission sought to enforce license conditions, which included measures for disaster management. SLT took the Y2K problem, which was described as a disaster of uncertain proportions but with a certain date, very seriously and it was handled well. However, Sri Lanka's man made endemic disasters of terrorism, which included a series of deadly suicide bombing attacks on the capital city, caused serious problems to the network thus the entire system crashed during the traffic congestion. Currently SLT is planning to mitigate the effects of disasters, however still a long-term solution to disaster recovery has not been implemented by SLT.

The comparative picture of the servicing capability is presented in Figure 7. It shows that SLT possess a medium level of specialization for almost all elements of servicing capability after the privatization. However, there is room for improvement.

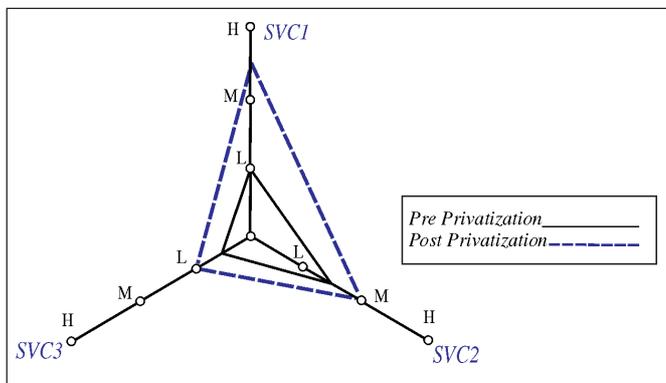


Figure 7. Servicing Capability Before and After Privatization

Acquisition Capability (ACC)

The assessment of the five elements of acquisition capability is described below, for both pre- and post-privatization periods.

ACC1. The capability to carry out projects/investments

During the pre-privatization period ACC1 was rated as low as only US\$25.7 million was spent on investments. According to the Head of Treasury Division these investments were from Government Guaranteed Project loans. During the post privatization period ACC1 was rated as medium. US\$156.4 million was spent from Government Guaranteed Project loans, while SLT also undertook US\$119 million worth of projects. During the post-privatization period, 56% of the projects are financed with SLT's own funds while 27% by overseas development agency funding and 17% with suppliers' credit.

ACC2. Capability to identify, negotiate and finalize the terms of the technology to be acquired

During the pre-privatization period the overall ACC2 was rated as insignificant. All the projects undertaken were on turnkey basis and external consultants carried out technology acquisition work, thus ACC2.1 was rated as insignificant. No database on operation information of technologies was maintained since the projects were on turnkey basis, thus

ACC2.2 was rated as non-existent. To perform contractual activities (ACC2.3), SLT required external assistance. External consultants handled tender document preparation, bid evaluation, and pre-tender conference. Therefore, the dependence was very high, thus ACC2.3 was rated as insignificant. During post-privatization period the overall ACC2 was rated as low. Most of the projects were carried out on turnkey basis, while SLT also undertook some projects. Thus, ACC2.1 was rated as low. Although the need for maintaining a database on operation information for technologies used has been felt, no such database exists at present, thus ACC2.2 is non-existent. SLT now has in house capability of carrying out contractual activities such as floating tender, bid evaluation, contract negotiation and letter of award placement. However, external consultants carry out such contractual activities for projects funded by Japan Bank for International Corporation (JBIC), and therefore, ACC2.3 was rated as low.

ACC3. Capability of having up-to-date information about specifications, quality and availability and price of required components

During both pre-privatization and post-privatization periods, SLT performed all activities pertaining to procurement of raw materials, supporting facilities and consumables. Thus the degree of dependence was low and capability high.

ACC4. Capability to assess, negotiate and finalize the terms of finances

During the pre-privatization period, the overall ACC4 was rated between low and medium. All the financial packages (11 loans) identified (ACC4.1) during the pre-privatization period were with external support, thus ACC4.1 was rated as low. Although SLT staff carried out the assessing, negotiating and finalizing the terms and conditions (ACC4.2), the concerned personnel rated ACC4.2 as low. Number of projects sponsored through bilateral and multilateral agencies were more than five, thus ACC4.3 was rated as medium. During the post-privatization period the overall ACC4 was rated between low and medium. Six loans were identified with the support of external agencies, thus ACC4.1 was rated as low. ACC4.2 was also rated as low even though SLT staff carried out the assessing, negotiating and finalizing the terms of condition. According to the Head of Treasury Division, more than five projects were financed, through bilateral and multilateral agencies, thus ACC4.3 was rated as medium.

ACC5. Capability of the organization to plan, monitor and coordinate the resource acquisition process and vendor development

During the pre-privatization period, ACC5 was rated as low. The average time overrun during the resource acquisition process as a percent of scheduled time was high. According to the Chief Operating Officer who was working at that time with the Sri Lanka Telecomm Corporation, pre-privatization political involvement in the procurement process hampered expansion considerably as it took nearly one-year to obtain approval. During the post-privatization period, ACC5 was

rated as medium. The current system provides a budget for procurement for each project that is approved by the Board and included in the annual business plan. The Tender Board consisting of Chief Executive Officer (CEO), the Chief Operations and the Chief Technical Officer select suppliers, and best possible prices are negotiated. The average time taken to complete the procurement process has improved greatly to 2-3 months.

The comparative picture of the acquiring capability is presented in Figure 8. It shows that SLT possess a higher level of specialization for some of the elements of acquisition capability during the post-privatization period. However the management was of the view that special emphasis has to be given by SLT to areas such as maintaining databases for operation information and for identification of favorable financial packages.

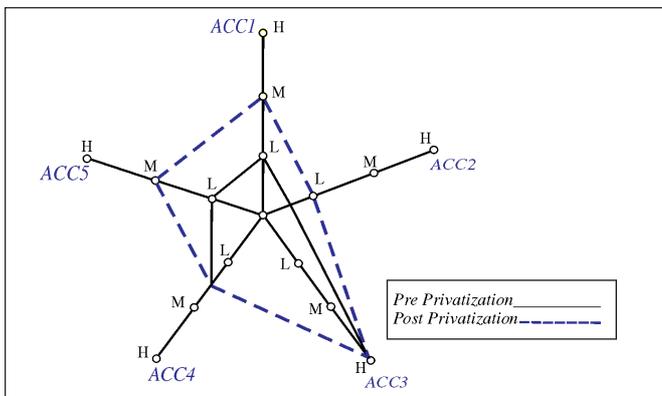


Figure 8. Acquisition Capability Before and After Privatization

Human Resources Development Capability (HDC)

The two elements of the human resources development capability are assessed below for both pre and post-privatization periods.

HDC1. Capability of recruiting and retaining highly qualified technical staff

During the pre-privatization period the overall HDC1 was medium. The percentage of technical professionals (HDC1.1) among total staff was 14%, thus HDC1.1 was rated as medium. However, the percentage of IT professionals (HDC1.2) was less than 10%, thus HDC1.2 was rated as low. The technical staff at SLT had very basic knowledge of computers. The average annual rate of professional employees resigning (HDC1.3) during this period was less than 10%; therefore SLT had a high capability of retaining professionals. During the post-privatization period the overall HDC1 was rated as medium. The percentage of technical professionals (HDC1.1) was 13%, thus HDC1.1 was rated as medium. The percentage of IT professionals (HDC1.2) were more than 40% since most of the staff had training in IT, thus HDC1.2 was rated as medium. The average annual rate of professional employees resigning (HDC1.3) was more than 10% due to the availability of more job opportunities in the private sector and abroad for computer, telecommunication and electronic engineers. Some

of the employees received early retirement benefits after serving SLT for more than twenty years, and then joined private telecommunication service providers. HDC1.3 was rated as medium.

HDC2. Capability of providing training to improve the skills and abilities of employees and to motivate them

During the pre-privatization period the overall HDC2 was rated between medium and high. SLT has its own Telecom Training Centre. There are two main centers at Welisara and Moratuwa and three regional training centers at Galle, Peradeniya and Anuradhapura. During the pre-privatization period, the average number of days of training per person (HDC2.1) was more than 9 days (7 hours *9 = 63 hours), thus HDC2.1 was rated as high. An SLT employee on an average received (HCD2.2) over 15% of the total person-hour of training from outside the organization, especially overseas, thus HDC2.2 was rated as medium. On an average, 30% of the training material preparation (HDC2.3) was carried out by outside agencies. The training need identification, training evaluation was carried out in-house, thus HDC2.3 was rated as medium. During the post-privatization period the overall HDC2 was rated between medium and high. The average number of days of training per person (HDC2.1) was more than 6 days (7 hours*6 = 42 hours). According to the Head of Human Resources Group, from 1997, the main objective of Human Resources Division was to prepare the employees for change to face new challenges of a company in a competitive environment, thus HDC2.1 was rated as high. An SLT employee received on an average 13% of the total person-hour of training (HDC2.2) from outside the organization, thus HDC2.2 was rated as medium. The degree of dependence in carrying out various training activities (HDC2.3) was rated as medium.

The comparative picture of the human resources development capability is presented in Figure 9. It shows that there was no impact from privatization on human resources development capability since the level of the capabilities did not show any increase during post-privatization period.

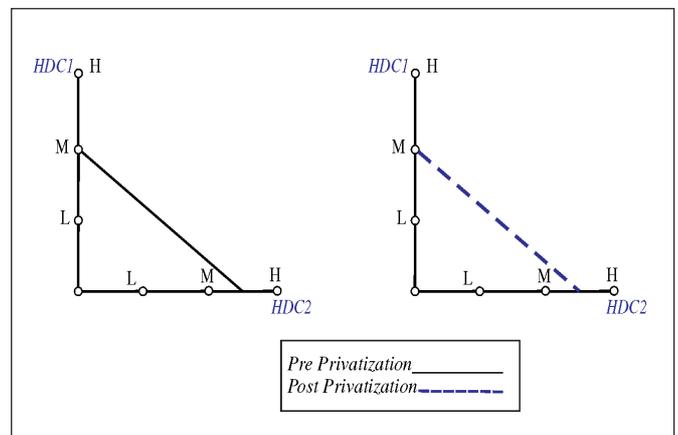


Figure 9. Human Resources Development Capability Before and After Privatization

Information Technology Capability (ITC)

The three elements of the information technology capability are assessed below for both pre-and post-privatization periods.

ITC1. Capability of having a flexible billing system

During the pre-privatization period ITC1 was rated as low. During this period, the billing system was not computerized; therefore the flexibility of the system was very low. During the post privatization period, ITC1 was rated as medium. Billing system was computerized in 1997, however a separate billing is made for each service and converged billing cannot be provided. A detailed billing is provided only on customer request. According to the Heads of Billing and Collection Division and Information Technology Division, a new flexible billing system, which can accommodate a wide range of customer friendly packages and discount schemes, was on the cards.

ITC2. Capability of maintaining a database for churn rate

No such database was maintained during both pre and post privatization periods, thus this capability was rated as non-existent. Head of Information Technology Division is considering developing a database especially for their blue chip clientele due to various marketing activities carried out by SLT's rival telecom service providers.

ITC3. Capability of providing information support and networking

During the pre-privatization period, the overall ITC3 was rated as low. During this period, the usage of computers in different regional telecommunication centers was low and less than 50% of the information (ITC3.1) was accessed through computerized databases, thus ITC3.1 was rated as low. The reliability of the information system (ITC3.2) was rated as low since the databases were not up-to-date. There was no networking within and outside the organization, thus ITC3.3 was non-existent. During the post-privatization period, the overall ITC3 was rated between medium and high. More than 90% of the information needs (ITC3.1) are met by accessing computerized databases, thus ITC3.1 was rated as medium. During the post-privatization period, the desired information is available when needed, accurate and up-to-date, thus ITC3.2 was rated as high. With respect to networking (ITC3.3), a Wide Area Network (WAN) was introduced in 1997 and now almost all the offices of SLT are in the WAN. The SLT headquarters has three main multi-storey buildings, and they have a separate local area network (LAN) with a fibre optic backbone. Thus, ITC3.3 was rated as medium.

The comparative picture of the information technology capability is presented in Figure 10. This figure shows that with privatization the capability level of two elements showed a significant improvement. However, special attention has to be given for maintaining a database for the churn rate.

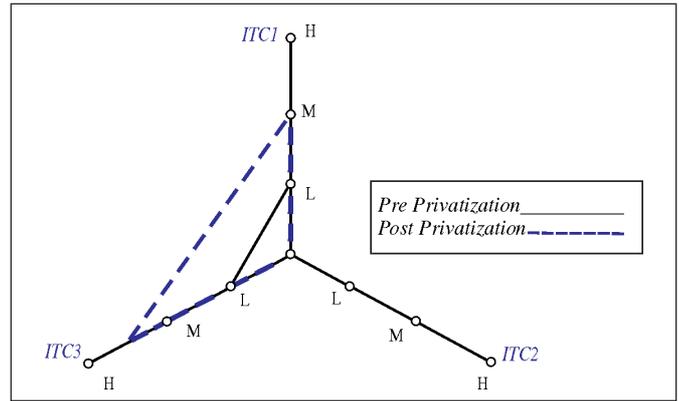


Figure 10. Information Technology Capability Before and After Privatization

Strategic Planning Capability (SPC)

The two elements of the strategic planning capability are assessed below for both pre- and post-privatization periods.

SPC1. Capability to undertake strategic planning

During the pre-privatization period, the overall SPC1 was rated between low and medium. During this period, according to the senior managers, SLT was under capacity and could not meet the demand of the consumers, thus SPC1.1 was rated as low. With respect to the average price of national calls (SPC1.2), SLT was under pricing the local call charges by increasing the IDD charges and therefore had a national call charge of US\$0.015 per minute, thus SPC1.2 was rated as medium. During this period, SLT introduced digital transmission and therefore due consideration was given to the future thrust of technology, thus SPC1.3 was rated as medium. SLT followed a weak-follower strategy during the pre-privatization period by waiting until the technology is proven and acquired well-proven and old technologies, thus SPC1.4 was rated as low.

During the post-privatization period, the overall SPC1 was rated as medium. The optimal reserve margin (Note1) SPC1.1 is 0.23. SPC1.1 was rated as medium. During this period, SLT increased the domestic call charges (SPC1.2), thereby reducing the IDD rates and now the domestic call charges are US\$ 0.032 per minute. SLT is reducing international call charges by 8-10% every year, thus SPC1.2 was rated as medium. Over the past six years, SLT invested 400 million US\$ in developing state-of-the art communication infrastructure and ISDN was introduced, thus SPC1.3 was rated as medium. With respect to the position in the technological progression path (SPC1.4), SLT still adopts a follower strategy by acquiring state-of-the art technologies. According to the senior managers, it might take some more years for SLT to adopt a leader strategy, by developing and implementing new technology. Thus SPC1.4 was rated as medium.

SPC2. Capability to assess the competitive environment

During pre-privatization period, the overall SPC2 was rated as low. During this period strategic planning was not carried out. The necessity of assessing the competitive environment

(SPC2.1) was not felt due to the monopoly status enjoyed by SLT, thus SPC2.1 was non-existent. With respect to the vendor environment (SPC2.2), only the existing services of the vendors were considered, thus SPC2.2 was rated as low. During the post-privatization period, the overall SPC2 was rated as medium. The need for strategic planning was identified and a separate division was established by the SLT. During this period, according to both CEO and COO, SLT totally changed its attitudes from a government entity to think in business terms, by starting to identify the competitors, their strengths and weaknesses and also improving the market share. Thus SPC2.1 was considered as medium. SLT's management gave due consideration to the appropriateness of the current organization, organizational position and market position as well as to the vendor environment, thus SPC2.2 was rated as medium.

The comparative picture of strategic planning capability is presented in Figure 11. This figure indicates that during the post-privatization period capability level of two elements showed significant improvement.

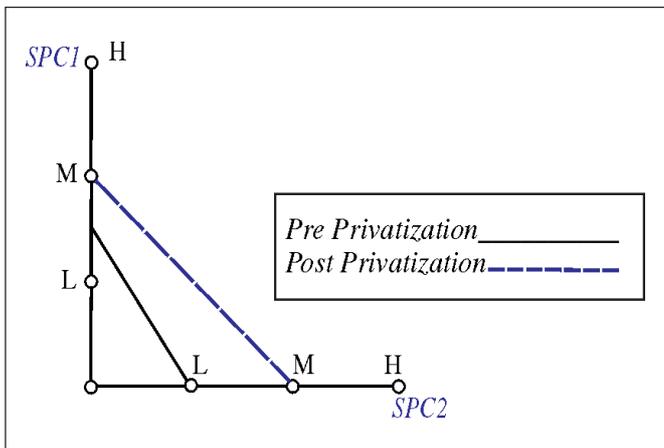


Figure 11. Strategic Planning Capability Before and After Privatization

Overall Technological Capability

In the above subsections, a comparison of technological capability before and after privatization, was made along each of the capability elements under the eight technological capabilities. In this subsection, a comparison is made on the overall technological capability before and after privatization, along all the eight technological capabilities. An aggregate score for each of the eight technological capabilities for both pre- and post-privatization periods are developed based on the following equivalent numerical ratings of each applicable capability element:

Insignificant	Low	Low Medium	Medium High	Medium	High
0	1	2	3	4	5

The overall value of each technological capability is calculated for both pre- and post-privatization periods by dividing the sum of the element ratings by the number of

applicable elements for that capability. Thus,

$$TC_i = \sum_{j=1}^N TCE_j / N$$

Where, TC_i is the i^{th} Technological Capability

N = Number of applicable capability elements in the i^{th} capability

TC_i is given a rating based on the resulting numerical value from the above equation according to the following scale:

$0 \leq TC_i < 0.5$ "C Non-Existent

$0.5 < TC_i < 1.5$ "C Low

$1.5 < TC_i < 2.5$ "C Low-Medium

$2.5 < TC_i < 3.5$ "C Medium

$3.5 < TC_i < 4.5$ "C Medium-High

$4.5 < TC_i < 5$ "C High

The comparative picture of the overall technological capability of SLT is presented in Figure 12. This figure indicates that creation and marketing and selling capabilities during the pre-privatization period were non-existent. After the privatization, creation capability has reached a low level, while marketing and selling capability has reached a medium level. It shows that design and engineering, servicing, and strategic planning capabilities were at low level during the pre-privatization period, but were at medium level after the privatization. The acquisition capability which was at low-medium level during pre-privatization period has reached a medium level after privatization while information technology capability which was at low level during pre-privatization has reached low-medium level after privatization. The human resources development capability remained at the pre-privatization, medium level after privatization.

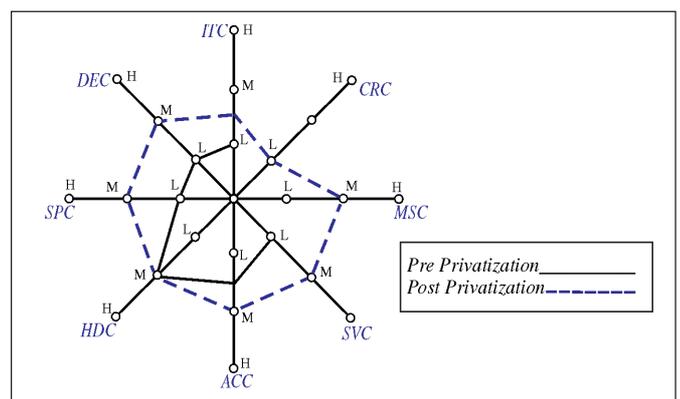


Figure 12. Overall Technological Capability Before and After Privatization

Summary of Results and Recommendations

The analysis of the technological capabilities before and after privatization performed in this paper evoked several reactions from the management of SLT. Recommendations of further improvements in technological capabilities are

made in consultations with top management, considering these reactions and findings of the study.

Although SLT's technological capabilities have risen in many areas with privatization, its creation capability is low even after privatization. The main reason is that SLT still depends on their joint venture partner NTT for all R&D work. With regard to creation capability, the CEO of SLT mentioned that, even though the need has been felt in having their own R&D centre to carry out R&D work, especially for broadband access including ADSL and e-commerce solutions, it may take some more years for SLT to have this capability. SLT has already included the need for an R&D centre in their strategic plan and they have selected a location for setting up the centre.

Most of the elements of design and engineering capability have reached a medium or high level after privatization. The main reason given for this is NTT bringing in the required capital and technical know-how. In order to enhance the design and engineering capability, it is necessary to have more involvement and representation in ITU and Asia Pacific Telecommunity in setting up standards.

Most of the elements in marketing and selling capability have surged with privatization. This had been due to the culture of competition and dynamism created among the staff after privatization. SLT's Teleshops introduced after the privatization has revolutionized customer service. These one-stop shops provide a wide range of services and products under one roof. The Teleshops have become SLT's biggest sales channel. Since a major part of SLT's business is now transacted at Teleshops, they need to place considerable emphasis in developing the customer care skills of the staff at these shops by providing training on business and sales communication skills as well as through significant re-orientation in employee attitudes and approaches in the levels of customer care offered.

SLT's servicing capability has increased to a medium level with the privatization. The '121' Faults Reporting Centers, which were introduced in 1998, have been computerized to monitor and control the faults clearance process. Colombo faults reporting centers have been connected to various exchanges in Colombo creating a Wide Area Network (WAN) in order to access information required for managing faults. Although the extensive network and system rehabilitation program launched in 2000 as well as the Outside Plant Maintenance Centre (OPMC), established in Colombo in 2002, had improved the servicing capability and quality of the maintenance, further improvement in this capability is required with the introduction of more advanced technology and skilled personnel to provide maintenance as well as through opening of more OPMCs in other areas of the island.

SLT's acquisition capability elements also increased with the privatization. However, the capability to identify, assess, negotiate and finalize the terms of technology to be acquired is still at a low level. One factor evident from the

case study is SLT's human resource development capability, which did not change after privatization. SLT would have to enhance human resources development capability to help its long-term strategy of developing a superior human resource profile. SLT's training centre could team up with local universities to provide appropriate degrees after the completion of certain training programs and examinations, such as mini or executive MBA programs with the University of Moratuwa.

SLT's capability for information technology too improved with privatization due mainly to the increased usage of IT. Information technology capability needs to improve to make the billing system more flexible and customer friendly. SLT needs to concentrate more on their corporate customers. This would be only possible if they develop and maintain databases on services to these customers.

SLT's strategic planning capability is still at a medium level and it is envisaged that the newly set up corporate planning unit will enhance this capability in the future. SLT needs a formal telecommunications strategic plan, which will ensure sustaining their growth as well as maintaining their competitive position in the industry in Sri Lanka.

Despite the changes in corporate management and identity, SLT is still transforming from a public utility to an efficient private sector company. SLT's extensive network backbone provides SLT with a comparative advantage, as does its cash-generating base of fixed line customers. SLT has managed to remain competitive, as a result of economies of scale and scope. The flat organizational structure has given key staff more autonomy and to a large extent eliminated the inefficiencies of a bureaucratic organization, by improving staff motivation and speed of decision making. With privatization, political interferences in decision-making have been almost completely eliminated ensuring improved resource allocations.

From the case study it is clear that almost all the technological capabilities achieved a medium level of achievement after privatization due to change in customer focus, improvement in service levels, and overall efficiency of SLT. The case study finds that most of the performance indicators such as connectivity, revenue, operating efficiency, quality of service, network expansion and capital investment, have increased significantly after SLT was privatized. Table 1 shows how three important performance indicators, the average annual revenue, the average number of subscribers and the average number of subscribers for enhanced services, have improved from their low average values during the pre-privatization period to substantially higher values during the post-privatization period. However, it is understood that a sizable level of the observed improvement may have resulted from changes in the regulatory conditions in the country as well as improvements in the telecommunications sector technology worldwide, rather than from privatization alone. The purpose of this study was to analyze technological capability improvements after privatization. A further study in delineating the technological capability



improvements from privatization and regulatory changes in the industry may be attempted to ascertain the actual contribution of privatization.

Concluding Remarks

Technological capability assessment provides useful and critical information to help firms make strategic decisions. The methodology and the research process used in this study could be used in analyzing the technological capabilities of firms in other sectors, either in service or manufacturing. However, the value chain and the technological capability needed in performing the value chain activities need to be identified systematically. The development of indicators for the capability assessment could then follow.

The indicator development in this research involved learning in-depth the management and technological processes in the telecommunication business, based on relevant literature, inputs from experts and practicing senior managers, and a thorough study of the case company's processes, functions and activities. A similar approach could be used for a company in any other sector.

The research process used here could also be used for benchmarking purposes. Through benchmarking, an organization could identify the technological capability gaps it has with respect to the leading firms in the sector. By using the same set of indicators, for both the leading firms and the firm under study, one could arrive at some useful conclusions on the needed technological capability development.

Although some of the conclusions from this case study could be generalizable, one should consider the following shortcomings in doing so. The number of published articles available in the literature, especially those on technological capabilities in the telecommunication sector, was very small and so was the number of experts both at the ITU Regional Office and practicing managers at TOT and TT&T. The indicators for technological capability assessment identified here could be less than comprehensive. There could have also been some bias towards some processes and technological capabilities due mainly to the personal preferences and narrow experiences of some of the managers in the case company. Finally, the robustness of the findings should be checked for generalization by replicating through multiple case studies.

References

Bharadwaj A.S. (2000) A Resource-based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation, *MIS Quarterly*, 24, 169-196.

Bischoff J. (2003) Technological Conditions and Issues in Promoting Integration of Industrial Activities at the Regional and Global Levels: Prospects and Challenges of Globalization and Liberalization, *Asian & Pacific Centre for Transfer of Technology*, New Delhi.

Bortolott B., D'Souza, J, Fantini M. and Megginson, W.L. (2002) Privatization and the Sources of Performance Improvement in the Global Telecommunications Industry, *Telecommunications Policy*, 26, 243-268.

Corbett L.M. and Cutler D.J. (2000) Environmental Management Systems

in the New Zealand Plastics Industry, *International Journal of Operations and Production Management*, 20, 204-224.

Creswell J.W. (1997) *Qualitative Inquiry and Research Design: Choosing among Five Traditions*, Sage Publications, London.

Dahlman C. and Ross-Larson B. (1987) Managing Technological Capabilities in a New High Tech Business: The Case of Cellular Services, *World Development*, 15(6) 759-775.

Fransman M and King K. (1984) *Technology Capability in the Third World*, The Macmillan Press Ltd., London.

Garrone P. and Rossini A. (1998) The Role of Technological and Product Capabilities in a New High Tech Business: The Case of Cellular Services, *The Journal of High Technology Management Research*, 9(2) 285-307.

Greenwalt M.B. (1994) Student-written Case Studies: The Benefits to the Internal Audit Curriculum, *Managerial Auditing Journal*, 9, 3-7.

International Telecommunication Union Standardization Sector (ITU-T) Recommendations-*Handbook on Transmission Planning* (1993) ITU, Geneva, Switzerland.

International Telecommunication Union Standardization Sector (ITU-T) Recommendations- *Handbook on Quality of Service and Network Performance* (1993) ITU, Geneva, Switzerland.

International Telecommunication Union Standardization Sector Recommendations (ITU-T) (2002) *The Worldwide Official Telecommunication Standards*, ITU, Geneva, Switzerland.

International Telecommunication Union, Telecommunication Indicators Handbook at <http://www.itu.int/ITU-D/publications/world/material/handbook.html>.

International Telecommunication Union, Additional Indicators at <http://www.itu.int/ITU-D/ict/material/Proposed%20additions.doc>.

International Telecommunication Union, Operational Bulletin at <http://www.itu.int/itudcoc/itu-t/ob-lists/op-bull/2001/index.html>.

International Telecommunication Union, Operational Bulletin at <http://www.itu.int/itudcoc/itu-t/ob-lists/op-bull/2002/index.html>.

International Telecommunication Union, *World Telecommunication Indicators Database* (2002) 7th edition, ITU, Geneva, Switzerland.

Kelly T. (1999) Commonwealth Telecommunication Organization, Senior Management Seminar: Telecoms Restructuring and Business Change, *ICT-Speeches and Discussion papers*, Malta, 17-21 May.

Li W. and Xu L.C. (2002) The Impact of Privatization and Competition in the Telecommunications Sector Around the World, *World Bank-Stanford Telecommunication Database*.

Marcelle G. (2002) Reconsidering Conventional Wisdom on Technology Transfer, *Science and Technology Policy Research Unit (SPRU)* University of Sussex, Brighton, UK.

McCutcheon D.M. and Meredith J.R. (1993) Conducting Case Study Research in Operations Management, *Journal of Operations Management* 11, 239-256.

McGuire L. (1995) Case Study for Research—Story Telling or Scientific Method, Department of Management Working Paper, Monash University, Victoria, Australia

Minoli D. (1991) *Telecommunications Technology Handbook*, Artech House, Boston.

Noll R. (2000) Telecommunication Reform in Developing Countries, *Stanford Institute for Economic Policy Research*, Policy Paper 99-31.

Panda H. and Ramanathan K. (1995) The Role of Technological Capability in Value Addition: The Case of Firms in the Electricity Sector, *Technology Management*, 2(2) 84-100.

Pavitt K. and Bell M. (1992) National Capacities for Technological Accumulation: Evidence and Implications for Developing Countries, *World Bank Annual Conference on Development Economics*, Washington D.C.

Porter M.E. (1985) *Competitive Advantage*, Free Press, New York.



Praest M. (1998) Changing Technological Capabilities in High-Tech Firms: A Study of the Telecommunications Industry, *The Journal of High Technology Management Research*, 9, 175-193.

Ramamurti R. (1996) The new frontier of Privatization, In *Privatizing Monopolies: Lessons from the Telecommunication and Transport Sectors in Latin America*, John Hopkins University Press, Baltimore.

Rushdi A.A. (2000) Total Factor Productivity Measures for Telstra, *Telecommunications Policy*, 24, 143-154.

Ros A. and Banerjee A. (2000) Telecommunications Privatization and Tariff Rebalancing: Evidence from Latin America, *National Economic Research Institute*, London.

Rosenberg N. (1976) *Perspectives on Technology*. Cambridge University Press, Cambridge.

Seki S. (1992) *What Can We Learn from Technology Assessment? Japan's Growing Technological Capability, Implications for the US Economy*, National Academy Press, Washington, D.C.

Sharif N. (1994) Integrating Business and Technology Strategies in Developing Countries, *Technological Forecasting and Social Change*, (45) 151-167.

Simon A., Sohal A. and Brown A. (1994) Generative and Case Study Research in Quality Management, Part 1: Theoretical Consideration, *International Journal of Quality and Reliability Management* 13, 33-42.

Wallace K.M. (1984) The Use and Value of Qualitative Research Studies, *Industrial Marketing Management*, 181-185.

Wallsten S.J. (1999) An Empirical Analysis of Competition, Privatization, and Regulation in Telecommunications Markets in Africa and Latin America, *Policy Research Working Paper*, 2136, World Bank.

Yin R.K. (1994) *Case Study Research, Design and Methods*, Sage Publication, USA.

Zikmund W.G. (1997) *Business Research Methods*, Dryden Press, USA

Note 1

System Reserve Margin = (Capacity Demanded- Installed Capacity)/
Maximum Capacity Demanded

Appendix A. Assessment of the Indicators

Table A-1. Creation Capability Elements and Possible Indicators for their Assessment

Capability Elements	Indicators	Criteria for Evaluation		
		Low	Medium	High
CRC1. Capability to adapt and modify existing process, applications, service and communication infrastructure	CRC1.1. Total annual R&D budget	If less than US\$ 50 million	If between US\$ 50-500 million	If more than US\$ 500 million
	CRC1.2. R&D budget as a percent of annual turnover	If less than 1%	If between 1 and 5%	If more than 5%
	CRC1.3. Percent of research contracts received from outside in the total R&D budget	If less than 2%	If between 2 and 5%	If more than 5%
	CRC1.4. Percent of research contracted to outside agencies in the total R&D budget	If less than 20%	If between 20 and 50%	If more than 50%
	CRC1.5. Percent of R&D projects reaching completion out of total number of projects undertaken	If less than 60%	If between 60 and 80%	If more than 80%
CRC2. Capability to create new organizational structure	CRC2.1. Degree of dependence for undertaking major changes in the organization structure of the company during the last five years	If outside consultants are required only to review company's action plan	If company is dependent on outside consultants for analysis of business environment but not for action plan formulation	If completely dependent on outside consultants
CRC3. Capabilities to plan, monitor and control research and development projects	CRC3.1. Percent of projects completed without cost and time overrun	If less than 70%	If between 70% to 80%	If 80% or more
	CRC3.2. Strength of linkage of R&D division with outside agencies	External agencies are rarely or never involved in R&D project selection, or joint research projects involving an amount less than 5% of R&D budget.	Few external entities are involved in R&D project selection informally, and joint research projects involving external (to the service provider) entities fall between 5 to less than 10% of R&D budget.	Major external entities are involved through a well structured consultative body, and level of joint research projects involving external (to the service provider) entities exceed 10% of R&D budget.
	CRC3.3. Average budget of an R&D project	If less than US\$ 0.5 million	If between US\$ 0.5 – 10 million	If more than US\$ 10 million
	CRC3.4. Ratio of short term to long term R&D projects in terms of budgetary allocation	If 1 or less than 1	If more than 1 and less than or equal to 1.25	If more than 1.25
CRC4. Capability of managing joint venture partnerships	CRC4.1. Increase in equity investment with partners during the last five years as the total contracts	If less than US\$ 100 million	If between US\$ 100 million to US\$ 500 million	If more than US\$ 500 million
	CRC4.2. The outcome of the joint venture partnership	If the joint venture partnership brings in lot of conflicts to the service provider	If the joint venture partner sticks to the original agreement and is not very flexible in making the necessary changes as and when it is required	If the joint venture partner is very flexible and operates well with necessary changes

Table A-2. Design and Engineering Capability Elements and Possible Indicators for their Assessment

Capability Elements	Indicators	Criteria for Evaluation		
		Low	Medium	High
DEC1. Capability to carry out network expansion or facility planning	DEC1.1. Percentage of projects for which facility planning was performed without any external assistance during the last five years	If less than 50%	If between 50% to 90%	If more than 90%
DEC2. Capability to carry out network modernization	DEC2.1. Percentage of Digitalization	If less than 75%	If between 75% to 95%	If more than 95%
DEC3. Capability to implement new services	DEC3.1. Average number of new services per year during the last five years	If less than 3	If between 3 to 5	If more than 5
DEC4. Capability to prepare technical master plan (switching, transmission, signaling and numbering)	DEC4.1. Percentage of requests for technical advice and supports for computer-computer communications is performed without any external assistance	If less than 75%	If between 75% to 95%	If more than 95%
DEC5. Capability for representation in ITU/ other international standard organizations	DEC5.1. Number of people representing ITU, ETSI or other international standard organizations per year	If less than 5	If between 5- 10	If more than 10

Table A-3. Marketing and Selling Capability Elements and Possible Indicators for their Assessment

Capability Elements	Indicators	Criteria for Evaluation		
		Low	Medium	High
MSC1. Capability to identify customers, and bid and negotiate the terms of sales.	MSC1.1. Percentage of increase in total revenues from all telecommunications services	If less than 5%	If between 5 % and 30%	If more than 30%
	MSC1.2. Teledensity (telephone lines per 100 inhabitants)	If less than 5	If between 5 and 30	If more than 30
MSC2. Capability to develop and maintain the transmission channel for the service	MSC2.1. Degree of dependence on external agencies for the completion of transmission projects	If support is necessary for design and engineering only	If it is necessary for design engineering and construction	If external support is necessary for all activities
	MSC2.2. Degree of dependence on developing and maintaining the transmission including quality of transmission	If support was necessary for all activities	If support is necessary for operating and maintaining the transmission	If support was not necessary for operating and maintaining the transmission
MSC3. Capability to provide service to customers as per contract	MSC3.1. Ability of the organization to provide the service on time	If more than one month	If between one week and one month	If less than one week
MSC4. Capability to plan, monitor and coordinate marketing and selling activities	MSC4.1. Average cost overrun for the major projects as a percent of budgeted cost	If less than 5%	If between 5% and 20%	If more than 20%
	MSC4.2. Actual revenue as a proportion of planned revenue	If ratio is less than 0.9	If ratio is between 0.9 and 1	If ratio is more than 1
	MSC4.3. Average delay in payments	If less than 30 days	If between 30 to 120 days	If more than 120 days
MSC5. Capability to carry out marketing research	MSC5.1. Degree of dependence on external agencies for carrying out marketing research	If no marketing research was carried out and fully dependent on external agencies	If they received some assistance from external agencies for carrying out field surveys	If Marketing research was carried out with the assistance of the staff of its marketing and sales division
MSC6. Capability to carry out customer needs analysis	MSC6.1. Degree of dependence on external agencies for identifying customer needs analysis	If no customer needs analysis was carried out and the organization was fully dependent on external agencies	If they received some assistance from external agencies by way of carrying out the field surveys	If the customer needs analysis was carried out with the assistance of the staff in the marketing and sales division
MSC7. Capability to increase the number of subscribers for enhanced services	MSC7.1. Percentage of increase in subscription for enhanced services	If less than 20%	If between 20% to 50%	If more than 50%
MSC8. Capability to introduce different user packages	MSC8.1. Percentage of sales for different user packages	If less than 20%	If between 20% to 50%	If more than 50%
MSC9. Capability in public relations activities	MSC9.1. Advertising cost as a percent of total operational expenses	If less than 0.75%	If between 0.75% to 1%	If more than 1%
MSC10. Capability to maintain a customer database	MSC10.1. Extensiveness of the customer database	No maintenance of a database	Contents of the database: Details of customers usage information Frequency of updating: annually	Contents of database: Details of customers usage information, usage of different services, credit details, calling groups Frequency of updating: monthly/daily
MSC11. Capability to identify the corporate customers or high volume business users	MSC11.1. Percentage of corporate customers	If the increase in percentage is less than 5%	If the increase in percentage is between 5% to 20%	If the increase in percentage is more than 20%

Table A-4. Servicing Capability Elements and Possible Indicators for their Assessment

Capability Elements	Indicators	Criteria for Evaluation		
		Low	Medium	High
SVC1. Capability to provide a quality service to customers	SVC1.1. The normal period for responding to requests for a new line (with infrastructure and spare capacity)	If more than two weeks	If less than five working days	If less than one day
	SVC1.2. Average time taken to provide the installation estimate	If more than one month	If less than 3 days	If less than one day
	SVC1.3. Percentage of telephone service faults cleared by next working day	If less than 30%	If between 30% to 50%	If more than 50%
	SVC1.4. Percentage of calls, which fail during the busy hour due to network congestion or line failure	If more than 10%	If between 5% to 10%	If less than 5%
	SVC1.5. The total number of reported faults to main telephone lines	If more than 50%	If between 20% to 50%	If less than 20%
	SVC1.6. Percentage of calls for operator service answered within 15 seconds	If less than 50%	If between 50% to 75%	If more than 75%
	SVC1.7. Complaints per 1000 bills	If more than 1%	If between 0.5% to 1%	If less than 0.5%
SVC2. The capability to adhere to high standards of safety and security	SVC2.1. Degree to which ISO standards have been Implemented	If no measures were taken	If some measures were taken to implement ISO standards	Already implemented
	SVC2.2. The level of the protection system for the telephones	If no protection system	If some measures were taken to protect the security system	If there is a highly protected security system
SVC3. Capability to have a disaster recovery plan	SVC3.1. The time frame within which restoration work can be initiated in terms of a disaster	If it takes more than a week	If between 1 day to 7 days	If less than one day

Table A-5. Acquisition Capability Elements and Possible Indicators for their Assessment

Capability Elements	Indicators	Criteria for Evaluation		
		Low	Medium	High
ACC1. Capability to carry out projects/investments	ACC1.1. Average investment for telephone switching equipment such as local, national and international exchanges, transmission equipment	If less than US\$ 100 million	If between US\$100 million to US\$1 billion	If more than US\$ 1 billion
ACC2. Capability to identify, negotiate and finalize the terms of the technology to be acquired	ACC2.1. Percent of major contracts for which technology acquisition activities were performed without any external assistance	If less than 75%	If between 75% and 90%	If more than 90%
	ACC2.2. Extensiveness of database for technologies related to operation information with respect to identifying, negotiating, and finalizing the terms of technology to be acquired	Contents of database: source address and key technology parameters Frequency of updating: once in more than three years Extent of networking: No outside linkage	Contents of database: source address, key technology parameters, and reference address of users Frequency of updating: every two to three years Extent of networking: Linked to database of major manufacturers	Contents of database: source address, key technology parameters, cost, reference address of users, and reference feedback Frequency of updating: annual Extent of networking: Linked to database of major manufacturers, Industry associations, R&D institutions
	ACC2.3. Degree of dependence in performing contractual activities	If no assistance is needed, but may retain external consultant for the review of bid evaluation	If assistance is needed for bid evaluation only	If assistance is needed for floating tender, bid evaluation, contract negotiation and letter of award placement
	ACC2.4. Profile of the subcontractors or the joint venture partners	Contents of the database: no database is maintained, however the details are recorded as and when they enter into partnerships Frequency of updating: no updating Extent of networking: no outside linkage	Contents of the database: Address and annual turnover details Frequency of updating: Every two to three years Extent of Networking: linked to database of major joint venture partners	Contents of the database: Annual turnover details, address, equity partnerships entered by them Frequency of updating: annual Extent of networking: linked to the databases of all joint venture partners
ACC3. Capability of having up to date information about specifications, quality and availability and price of required components	ACC3.1. Degree of dependence for the procurement of raw materials and supporting facilities and consumables	If normally no assistance is needed, but may retain an external consultant for the review of bid evaluation occasionally	If assistance is required for bid evaluation only.	If assistance is required for floating tender, bid evaluation, contract negotiation, and letter of award placement
ACC4. Capability to assess, negotiate and finalize the terms of finances (both debt and equity financing to be acquired)	ACC4.1. The percent of financial packages identified, assessed and negotiated without any external support	If less than 75%	If between 75% to 90%	If more than 90%

Capability Elements	Indicators	Criteria for Evaluation		
		Low	Medium	High
	ACC4.2. Degree of dependence for the procurement of finance	If all financial procurement activities were executed by self, excepting few occasional review by external consultant	If external assistance was necessary only for reviewing the finalized terms and conditions	If external assistance was necessary for identification of financing source, assessing, negotiating and finalizing the terms of condition
	ACC4.3. Number of projects sponsored through bilateral and multilateral agencies	If less than 5	If between 5 to 10	If more than 10
ACC5. Capability to plan, monitor and coordinate the resource acquisition process and vendor development	ACC5.1. Average time overrun during the resource acquisition process as a percent of scheduled time	If less than 10%	If between 10% to 30%	If more than 30%
	ACC5.2. The percent of new vendors developed in various fields	If less than 10% of the new contracts were awarded to new vendors	If between 10% to 20% of the new contracts were awarded to the new vendors	If more than 20% of the new contracts were awarded to the new vendors

Table A-6. Human Resources Development Capability Elements and Possible Indicators for their Assessment

Capability Elements	Indicators	Criteria for Evaluation		
		Low	Medium	High
HDC1. Capability of recruiting and retaining highly qualified technical staff	HDC1.1. Percentage of technical professionals over the total number of employees	If less than 10%	If between 10% to 50%	If more than 50%
	HDC1.2. Percentage of IT professionals over the total number of technical professionals	If less than 10%	If between 10% to 50%	If more than 50%
	HDC1.3. Average rate of professional employees resigning	If more than 30%	If between 10% to 30%	If less than 10%
HDC2. Capability of providing training to improve the skills and abilities of employees and to motivate them	HDC2.1. Average hours of training per person per annum	If less than 20	If between 20 and 40	If more than 40
	HDC2.2. Degree of optimality in internal and external training mix	If person-hour of training obtained from outside is either less than 5% or more than 30% of total training person-hour	If person-hour of training obtained from outside falls in the range of either 5% to 10% or 20% to 30% of total training person-hour	If person-hour training obtained from outside falls in the range of 10% to 20% of total training person-hour
	HDC2.3. Degree of dependence in various training activities	If less than 10% of only training material preparation and training conductance are carried out by outside agencies	If between 10% to 50% of only training material preparation and training conductance are carried out by outside agencies	If none of the important training related activities are done by the organization or more than 50% of the training material preparation and training conductance are performed through outside assistance

Table A-7. Information Technology Capability Elements and Possible Indicators for their Assessment

Capability Elements	Indicators	Criteria for Evaluation		
		Low	Medium	High
ITC1. Capability to have a flexible billing system	ITC1.1. The flexibility of the billing system	If there is a separated billing	If there is a separate bill with detailed calls services in one bill	If it is possible to provide multiple
ITC2. Capability of maintaining a database for churn rate	ITC2.1. Percentage of customers joining other service providers	If more than 30%	If between 10% to 30%	If less than 10%
ITC3. Capability for providing information support and networking	ITC3.1. Degree of computerization	Less than 50% of the information needs are met by accessing computerized databases	Between 50% to 90% of their information needs are met by accessing computerized databases	more than 90% of the information needs are met by accessing computerized databases
	ITC3.2. Degree of reliability of the information system	If the desired information is not available more than 25% of requested times, not always accurate and not up-to-date	If the desired information is not available less than 25% of requested times, accurate and not up-to-date	If the desired information is available when needed, accurate and up-to-date
	ITC3.3. Level of networking within the organization and within the outside agencies	If all the computers in the organization are not linked	If all the computers within the organization are linked but no linkage to outside agencies	If all the computers and systems within the organization are linked and also have linkages with outside agencies

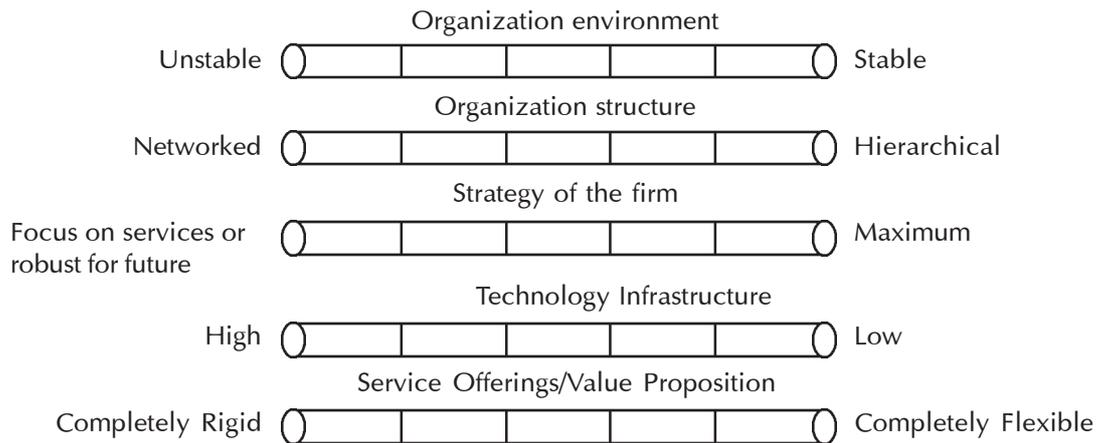
Table A-8. Strategic Planning Capability Elements and Possible Indicators for their Assessment

Capability Elements	Indicators	Criteria for Evaluation		
		Low	Medium	High
SPC1. Capability to undertake strategic planning	SPC1.1. Degree of deviation from the optimal reserve margin	If the reserve margin is more than 0.2 but less than 0.3	If the reserve margin is either within the range of 0.3 to 0.4 or 0.1 to 0.2	If the reserve margin is less than 0.1 (little margin) or more than 0.4 (excessive over capacity)
	SPC1.2. Average price of national telecommunication call charges (per 3 minute rate)	If less than US\$ 0.015	If between US\$ 0.015 and US\$ 0.15	If more than US\$ 0.15
	SPC1.3. Consideration of future thrust of technology	If for both transmission and switching analog is used	If the switches and the links between them are digital, integrated digital (IDN) and partly being replaced by ISDN	If an integrated services digital network (ISDN) is used
	SPC1.4. Position in the technological progression path	Those following weak follower strategy	Those following strong follower strategy	Those following leader strategy
SPC2. Capability to assess the competitive environment	SPC2.1. Consideration given to the competitive environment	If only major companies were considered	If major competitors and their strengths and weaknesses with respect to the telecommunication system were considered	If major competitors, their strengths, weaknesses, with respect to the telecommunication system, and the improvement of the companies position as against the competitors were considered
	SPC2.2. Consideration given to the vendor environment	If only existing services of the vendors were considered	If the existing services of the vendors and compatibility issues of the vendors were considered	If the existing vendors, compatibility issues of the vendors and strengths and weaknesses of existing vendors were considered
	SPC2.3. Consideration given to the organizational Environment	Only appropriateness of the current organization for managing the future was considered	Appropriateness of the current organization, ability of the managers to obtain information related to future plans with sufficient time and detail were considered	Appropriateness of the current organization, ability of managers to obtain information related to future plans with sufficient time and detail and organizational position of the MIS and telecommunication depts.



Flexibility Mapping : Practitioner's Perspective

1. What types of flexibilities you see in the practical situation of “Technological Capability Development” on the following points:
 - Flexibility in terms of “options”
 - Flexibility in terms of “change mechanisms”
 - Flexibility in terms of “freedom of choice” to participating actors.
2. Identify and describe the types of flexibilities that are relevant for your own organizational context? On which dimensions, flexibility should be enhanced?
3. Try to map your own organization on following continua (Please tick mark in the appropriate box(es))



4. Develop a SAP-LAP (Situation Actor Process-Learning Action Performance) model of “ Technological Capability Development” relevant to your organization

Reflecting Applicability in Real Life

1. How do you find the case study presented in this paper relevant to your organization? Critically examine and use the relevant issues.
2. Based on the research process in this paper, is it possible to use it for benchmarking purposes?
3. To what extent the findings of this paper are relevant for the technological capability development of your organization?



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Effect of Ownership Restructuring and Intensity of Competition on Strategy and Structure of State-Owned Enterprises: An Integrated Framework

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Abstract

Restructuring of state-owned enterprises (SOE) has been debated for past three decades. This topic has been studied by various researchers across the globe. However, literature is unable to provide an integrated framework to understand and comprehend the process of SOE restructuring. This piece of work is trying to learn the basics and intricacies of SOE operations, while functioning in its environment. Scope of work maps the dynamism in environmental forces, which pose either change of ownership or that in intensity of competition of industry on one hand, and corresponding organizational adaptation through unique posture with respect to its environment on the other. In contrast to an economist, who mainly considers organization as a black box, effort is made to understand the intricacies of organizational internal processes of functioning and transactions within and across the functional boundaries. This effort is oriented towards understanding the complexities both within the organization and in its interaction with environment. Focus of work remains at strategic orientation of corporation with environment, and structural issues like decentralization in decision making, adaptation through standardization and formalization, and through innovation and learning. The present attempt draws from exhaustive study of two engineering corporations, which had gone through the process of SOE restructuring.

Keywords : decentralization, industry structure, innovation and learning, organizational performance, ownership, restructuring, socio-political and economic environment.

Introduction

It is said that the state-owned enterprises (SOE) are functioning with multiple, intangible, conflicting and non-prioritized goals (Walter and Monsen 1979, Kay and Thompson 1986, Perry and Rainey 1988, Caves 1990, Moore 1992, Kostera and Wicha 1996, Martin and Parker 1997). This leads to bureaucratic and normative styles of functioning, lack of managerial autonomy, excessive external intervention in functioning and non-existence of performance-based reward system (Walter and Monsen 1979, Kay and Thompson 1986, Perry and Rainey 1988, Caves 1990, Moore 1992, Kostera and Wicha 1996, Martin and Parker 1997). These organizations have no fear of loss or bankruptcy and do not need to pay dividends due to preferential access to states' purse, rescue takeovers and built-in markets and subsidies. They also lack the customer orientation (Walter and Monsen 1979, Kay and Thompson 1986, Perry and Rainey 1988, Caves 1990, Moore 1992, Kostera and Wicha 1996, Martin and Parker 1997). Simultaneously, SOE are blessed with their investment as per political priority rather than economic priority, which creates the contradiction between political and investment time frames (Kay and Thompson 1986, Caves 1990, Moore 1992, Kostera and Wicha 1996, Martin and Parker 1997). However, environmental shift towards markets through consumerism and closeness to customers and consciousness of stakeholders lead to a demand for profitability from SOE.

This questioned the very existence of state owned enterprises. The effect was restructuring of SOE, which started in mid-seventies in USA, emphasizing the role of regulatory authorities and in late-seventies in UK, emphasizing the change of ownership of SOE. Even in eighties and nineties, similar processes have been followed with slight variations in different economies and their findings have been documented in the literature.

In India, restructuring of SOE started in mid eighties and picked up its momentum in early nineties. A substantial section of Indian economy, especially, the core and infrastructure sector is catered through state-owned enterprises. Thus, performance of Indian economy is heavily dependent on performance of this sector. Unfortunately, researchers in India and abroad have not paid adequate attention to this issue. According to Martin and Parker (1997:217) "the histories of these (SOE) and the other organizations studied suggests that we need a far better understanding of organizational adaptation to changes in the external environment including ownership and competition. ... This has led to a voluminous literature on privatisation, competition and incentives but little on the process of change" (original emphasis).

In this process of restructuring, role of state is redefined and performance of SOE is expected to improve. Most of these studies have taken organizational aspects of SOE for granted, which assumes organization as a black box

(Figure1). Effect on performance of external restructuring, and more specifically change in ownership has been discussed. Unfortunately, there seems to be a reasonable level of gap between organizations' actual level of performance and that expected from it (Martin and Parker 1997). Hence, there is a need to examine the organization related issues of SOE restructuring in depth and conjectures are explored to fill this gap through this effort.

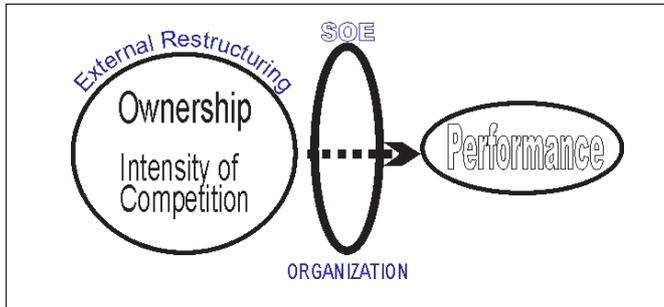


Figure 1: SOE Restructuring (Schematic Diagram)

Organizational Adaptation as a Need for Restructuring

Organizational Performance

As per literature, organizational performance has been quite debatable issue. Lack of clarity for assessing organizational performance remains not only at the level of measurement but also on dimensions to be considered. In case of SOE, latter poses unique level of difficulty. At the level of definition, what does organizational performance connote? Is it focused on economic and commercial aspects of the activity alone or with non-economic goals as well? Literature suggests that profit making activities lost their significance as profits earned by enterprise were reallocated by centre after collection (Granick 1960 in Kostera and Wicha 1996). The profit making attitude lost its root as there was no fear of loss making or bankruptcy, no need to pay dividends and preferential access to state financing through tax-payers' money (Walters and Monsen 1979, Martin and Parker 1997). Moreover, there was blurring of organizational goals and objectives due to mixing of allocation and production activities; which led to the lack of goal clarity and jeopardized the attainment of organizational objectives and efficiencies (Kay and Thompson 1986, Kostera and Wicha 1996). In case of Poland, participants including central authorities, politicians and organizational managers used state-owned enterprises as a means for achieving goals other than economic goals (Kostera and Wicha 1996). Additionally, investments were made not as per economic rationality of market but as per political rationality of central authorities and politicians (Kostera and Wicha 1996); which created a situation of incompatibility between investment and political time frames (Moore 1992; Martin and Parker 1997). These investments were oriented mainly, either to create

Inclusion of 'Socio-political' and economic dimensions bring distinct level of clarity on specificity and objectivity in performance measurement of SOE.

facilities for luxuries of their own employees or to please the central authorities and political leaders (Kostera and Wicha 1996). In return, SOE were not only offered a preferential access to states' purse, which was collected through tax-payers' money and permitted hidden subsidies, but also forgiven from earning profits and dividend payments (Walters and Monsen 1979). According to Caves (1990:151), "the SOE's objectives either as imposed by its chief executive and directors or as emerging from a complex organizational coalition". Additionally, atmosphere in SOE presents not only the loose coupling between structure and actions but also the loose links between actions and outcomes (Spenner et al. 1998). Similarly, availability of slack within SOE has provided enormous opportunities to the organizational members to capitalize it as per their bargaining power (Caves 1990). This not only encouraged them to form and to act within groups as per their vested interests, but also fertilized and fueled them to generate further slack amenable to their selfish interests.

An Indian case-study by Singh (2004) suggests that SOE resources are used not only to generate employment and provide facilities for certain sections of society but also to sell the products at lower prices than the cost incurred. This was triggered by, and furthered the, organizational efforts towards non-economic activities which led to economic inefficiency and failure. However, another case on organizational success by the same study suggests isolation from employment generation and socio-political environment, and production and marketing of goods as per commercial requirements. This orients the SOE towards economic viability. Above mentioned discussions and the two cases studied by Singh (2004) suggests that there are two distinct arenas in which SOE operates. These are economic and socio-political ones (Figure 2). Operations in economic arena decide the economic success, which is clearly visible from the case of Punjab Tractors (Singh 2004). However, simultaneous operation in economic and socio-political arena assigns the organizational resources in two different activities pertaining to respective arena to obtain desired objectives. Thus, evaluation of performance

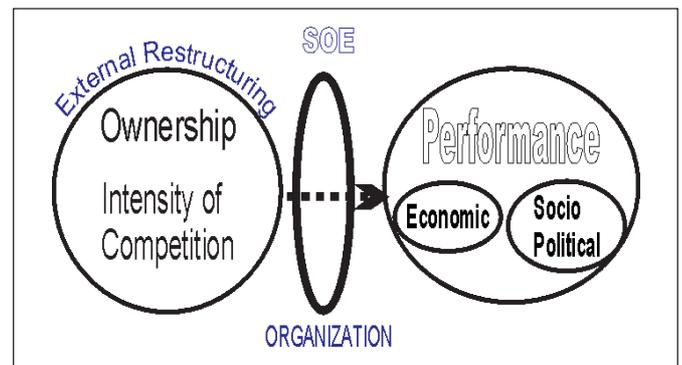


Figure 2: SOE Restructuring with Intricacies on Performance Measurement

demands requisite evaluation tools to measure the effectiveness of activities performed in respective arena, which may vary in nature and also in process at the level of execution. It is a different issue that evaluation of performance on economic dimension can be carried out with higher level of precision and objectivity than that on socio-political dimension. Figures 1 and 2 illustrate the process pictorially.

Scope of Restructuring

Restructuring can be considered through the processes happening either external or internal to the organization. External restructuring is further considered for the effect of ownership restructuring and that of restructuring in intensity of competition on the organization (SOE). Former is popularly known as privatization and latter as liberalization or green-field privatization (Gouri 1991, Reddy 1991). Internal restructuring is focused on structural and strategic dimensions of the organization. External restructuring can be carried out either through ownership restructuring or through opening up of the industry, which was reserved solely for states' operation earlier. However, internal restructuring can be carried out through different contractual mechanisms like – signing up of MOU (memorandum of understanding) between management of SOE and the state or management contracting such as franchising, mandating and leasing (Dhiratayakinant 1991, Gouri 1991, Reddy 1991). This kind of internal restructuring is also called distancing of SOE from states or cold privatization (Gouri 1991, Gouri, Shankar, Reddy, Shams 1991, Reddy 1991). Additionally, internal restructuring is also possible either through realignment of organizational orientation with economic versus socio-political environment, or through redefinition of structural arrangement for internal functioning; like reporting relationship, decision making process, technology of processing or organizational practices.

Framework for Understanding SOE Restructuring

Adjoining diagrams in Figures 1 and 2 are attempts to understand the process of restructuring for state-owned enterprises. Extensive amount of work has been done by researchers, mainly economists, on effect of change of ownership and intensity of competition on performance of these organizations. But, they are silent on organizational issues and treat organization as a black box. Organization theory and strategic management would say that in external relationship, performance is mediated through organization and strategic variables. Martin and Parker (1997:213) have presented a detailed picture of performance for eleven SOE of UK, in the process of restructuring for a longer term and compared them in different phases like nationalization, recession, pre-privatization, post-privatization and the latest period. Results favor the performance improvement for the

duration of pre-privatization. This reminds that either organizations disgorge slack due to fear of its absorption by outsiders after privatization (Caves 1990) or it is difficult to segregate the effect of ownership, industry competitiveness or other dimensions of internal restructuring on performance (Martin and Parker 1997). During the same period, Martin and Parker (1997:202) have noted that performance of state-owned enterprises like coal industry, British Rail and Post Office has paralleled that of the privatized enterprises. Similarly, during the same period, British Gas and British Telecom were better off because of technological changes rather than the change in ownership per se (Martin and Parker 1997:202). Hence, it is difficult to specify the composition of performance improvement in organization due to ownership, industry competitiveness or internal restructuring (Dunsire, Hartley and Parker 1994:125, Martin and Parker 1997:59, 170-172, 197, 202, 217-218).

“The central question emerges that an external restructuring through the change of ownership and competition do provide increased incentives to operate efficiently, but, how does this translate in terms of managerial decision making and business organization within the ‘black box’ of the firm” (Martin and Parker, 1997:170)? Similarly, effect of internal restructuring through various contractual mechanisms on organizational strategy, structures and decision making process demands special attention. Thus, motivation for and importance of dynamism in the internal dimensions of organization like; structure and strategic variables stimulate for further investigation. Figure 3 illustrates the process involved.

Industrial Restructuring

It refers to the mode of restructuring, whereby, forces of external environment change the competitiveness of industry. This kind of restructuring can happen either through technological redefinition or through administrative mechanism. Former type of restructuring has happened in power generating companies, whereby the business for power generation and power distribution has been separated. Similarly, British Rail has divided the railways activities into different businesses as – track related facilities, rolling stocks, signaling facilities, loading-unloading facilities, station related amenities, operating companies and so on. However, latter type of restructuring through administrative mechanism could be possible due to opening up of the industry and can be considered as the green-field privatization (Gouri 1991, Reddy 1991).

Green-field Privatization

It refers to that industry, which was earlier solely reserved for state-owned organizations but are now being opened for the private organizations as well (Gouri 1991, Reddy 1991).

Proposition 2: With the restructuring of SOE, it is expected that organization will observe decentralization of technical activities and centralization of administrative activities to a greater degree.

In the process, intensity of competition in (the) industry increases. This is also known as liberalization.

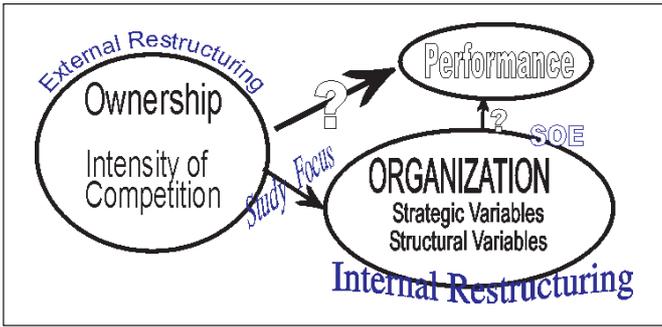


Figure 3: SOE Restructuring with Intricacies on Organizational Dimensions

Existing Competitive Industry

It refers to that industry, which was also opened for private organizations along with state-owned organizations either from inception or from a long time in the past.

Ownership Restructuring

It refers to the mode of restructuring, whereby, ownership of the organization changes.

Consideration of organizational orientation along with ownership and industry structure in the process of SOE restructuring facilitates complete spectrum, and sharpens our learning on orientation and relative emphasis from corporation to environment and vice versa.

Privatization

It refers to the mode of ownership restructuring, whereby, ownership of the organization changes from 100% state ownership to include majority of its equity either from general public or from some privately owned organizations, or through a suitable combination of the two.

Government Ownership

It refers to organization having majority of its equity, owned either by the state or in combination with some other organizations, whose ownership is with the state.

Table 1 facilitates for distinction on the basis of mode of restructuring through external mechanism, namely with change of ownership and intensity of competition in the industry. Additionally, organization with government ownership will not only act as control group for environmental changes like: technology, cultural set up and consumer and supplier awareness, but also will provide step wise understanding for the relative effect of restructuring as indicated in the adjoining table. As per Table 1, Maruti Udyog Limited and Orissa Electricity Board have been in the business of manufacturing and marketing of passenger cars and electric power respectively. They have passed through the process of privatization and opening up of industry. On the other side, Indian Oil Corporation Limited has gone through the process of opening up of industry, and seen the growth in competitive forces. The Punjab Tractors Limited and Modern Food Industries Limited, who have been in the business of manufacturing and marketing of tractors, forklifts and harvester combines, and confectionary

items like sliced bread and cakes respectively, remained in competitive industry for long and experienced the change of ownership. Scooters India Limited has seen the growth in competitive forces for scooter in eighties and that for

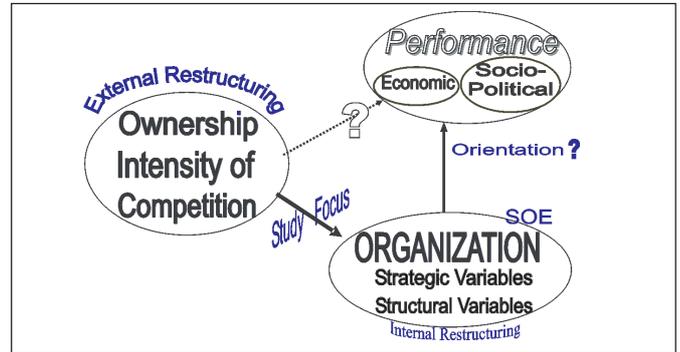


Figure 4: SOE Restructuring with Intricacies on Performance Measurement and Organizational Details

three-wheeler in nineties, and switched its business from scooter to three-wheeler in 1990, while maintaining its ownership status with the state.

Figure 4 illustrates the complete map of SOE restructuring, whereby modes of external restructuring are being superimposed on or are being simultaneously operated with internal restructuring of organization by opening the black box. Opening of organizational black box is sketched for strategic and structural variables, which decide the corresponding SOE orientation with its environment, namely economic versus socio-political ones or a combination of two, for fixing the organizational performance.

Table 1: Modes of Privatization

External Restructuring		Ownership	
		Privatized	Government
Industry	Greenfield	-Maruti Udyog Ltd.	- Indian Oil Corporation Ltd.
	Privatization	-Orissa State Electricity Board (HIGH)	(MEDIUM HIGH)
Competitiveness	Existing	Punjab Tractors Ltd.	Scooters India Ltd.
	Competitive Industry	Modern Food Industries Ltd (MEDIUM-LOW)	(LOW)

Note: words in bracket () indicate level of changes?

It is expected that the level of changes will be low where ownership is still lying with the government and industry has already been in the competitive sector for a longer duration. However, the same will be high with the change of ownership, especially, through privatization along with the opening up of industry for participation of private sectors to operate in. Additionally, literature suggests that the effect of industry opening will be more pronounced than that of

change in ownership when operated individually, and their effect will lie between the previously specified two limits.

Research Framework

Table 1 presents the effects of external forces due to ownership change and opening up of industry, which was solely reserved for state to operate in. These are the forces from environment on organization to modify its operational scope and paradigm. However, there remains another dimension for orientation of the organization during its operation either solely to the economic environment or both to the economic and socio-political environments. Last one is the strategic choice (Child 1972, 1997) available to SOE, and remains in its jurisdiction to align and orient as per organizational interests and purpose. Any SOE can select its orientation with suitable composition of activities on economic and socio-political continuum. Thus, complete spectrum of restructuring of SOE can be understood through the simultaneous operation of ownership change, opening up of industry, and organizational orientation for strategic choice on socio-political versus economic aspects of the environment. Figure 5 and 6 are trying to clarify this through line and detailed diagrams.

Proposition 3: With the restructuring of SOE, it is expected that organization will observe increase in the level of standardization of technical activities and decrease in the level of formalization of administrative activities to a greater degree.

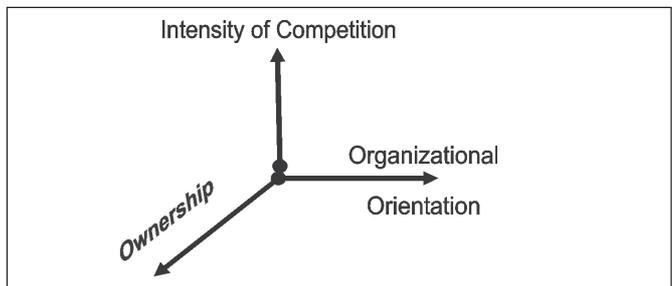


Figure 5: SOE Restructuring and Organizational Orientation (Line Diagram)

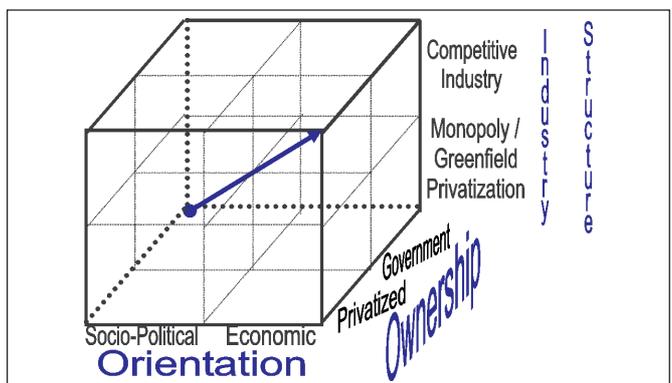


Figure 6: SOE Restructuring and Organizational Orientation with Environment

Strategic Aspect

“The extent to which a firm achieves goodness of fit between its external environment and its structural

characteristics is considered to be the decisive factor in determining performance ... Successful firms are those that achieve a strategic fit with their market environment and support strategy with appropriate structures and management processes” (Martin and Parker, 1997:172). Similarly, they have clarified on organizational orientation and strategic choice with respect to the environment. Accordingly, “at one level, privatisation is about strategic choice or the direction in which the organization is to move. Management in privatised companies are clear about the general way that government expects them to change, in particular to be completely self-financing, entrepreneurial and more consumer oriented” (Martin and Parker, 1997: 171). Underpinning the process of organizational operations, Colling and Ferner (1992) observe that the managers of SOE are expected to learn and

demonstrate a higher level of accountability apart from technical competence. Similarly, Buck, Filatotchev, and Wright (1998) compare the importance of exit based governance over voice based governance in SOE restructuring of Russian firms. Continuing on the same, Luthans and Rioli (1997) observe an increase in the level of market and customer orientation in a restructuring case of Albanian Chemical Company (earlier an SOE). Similar remain the observations of Spenner et al (1998). According to Martin and Parker, (1997: 171):

“More complex is the strategic implementation, in the sense of ensuring that the organization has the structures, processes and internal mind-set necessary to carry through the programme of change. If privatisation is to lead to improved performance, it implies substantial restructuring within firms. Changes must occur to complement those happening in the external environment”.

Detailed study on restructuring of two Indian SOE suggests a clear shift towards economic environment for successful transformation of the organization, or for solely economic orientation for a successful adaptive corporation (Singh, 2003). An adaptive corporation, like Punjab Tractors Limited remained in touch with product market, and always modified its product design and offerings as per customer requirements. It, however, isolated itself from socio-political environment. It staffed the corporation as per requirements of skill set demanded by the product market as against recruitment of personnel to generate employment in the social environment. However, reverse was the case with another SOE, namely Scooters India Limited, which shifted its orientation from socio-political environment towards economic environment during its process of internal restructuring. Additionally, latter changed its product as per market requirements and increased the level of customer service.

Proposition 1: With the restructuring of SOE, it is expected that organization will orient itself towards customers and

isolate itself from socio-political environment to a greater degree.

Structural Aspects

Value addition process involves value addition through both the technological processes and transactions across functional boundaries. Former is called as technical core (Mintberg, 1983) and latter is branded as administrative process or machine bureaucracy (Mintberg, 1983). Organizational success through restructuring will depend on effectiveness of adaptation on the above mentioned two dimensions. Structural dimensions like degree of centralization, level of formalization and standardization, and the level of organizational innovation will help in understanding the process of successful restructuring.

Decentralization

Boundaries for centralization-decentralization continuum lie with the hunger for power by centre on one side, and the need for product and organizational flexibility by corporation on the other. This involves repositioning the vested interest groups involved in organizational coalition (Caves 1990, Grosse and Yanes 1998). More specifically, in the 'network' industries with closely integrated activities, each part of the system is dependent on the other; which are simultaneously dependent on centrally planned technology, research and development and the nature of core products (Colling and Ferner, 1992:219) but also "(e)mployees ... acquire locally specific knowledge that conveys considerable bargaining power within the organizational coalition" (caves, 1990:156). This invites not only centralization of activities but also centralization of corporate culture. This leads to the *development of unified corporate internal labor market both for managerial and other staffs* (Colling and Ferner, 1992:219) *and also to the habit of absorption of organizational slack by tapping their rent seeking behavior* (Caves, 1990) (emphasis added). Additionally, it also jeopardizes the team production approach, as firm's behavior for 'privately owned market', which creates an environment of intrafirm competition among inputs, gets misaligned (Alchian and Demsetz, 1972). On the other hand, forces of restructuring along with market forces will be strong enough to supersede the centralizing forces leading to decentralization of organizational activities and empowerment of middle managers.

Segregating the technical and administrative aspects of value addition process, one can get a deeper insight of for the influence of centralization-decentralization continuum. Study conducted and reported by Singh (2003) suggests that decentralization of technical activities and centralization of administrative activities remain the main features of successful SOE restructuring. Accordingly, the adaptive corporation, like Punjab Tractors Limited has observed

decentralization of technical activities through higher level of specialization, focus, employees' involvement through the use of personal initiatives and suggestion schemes, and control of quality by the manufacturing personnel only in lieu of quality control inspectors. On the other side, restructuring corporation, like, Scooters India Limited has observed decentralization of technical activities through higher level of specialization, focus, and use of business process reengineering by manufacturing personnel. In both these organizations, there has been statistically significant increase in the level of job authority, supervisory authority, unit employee authority and unit collegial (group) authority. Additionally, Scooters India Limited has also observed centralization of administrative activities.

Proposition 2: With the restructuring of SOE, it is expected that organization will observe decentralization of technical activities and centralization of administrative activities to a greater degree.

Formalization and Standardization

Potential for intense use of norms in SOE is due to tall hierarchy with formal accounting through the chain of commands and blurred organizational goals (Martin and Parker, 1997). This leads the decision-making process to be highly bureaucratic for both the policy and operational level issues, and individuals avoid the uncertainty and risk through the use of rules. Due to lack of clarity in output, performance is measured either on the basis of inputs or on the basis of processes, which further complicates the situation. Hence, a huge rulebook is established to deal with possible contingencies and little is left for discretion (Martin and Parker, 1997:174-175, 190). A comparison of activities for SOE, and Private and Public Owned Enterprises suggests that in the former case, individuals are blessed with what can they do and that in the latter case, what they can not (Singh 2004).

Study conducted and reported by Singh (2004) suggests that there has been increase in the level of job and unit standardization. Additionally, personnel for maintenance activities have been attached with the concerned functional departments to avoid the organizational inefficiencies and reporting difficulties (Punjab Tractors Limited). Similarly, installation of assembly line has further increased the process of standardization in technical activities both at Punjab Tractors Limited and Scooters India Limited. However, communication process has been personalized in lieu of being formalized through written communication. Decision making has involved more number of meetings, rather than through the process of file and paper movements. Simultaneously, non-technical activities at Scooters India Limited have demanded consent of CEO not through the process of paper movement but otherwise. On the other side, lower level employees at Punjab Tractors Limited could share their difficulties and grievances with higher level

Proposition 4: With the restructuring of SOE, it is expected that organization will observe increase in the level of innovation and utilize the benefits of learning to a greater degree.

authorities without moving through the formal hierarchies.

Proposition 3: With the restructuring of SOE, it is expected that organization will observe increase in the level of standardization of technical activities and decrease in the level of formalization of administrative activities to a greater degree.

Innovation and Learning

According to Peter Senge (1990), organizational success is heavily influenced by its capacity to learn and innovate at the process level. Corporate success of British Airways was effective not because of the ownership restructuring but because of its capacity to innovate at market, customer, service and business practice levels (Martin and Parker, 1997).

The two Indian cases studied and reported by Singh (2004) suggest that there has been increase in the level of innovation and learning for both adaptive SOE and restructured SOE. Adaptive SOE like Punjab Tractors Limited modified its product designs as per market requirements, changed its product offerings and introduced a new product in the very next year of starting its production. Subsequently, it kept on innovating and introducing newer models and new products as per market requirements. Similarly, it introduced the quality improvement program, once market signaled for it, and result was that the organization was not only cost leader in the industry but also practiced product and market differentiation in the tractor industry. In the year 2003, it introduced Swaraj939 model of tractor, which meets the environmental requirements as per norms of Euro 2005. The key to this success lay at the level of process and accordingly, quality was not merely tagged with but also embedded with the product. Similarly, it was also a market invader. On the other side, restructured SOE like Scooters India Limited utilized the benefits of business process reengineering and tapped the utilities of outdated technology for scooters production into that for three-wheeler production. Additionally, it changed its product from two-wheeler to three-wheeler. The reason was that the market for former was quite saturated, while that for the latter was expanding and untapped.

Proposition 4: With the restructuring of SOE, it is expected that organization will observe increase in the level of innovation and utilize the benefits of learning to a greater degree.

Limitations

This work is pooling from study conducted and reported by Singh (2004), which is based on two cases of SOE restructuring. One of them has gone through the process of ownership restructuring, however, its effect remains meaningless, as the corporation was adaptive one. Another has gone through the process of internal restructuring, though influence of industry competitiveness remains in the process. Thus, propositions need to be verified in the context of ownership change and that in the dynamism of competitive environment and also across different

industries. These two are primarily engineering companies. The former is in the business of manufacturing and marketing of tractors, forklifts and harvester combines, while the latter shifted its operation from scooters' business to three wheelers' business and stopped the business of manufacturing and marketing of fans. Former is called Punjab Tractors Limited, while latter is Scooters India Limited. Thus, to appreciate the full utility of model, it needs to be verified under complete spectrum of ownership change and that of intensity of competition in different industries.

Conclusion

For long time, organizational performance for SOE has been hinged and evaluated for economic activities only, however resources have been committed on both the economic and socio-political dimensions. This means that performance measurement demands distinct parameters to evaluate the same on both the dimensions. Additionally, SOE needs to balance its activities and commitment of resources on economic and socio-political arenas, and can exercise its choice for orienting its goals, resources and activities on this continuum. Accordingly, it can adopt the choice of restructuring on external (ownership versus opening up of industry) and internal (contractual arrangements versus structural adjustments) restructuring.

It has been experienced that the forces of restructuring invite organizational orientation with unique focus on customer and market, and isolation from socio-political commitments. Additionally, higher levels of decentralization of technical activities and centralization of administrative activities have been noticed. Similarly, increase in the level of standardization of technical activities and decrease in the level of formalization of administrative activities have also been observed. Finally, restructuring of SOE will invite increase in the levels of innovation and utilize the benefits of learning to a greater degree.

References

- Alchian A.A. and Demsetz H. (1972) Production, Information Costs and Economic Organization, *American Economic Review*, 62, 777-795.
- Allison G.T. (1971) Essence of Decision Explaining the Cuban Missile Crisis, *Harper Collins Publishers*, New York.
- Bhowmik A.K. (1995) Takeovers by Employees Response to Privatisation in Pakistan, *Economic and Political Weekly*, April 29, 931-933.
- Bowman C. and Asch D. (1987) Strategic Management, *Macmillan Education*, London.
- Buck T., Filatotchev I. and Wright M. (1998) Agents, Stakeholders and Corporate Governance in Russian Firms, *Journal of Management Studies*, 35(1), January, 81-104.
- Caves R.E. (1990) LESSONS FROM PRIVATIZATION IN BRITAIN State Enterprise Behavior, Public Choice, and Corporate Governance, *Journal of Economic Behavior and Organization*, 13(2), 145-169.
- Child J. (1972) Organizational Structure, Environment and Performance: The Role of Strategic Choice, *Sociology*, 6(1), 1-22.
- Child J. (1997) Strategic Choice in the Analysis of Action, Structure, Organizations and Environment: Retrospect and Prospect, *Organization Studies*, 18(1), 43-76.

- Clark E. and Soulsby A. (1995) Transforming Former State Enterprises in the Czech Republic, *Organization Studies*, 16(2), 215-242.
- Clark E. and Soulsby A. (1998) Organization-Community Embeddedness: The Social Impact of Enterprise Restructuring in the Post-Communist Czech Republic, *Human Relations*, 51(1), January, 25-49.
- Colling T. and Ferner A. (1992) The Limits of Autonomy: Devolution, Line Managers and Industrial Relations in Privatized Companies, *Journal of Management Studies*, 29(2), March, 209-227.
- Dhiratayakinant K. (1991) Framework for the Choice of Privatisation Modalities, Gouri, Geeta; Privatisation and Public Enterprise: The Asia-Pacific Experience, *Oxford & IBH Publishing Co. Pvt. Ltd.*, New Delhi, Bombay, Calcutta, 251-265.
- Dunsire A., Hartley K. and Parker D. (1994) Organizational Status and Performance: Summary of the Findings, in the book by McKeivitt D. and Lawton A. (1994) *Public Sector Management: Theory and Practice* (edited); *Sage Publications and The Open University*, London.
- Economist (1998) After Privatising: Extended franchise? January 17, 71-72.
- Economist (1998) Transport: Odd coupling; June 27, 64.
- Economist (1999) Britain's Railways: The Rail Billionaires, July 3, 57-60.
- Economist (1999) Mending Britain's Rotten Railways, July 3, 15.
- Economist (1999) Railways: Standing Room only, January 2, 50.
- Economist (2001) A better Way to Run a Railway, March 17, 57.
- Economist (2001) London Underground: Ken has all the Aces, March 17, 58-59.
- Economist (2002) Railway: Come back, Dr Breeching', January 19, 49-50.
- Economist (2002) Railway: That's enough passengers'; January 5, 45.
- Gouri G. (1991) Policies, Modalities and Issues, in Gouri, Geeta; Privatisation and Public Enterprise: The Asia-Pacific Experience, *Oxford & IBH Publishing Co. Pvt. Ltd.*, New Delhi, Bombay, Calcutta, 73-107.
- Gouri G. (1996) Privatisation and Public Sector Enterprises in India: Analysis of Impact of a Non-Policy, *Economic and Political Weekly*, November 30, M63-M74.
- Gouri G., Shankar T.L., Reddy Y.V. and Shams K. (1991) Imperatives and Perspectives, in Gouri, Geeta; Privatisation and Public Enterprise: The Asia-Pacific Experience, *Oxford & IBH Publishing Co. Pvt. Ltd.*, New Delhi, Bombay, Calcutta, 73-107.
- Grosse R. and Yanes J. (1998) Carrying out a Successful Privatization: The YPF Case, *Academy of Management Executive*, 12(2), May, 51-63.
- Hall R.H. (1996) *Organizations: Structures, Processes and Outcomes* (6th edition), *Printice Hall Inc.*; New Jersey.
- Kay J.A. and Thompson D.J. (1986) Privatisation: A Policy in Search of a Rationale, *Economic Journal*, 96, March, 18-32.
- Kornai J. (1986) The Hungarian Reform Process: Visions, Hopes, and Reality, *Journal of Economic Literature*, 24(4), December, 1687-1737.
- Kostera M. (1995) Differing Managerial Responses to Change in Poland, *Organization Studies*, 16(4), 673-697.
- Kostera M. and Wicha M. (1996) The 'Divided Self' of Polish State-Owned Enterprises: The Culture of Organizing, *Organization Studies*, 17(1), 83-105.
- Kumar K. and Srivastava R. (2001) Management Case: Scooters India Limited, *Vikalpa*, 26(2), April-June, 59-72.
- Kumar K. and Sahay A. (1996) Scooters India Limited (A), (B) and (C)' in Kumar, Krishna, (1996) Cases in Strategic Management, *Global Business Press*, New Delhi, 331-370.
- Luthans F. and Riolli L.T. (1997) Albania and the Bora Company: Lessons learned before the Recent Chaos, *Academy of Management Executive*, 11(3), August, 61-72.
- Majumdar S.K. and Ahuja G. (1997) Privatisation: An Exegesis of Key Ideas, *Economic and Political Weekly*, July 5, 1590-1596.
- Martin S. and Parker D. (1997) The Impact of Privatisation: Ownership and Corporate Performance in the UK, *Routledge*, London.
- Merrill L. (2000) Punjab Tractors Limited: Breaking Ground, October 9, 1-8.
- Mintzberg H. (1983) Structure in Fives: Designing Effective Organizations, *Pintice Hall International Editions*, New Jersey.
- Monsen R.J. and Walters K.D. (1979) A Theory of the State-Owned Firm in a Democracy, The State-Owned Enterprises Conference, *Harvard Business School*, March 26-28.
- Moore J. (1992) British Privatization-Taking Capitalism to the People, *Harvard Business Review*, January-February, 115-124.
- Perry J.L. and Rainey H.G. (1988) The Public-Private Distinction in Organization Theory: A Critique and Research Strategy, *Academy of Management Review*, 13(2), 182-201.
- Pryke R. (1981) *The Nationalized Industries: Policies and Performance since 1968*, *Martin Robertson*, Oxford.
- Reddy Y.V. (1991) Modalities of Privatisation, in Gouri G., Privatisation and Public Enterprise: The Asia-Pacific Experience, *Oxford & IBH Publishing Co. Pvt. Ltd.*, New Delhi, Bombay, Calcutta, 219-240.
- Senge P. (1990) *The Fifth Discipline*, *Doubleday*, New York.
- Singh S.P. (2004) Ownership and Internal Restructuring of State-Owned Enterprises, Unpublished Doctoral Thesis, *Indian Institute of Technology Kanpur*, January.
- Soulsby A. and Clark E. (1996) The Emergence of Post-Communist Management in the Czech Republic, *Organization Studies*, 17(2), 227-247.
- Spenner K.I. and Jones D.C. (1998) Social Economic Transformation in Bulgaria: An Empirical Assessment of the Merchant Capitalism Thesis, *Social Forces*, 76(3), March, 937-965.
- Spenner K.I., Suhomlinova O.O., Thore S.A., Land K.C and Jones D.C (1998) Strong Legacies and Weak Markets: Bulgarian State-Owned Enterprises during Early Transition, *American Sociological Review*, 63, August, 599-617.
- W-I-CARR (1995) India Research: Punjab Tractors, August 1, 1-8.
- Yin R.K. (1989) *Case Study Research: Design and Methods*, *Sage Publications*, Applied Social Research Methods Series, 5.
- Yin R.K. (1993) *Applications of Case Study Research*, *Sage Publications*, Applied Social Research Methods Series, 34, Newbury Park.
- Zif J. (1981) Managerial Strategic Behavior in State-owned Enterprises-Business and Political Orientations, *Management Science*, 27(11), November, 1326-1339.

Appendix I

Punjab Tractors Limited

Punjab Tractors Limited (PTL) is basically an engineering company and has primarily been in the business of manufacturing and marketing of tractors and tractor drawn agricultural implements, harvester combines, metal castings, and forklifts. It was incorporated by PSIDC (Punjab State Industrial Development Corporation) in 1970 with indigenous technology from CMERI Durgapur for manufacturing and marketing of tractors. PTL started its commercial production for 24 hp agricultural tractors in early 1974 and kept on adding different models of tractors in due course of its journey. Around 1979-81, it added facilities for manufacturing of harvester combines and established its own foundry division. Similarly, around 1983-84, facilities for manufacturing of forklifts were also added. Initially, it faced various kinds of difficulties, like humiliation from state government due to rejection of technology from apex authority, acute difficulty in raising funds, problem of bearing capacity for the factory land, and short shipment in the supply of heat treatment equipment. Things were more difficult due to poor image of domestic products and lack of funds to farmers for buying Swaraj tractors as PTL was excluded from the list of manufacturers, whose tractors were eligible for World Bank line of credit. The tractor industry was quite competitive due to lower cost of manufacturing in East European countries with proven technologies while PTL had high cost of production due to unproven and infant technology coming out from R and D laboratory. The company was able to overcome all these difficulties with requisite strategies including exemption of excise duty for 2 years during 1976 through 1978 from the government of India. Initially and till the end of seventies, the company was facing competition from Eicher Tractors, Escorts Tractors, Gujarat Tractors, HMT (Hindustan Machine Tools), Kirloskar Tractors, Mahindra and Mahindra, TAFE (Tractors and Farm Equipments Limited) and few more small players, besides cheaply produced foreign makes. In the years 1982-83, company experienced its biggest jolt due to credit squeeze by commercial banks as it was operating mainly for volume of production rather than quality of products. This triggered the initiatives for quality improvement with the help of Juran's approach for quality improvement at the process level. Simultaneously, PTL had passed through the distinct phases in its technology of manufacturing, and now it has the technology, which is comparable to that possessed by corporations situated anywhere in the world. During the period of 1987 through 1999, its tractors had been selling either against advance payment or against cash only. Additionally, the company has been leader in earning profit not only in tractor industry but also in the whole auto industry. Since 1994, PTL is also practicing both cost leadership and differentiation together. Now, tractor business has become quite competitive, especially since late 1990s, as multinational giants like John Deere and New Holland have appeared besides some domestic entrants like Sonalika and Bajaj Tempo.

In the year 1993-94, PSIDC sold its share to general public and also to the non-government organizations and ceased to be state-owned enterprise. Thus, 1990's was a distinct period for PTL as company changed its ownership structure. Additionally, industry capacity got increased manifold and market became the buyers' one. Thus, the decade of 1990s is being considered as the period of restructuring for the purpose of present study.

PTL's investment was business driven and it kept on adding the manufacturing capacity and product varieties as per demand of the business. Its recruitment was solely based on merits and purely as per business requirements without any consideration for social obligation or political agenda like employment generation. The organizational priorities and practices were business and technology driven and growth was planned and executed accordingly. It remained unique in successful development and long term association of business associates like vendors and ancillaries, and all India dealer network. Organizational orientation was mainly and exclusively towards economics and business, unlike socio-political one as in case of other SOE. PTL was blessed with unique leadership having both the managerial and entrepreneurial characteristics, which helped in attaining almost negligible internal conflict, as vested groups were almost absent, and labor union was from within and purely through the process of election without any political affiliation. Toxic effect of succession management was not there, as it happened only after 28 years of organizational founding. Finally, the organization was able to usher the culture of work and business in lieu of that for administration, as remained the case with other SOE.

Organizational processes, jobs and tasks have been standardized to a greater extent through installation of overhead conveyors in assembly operations, gravity conveyors in machine shops and complete revamping of storage space and bins. Additionally, pre-calibrated speed for the movement of conveyors in assembly operations had standardized and fixed the rate of assembly for tractors at PTL. On the issue of standardization, a senior officer viewed:

Now, a large number of jobs are reorganized for the assessment of performance at the individual level ... by separating the task, redesigning the work, changes in machine layout and also the type of machines ... through the job and process standardization. (Singh 2004:179)

Statistical measure on job and unit standardizations through the questionnaire survey with supervisory and managerial staff suggest statistically significant level of increase (Singh 2004). Simultaneously, around 35% to 40% of remuneration had been linked either with productivity at individual level or with quality of components manufactured (Singh 2004), which signifies the outcome of standardization. Similarly, statistical measure on job, supervisory, and unit employee and group authorities through the questionnaire survey with supervisory and managerial staff also shows statistically significant level of increase (Singh 2004). Its significance can be realized through the practice of self-inspection scheme for the job

performed on shop floor by workers in lieu of the jobs of quality control inspectors, and extensive use of employees' involvement and initiatives through adoption of suggestion scheme (Singh 2004). Additionally, the practice of "delegation of responsibility and authority", and the "delegation of power as the main approaches to retain the manpower" (Singh 2004:180). PTL remained a learning and innovative organization. It developed the technology for tractor at CMERI Durgapur, designed and fabricated a missing electronic component in heat treatment equipment supplied by East German manufacturer, and replaced the foundation work by 'open-web-portal-frame' structure and 'membrane RCC walls' were bolted on to structural foundations once factory land faced the problem of bearing capacity (Singh 2004). Installation and operation of its own tool room facilities for manufacturing of tools, jigs and fixtures before setting up of plant, redesign of automatic depth-cum-control hydraulic lever right in the beginning, and launching of Swaraj735 in the very second year of commencement of production remained some of the important episodes for the use of innovation and learning. Market crash in 1982 was used to diagnose the reasons for market failure, and accordingly Juran's quality improvement program was practiced to embed the quality with the product. This led PTL to sell its tractors, during 1987 and 1999, either against cash payment or against advance payment. In the year 2003, it has developed and manufactured a tractor model Swaraj939, which meets environmental requirements to be expected in 2005. Lastly, PTL remained an adaptive corporation and change of ownership did not influence the organizational functioning and performance.

Appendix II

Scooters India Limited

Scooters India Limited (SIL) is basically an engineering company and has primarily been in the business of manufacturing and marketing of scooters, three wheelers and fans. It was incorporated by the Government of India in 1972 with old plant and machinery from Innocenti (Italy) having manufacturing capacity of 500,000 scooters. However, the project cost of Rs. 109 million with Innocenti's old plant and machinery became a sanctioned amount of Rs. 134.5 million and the actual expenditure incurred was Rs. 194.8 million as against a sum of Rs. 159.1 million in case of new plant from Piaggio. Out of Rs. 194.8 million, Rs. 30.9 million was incurred on unapproved power pack project. Additionally, the facilities bought from Innocenti were not fully balanced, as Innocenti had not only sold some portion of its plant before coming in contact and/or during negotiations with the Government of India but also could not release some facilities, which were common for production of other products. SIL had to establish its own forging, die casting, foundry and paint shops besides buying certain machines from HMT to overcome the supply related problems and also to fulfill the complete machining requirements. Either due to fault of building designer or due to decisions of founder CEO, the process of automation faced severe constraints in due course of time. Even the

geographical location of SIL put further constraints on its functioning, as 70% of components were procured from distant places, which not only increased transportation and inventory carrying costs but also added administrative complexities. The company also lacked the back up for technical support and know how. However, the corporation acquired facilities, know-how and also the commercial proprietary right to manufacture 3 wheelers in 1973-75 from Innocenti. (Kumar and Sahay 1996)

In 1975, SIL introduced its first product called 'Vijai Deluxe' scooter, which failed in the market. Subsequently, it modified and introduced other models and products. It kept on adding products, like Vinay moped, which could not be commercialized and whole investment of Rs. 35 million became a waste besides the loss of time, energy, and opportunities. It acquired Delhi fan unit of Ganesh Mills, and could not integrate its activities with the existing business. The most difficult part was its costing system, and SIL was unable to recover its cost from the manufacturing and selling of product. As a result, it was caught up in the loop of perennial losses and incurred a loss of Rs. 428.92 million for a sale of Rs. 103.18 million in only one financial year 1989-90. By mid eighties, the Government of India felt that SIL would not be able to turn around, and tried to sell the organization to the private parties but failed to do so. Meanwhile, workers' union joined hands with officers and fought a pitched battle against the management and government. Finally, government appointed a new CEO, Dr. Arun Sahay in early 1990 to wind up the company, who refused to do so and presented a plan for the organizational revival. In the meantime, SIL got covered under BIFR (Board for Industrial and Financial Reconstruction) in 1992. The process of restructuring started with the referral to BIFR and around 850 employees took voluntary retirement in the later part of 1993 and early part of 1994. SIL switched its business completely from two wheelers to three wheelers and regained the confidence of bankers and suppliers by middle of 1990s. (Kumar and Sahay 1996; Kumar and Srivastava 2001; Annual Reports)

Meantime, SIL came out from the business of two wheelers and fans in 1990 and 1997 respectively, as a step in organizational and business restructuring. Its major strength was licensed capacity for manufacturing and also issuing permissions for setting up of scooter assembling unit in other states. Due to large gap between demand and supply of scooters, SIL maintained its monopolistic position from 1970s till early 1980s besides Bajaj Auto Limited, a private sector company. However, in early 1980s, LML Kanpur was established with newer technology from Piaggio, Italy for manufacturing of scooters. Thus, the two companies, Bajaj Auto and LML became the strong competitors for scooters' business in 1980s. Additionally, the development of fuel-efficient technology for motor cycles and expansion of moped manufacturing capacity reduced the gap between demand and supply of scooters by substituting scooters with motor cycles or mopeds, where ever was possible and feasible. Thus, by mid 1980s, not only the monopoly power of SIL checked due to intense



competition in the two-wheeler industry but its very survival was questioned. Additionally, industry capacity got increased manifold and market became the buyers' one. Thus, the period of 1992 through 1996 is being considered as the period of restructuring for the purpose of present study.

SIL's investment was not business driven and it kept on adding the manufacturing capacity and product varieties as per will of political bosses or that of CEO. Its recruitment was mainly to please the political bosses by fulfilling the national agenda for employment generation, and organizational chart was fitted to show the engagement of manpower. Not only the organizational priorities were diffused across business but also organizational practices were socially and politically driven. It failed completely in development of business associates like vendors, ancillaries, and all India dealer network by hiring college sophomores. Organizational orientation was mainly socio-political and remained poorly aligned with economics and business. SIL suffered in leadership and succession management. It had experienced 5 leaders in 5 years (1979 through 1984), and also lacked in entrepreneurial and managerial characteristics, which plagued the organization with huge internal conflict, as vested groups were formed and functional. Similarly, recognition of labor union was through local state government rather than that through the process of election, which invited ample scope for political affiliation and interventions. This further escalated the intensity of internal organizational conflict.

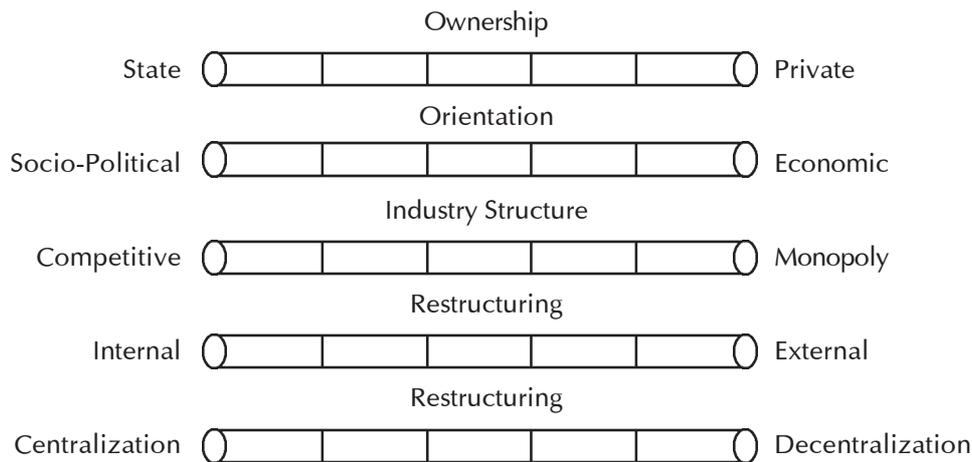
During the period of restructuring, organizational processes, jobs and tasks had been standardized to a greater extent through installation of conveyors in assembly

operations. Additionally, pre-calibrated speed for the movement of conveyors in assembly operations had standardized and fixed the rate of assembly for three-wheelers at SIL. Statistical measure on job and unit standardizations through questionnaire survey with supervisory and managerial staff suggests statistically significant level of increase (Singh 2004). Similarly, statistical measure on job, supervisory, and unit employee and group authorities through the same questionnaire survey also shows statistically significant level of increase (Singh 2003). Additionally, the "(m)anagement style changed from ... isolation to participation" and a culture for teamwork had been established (Singh 2004:99). SIL continued the practice of BPR (business process reengineering), which helped the organization in converting machinery and facilities for production of two wheelers into that for three wheelers, reducing the cost of operation significantly and achieving higher level of productivity. Similarly, the evil effects of internal conflict were controlled, vested interest groups were checked, teamwork was ushered and some of the inefficient operations like forging were outsourced. With the process of restructuring, SIL adopted the culture of learning and innovation. In the initial phase of restructuring, SIL sold scrap and took advances from dealers against delivery of three wheelers for working capital, as funds from banks were not available. It used training to redeploy manpower in newer functions, once VRS (voluntary retirement scheme) was availed by 850 employees in 1994. Petrol driven three wheelers were converted into diesel driven ones. Additionally, it developed and launched electrically driven three wheeler, which is pollution free and environment friendly.



Flexibility Mapping : Practitioner's Perspective

1. What types of flexibilities you see in the practical situation of "Ownership Restructuring and Competition" on the following points:
 - Flexibility in terms of "options"
 - Flexibility in terms of "change mechanisms"
 - Flexibility in terms of "freedom of choice" to participating actors.
 Identify and describe the types of flexibilities that are relevant for your own organizational context? On which dimensions, flexibility should be enhanced?
2. Try to map your own organization on following continua (Please tick mark in the appropriate box(es))



3. Develop a SAP-LAP (Situation Actor Process-Learning Action performance) model of "Ownership Restructuring and Competition" relevant to your organization.

Key questions reflecting the applicability in real life:

1. How are the objectives of your organization oriented in terms of socio-political and economic spectrum? How will you utilize the findings of this study to focus them?
2. What is the level of centralization, formalization and standardization in your organization? Can you redesign the organizational processes involving above-mentioned parameters, which can help you in focusing organizational orientation and also in achieving organizational effectiveness?



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Liability Management in Commercial Banks in India: A Comparative Study of Bank Groups in Liberalized-Era

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Abstract

This paper examines the liability structure of 68 commercial banks operating in India for eight consecutive years, 1992-2000. The special emphasis is on the influence of ownership structure and size in this regard. Time series and cross-section analysis of the liability structure of sample banks reveals that they use 17 units of debt for each unit of owned funds, which is consistent with limits set by regulation. After recapitalization, nationalized banks appear closer to foreign banks in terms of leverage; the leverage of private banks is closer to the State Bank group. Although networth to total assets ratio is highest for small banks, relatively lower reserve to networth ratio for them suggests that their shareholders are more interested in regular dividend income. With the notable exception of the foreign banks, the share of deposits has increased for all bank groups in the second half of the study. The relative importance of various types of deposits seems to depend on the nature and scale of operations of the sample banks. Borrowings constitute a miniscule portion of total sources of funds for the sample banks.

Keywords : borrowed funds, capital adequacy ratio, core capital, debt-equity ratio, demand deposits, owned funds, saving bank deposits, term deposits, tier1 capital.

Introduction

Liabilities, in a broad sense, signify the sources of funds. Evidently, various sources of funds differ with respect to cost, maturity, and repayment. Besides, owned and borrowed funds have different implications for financial leverage. Thus, liability management may be viewed as planning and coordination of various sources in such a way that it leads to maximization of shareholders' wealth in a risk-return framework. In operational terms, this implies regular supply of funds to ensure adequate liquidity in the short-term and sustained growth of earning assets in the long-term.

Accordingly, the purpose of this paper is to examine liability structure of 68 sample banks during 1992-2000. For better exposition, the subject matter is presented in five sections, namely the scope and methodology, management of owned funds, management of deposit liabilities, management of borrowings and finally the major findings.

Scope and Methodology

The present analysis covers 68 scheduled commercial banks, other than regional rural banks, operating in India for eight consecutive years, (1992-2000). In terms of ownership structure, these belong to four broad groups – State Bank of India and its seven associate banks, called the State Bank group, 19 nationalized banks, 21 private sector banks, and 20 foreign banks. Further, these 68 banks have been regrouped as – large, medium, and small, based on the size

of their total assets as on March 31, 1992. Banks in the upper quartile have been assigned to the large group (17), those in the lower quartile to small group (17) and others in the inter-quartile range in the medium group (34) (Note1).

Here, a 'static' concept of size has been used, i.e., the size-classification of the sample banks is frozen at the beginning of the study period. The alternative approach of redefining size-group for each year of the study was evaluated, but found unsuitable for various reasons.

First, we are interested to know whether there is any relationship between the size of the bank and the impact of the reform process. For this, it is necessary to choose a common base line and freeze the size group.

Second, this approach facilitates interpretation of results and brings out the relative importance of size vis-à-vis ownership structure, by freezing the relationship between the two.

Third, during the period of the study, the number and composition of scheduled commercial banks differed from year to year, due to the entry of new banks and the process of merger and acquisition. The focus of the study is on 'old banks', which constitute only a part, albeit a dominant one, of the Indian banking system. Thus, redefinition of size-group would have added an element of arbitrariness without corresponding benefits.

The relevant data has been culled out from statistical

tables relating to banks, an annual publication of the Reserve Bank of India (RBI) – the central bank of India. In addition, extensive use has been made of Performance Highlights of Banks, published by the Indian Banks Association; and Report on Trend and Progress of Banking in India, a regular publication of the RBI.

The analysis makes use of financial ratios with total assets as the base for various liability groups. All financial ratios have been tracked over the eight-year period to discern the overall trend for 68 banks in the sample vis-à-vis their sub-groups based on ownership pattern and size. Further, average ratios have been computed for the eight year period of the study (1992-2000), and its two sub-periods: the first half (1992-1996) and the second half (1996-2000).

Next, each ratio for the two sub-periods have been compared and tested for statistically significant differences by using ‘paired t-test’ method (Note 2). The procedure is applied to various sub-groups, and the overall sample. This approach explicitly recognizes/ assumes that banks required an ‘adjustment period’ to reorganize/ reorient their operations and strategies in the new environment.

To explore the relationship between the nature of the bank and profitability, all ratios have been tested for inter-group differences, for the eight-year period and its two halves. The analysis of variance (ANOVA) technique has been used for the purpose. It is followed by Bonferroni post-hoc test procedure for multiple pair-wise comparisons. This detects statistically significant differences, when null hypothesis of no difference between more than two groups is rejected (Note 3).

Management of Owned Funds

Owned funds or networth constitute the share capital contributed by the owners (equity shareholders) and reserves. Reserves – statutory, specific, and general – are retained earnings or undistributed profits, which are distinguished from ‘provisions’ made to provide for known liabilities and reduction in the value of certain assets. To the extent equity funds act as a cushion against unexpected losses, it is known as the ‘core capital’. However, its excessive use lowers the return on equity. Thus, financial theory suggests an optimal mix of equity and debt (borrowed funds) that maximizes the wealth of shareholders. This depends on taxes, bankruptcy costs, and information asymmetry (Note 4).

From the perspective of financial management, we have examined three aspects related to management of owned funds. These are networth to total assets ratio, servicing of capital and issues in capital adequacy.

Networth

Networth has been analyzed with respect to total assets. However, it is not reported in annual accounts per se. As noted above networth comprises of capital, reserves and surplus. Thus, its values have

been obtained by adding up capital, reported under Schedule 1, and reserves and surplus, reported under Schedule 2 of annual accounts. The value of networth is gross of accumulated losses, if any. Besides, no adjustment has been made for investment in shares as the focus is not on net owned funds

A perusal of relevant data contained in Table 1 shows that each unit of owned funds supported nearly 18 units of total assets, during 1992-2000. This relationship is an outcome of the requirement that commercial banks shall

“It is an accepted principle that these banks are not to run solely or even mainly with the object of making maximum profits. However, this does not mean that they are not to make any profits at all. In particular there is a substantial investment of public funds in these banks and a reasonable return on this investment would be expected by the government.” Source : Banking Commission (1972: 296)

Table 1: Net worth to Total Assets Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages											Subperiod change	Number of banks with + trend	Paired t-test probability	
	1992	1993	1994	1995	1996	1997	1998	1999	Average						
	-	-	-	-	-	-	-	-	1992	Sub-period I	Sub-period II				
	1993	1994	1995	1996	1997	1998	1999	2000	2000	1992-1996	1996-2000				
A. Ownership															
State Bank	1.7	2.6	3.5	3.7	4.3	5.0	4.9	4.6	4.07	2.98	4.71	+	8	0.00	
Nationalized	3.3	4.8	6.7	6.9	6.7	6.8	6.4	5.7	6.08	5.66	6.32	+	11	0.16	
Private	2.4	2.8	3.5	4.7	5.5	5.5	5.3	5.3	4.81	3.57	5.36	+	19	0.00	
Foreign	4.9	7.0	8.8	9.9	10.5	10.7	9.4	8.4	9.03	7.92	9.63	+	17	0.10	
B. Size															
Large	2.4	3.7	5.0	5.1	5.1	5.5	5.4	5.0	4.85	4.20	5.24	+	13	0.04	
Medium	4.0	5.1	6.8	7.9	8.2	8.1	7.2	6.4	6.96	6.24	7.35	+	28	0.00	
Small	4.5	7.3	9.9	10.3	10.8	11.2	10.0	9.0	9.54	8.40	10.12	+	14	0.01	
Total	2.9	4.2	5.6	6.0	6.1	6.5	6.1	5.5	5.59	4.86	6.00	+	55	0.00	

transfer 20 per cent of their profits to reserves, until the ratio of owned funds reaches 6 per cent of their deposits (Note5).

It may be noted that the floor level for owned funds is investment required for risky assets, like shares, and non-earning assets like cash, and fixed assets. As per this yardstick, all bank groups, with the notable exception of private banks appeared comfortable, even at the beginning of financial sector reforms. The three assets of private banks accounted for 2.9 per cent of their total assets, whereas share of networth accounted for barely 2.5 per cent of total assets in 1992-93. Obviously, the situation improved with new capital adequacy norms.

Another notable point is that, during the first four years of the study (1992-1996), the ratio had more than doubled for all bank groups. In spite of a decline in the ratio in the last two years of the study, the sub-period change is positive for four-fifths of sample banks. Obviously, the decline is slower than the increase.

Prima facie, the decline in networth to total assets ratio during the last two years of the study is startling. It is primarily due to losses suffered by certain banks in that period.

The ratio of networth to total assets continues to be low for the State Bank group due to their reliance on Tier II capital (use of subordinated debt) to satisfy capital adequacy norms. In sporadic cases, even this could not be met as evidenced by their negative networth after adjustment of accumulated losses.

Foreign banks use maximum owned funds for each unit of asset. Their dominance among the small and medium sized banks explains higher ratio for these groups. It is surprising that nationalized banks are closer to foreign banks, while private banks are closer to the State Bank group. It seems private banks use leverage to maximize their

earnings per share (EPS).

Servicing of Equity Share Capital

Although the level of networth is governed by the regulatory requirements, the ways of achieving it may differ among banks. Banks enjoy this flexibility partly because servicing of equity share capital, in general, is not a contractual obligation. Nevertheless, the proportion of equity share capital and reserves in networth may be used to manage cash outflow arising from payment of dividend on equity share capital. It may be noted at the very outset that the focus is not on potential increase in market price of the share.

The Committee on the Financial System (1991) and the Committee on Banking Sector Reforms (1998), both headed by Mr. M. Narasimham, have also stressed that the structure of the banking system should be 'market-driven' and based on profitability considerations brought about by a process of mergers and acquisitions.

Thus, a high ratio of reserves and surplus to equity share capital indicates either lack of sufficient cash profits to pay dividends or continuous internal financing by

eschewing payment of dividends. These distinct possibilities make the inter-group comparison rather difficult.

From a perusal of the data presented in Table 2, the following remarkable points stand out:

- Initial decline in the ratio is followed by a steady increase since 1995-96. This may be ascribed to a set of two factors: adjustment of accumulated losses against reserves and surplus followed by retention of profits to enhance network.
- Apparently, shareholders of small banks are more interested in regular dividend income. It may be recalled that, among all bank groups, networth to total assets ratio is the highest for them, but reserves to equity funds ratio is the lowest for them.
- State Bank of India and its associate banks, as part of the public sector banks, follow a conscious policy of boosting its earnings per share (EPS) by manipulating this ratio.

Table 2: Equity Capital to Net worth Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages											Subperiod change	Number of banks with +trend	Pairedt -test probability	
	1992	1993	1994	1995	1996	1997	1998	1999	Average						
	-	-	-	-	-	-	-	-	1992	Sub-period I	Sub-period II				
	1993	1994	1995	1996	1997	1998	1999	2000	2000	1992-1996	1996-2000				
A. Ownership															
State Bank	15.1	12.9	11.4	12.2	11.6	9.3	8.2	7.2	9.8	12.4	8.8	-	1	0.37	
Nationalized	58.4	64.2	68.5	65.2	58.2	53.5	49.5	44.9	55.9	65.3	51.0	-	5	0.00	
Private	17.7	16.8	16.1	14.8	12.6	11.3	11.6	11.6	12.7	15.8	11.7	-	6	0.01	
Foreign	7.0	7.6	6.8	9.2	16.2	14.9	15.1	17.4	13.4	7.9	15.9	+	11	0.18	
B. Size															
Large	43.9	48.0	53.2	51.4	43.4	38.7	36.2	32.8	41.6	50.4	37.3	-	5	0.03	
Medium	32.0	32.2	29.1	25.5	27.4	24.7	21.0	17.6	23.9	28.6	22.2	-	8	0.35	
Small	58.9	51.4	51.0	57.5	56.5	56.1	58.6	59.7	57.1	54.8	57.9	+	10	0.77	
Total	41.7	44.9	48.5	45.8	39.7	35.4	32.7	29.4	37.7	46.0	33.9	-	23	0.10	

- The direction and magnitude of sub-period change for foreign banks indicates massive infusion of fresh share capital by them.
- The very low ratio for nationalized banks is due to poor profitability of their operations in the past.

Issues in Capital Adequacy

It is significant to note at the outset that capital is not a single item in determining capital adequacy. Basle Capital Accord has defined capital in two tiers: Tier I and Tier II. Tier I capital (also known as core capital) provides that most permanent and readily available support to a bank against unexpected losses. Tier II of capital contains elements that are less permanent in nature or are less readily available. While Exhibit 1 shows constituents of Tier I capital, components of Tier II capital are listed in Exhibit 2.

The principal advantage of risk-based capital standards is that it permits inclusion of off-balance sheet items like guarantees, which are a principal source of fee-based income for banks. Nevertheless, it treats each asset in isolation of the liability that was used to finance. Besides, Yeager and Seitz (1989:256-57) observe that it ignores the portfolio diversification effect.

The information on capital adequacy is available in such a format that positional averages, namely median and mode are more suitable. Accordingly, 'box-plots' (Kinnear and Gray, 1999:97-99) has been used to show the comparative position of various groups.

It is evident from Exhibits 3 to 6 that median values have increased for all the groups and there is less variability in values. This may be ascribed to the suggestion by The committee on Banking Sector Reforms (1998, para 3.15), headed by M. Narasimham, for phased increase in capital adequacy ratio from 8 percent to 9 per cent by March-end 2000, and to 10 per cent by the end of March 2002. Nevertheless, some banks have low and in fact even negative capital adequacy ratio. This is explained by heavy losses incurred by them.

Exhibit 1: Components of Tier I Capital

Paid up capital

- + Statutory reserves
- + Disclosed free reserves
- + Balance in share premium account
- + Capital reserves from sale (not revaluation) of assets
- Accumulated losses, if any
- Book value of intangible assets
- Equity investment in subsidiaries

Tier I (core capital)

Exhibit 2: Components of Tier II Capital

Cumulative perpetual preference shares

- + Undisclosed reserves
- + Revaluation reserves

- + General provisions and loss reserves
- + Hybrid debt capital instruments
- + Subordinated debt

Tier II capital

Source: Based on Reserve Bank of India, Report on trend and progress of banking in India, 1996-97, p. 119.

Exhibit 3: Capital Adequacy Ratio of Sample Banks by Ownership Structure, 1996-97

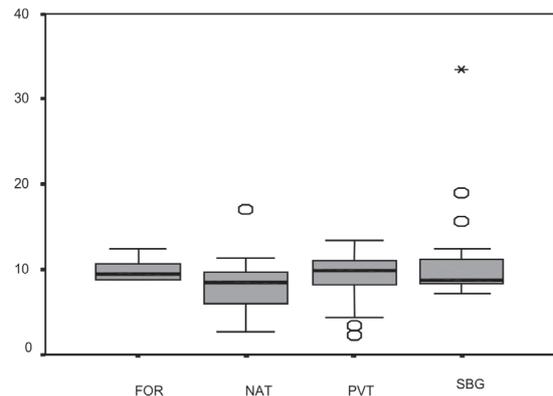


Exhibit 4: Capital Adequacy Ratio of Sample Banks by Ownership Structure, 1999-2000

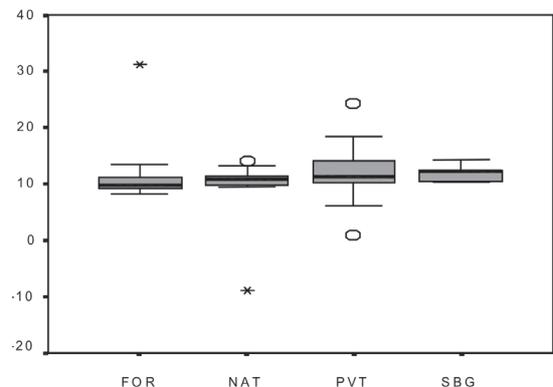


Exhibit 5: Capital Adequacy Ratio of Sample Banks by Size, 1996-97

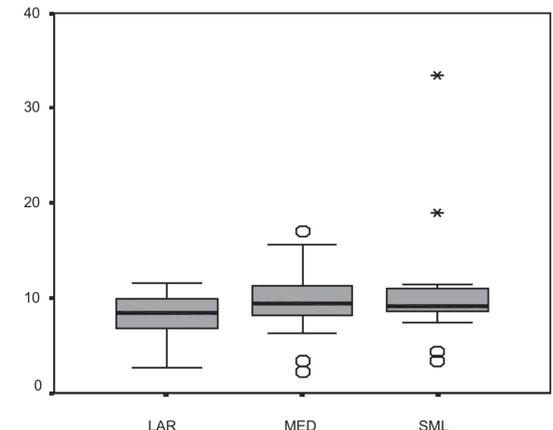
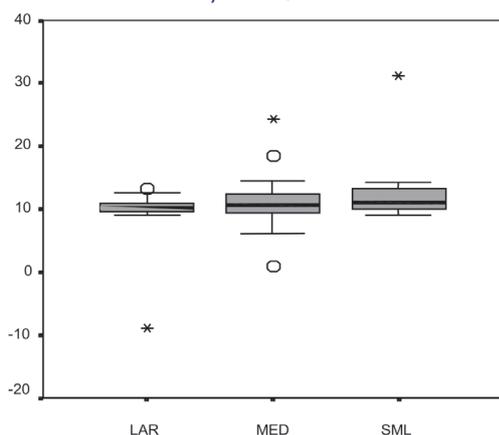


Exhibit 6: Capital Adequacy Ratio of Sample Banks by Size, 1999-2000



Legend (for Exhibits 3 to 6): The vertical limits of the 'box' show the inter-quartile range. The thick horizontal line across the interior of the box represents the median. Vertical lines outside the box are called 'whiskers', which connect the largest and the smallest values that are categorized neither as outliers (marked as 'O') nor as extreme values (marked as '*').

Management of Deposits

Total Deposits

Management of deposits entail three variables: cost, maturity, and relative weights of various types of deposits in the portfolio. Primarily deposits are of two types: demand deposits which do not carry any interest cost and term deposit on which interest payable depends on the term of the deposit. These deposits may originate either from another bank or public, i.e., non-bank entities. Composition of deposits is given in Schedule 3 of the annual accounts of banks in India. It adds one more type of deposit from public, namely, savings bank deposit. Besides, demand-and term-deposits from public are distinguished from deposit by banks.

The focus of the paper is on: What broad trends are in profitability of 'old' or existing commercial banks since 1992? How has reform process affected the overall profitability and its proximate determinants / causes for commercial banks in India? Whether high or low performance can be linked to ownership pattern and/ or size of the bank?

Management of deposit is crucial in view of its implications for interest cost, spread margin, interest rate risk, and maturity risk. Here, the primary focus is on importance of various types of deposits as means of financing total assets. Ex-hypothesi, the relative importance of various deposits in the deposit portfolio of a bank rests on: (a) spread of operations; (b) nature of clientele served; (c) expectations about future interest rates; (d) asset preferences of households and banks; (e) availability of substitutes to depositors, both public and banks. Hence, small banks catering to niche market segments, in general, would have higher dependence on term deposits as compared to large and nationalized banks.

It is essential to understand the nature of relationship between deposits and total assets. The two are linked through the medium of bank credit. To begin with, deposit liabilities of a bank arise when cash or cheque is deposited in a bank. Total deposits swell as banks extend credit on the strength of deposits received. This is called the process of deposit/ credit creation. With such expansion of bank credit, the deposit to total assets ratio increases; so does the credit (advances or loan) to deposit ratio, approaching unity. A low ratio per se implies access to and use of other sources

of funds, whether owned or purchased (borrowed). Banks use other sources when such sources are available at cheaper rates than deposits or the central bank raises

cash reserve ratio (CRR) to reign in credit creating potential of banks.

In sum, the ratio of deposits to total assets for a bank is determined by a complex interaction among deposit base of the bank, lending potential (exhausted/ untapped), cost and availability of other sources of funds, above all, lending rates and demand for credit.

During 1992-2000 (Table 3), the sample banks, on an average, funded four-fifths of their total assets through

Table 3: Deposits to Total Assets Ratio for the Sample Banks

Bank group	Figures are in percentages													
									Average		Subperiod change +trend	Number of banks with	Pairedt-test probability	
	1992	1993	1994	1995	1996	1997	1998	1999	1992	Sub-periodI 1992-1996				Sub-periodII 1996-2000
	-	-	-	-	-	-	-	-	-					
	1993	1994	1995	1996	1997	1998	1999	2000	2000					
A. Ownership														
State Bank	67.1	69.6	71.4	70.2	70.6	73.6	75.8	76.4	72.71	69.73	74.45	+	5	0.52
Nationalized	85.5	85.4	84.4	82.9	84.1	85.8	86.1	86.5	85.25	84.39	85.76	+	12	0.04
Private	86.4	87.5	86.5	83.5	84.0	86.4	86.4	86.2	85.82	85.66	85.90	+	14	0.10
Foreign	67.2	72.4	75.7	69.4	67.1	67.8	65.3	62.5	67.45	71.27	65.38	-	6	0.39
B. Size														
Large	77.7	79.0	79.2	77.8	78.8	81.0	81.9	82.3	80.16	78.44	81.19	+	12	0.07
Medium	79.3	80.9	82.0	78.8	78.3	80.2	79.8	79.1	79.65	80.21	79.38	-	14	0.10
Small	77.5	77.7	76.1	69.7	68.9	73.1	75.5	76.6	74.03	74.39	73.86	-	11	0.76
Total	78.0	79.4	79.8	77.9	78.5	80.6	81.3	81.4	79.95	78.77	80.63	+	37	0.47

deposits. The overall trend is steady increase in all years except 1995-96. Hence, there is a marginal increase in the ratio between the two sub-periods, which is accounted for half of the sample banks. It may be noted here that, during the second half of the study, aggregate deposits of the banking sector (not sample banks) grew faster (17 per cent per annum) than bank credit (15.8 per cent per annum). This underscores the ability of a large section of the sample banks to supply bank credit at competitive terms.

Inter se bank groups, two prominent features of foreign banks are the lowest ratio and negative sign for sub-period change. Apparently, the direction of causal relationship between deposits and bank credit is from credit to deposits and borrowings. The volatility in the ratio further confirms this. The obvious conclusion is use of purchased funds to fund credit granted by them, i.e., aggressive liability management in the narrow sense of the word. Another plausible implication is that they have dominance of term deposits in their deposit portfolio. Such deposits carry the liquidity risk (not renewed on maturity), and create adverse 'gap' in a falling interest rate scenario.

It is interesting to note that State Bank group, among domestic banks, has the minimum ratio. This highlights the access of the group to alternative sources of funds. In fact, the State Bank of India – the leader of the group – has international reach and operations. It issued global depository receipts (GDRs) in 1996-97. Besides, its share of rupees 10 was issued at a premium of rupees 233 (Note 6).

An important aspect of deposit management is composition of deposits. The following discussion covers the composition of deposits, and major issues emerging out of it.

Term Deposits

Term deposits as the name suggests are deposits placed with

banks for a pre-determined term. Popularly, these are known as fixed deposits. The terms of maturity have been standardized, the minimum duration being 15 days. The relationship between the term of deposit and interest payable is determined by 'the term structure of interest rates'. Usually, the rate increases with the term.

Fixed deposits constitute the bulk of deposits of the sample banks (Table 4). Their share in the total deposits has marginally increased from 61.6 per cent (1992-96) to 63.4 per cent (1996-2000). This is consistent with the general trend for the banking system since 1994-95.

Apparently, a part of low-interest bearing savings deposit and non-interest bearing demand deposits have been converted into term deposits. This may be ascribed to a set of two factors: general decrease in interest rate since late 1996 and stock market crisis of 1995 - 97 (Note 7). Other notable findings are:

- Foreign banks followed by private banks and public sector banks, in that order, constitute three distinct groups (Annexure I).
- Foreign banks constitute the only group for which sub-period change is negative; still they attach nearly three-fourths weight to term deposits in their deposit portfolio.
- Private banks, spurred by growing competition, indulged in aggressive selling of term deposits to secure rapid growth. This explains sharp increase in their interest cost and shrinking spread margin.
- For public sector banks, relatively low share of term deposits is consistent with nature and scale of their operations. Apparently, savings bank deposits of salaried class maintained with them are an attractive source of funds for them.
- Inter-se public sector banks, the State Bank group has lower ratio of term deposits to total deposits. The

It assumes that banks required an 'adjustment period' to reorganize/ reorient their operations and strategies in the new environment.

Table 4: Term Deposits to Total Deposits Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages												Subperiod change	Number of banks with +trend	Pairedt-test probability	
										Average						
	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000	Sub-period I 1992-1996	Sub-period II 1996-2000					
A. Ownership																
State Bank	54.5	56.3	55.7	55.6	56.4	57.0	59.5	60.9	57.7	55.6	58.8	+	7	0.09		
Nationalized	63.1	63.5	61.6	61.6	62.4	63.1	64.0	64.0	63.1	62.4	63.5	+	14	0.04		
Private	62.1	65.2	66.8	69.0	72.1	74.8	75.3	73.7	71.7	66.4	74.1	+	20	0.00		
Foreign	74.4	77.9	76.8	75.3	73.4	73.4	73.1	69.9	73.7	76.1	72.3	-	9	0.20		
B. Size																
Large	61.2	61.9	60.2	59.9	60.4	61.0	62.4	62.7	61.4	60.7	61.8	+	11	0.80		
Medium	61.4	64.1	64.0	64.9	66.1	67.5	68.2	67.7	66.3	63.9	67.5	+	27	0.00		
Small	75.9	78.4	78.5	78.2	79.7	80.5	80.8	80.2	79.6	78.0	80.3	+	12	0.40		
Total	61.3	62.6	61.3	61.3	62.0	62.9	64.1	64.2	62.8	61.6	63.4	+	50	0.01		

business community, in general, prefers to bank with it, due to its wider branch network in India and abroad.

- Small banks, dominated by private and foreign banks, rank first with four-fifths of total deposits in the form of term deposits.

Term deposits from banks: Term deposits may originate from public or other banks. They are motivated by different factors. Term deposits of banks signify one segment of inter-bank market for funds, in which cash-surplus banks place funds with other banks, for 14 days to 90 days. Now, certificate of deposits have also emerged as a new and attractive option due to its negotiable nature.

To an extent term deposits from public and banks complement each other; analysis of one explains the other. Nevertheless, variations are more accentuated when the variable with smaller share is chosen. Accordingly, data presented in Table 5 pertain to term deposits from other banks rather than public.

The share of banks in total term deposits has been less than 6 per cent during the period of the study. As expected, this source is more important for small, foreign, and private banks. In spite of positive trend in the last three years, sign for sub-period change is negative. The positive trend, which corresponds to deregulation of deposit rates in December 1996, indicates that term deposits of banks grew faster than term deposits of public. It is sensible for banks and the public to hold more of term deposits when interest rates are weakening.

Nevertheless, the average for second half is higher for private and medium banks, but with a crucial difference between the two. The increase is wider and much stronger for private banks. In fact, the average for the group is nearly twice that for the sample during 1996-2000. It is more likely

to be a sign of their activities in certificate of deposit segment of money market rather than liquidity problems. Besides, it points at their attempt to match risk sensitive liabilities (RSL) with risk sensitive assets (RSA) like bills, cash credit and overdrafts.

Another notable aspect is the trend pattern of the ratio for foreign banks. It steadily declined from 23.7 per cent (1992-93) to 2.1 per cent (1997-98) and then rose back to 10.3 per cent (1999-2000). Comparison with movements in minimum deposit rates reveals the importance of cost of deposits to them. The inference is corroborated by the ratio of total deposits to total assets and term deposits to total deposits.

The profitability of sample banks, measured in terms of ROE underscores the resilience of the Indian banking sector in withstanding stress and strains of the adjustment process.

Savings Bank Deposits

Savings bank deposits are interest-bearing deposits with chequebook facility, but without specific maturity. The number of debits should not exceed 50 in a half year (Note8). The account attracts a penalty if the actual balance falls below the prescribed minimum. Actual minimum balance from 1st to 10th of the month, and maintained up to the end of the month qualifies for payment of interest, at RBI notified rates.

Table 6 shows that savings bank deposits constitute a relatively stable source of funds, its share being one-fifth of total deposits. It is evident that all bank groups, especially by ownership structure, have their own clientele in unique market niches (Annexure I). It seems that the share of savings bank deposits is more for banks with a wide network of branches and maintaining large number of accounts, with small average balances. Thus, the ratio is higher for large and public sector banks.

Table 5: Term Deposits from Banks to Total Term Deposits Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages											Subperiod change	Number of banks with +trend	Pairedt-test probability	
	1992	1993	1994	1995	1996	1997	1998	1999	Average						
	-	-	-	-	-	-	-	-	1992	Sub-period I	Sub-period II				
	1993	1994	1995	1996	1997	1998	1999	2000	2000	1992-1996	1996-2000				
A. Ownership															
State Bank	4.2	4.6	4.8	4.3	3.8	3.9	4.6	4.5	4.4	4.5	4.3	-	6	0.36	
Nationalized	7.2	6.3	5.2	5.2	4.9	5.0	5.5	5.4	5.5	5.9	5.3	-	10	0.61	
Private	4.8	5.1	5.2	6.0	7.7	10.1	11.3	10.9	8.9	5.4	10.3	+	15	0.01	
Foreign	23.7	17.7	14.1	8.6	5.2	2.1	6.0	10.3	9.6	15.1	6.1	-	8	0.28	
B. Size															
Large	7.7	7.1	6.2	5.8	5.1	5.0	5.8	6.0	5.9	6.6	5.5	-	8	0.14	
Medium	6.7	5.1	4.5	3.8	4.1	4.7	5.5	5.6	5.0	4.8	5.1	+	21	0.93	
Small	15.0	12.0	12.0	6.5	6.8	6.9	9.7	12.2	9.7	10.6	9.2	-	10	0.64	
Total	7.6	6.8	5.9	5.3	4.9	4.9	5.8	6.0	5.7	6.3	5.5	-	39	0.52	

Table 6: Savings Deposits to Total Deposits Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages											Subperiod change	Number of banks with +trend	Pairedt-test probability
	1992	1993	1994	1995	1996	1997	1998	1999	Average					
	-	-	-	-	-	-	-	-	1992	Sub-period I	Sub-period II			
	1993	1994	1995	1996	1997	1998	1999	2000	2000	1992-1996	1996-2000			
A. Ownership														
State Bank	20.5	20.3	21.7	22.4	21.9	22.0	21.6	21.3	21.5	21.3	21.6	+	4	0.61
Nationalized	21.7	21.6	22.9	23.6	23.6	23.7	23.8	23.9	23.3	22.6	23.8	+	12	0.37
Private	20.6	18.2	16.9	16.3	15.4	14.0	13.8	14.3	15.3	17.6	14.3	-	1	0.00
Foreign	7.1	6.8	7.8	8.2	7.7	7.5	8.0	9.3	7.9	7.5	8.2	+	12	0.32
B. Size														
Large	20.4	20.4	22.1	22.9	22.8	23.0	23.0	23.0	22.5	21.6	23.0	+	14	0.05
Medium	20.8	18.9	18.7	18.6	18.1	17.4	17.4	17.8	18.1	19.1	17.6	-	10	0.00
Small	13.0	11.4	11.3	11.2	10.1	9.5	10.0	10.6	10.6	11.6	10.1	-	5	0.02
Total	20.4	20.0	21.2	21.8	21.5	21.5	21.4	21.6	21.3	20.9	21.5	+	29	0.00

Interestingly barely two-fifths of sample banks have influenced the sub-period averages and hence the sign of change. Most of these are nationalized and foreign banks. A related dimension is the fall in sub-period average for as many as 20 out of 21 private banks. Apparently, they seem to have encouraged their clients to convert a part of their savings bank deposit in to term-deposits.

Demand Deposits

Demand deposits, popularly known as current account deposits, constitute transaction deposits of the individuals, business firms, institutions, and banks. Five principal features of such deposits are: non-interest bearing, hence, non interest-risk sensitive liability, no maturity, payable on demand, high administrative costs, hidden interest payment or subsidy to the client when charges for certain services fall short of cost. From a bank's perspective, such deposits include a trade off between interest costs and operating

costs.

Table 7 shows that demand deposits constitute one-sixth of total deposits, during 1992-2000. The overall trend illustrates declining importance of demand deposits during this period. The reason is efficient management of cash by individuals and firms. Besides growing awareness, this is aided and abetted by developments in the areas of information technology and telecommunications.

It is interesting to note that State Bank of India and its associates have emerged as the most profitable bank group primarily due to successful use of leverage than efficiency. It is interesting to note here that State Bank of India was the first bank in the sample to access capital market in December 1993.

Interestingly, foreign banks seem to defy the overall trend. This may be ascribed to a set of two factors. First, they made the head start in providing value added services attached to such accounts. Second, they have focused on large institutional account holders who are more sensitive to such value addition. It warrants reiteration that operating costs per transaction of demand deposits tend to be high. Thus, average size per transaction should be high and/ or

Table 7: Demand Deposits to Total Deposit Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages											Subperiod change	Number of banks with +trend	Pairedt-test probability
	1992	1993	1994	1995	1996	1997	1998	1999	Average					
	-	-	-	-	-	-	-	-	1992	Sub-period I	Sub-period II			
	1993	1994	1995	1996	1997	1998	1999	2000	2000	1992-1996	1996-2000			
A. Ownership														
State Bank	24.9	23.4	22.6	22.1	21.7	21.0	19.0	17.8	20.8	23.1	19.5	-	2	0.21
Nationalized	15.0	14.8	15.5	14.8	14.0	13.2	12.2	11.9	13.5	15.0	12.7	-	3	0.00
Private	17.4	16.6	16.4	15.1	12.8	11.2	11.0	12.0	13.0	16.1	11.7	-	1	0.00
Foreign	18.5	15.4	15.5	16.5	18.9	19.1	18.9	20.8	18.3	16.3	19.5	+	11	0.73
B. Size														
Large	18.4	17.6	17.8	17.2	16.7	15.9	14.6	14.2	16.1	17.7	15.2	-	4	0.05
Medium	17.8	17.0	17.3	16.6	15.9	15.1	14.4	14.5	15.6	17.1	14.9	-	8	0.05
Small	11.1	10.2	10.2	10.6	10.2	10.0	9.2	9.2	9.9	10.5	9.6	-	5	0.98
Total	18.2	17.4	17.6	17.0	16.4	15.7	14.5	14.2	15.9	17.5	15.0	-	17	0.08

the operations should be automated. In this context, it is pertinent to note that, during 1999-2000, business per employee for foreign banks was three to five times that for domestic banks (Note 9). Besides, their operating cost to gross income ratio has been very stable during 1992-98.

Demand deposits from banks: Demand deposits from banks signify two things: (a) ‘compensatory balances’ maintained by smaller banks with bigger banks in return of certain services, i.e., a form of ‘correspondent banking’; (b) the obverse or the other side of ‘balances with other banks’ on assets side of the balance sheet. Thus, the size of such deposits depend on the branch network of the bank and arrangements with other banks. It is pertinent to note here that scheduled commercial banks include regional rural banks, which numbered 196 out of 297 banks functioning and reporting in India as at March-end 2000.

During 1992-2000, the average share of demand deposits from banks in demand deposit liabilities of the sample banks was 8.2 per cent (Table 8). Although the average for second half is marginally higher, the corresponding value is lower for every second bank in the sample. Efficient cash management, impact of technology, and considerations of ‘gap management’, which favour low risk sensitive assets and liabilities for declining interest rates, are some of the plausible reasons for this pattern.

Another significant thing about composition of demand deposits from banks is its importance to the State Bank group (Annexure I). Demand deposits from banks are three to four times more important to the State Bank group as compared to other bank groups covered in the study. It is a logical corollary of its size and scale of operations. Perhaps, the banks in the group are acting as ‘correspondent banks’ to smaller banks.

Management of Borrowings/ Purchased Funds

Total Borrowings

Banks resort to borrowings either to meet liquidity needs

or to fund growth of earning assets. In other words, borrowings, also known as purchased funds, obviate the need to maintain liquid assets and delink the growth of earnings assets from growth in deposits. To the extent purchased funds are not subject to preemption, through CRR and SLR requirements .Their potential for expansion of bank credit, and hence, total assets is more.

Banks with high credit deposit ratio tend to borrow more. They may borrow in domestic markets or abroad. In the domestic market the principal sources are the central bank, other banks, and cash rich corporate bodies and individuals. Interaction of the term structure of interest rate and maturity period of borrowings determines the cost of funds for a given source. Other things being equal cost moves in tandem with maturity.

Thus, borrowings should be distinguished as short-term and long-term. However, such a break-up is not given either by the RBI in its database or by banks in Schedule 4 of annual accounts. In view of the data constraint, the study can not examine the aspect related to purpose and maturity of borrowings.

A perusal of data exhibited in Table 9 shows that total borrowings constituted barely 5 per cent of the total assets of sample banks, during 1992-2000. The general trend is a decline in the importance of borrowings for four-fifths of the sample banks. The average of the second half is two-thirds of that in the first half. Apparently, it is due to faster growth of aggregate deposits than bank credit in the banking system. While deposits grew at 17 per cent per annum during 1992-2000, bank credit grew at 15.8 per cent per annum. Growth rate of bank credit and its impact on liquidity of the banking system and interest rate determine the time-trend for borrowings.

Borrowing Pattern of Foreign Banks has Several Notable Features

- Borrowed funds account for nearly one-sixth of their total

The link between government ownership of banks and their performance is rather weak.

Table 8: Demand Deposits from Banks to Total Demand Deposits Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages												Subperiod change	Number of banks with +trend	Pairedt-test probability	
	1992-1999									Average						
	1992	1993	1994	1995	1996	1997	1998	1999	1992	Sub-period I 1992-1996	Sub-period II 1996-2000					
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1993	1994	1995	1996	1997	1998	1999	2000	2000							
A. Ownership																
State Bank	12.4	13.5	13.7	14.5	14.9	15.4	15.1	14.6	14.4	13.6	15.0	+	4	0.38		
Nationalized	6.4	5.4	4.2	4.2	4.4	4.3	4.4	4.4	4.6	4.9	4.3	-	9	0.13		
Private	5.2	5.4	4.6	4.0	3.9	4.1	4.8	4.1	4.4	4.7	4.2	-	8	0.74		
Foreign	5.7	5.4	3.8	3.5	2.9	2.9	3.4	3.2	3.6	4.5	3.1	-	9	0.27		
B. Size																
Large	8.8	8.6	7.9	8.3	8.6	8.8	8.8	8.5	8.6	8.4	8.7	+	8	0.27		
Medium	8.5	8.3	7.1	7.0	7.0	7.1	7.3	7.0	7.3	7.6	7.1	-	12	0.66		
Small	2.7	2.0	1.5	1.3	1.6	2.0	4.2	3.9	2.6	1.8	3.0	+	10	0.65		
Total	8.7	8.5	7.7	7.9	8.2	8.4	8.4	8.1	8.2	8.2	8.3	+	30	0.77		

Table 9: Borrowings to Total Assets Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages											Subperiod change	Number of banks with +trend	Pairedt-test probability
	1992	1993	1994	1995	1996	1997	1998	1999	Average					
	-	-	-	-	-	-	-	-	1992	Sub-period I	Sub-period II			
	1993	1994	1995	1996	1997	1998	1999	2000	2000	1992-1996	1996-2000			
A. Ownership														
State Bank	9.4	7.5	5.8	7.4	5.8	3.8	3.7	3.3	5.29	7.43	4.04	-	0	0.00
Nationalized	4.5	3.2	2.8	4.1	3.1	1.4	1.5	1.6	2.49	3.63	1.82	-	1	0.00
Private	4.1	3.3	4.4	6.1	4.7	2.7	3.0	2.9	3.70	4.73	3.23	-	2	0.00
Foreign	19.2	13.5	8.1	13.5	15.0	14.3	17.7	21.2	15.97	13.28	17.43	+	11	0.83
B. Size														
Large	7.2	5.4	4.1	5.6	4.5	2.7	2.7	2.6	3.94	5.47	3.02	-	2	0.00
Medium	7.2	5.3	4.1	6.5	5.7	4.3	5.5	6.7	5.66	5.71	5.64	-	8	0.45
Small	12.0	11.1	11.5	18.3	18.2	14.0	11.7	10.6	13.47	13.88	13.27	-	4	1.00
Total	7.2	5.4	4.2	6.0	5.0	3.2	3.5	3.8	4.48	5.63	3.82	-	14	0.99

assets and two-fifths of total advances.

- Borrowings of foreign banks have been up to six times the average for 68 sample banks.
- Sub-period change, from one-seventh to one-fifth, is positive for this group only.
- The increase is fairly widespread but concentrated among medium banks.
- Due to intra-group variations, inter-group differences are not very strong (Annexure I).

Importance of borrowings for small banks also merit attention. Nearly one-seventh of their total assets have been funded by purchased funds. Apparently, they do so to tide over their liquidity problems. This is confirmed by the fact that their borrowings peaked precisely when interest rates were reigning high in the Indian economy.

Borrowings from Abroad

Although a small portion of total assets has been financed through borrowings, it is significant to know whether such funds are raised within the country or from abroad. This

would serve two purposes. While the overall average and trend in it will reflect the extent to which Indian banking system is integrated in the global financial architecture, inter-group variations will indicate ability and willingness of various bank groups to tap international financial markets. Above all, expectations about future exchange rates play a crucial role in this regard, in view of the exchange rate risks involved.

Over one-third of the total borrowings by the sample banks during 1992-2000 were from abroad (Table 10). The average for the second period is low because Indian rupee (INR) devalued at average annual rate of 5.8 per cent as against 2.5 per cent in the first half. While volatility in exchange rates introduces an element of risk, devaluation of home currency adds to the burden of the borrower. For example, if INR devalues against USD (US dollar) from rupees 50 to rupees 55, the additional outflow due to devaluation would be rupees 5 per USD borrowed.

It is significant to note that international presence rather than an organic link with overseas banks is the crucial determinant of borrowings from abroad. Thus, the State Bank

Table 10: Borrowings from Abroad to Borrowings Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages											Subperiod change	Number of banks with +trend	Pairedt-test probability
	1992	1993	1994	1995	1996	1997	1998	1999	Average					
	-	-	-	-	-	-	-	-	1992	Sub-period I	Sub-period II			
	1993	1994	1995	1996	1997	1998	1999	2000	2000	1992-1996	1996-2000			
A. Ownership														
State Bank	69.7	67.7	70.7	61.7	68.1	85.0	85.2	77.3	72.5	67.1	78.2	+	5	0.26
Nationalized	17.5	17.3	17.8	9.8	8.6	14.0	11.9	7.5	12.6	14.8	9.9	-	5	0.02
Private	6.2	5.4	6.9	4.8	3.3	3.6	3.2	5.0	4.6	5.6	3.8	-	10	0.42
Foreign	7.0	14.1	39.1	22.0	18.9	24.6	15.1	15.3	17.8	18.4	17.6	-	7	0.93
B. Size														
Large	45.3	46.8	50.4	39.0	42.0	55.5	51.3	43.8	46.0	44.7	47.4	+	4	0.05
Medium	9.7	13.9	24.0	15.3	14.1	23.4	16.4	16.6	16.6	15.4	17.2	+	14	0.49
Small	0.4	2.9	11.0	8.8	12.5	26.1	27.2	20.5	16.4	7.1	21.1	+	9	0.08
Total	37.8	39.2	43.3	31.7	32.7	43.2	36.5	30.6	36.0	37.2	35.0	-	27	0.92

group obtained nearly three-fourths of its borrowings from abroad, which is over four times that for foreign banks. It is a logical corollary of their efforts to hedge or manage their exchange risk. The rule of thumb is to match assets and liabilities denominated in a given foreign exchange, so that there is no 'net' position.

Interestingly, the decline in the foreign borrowings of nationalized banks is statistically significant at 5 per cent level. Similarly, the direct relationship between size of the bank and the size of the borrowings noticed in the first half of the study is disturbed by nearly three-fold increase in the ratio for small banks, which are dominated by foreign banks.

Borrowings in India

This head is a complement of borrowings from abroad. Hence, importance of different domestic sources of borrowings has been examined in relation to total borrowings.

Borrowings from Other Institutions

Borrowings from other institutions constitute the principal source of domestic borrowings for sample banks. Banks borrow from other cash rich financial institutions like insurance institutions and mutual funds. Often, the purpose is to deal with temporary liquidity crunch. It may be noted here that banks are allowed to issue subordinate and hybrid debt instruments, which qualify for inclusion in Tier II capital.

This source is next to foreign borrowings in importance, its share in total borrowings being three-tenths (Table 11). It is interesting to note that even cash rich State Bank group takes recourse to this source, albeit occasionally. Foreign banks attach slightly more importance to this source, but the ratio is equally stable for them.

In contrast, nationalized and private banks have much

higher and volatile borrowings from other institutions. This signifies absence of appropriate planning in liability management, leading to money-desk or reserve-position liability management and/ or reactive component of generalized liability management (Note 10).

The analysis by size suggests that small banks, especially small foreign banks, rely less on this source. Apparently, their size acts as disincentive and they prefer to borrow from inter-bank market.

Profitable performance recorded by most of public sector banks and more so the turnaround in profitability achieved by a quite a few of them goes to show that profit goal is in tune with social responsibilities and developmental role of banks.

Borrowings from Reserve Bank of India (RBI)

The RBI as central bank of the country is 'the lender of the last resort', but much of the borrowings from it appear to be under various refinance schemes, like Bill Refinance Scheme, and Government Securities Refinance. In addition, much of the borrowings from the RBI depend on total liquidity of the system. This conclusion is endorsed by the borrowing behaviors of the nationalized and private banks (Table 12). The borrowing pressure eased after the RBI took several steps in 1996-97 to improve the liquidity of the system.

The growing dependence of the nationalized and large banks expose their weak condition. In contrast, the borrowings of the foreign banks seem to have been well planned. This holds true for small banks as well. Apparently, their cash flows are more stable and predictable.

Borrowings from Banks

Borrowings from banks signify the other side of money at call and short notice, i.e., the market for funds from overnight to a fortnight. Besides banks, cash rich financial institutions are also allowed participation as lenders, to prevent excessive volatility in interest rates. From its

Table 11: Borrowings from other Institutions to Borrowings Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages											Subperiod change	Number of banks with +trend	Pairedt-test probability
	1992	1993	1994	1995	1996	1997	1998	1999	Average					
	-	-	-	-	-	-	-	-	1992	Sub-period I	Sub-period II			
	1993	1994	1995	1996	1997	1998	1999	2000	2000	1992-1996	1996-2000			
A. Ownership														
State Bank	16.2	17.4	16.5	11.6	11.3	13.9	13.4	16.3	14.4	15.2	13.7	-	3	0.87
Nationalized	65.0	69.0	51.4	40.8	45.9	69.5	67.5	51.8	55.3	54.6	56.2	+	10	0.28
Private	56.2	62.5	47.7	36.5	48.9	78.5	68.1	58.8	55.8	46.1	62.2	+	13	0.83
Foreign	17.5	17.4	18.0	22.7	18.3	20.3	19.7	22.0	20.1	19.2	20.4	+	12	0.76
B. Size														
Large	34.3	36.4	31.2	24.9	26.3	32.2	32.9	30.0	30.7	31.3	30.0	-	8	0.33
Medium	34.2	33.2	30.2	29.4	29.6	35.2	30.2	29.4	30.9	31.4	30.6	-	21	0.05
Small	27.9	25.7	37.8	26.5	21.5	22.0	20.7	19.3	23.7	29.1	20.9	-	9	0.17
Total	34.2	35.5	31.2	26.2	26.9	32.5	31.3	29.3	30.5	31.3	29.8	-	38	0.47

Table 12: Borrowings from RBI to Borrowings Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages											Subperiod change	Number of banks with +trend	Pairedt-test probability	
										Average					
	1992	1993	1994	1995	1996	1997	1998	1999	1992	Sub-period I	Sub-period II				1992
-	-	-	-	-	-	-	-	-	1992-1996	1996-2000	1995	1996	1997		
A. Ownership															
State Bank	14.2	14.9	15.9	28.3	25.0	0.0	2.1	5.5	14.2	18.9	9.1	-	3	0.30	
Nationalized	0.4	3.5	43.0	42.6	67.4	6.5	22.9	38.7	31.4	24.3	39.6	+	18	0.00	
Private	38.8	39.4	61.5	42.4	50.2	3.4	28.2	31.2	36.7	46.5	30.2	-	8	0.35	
Foreign	25.1	26.7	25.9	23.4	21.7	9.1	14.5	16.4	18.3	25.1	15.4	-	4	0.47	
B. Size															
Large	8.9	10.1	23.2	30.4	37.6	4.2	10.5	22.2	19.4	18.5	20.4	+	15	0.00	
Medium	24.6	28.6	54.2	45.9	50.6	5.3	16.9	15.9	27.0	39.2	21.0	-	13	0.09	
Small	34.6	26.2	22.3	18.8	19.6	9.0	13.6	20.9	18.3	23.0	15.9	-	5	0.89	
Total	12.3	14.2	29.8	33.8	40.1	4.9	13.1	19.3	21.6	23.1	20.4	-	33	0.86	

behavior over-time, one can infer whether the bank is suffering from chronic excess of loanable funds or maintains low level of liquid assets.

Table 13 presents percentage of total borrowings made from other banks in the domestic market to their total borrowings. Among all sources of borrowings considered, sub-period change is positive only for this source. The increase from one-seventh to one-fifth is accounted for by two-fifths of the sample banks. This signifies:

- Relatively easy liquidity conditions in the banking system.
- Development of inter-bank call money market, in response to steps taken by the RBI since 1995-96, such as, reduction in minimum size of transaction from Rs. 10 crore to Rs 5 crore (Note 11).

Inter-group comparison shows that domestic banks maintain excessive 'stored liquidity', while foreign banks rely more on 'purchased funds' to maintain their liquidity positions (Appendix I). Apparently, behavior of foreign banks is shaped by their size. Small and medium banks, dominated by foreign banks, borrow more from fellow banks.

Finally, exceptionally low ratio for the State Bank group

Table 13: Borrowings from Banks to Borrowings Ratio for the Sample Banks, 1992-2000

Bank group	Figures are in percentages											Subperiod change	Number of banks with +trend	Pairedt-test probability	
										Average					
	1992	1993	1994	1995	1996	1997	1998	1999	1992	Sub-period I	Sub-period II				1992
-	-	-	-	-	-	-	-	-	1992-1996	1996-2000	1995	1996	1997		
A. Ownership															
State Bank	0.4	0.2	0.5	0.3	0.8	1.1	0.3	0.9	0.6	0.3	0.8	+	2	0.71	
Nationalized	17.3	12.5	8.4	12.6	11.2	14.5	7.3	5.6	11.3	12.9	9.4	-	9	0.93	
Private	15.5	15.0	16.4	24.4	23.7	20.4	17.2	20.0	20.1	19.6	20.4	+	6	0.23	
Foreign	56.8	49.1	23.5	44.3	47.5	47.5	53.4	54.3	49.9	45.9	51.6	+	11	0.13	
B. Size															
Large	11.2	7.2	5.0	7.9	7.3	9.5	7.9	7.1	8.0	8.1	7.8	-	8	0.24	
Medium	41.5	36.1	10.6	23.8	30.5	37.9	42.9	45.4	36.3	27.7	40.6	+	12	0.72	
Small	63.5	50.9	42.5	51.0	57.7	50.6	50.5	45.1	51.2	50.8	51.4	+	8	0.30	
Total	17.8	14.0	7.5	13.8	16.5	21.4	23.7	25.9	18.2	13.6	22.1	+	28	0.50	

to depend on nature and scale of operations. Accordingly, savings bank deposits are more important for public sector banks. Similarly, term-deposits, particularly from other banks, are more important for foreign and private banks. It appears that some banks have encouraged depositors to convert a part of demand and savings deposit into term deposit. Besides, after stock market crisis of 1995-97, term deposits have emerged as attractive substitutes.

Although borrowings constitute a miniscule portion of total sources, one-third share of borrowings from abroad is a matter of great satisfaction. It is significant to note that international presence rather than an organic link with overseas bodies is a crucial determinant of borrowings from abroad. Thus, the ratio of borrowings from abroad to total borrowings for the State Bank group is over four times that for the foreign banks.

Borrowings in inter-bank call and term money market have grown in recent years, due to generally easy liquidity conditions in the banking system. While borrowing from other institutions seems to be on the decline, excessive borrowings by nationalized banks from the RBI underscore their weak condition.

Notes

- 1 The range for the asset size of large banks is Rs. 950.79 billion (State Bank of India) to Rs. 41.51 billion (Bank of Maharashtra). The corresponding range for medium banks is Rs. 41.07 billion (Dena Bank) to Rs. 3.28 billion (Banque Nationale de Paris), and Rs. 3.26 billion (Credit Lyonnais) to Rs. 0.67 billion (Lord Krishna Bank) for small banks. Large banks comprise of State Bank of India (SBI) from State Bank Group, 2 foreign bank, and 14 nationalized banks. Medium banks include 7 associate banks of SBI, 5 nationalized banks, 14 private, and 8 foreign banks. Small banks include 7 private banks and 10 foreign banks.
- 2 For details about 'paired t-test', see Rubin and Levin (1991:380-84).
- 3 For details of Bonferroni procedure, see Toh and Hu (1998: 465-69).

- 4 Sinkey (2002) provides a comprehensive discussion on capital structure and value of a banking firm. Yeager and Seitz (1989) also provide useful insight into capital adequacy and required rate of return.
- 5 The Banking Commission (1972: 297) as reported by Birla Institute of Scientific Research (1981: 46).
- 6 Report on Trend and Progress of Banking, 1996-97, p. 8.
- 7 For details on stock market crises, see Gupta (1997). Also, Gupta, Gupta (check) and Jain (2001).
- 8 An extract of the relevant rules is given at the end of the passbook.
- 9 Indian Banks Association (IBA). 2002. Database on Indian banking, 1997-2001. IBA Bulletin . 24(3): 294-95.
- 10 For details of the concepts involved, see Sinkey (1983: 364-381).
- 11 For details, see various issues of Report on Trend and Progress of Banking, especially 1996-97 issue, pp. 110-11.

References

- Birla Institute of Scientific Research (1981) *Banks since Nationalization*, New Delhi, Allied Publishers Pvt. Ltd.
- Government of India (1972) *The Report of the Banking Commission*, Delhi, Manager of Publications, Government of India.
- Gupta L.C. (1997) *The Roots of India's Stock Market Crisis*, Delhi, Society for Capital Market research and Development.
- Gupta C.P. and Jain N. (2001) *Householders' Investment Preferences: The Third All-India Investors' Survey*, New Delhi, Society for Capital Market Research and Development.
- Kinnear P.R. and Colin D.G. (1999) *SPSS for Windows Made Simple*, East Sussex, Psychology Press Ltd. Publishers.
- Levin R.I. and David S.R. (1991) *Statistics for Management*, New Delhi, Prentice Hall of India.
- Sinkey J.F., Jr. (1983) *Commercial Bank Financial Management*, New York, Macmillan.
- Toh R.S. and Hu M.Y. (1998) *Basic Business Statistics: An Intuitive Approach*, St. Paul, MN, West Publishing Company.
- Yeager F.C. and Neil E.S. (1989) *Financial Institution Management: Text and Cases*, New Jersey, Prentice Hall, Inc.

Appendix I

ANOVA Results for Inter group Comparisons of Liability Composition Analysis, 1992-2000*

	1992-2000		1992-1996		1996-2000	
	Type	Size	Type	Size	Type	Size
Net worth / Total Assets	SBG-NAT FOR -ALL		FOR-ALL NAT-ALL SBG-NAT		FOR-ALL	
Equity share capital/networth	SBG-NAT NAT-SBG, PVT	MED-LAR, SML	SBG-NAT NAT-SBG, PVT	MED-LAR, SML	SBG-NAT NAT-SBG, PVT	MED-LAR, SML
Term Loans/Advances	SBG-FOR			LAR-MED	FOR-SBG, PVT	
Deposits/Total assets	FOR-ALL SBG-PVT	SML-LAR	FOR-SBG, NAT		FOR-ALL	
Term deposits/Deposits	PVT-ALL FOR-ALL	LAR-MED, SML	FOR-ALL	LAR-MED, SML	PVT-ALL FOR-ALL	LAR-MED, SML
Term deposits from banks/Term deposits	NAT-FOR		FOR - ALL			
Savings deposits/ Deposits	SBG-PVT, FOR NAT-PVT, FOR		FOR-ALL	LAR-SML	PVT-ALL FOR-ALL	
Demand deposits/ Total deposits	MED-SML		MED-SML	FOR-NAT, PVT		
Shares/Investment			NAT-FOR			
Demand deposits from banks/Total deposits	SBG-ALL		SBG-ALL	MED-SML	SBG-ALL	
Borrowings/Total assets		LAR - SML		LAR-MED, SML		LAR-SML
Borrowings from abroad/Total borrowings	SBG-ALL		SBG-ALL	SML-LAR	SBG-ALL	
Borrowings from other institutions/ Total borrowing	SBG-NAT, PVT NAT-SBG, FOR PVT-SBG, FOR FOR-NAT, PVT		SBG-NAT, PVT NAT-SBG, FOR PVT-SBG, FOR FOR-NAT, PVT		SBG-NAT, PVT NAT-SBG, FOR PVT-SBG, FOR FOR-NAT, PVT	SM-LAR
Borrowings from RBI/Total borrowing	NAT-FOR	MED-SML		MED-LAR, SML	FOR-NAT, PVT	
Borrowings from banks/Total borrowing	FOR-ALL	SML-LAR, MED	FOR-ALL	SML-LAR, MED	FOR-ALL	SML-LAR, MED

*: Significant differences at 5% level using Bonferroni post hoc test procedure for multiple pair wise comparisons.

NAT - PVT, FOR means NAT banks differ from PVT banks and FOR banks.

SBG - State Bank group; NAT - Nationalized banks; PVT - Private banks; FOR - Foreign banks;

LAR - Large banks; MED - Medium banks; SML - Small banks.



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Event Diary

This section contain important events. Only highlights and important dates are provided. For more information please contact the organizers.

Event : **2nd Management of Technology Conference (MOT 2005)**

Date : May 2005, Tehran.
Receipt of full paper: February 19, 2005.

Place : Electric Power Technology Development Center (MATN), Tehran

Contact : Electric Power Technology Development Center (MATN)
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Event : **European and Mediterranean Conference on Information Systems
EMCIS 2005**

Date : June 7-9, 2005
Cairo, Egypt

Theme : Exploiting Information Systems for Organizational Enhancement

Important Dates : Electronic Submission: February 25, 2005
Notification of Acceptance: March 25, 2005
Camera Ready Submission: April 30, 2005

Contact : Prof. Mustafa Alshawi
at mustafa.alshawi@buid.ac.ae OR m.a.alshawi@salford.ac.uk
Dr. Mohammed Arif
at mohammed.arif@buid.ac.ae

Event : **The IEEE Engineering Management Society's Annual International
Engineering Management Conference (IEMC 2005)**

Date : 11 - 13 September 2005

Place : Fairmont Hotel, St. John's, Newfoundland, Canada

Theme : A Strategic View of Engineering and Technology Management

Important Dates : Abstract Submission : March 15, 2005
Acceptance of Abstracts : April 15, 2005
Paper Submission : June 15, 2005

All interested persons should submit one page abstracts (500-750 words) through the conference website at: <http://www.iemc2005.org>



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Important Dates

Abstract Submission: 15th May, 2005, Full Paper Submission: 30th June, 2005, Acceptance of the Paper: 30th August 2005

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All authors, whose papers will be published in *Global Journal of e-Governance*, will be offered one year privileged membership of GIFT, Which covers e-access of GIFT services and electronic copy of *Global Journal of Flexible Systems Management*, *Global Journal of e-Business and Knowledge Management*, and *Global Journal of e-Governance*.



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Global Journal of Global Business and Competitiveness

e-Journal of GIFT School of Global Management
Global Institute of Flexible Systems Management

Call for Articles/Cases

Introduction

The *E-Journal of Global Business and Competitiveness* intends to be a global forum for practitioners, policy makers, teachers, researchers and learners to share their practical experiences, knowledge and insights in the evolution, formulation and implementation of strategies for competitiveness in global business context.

The journal will be available in electronic form for all interested in "Global Business and Competitiveness".

About Global Business and Competitiveness

With global customers, competition, capital and supply chains, global dimension is becoming important for many businesses. Most of time, a business need not even venture abroad to get feel for global competition. Global players have been entering many local markets. Survival and success in such exciting times demands competitiveness, the ability to compete in holistic sense. The evolving paradigm of the flexible systems management provides room for dynamic interplay of many concepts, theories and frameworks.

Editorial Objectives

The journal aims to publish **original research**-based articles and cases which will be of value and interest to managers, consultants, teachers and students concerned with issues of Global Business and Competitiveness.

Coverage

The journal will be organized into various sections to include following types of contributions: Research papers, Short notes/ Correspondence, Application and case studies, Book reviews, book summaries, Interviews and round tables, Global Business Plan, Competitiveness Initiative, Information about relevant conferences, workshops and seminars, Educational and learning experiments, and any other relevant information with the theme of the journal.

This journal is focused to bring papers on global business and competitiveness. Broadly, following areas are covered:

- Global Economy & WTO
- Knowledge-based Economy
- Global Management
- Global Strategy & Marketing
- Global Strategic Management
- Core Competence
- Country Competitiveness
- Corporate Competitiveness
- Global Cooperation
- Global Alliances, Joint Ventures, M&A
- HR Competitiveness
- Technological Competitiveness
- Leadership
- Quality
- Corporate Entrepreneurship
- Corporate Governance
- Cross-cultural Management
- Clusters
- Benchmarking
- International Business
- International Finance
- Business Excellence

The Journal is not limited to only above topics, but other relevant areas of Global Business and Competitiveness will be considered in future.

Important Dates for First Issue

Rich Abstract (250 words giving purpose, methodology/approach, findings, implications {research & practical} and the originality/value of the article) Submission: **30th May, 2005**

Full Paper Submission: 30th June, 2005, Acceptance of the Paper: 30th Sept., 2005, E-Publishing: 30th December, 2005

You may submit articles for future issues beyond above date of abstract.

For more information about the professional society GIFT, kindly visit www.giftsociety.org

If any editorial questions, please contact Dr. K. Momaya (Department of Management studies, IIT Delhi) at momaya@dms.iitd.ac.in

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About GIFT

GIFT (Global Institute of Flexible Systems Management) is a professional society to enhance “flexibility” in business and management.

Mission

To evolve and enrich the flexible systems management paradigm for the new millennium.

Vision

Evolving as a global forum for interaction of all interested professionals and organisations in a truly flexible mode so as to help them create more options, faster change mechanisms and greater freedom of choice in their own settings.

Schools

The Institute comprises of various schools, which are autonomous bodies, dealing with contemporary areas at the cutting edge contributing to the flexible systems management paradigm. At any point of time, each member can opt for an association with any two of the following schools in the respective thrust areas:

- * GIFT School of Global Management
- * GIFT School of Technology and Innovation Management
- * GIFT School of Information Technology & Knowledge Management
- * GIFT School of E-Governance
- * GIFT School of Learning Organisation and Strategic Transformation
- * GIFT School of Quality, Productivity and Wastivity Management
- * GIFT School of Environment Management and Sustainable Development
- * GIFT School of Human Values and Management Ethos
- * GIFT School of Social Change
- * GIFT School of Entrepreneurship
- * GIFT School of Services Management

Publications

- Book Series on Flexible Systems Management
- Quarterly Journal - “Global Journal of Flexible Systems Management” giftjourn@l
- Newsletter - “Flexibility”

Membership

The membership fees for different types of members, unless changed/revised by the Governing Council from time to time, will be as given under:

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- All individual members will get one complimentary copy of the giftjourn@l.
- All corporate/institutional members will get three complimentary copies of the giftjourn@l, one for library and two for nominees.

Correspondence :

All correspondence and membership applications may be addressed to the Manager of the institute at the following address:

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