Vol. 2 • Issue 8

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DRIVE

From Guest Editor...

Not Taught in Business School …

Mr S Raghupathi,
Guest Faculty,
SEMCOM.

A manager should have the courage to recruit a junior who can challenge him/her (manager).

No manager is perfect. There are areas where a manager is could be relatively weak in her skills hence, it is healthy for a manager to recruit a junior who can plug these voids. In the process, it is possible that a junior will challenge the manager. And the consequent results would collectively contribute to better the organization.

To be appreciated, a spark needs to turn into a fire.

Often, a spark dies down even before it turns into a fire. Appreciation of a spark, may lead to complacency. And this douses the spark that could have become a fire.

A customer needs attention first. Solutions can, and should follow.

In a bid to find a solution for the problem, a huge time gap is generated, which irritates the customer. Hence, upon a call, give immediate attention. This can be done by physical presence, listening, asking questions for better understanding of the problem and reassurance. Subsequently, the solutions should be delivered at the earliest. This helps in customer retention.

Invisible sales persons produce invisible sales.

A salesperson is the key media for the marketer. If the person is invisible to the customer, the product and the marketer are easily forgotten. The net result is depleting sales.

Cold calls, when left to freeze, produce ice, not sales.

A post call analysis, followed by a regular follow up is essential for generating leads and sales. If the customer is forgotten after a cold call, the customer has the privilege to forget you faster.

If you work for a one man organization, do not call 'a spade a spade.'

Most of the Indian companies are essentially 'one-man show' organizations. Normally, the top abhors direct criticism or words of wisdom. Hence, ensure that a point is properly packaged before it is put across. This is one of the essential attributes that increases the longevity of the manager in an organization.

The first and essential attribute of a salesperson is to be courageous to face the customer.

Meeting a customer requires a huge amount of courage. The unviable demands of the customer follow next. It calls for a lot of courage to bring the customer around to a level platform. Underselling, by succumbing, is bad for the health of the organization. Always remember: **'No deal is always better than a bad deal**.'

Customer evaluation is as important to a marketer, as vendor evaluation is to a buyer.

An organization which does not have a format for customer evaluation may end up in trouble. Preferably, a structured format is necessary to evaluate the customer. A bad customer, however large they may be, can be like rotten fish in the pond.

A channel partner, who shields the customer from the principal, should be removed immediately.

Particularly in Industrial marketing, the channel partners try to shield the customer from the principal. In some cases, it has been seen that the principal has never had any interaction with the end user. Thus, the channel partner ends up exploiting the principal. These are dangerous partners and they should be removed without any delay.

How you do is more important than what you do.

Holding a position or title may seem attractive. However, respect from the people of the organization depends on "How" you do your work. If you do your work well, the people send positive signals of respect for your work. These signals are different from the protocols and sycophantic displays. You should be able to recognize these signals. That is the time you actually arrive in the organization.

The businessperson who does not delegate, should be termed as a self-employed artisan

Business persons are expected to be risk takers. They are expected to hire people with a premise of trust. They hire people for their talents, and the time they can give to the business. If the business person does not delegate, the purpose of hiring is failed. Also, it leaves no time to think or plan for growth. This stifles the growth of the people hired as well. No point working for these types!

Relatives kill more businesses than employees.

With a very limited amount of sample, it has been my observation that relatives of the entrepreneur are more detrimental to the organization than the employees.

A Tamil verse; - "What one has learnt is equal to a handful of sand, what is to be learnt is equal to the universe."

And the process of learning continues. There are many more lessons learnt in this journey. The contributions have come from Customers, colleagues, superiors, friends and students. And the learning process continues.

About the Guest Editor:

Mr. Raghupathi is Science Graduate from University of Jabalpur (Madhya Pradesh). He started the career as a Medical Representative for Alembic in 1974. He has spent 17 years in pharmaceutical marketing and held various positions as Medical Representative, Field Supervisor, Sales Manager, Sales Promotion Manager and Group Product Manager. He was self employed for 10 years as marketing consultant. Currently, for the last 8 years he has been working with Swiss Glascoat Equipments Ltd. as Head of Marketing (General Manager-Marketing). Products handled by him include pharmaceutical formulations, office automation products, service products, and currently engineering products.

He has trained over 800 Sales personnel at various levels in various industries. He has a teaching experience of over 16 years as visiting faculty to Baroda Productivity Council and also SEMCOM. He has published marketing related articles in A&M magazine, Indian Express (When they had a supplement for management subjects in early 90's).

From the Chief Editor's Desk

Tours: Learning with fun…

It has been said for students that school or college is like a second home for them. They get their real education about life, principles, manners, morals etc initially from their homes, families and then from their teachers. Teacher plays a pivotal and crucial role in shaping the life of a student. Researches show that students come up with diverse talents. Each student is invariably different from another. But, sometimes unfortunately it so happens that a student is not able to identify the talent lying in him. At that time it becomes a job of a teacher to distinguish the talent first and let it flourish. But again a situation where there are more than 60 students in one classroom, duration of a lecture is also just one hour wherein teachers teach with an unseen burden on their shoulders regarding the completion of syllabus. In a scenario like such any teacher rarely receives an opportunity to identify the hidden talents or weaknesses of a student. So the question is how can a teacher overcome such circumstances?

Obviously there exist more than many ways subjective to the willingness and convenience of a teacher but out of them taking students on a tour or industrial visit is one of the most amusing, effective and welcomed approach. There are multiple objectives behind having such elements in student's academic life. First, it acts like a refresh button to a student's continuous, constant and consistent learning process. On a teacher's part it recharges the tempo, mood and rejuvenates the entire spirit of teaching. It provides ample opportunities to strengthen the bond between teacher and student. Students visualize and realize the fact that teachers are humans also. It's in fact a boon for the strict teachers. They get to know each other vividly. If a teacher is not keeping well or in other words if he has failed to establish a good rapport with some students then opportunities like such indeed work like miracles and magic. A good teacher captures this opportunity to identify the hidden and never-noticed potentials as well as weaknesses. A teacher can thus utilize the potential and work rigorously hard to deal with the problem arising in the classroom.

Visit to different industries also provide a kind of practical exposure to the young learners. Their horizons and perceptions can be widened by this. Through such events students are also taught discipline lessons. They learn to live with each other and in groups. Qualities like compromise, adjustment and being sociable could be sown by this. It's not only a visit to different places or industries but a visit to an inner sacred bond between a teacher and a student. If some students do not consist a habit to expose them into a classroom due to their

shyness, and, thus making their talents invisible, then during tours and outing teacher has an opportunity to talk to them informally. It enhances the teacher-student relationship advantageous to both.

Dr Nikhil Zaveri
Director & Principal, SEMCOM

SEMCOM **Updates**

Industrial Tours

Bhuj – Gandhidham – Kandla – Mandvi (Kutch) Tour

Fifty two students of First Year B Com accompanied with 3 faculties visited Kutch in the month of October. Thy visited various industries there.

PATEL WOOD PRODUCTS LTD

The company was basically established in 1980 and the plant we visited established in 2005. It is Asia's first computerized and automated timber plant. They are managing our operations through effective Information Technology adaptation and have excellent production facilities with fully automated imported plant and machinery. They have achieved this by investing in modern sawmill equipment and most advanced IT infrastructure SAP technology, while retaining the manual procedures necessary to provide an extensive range of timber products.

KANDALA SEZ- MESO Private Ltd.

The Kandala Free trade zone was converter in Kandala Special Economic Zone in the year of 2005 under the SEZ Act 2005. MESO Private limited were established in 1978 and currently having one more sister concern named Micasa Cosmetics private ltd. Students

have learnt also SEZ implications as well as the procedure and tax benefits and other incentives given by central govt.

PARLE BISCUITS PRIVATE LTD (Village Ler, Bhuj)

They are mainly in to biscuits, cookies and toffees. Parle has established its factories at different areas of India viz. Mumbai, Neemrana (Rajasthan), Bahadurdarh (Haryana), Bhuj and Banglore etc. the students were shown movie on various products of Parle. This plant has a printing plant where all the products' packaging is printed and in addition to that they have another plant of corrugated box for entire range of Parle products.

Jamnagar - Rajkot - Diu

This year students of FYBBA (Gen) have visited Jamnagar, Rajkot & Diu - regions of Saurashtra-Gujarat for their industrial tour in order to celebrate Swarnim Gujarat.

Students visited three large scale companies of Saurashtra, which again are nationwide popular in their respective areas.

Digjam ltd. At Jamnagar, producing world class fabrics and readymade garments was the first company. Students enjoyed lot in visiting this company, as the officials of the company demonstrated the manufacturing process and its various activities in detailed manner. Students actually learnt how exactly threading & weaving of clothes is done.

Samay electronics ltd. was the second company at Morbi nearby Rajkot, produces world class clocks and other electronic items. They are known for their speedy and effective manufacturing schedules. Students in real sense learnt that why the company is taking pride to declare itself as the company producing "one clock per one second."

Vrundavan Ceramic's pvt. Ltd., again a morbid based India's biggest vitrified tiles manufacturing plant, really amazed the students through its internationally renowned manufacturing technologies.

Overall students learnt a lot by taking a detailed idea about the different manufacturing and managerial methodologies of different industries of India. They awarded themselves with various business issues and concepts in practical sense. This will again help them to enhance their academic knowledge.

Delhi – Agra – Haridwar – Hrishikesh – Masoorie

Students of SEMCOM visited Delhi - Haridwar - Masoorie as a part of their annual industrial visits. They visited three companies namely Bharat Heavy Electricals Ltd, Haridwar, Parle Products Pvt. Ltd, Delhi, and Hindustan Sanitary & Industries Ltd. The core business of HEEP includes design and manufacture of large steam and gas turbines, turbo generators, hydro turbines and generators, hydro turbines

and generators, large AC/DC motors and so on. Makers of the world's largest selling biscuit, Parle-G, and a host of other very popular brands, the Parle name symbolizes quality, nutrition and great taste. The students learnt how with a reach spanning even the remotest villages of India, the company has come a very long way. HSIL is recognized among the top 300 companies in India, while rated amongst the best 100 small and medium sized companies in the world by the Forbes Magazine. The students also had sightseeing at Agra, Masoorie, Hrishikesh and Haridwar. The tour was coordinated by Mr. Yash Rajpara, Mr. Nimesh Rawal, Ms. Bhumika Patel and Ms. Swaty Parab

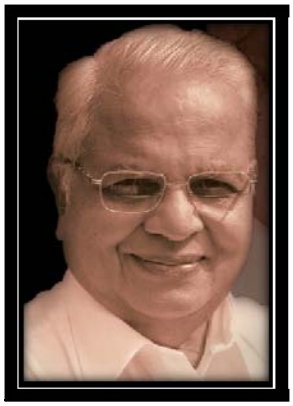
Editorial Team, DRIVE

GURUBODH

Between The Lines

- **Shri G. Narayana**
- **Compiled by Joe Mary George**

Guruji has compared the lines of writing with lives.



We all know that when one line stops, there is a full stop. That means there is a pause. We stop and think about the next sentence. We think, what can be the best in the next sentence, how the next sentence can be better than the previous. Therefore previous sentence is a preparation for next sentence. Thus, we go on building better and better sentences. The spirit of the previous sentences is the inspiring energy for the next sentences. After writing first sentence, that becomes a source and resource for the next sentence.

But Guruji is of the opinion that, why to wait for the full stop and end of sentence? Why we can not think about the next better sentence by improving the present sentences. Also don't just think about the present or next sentences separately. But think about the present and next several other sentences while writing the first/present sentence itself.

Then our sentences will be full of wit, wealth, wisdom and welfare. Thus our writings will be worthwhile.

In the same way when one life stops, there is a gap. That is, there is a pause. For us our every day life is a new life and gift form God. We try to live our life newly every day by improving the previous day's mistakes and by overcoming problems and difficult situations of life.

In the morning we do many sankalp-to lead a good and truthful life. But Guruji says why to wait for the death, end of life or end of the day? Why we can not think about the next day/moment, by improving the present life itself.

Thus, when we go on improving the present day, the present day will become a source and resource for the next day, moment. Thus our whole life can be resourceful and source of joy.

Then our lives will be full of wit, wealth, wisdom and welfare. Thus, our living will be worthwhile.

- **THIS IS THAT**
- **THIS (WRITING) IS THAT (LIVING)**
- ***Guruji***

My Voice:

Life is forever

Some people have touched our life in such a special way that we cannot forget them. Your physical existence may be mortal but your good deeds are immortal. Many people say time is strong and everything is forgotten. Nevertheless, how can you forget somebody who loved you without caring for his or her life? How can you forget somebody who did his or her best to make you happy? How can you forget somebody who sacrificed his or her happiness to see you happy? Yes, they can be your god, mother, father, wife, husband, sister, friend, teacher, soldier or anybody who has loved you without any selfishness.

So remember nothing go unnoticed. Your every act is counted and makes difference in others lives. The key to being immortal is being good to self and good to others. As they say, do what you expect from others. Always remember that you may feel nobody is watching you but you cannot escape the eyes of almighty god. Live in present and make positive difference in your own and other's lives. You may not last forever but your good deeds will always be remembered. As they say it is not important, how much you live but how you live. So try to touch some lives in a special way.

Sunil V Chaudhary
Lecturer, SEMCOM

SWARNIM GUJARAT CELEBRATION

SEMCOM students' Home-stay at villages of Anand District

To celebrate golden jubilee of Gujarat, starting from October 1, 60 students from the college had camp in villages under project 'Gramyatra' - Home-stay with Homeliness for a period of three days. Under this program they not only tried and understood problems faced by villagers, but also taught villagers basic computer skills through a six hour module designed by them.

Anand district development officer (DDO) Rahul Gupta conducted a half-day training program for students at the college to orient them about life in Villages. Taluka development officers (DOS) in the district and sarpanch of respective villages arranged logistic support for students, who in batches of three each, had camp in villages.

"Students from affluent class and cities have no idea about life in villages. Also, today's pedagogy doesn't sensitize students towards fellow citizens. Through this project, they will be able to get first hand experience and exposure," said SEMCOM Director Dr. Nikhil Zaveri, adding that not restricting to villages in Anand district, the college plans to take the project further to villages of neighboring Kheda district and later to other districts of Gujarat.

Knowledge management of the experience gained by participating students will be used to prepare a comprehensive village development plan, which will be submitted to government agencies.

The entire activity was coordinated by Mr. Sarvesh Trivedi, Ms. Nisrin Pathan, and Dr. Vigna Oza in tune with Social Sensitivity cell of SEMCOM

- ***Swarnim Gujarat Celebration Team***

Book Worms Club:

Book Review on "The Lamp" Reviewed by Ms Arti Vyas

About the Author:

In spite of blindness, Jim Stovall has been a national champion Olympic weightlifter, a successful investment broker, and entrepreneur. He is Co-Founder and President of the Narrative Television Network, which makes movies and television accessible for United States 13 million blind and visually impaired people and their families.

He has appeared on "Good Morning America" and CNN, and has been featured in Reader's Digest, TV Guide, and Time magazine. He is the author of previous books entitled You Don't Have to Be Blind to See, Success Secrets of Super Achievers, The Way I See the World, The Ultimate Gift, and Wisdom of the Ages, as well as his new book The Lamp.

Review:

In The Lamp, we will explore the relationship between wishing, hoping, believing and reality. Author love to share with his audience the principle that You Change Your Life When You Change Your Mind. The Lamp is a story of Stanley and Lisa a married couple leading a very poor and miserable life .Lisa bought four rusty fishing lures, a dented ice bucket, two moth-eaten sweaters, and an ancient ceramic lamp without a shade, bulb, or electrical cord from garage sale. When Stanley and Lisa were discussing about Lamp, a Genie Irwin appears from the lamp and agrees to fulfill there three wishes which they cannot fulfill on their own.

Stanley and Lisa's three wishes were

1. To get one million dollar.
2. There second wish was to have their relationship to be better. They wished to have loving and caring relationship with each other.
3. There third wish was to have successful careers.

Genie Irwin told them that the solution to their first wish is that Money comes as a result of service to others. The response to their second wish is simply doing unto others as we would have them done unto us. The answer to third wish is a person who enjoys his job never works a day in his life. A job well done is its own reward. Those who labor in the service of others and create value in the world around them will be richly rewarded, both in monetary terms and more importantly, in the currency of satisfaction and well-being."

Erwin told them that he cannot fulfill their wishes as all the three wishes they can fulfill on their own. Stanley and Lisa felt positive and were able to fulfill all their three wishes. The morale and message of the story is you yourself are the creator of your destiny and life.

RESEARCH ARTICLE

Impact of Information and Communication Technology on Technical Efficiency of Public Sector Banks with special reference to Corporation Bank

- ***Dr Sunny Thomas, Lecturer,*** SEMCOM
- ***Ms Waheeda Sheikh, Lecturer,*** SEMCOM

Introduction

The quality of functioning of the financial sector has profound impact on the functioning and productivity of all other sectors of the economy. Therefore, efficient financial intermediation should be seen as a catalyst for effective allocation of resources and promotion of productive growth in all other areas of the economy. Hence, economic efficiency and productivity analysis are intricately connected to the productivity, performance and efficiency of financial sector. Financial intermediation is essential to the promotion of both extensive and intensive growth of the economy.

Financial sector reforms set in motion in 1991 have generally changed the face of Indian banking. The banking industry has moved gradually from a regulated environment to deregulated market economy. The market developments kindled by liberalization and globalization have resulted in changes in the intermediation role of banks. The pace of transformation has been more significant in the recent times with ICT acting as a catalyst. The banking sector is opened up for greater international competition under World Trade Organization (WTO). Banks will have to cope with challenges posed by technological innovation in banking.

The deregulation of the banking industry coupled with the emergence of new technologies, are enabling new competitors to enter the financial services market quickly and efficiently. Advantages previously held by large financial institutions have shrunk considerably. ICT has leveled the playing field and afforded open access to customers in the global marketplace.

No area of commercial activity has been more influenced by the ongoing revolution in information and communications technology than the banking and financial systems. In the changing context, banks with a high degree of cost effectiveness would survive and thrive.

Electronic banking is a cost-effective delivery channel for financial institutions. Consumers are embracing the many benefits of mechanized banking. Access to one's accounts at anytime and from any location via the World Wide Web is a convenience unknown a short time ago. Thus, a bank's internet

presence transforms from traditional status to 'internet banking' status once the bank goes through a ICT integration and core banking solutions effort to enable the customer to access information about his or her specific account. The six primary drivers of mechanization in banking include:

- Improve customer access
- Facilitate the offering of more services
- Increase customer loyalty
- Attract new customers
- Provide services offered by competitors
- Reduce customer attrition

As a result of reforms, the PSBs were forced to adopt international practices and standards. These include international accounting standards, Core Banking Solutions, Real Time Gross Settlement, Basel Accord or norms, Risk management, Electronic Payments, Internet and Mobile banking. As a response to the demanding situation the banks have to adopt the variety of measures like transformation in structure, people, processes and technology. Use of ICT has increased the scalability of the banks. Manual sorting and other operations have given way to mechanical operations. Speed at which money can be transferred has increased tremendously. As a result the technical efficiency of the banks has increased.

Technical efficiency means the reduction in the transaction cost resulting in increase in the productivity per employees. Expert view efficiency in banking sector two ways - technical efficiency and economic efficiency. Technical efficiency arises when banks minimize their inputs given the outputs while economic efficiency is there when a bank would maximize its outputs given inputs. Technical efficiency is thus input saving and economic efficiency is output augmenting. In this sense we can cay that economic efficiency is a much broader concept for it involves optimal levels and combination of inputs for maximum output. It should be noticed that economic efficiency involves technical efficiency and not vice versa.

Public Sector Banks

As per second schedule of Reserve Banks of India Act, 1934, there are 28 PSBs in India. Public sector banks have either the Government of India or Reserve Bank of India as the majority shareholder. This segment comprises of State Bank of India (SBI) and its subsidiaries and other nationalized banks.

As seen in Table 1 nearly 75 per cent of the banking business in India lies with the Public sector Commercial banks. The PSBs also account for the large chunk of branches. However, new private sector banks and foreign banks with their highly mechanized operations are able to increase their share of the total business in India.

Table: 1 – Banking Sector in India as on 2006

	Total Number of Banks	Total Branches		Percentage Share in	
		Number	Percentage	Total deposits	Total Advances
Public Sector Banks	28	48016	87.63	75	72.9
Old Private Sector Banks	19	4566	8.33	6.0	5.5
New Private Sector Banks	8	1950	3.56	13.8	15.2
Foreign Banks	29	259	0.47	5.2	6.4
Total		54791	100.00	100.00	100.00

Source: Report on Trends and Progress of Banking in India 2005-06.

Levels of Information and Communication Technology in Banks:

The Mechanization architecture and its implementation in PSBs can be explained as follows. There are six levels of IT architecture in the banks.[1]

Level Zero: Completely Manual

At zero level as given in chart 1, the status of mechanization is completely manual. At present no bank of any considerable size or significance exists at this level.

This is the zero level of computerization in banks. The branches in this level are carrying out their operations manually. Customers of individual branches can transact only with their own branches using the human interface.

[1] Bhasin T M, (2003), "E Commerce in Indian Banking," Authors Press, Delhi, pp 510-125.

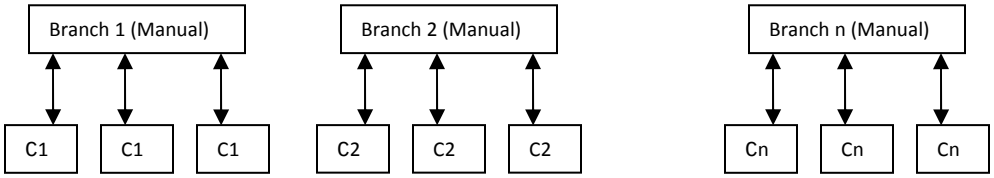


Chart 1: Customers can only transact at their respective branches using human interface

Level one: Scattered branches

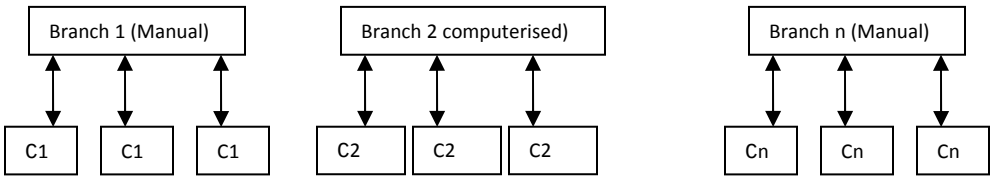
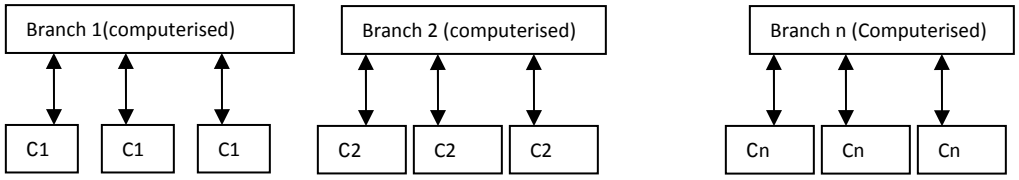


Chart 4.2: Customers can only transact at their respective branches using human interface

Chart 2 given above shows that in this level there exists scattered branch automation, wherein there is a slight improvement in the efficiency in customer service. At this level certain branches are computerized and other branches carry out their operations manually.

Level Two: Full Mechanization at branch level



More efficient operations but customers can only transact at their respective branches using human interface

Chart 3

In level two (chart 4.3) all the branches are fully computerized and the operations of the banks have become more efficient. But these branches work as stand alone branches. At this level the customers can transact their business at the branch level with the active help of computer ICT.

Level Three:

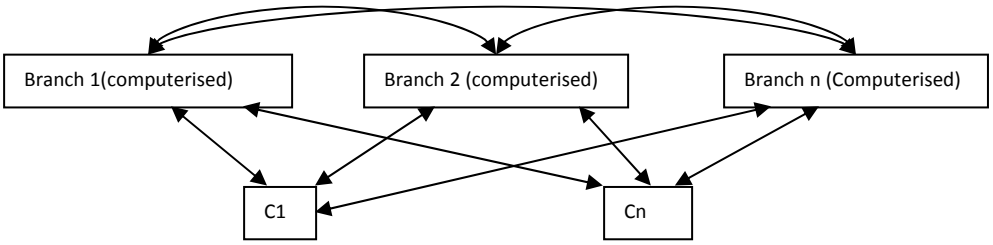


Chart 4.4*: Customers have mobility and options to transact through any of the branches*

Thirds level as depicted in chart 4.3, is full Mechanization at all branches, leading to efficient service opportunity, house keeping and MIS. At this level customers can transact their business from any branch from anywhere.

Level Four: Branch centric and with interconnectedness

The fourth level of Mechanization is branch centric and with interconnectedness. This type of IT penetration enhances the operational efficiency and scalability. When the bank is operating at the fourth level the bank is capable of operating twenty four hours and thorough out the year. Most of the operations are carried out with the help of the computers and the bank is fully networked.

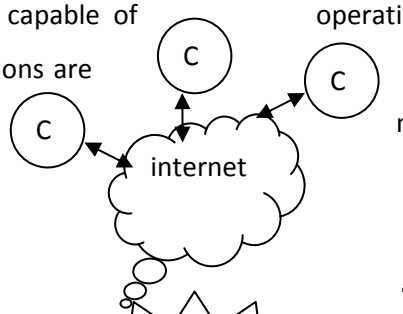
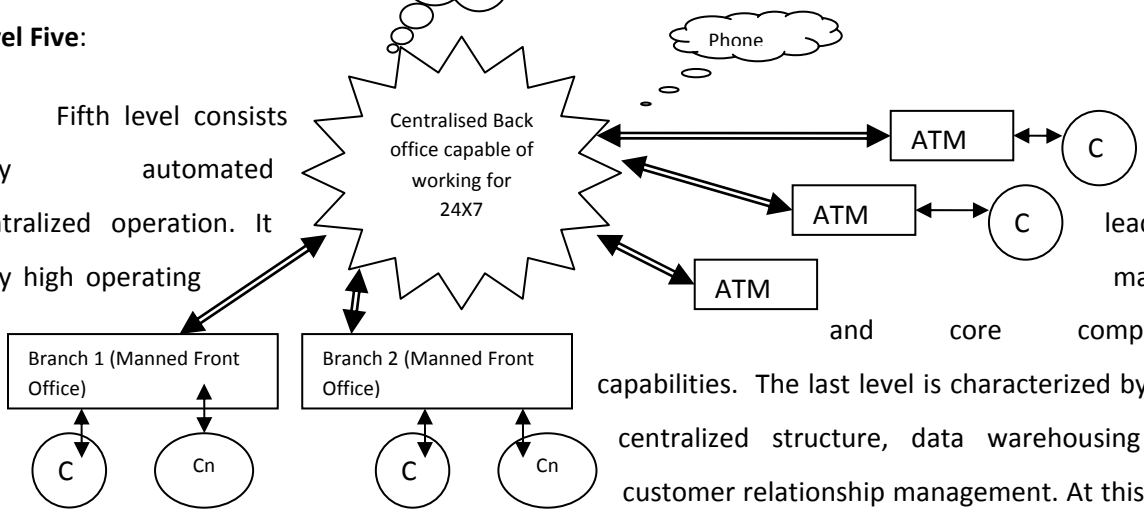


Chart 5

Level Five:



Fifth level consists of fully automated centralized operation. It leads to very high operating margins and core competent capabilities. The last level is characterized by fully centralized structure, data warehousing and customer relationship management. At this level

the banks operate at vary high level leveraging all areas of information ICT. Consumer Relationship Management (CRM) enables banks to increase customer satisfaction and exploit cross selling opportunities. At this level all the banks experience reduction in intermediation cost. [2]

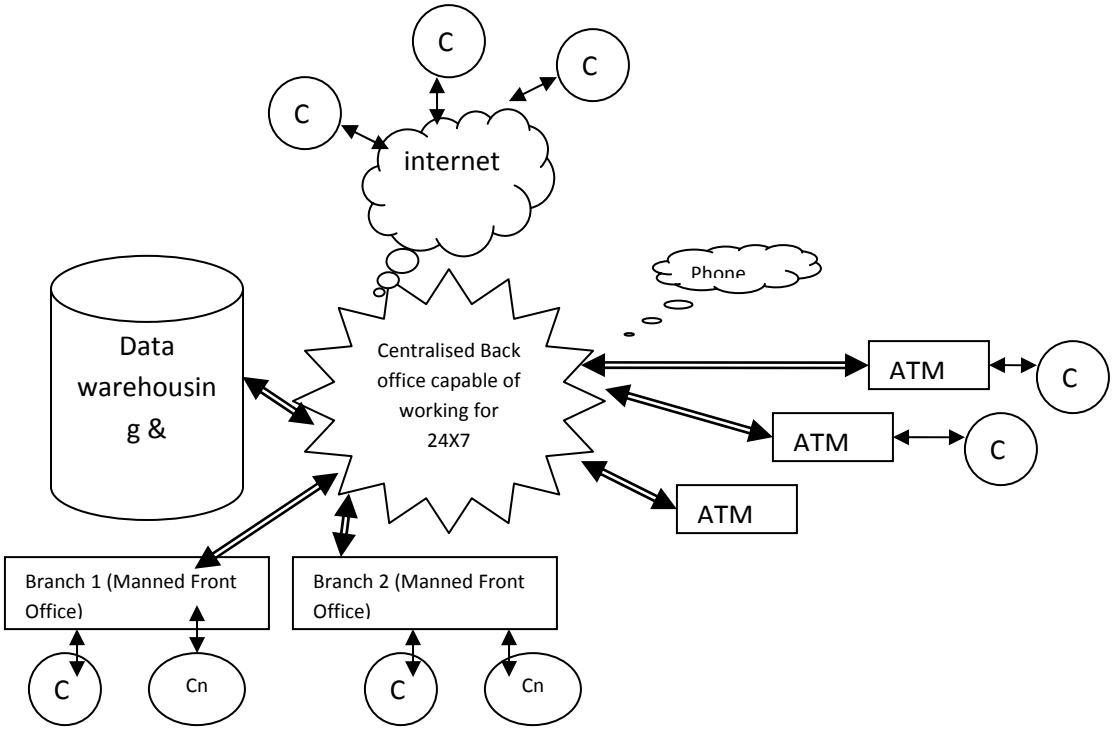


Chart 6

ICT and PSBs:

Information and communication technology along with high degree of computerization have changed the banking operations. With the increasing expectations of the customers and to provide customized services each and every bank has taken keen interest in over hauling their operations. As a result "by 2003-2004 more than 70 per cent of the bank branches have been fully computerized." [3]

The impact of computerization is seen in the form of enhanced efficiency and profitability of the banks. There are different levels of development and implementation of ICT for the banking operations. Modern banks are using ICT for achieving cost reduction, effective delivery of various products, enlarging the banking activities and customer retention.

[2] Ibid.
3 Padwal S.M, Godse V.T., (2004), "Transformation of Indian banks with Information ICT," Mumbai, Himalaya Publication.

With ICT acting as an enabler, great changes are witnessed in the banking scene. The traditional banking functions have given way to a system geared to meet all the financial needs of the customer. We see the emergence of highly varied financial products which are tailored to meet specific needs of customers in the retail as well as corporate segments. The advent of new ICT has changed the way the bank functions and the conventional definition of banking has already undergone changes. Globalization would provide opportunities for Indian banks to increase their international presence.

Retail lending is receiving greater focus. Banks are competing with one another to provide full range of financial services. Banks are using multiple delivery channels to suit the requirements and taste of customers. In the ultimate analysis successful banks will be those which continue to leverage the advancements in ICT in reengineering process and delivery modes and offering state of the art products and services providing complete financial solutions for different types of customers.

ICT is expected to be the main facilitator of change in the financial sector. Implementation of the ICT solutions involves huge capital outlay. Besides the heavy investment cost ICT applications also had a high degree of obsolescence. Banks will need to look for ways to optimize resource for ICT applications. From 1999 to 2005 the PSBs have spent Rs 10676.12 Crore towards the computerization of their operation.[4] One can conclude from table 2 the extent of computerization carried out by the PSBs in India. Government of India and the Reserve bank of India have taken several steps to modernize Indian banking scenario.

Table 2: Computerization of branches in PSBs in 2006 (per cent)

	Public Sector Banks
Fully computerized branches (per cent)	77.5
Partially computerized branches (per cent)	18.2
Non computerized branches (per cent)	4.3

Source: Report on Trends and progress in Banking 2005-06.

The above table brings out the fact that the public sector banks have long way to go in order to achieve the international standards. With the high degree of ICT; product innovation and process re-

[4] Reserve Banks of India, (2005-2006), Report on Trends and Progress of Banking in India

engineering will be the order of the day. The changes will be motivated by the desire to meet the customer requirements and to reduce the cost and improve the efficiency of service. All the banks will therefore go for rejuvenating their costing and pricing to segregate profitable and non-profitable business. From the earlier revenue = Cost+ profit equation i.e., customers are charged to cover the cost incurred and the profit expected, most banks have already moved into profit = revenue- cost equation.

This has been reflected in the fact that with cost of service staying nearly equal across banks, the banks with better control are able to achieve higher profits whereas the banks with high overheads due to underutilization of resources, un-remunerative branch network etc ., either incurred losses or made profits not commensurate with the capital employed. The new paradigm is cost = revenue - profit. Banks are taking on competition in the front end and seek cooperation in the back end as in the case of Automated Teller Machines (ATMs). This type of "Co-competition" will become the order of the day as banks seek to realize cost reduction and greater efficiency.[5]

ICT has brought fundamental shift in the functioning of banks. It has not only helped in bringing improvements in internal functioning but also enabled the banks to provide better customer service. ICT has wiped out the national boundaries and has given rise to cross border banking business. Banks are undertaking extensive business process engineering. With the changes in the business environment banks have to tackle issues like - delivery of products and services to customers in best possible way, designing an appropriate organizational model to fully capture the benefits of ICT, exploit ICT for deriving economies of scale, creation of cost efficiencies, and creation of customer-centric operation model.

Entry of ATMs has changed the profile of front offices in bank branches. Customers no longer need to visit branches for their day today banking transactions like cash/cheque deposits, withdrawals, cheque collections, balance enquiry etc. Electronic banking and internet banking have opened new avenues in 'convenience banking'. Internet banking has also led to reduction in transaction costs for banks. ICT solutions would make flow of information much faster, more accurate and enable quicker analysis of data received. This would make the decision making process much faster and more efficient. For the banks this would also enable development of appraisal and monetary tools which would make credit management much more effective. These developments would lead to a definite reduction in transaction costs, the benefits of which would be shared between banks and customers.

[5] Padwal S.M, Godse V.T. (2004), "Transformation of Indian banks with Information ICT," Himalaya Publication, Mumbai.

The application of ICT would help banks reduce their operating costs in the long run, though the initial investment would be sizeable. Money spent on ICT by banking and financial services industry in the US is approximately 7 per cent of the revenue as against 1 per cent by Indian banks.[6] One area where the banking system can reduce investment costs in ICT application is by sharing of facilities. It has been seen that banks come together to share ATM networks. Similarly, in the coming years banks and financial institutions will come together to share facilities in the area of payment and settlement, back office operations, data warehousing etc.

In order to facilitate inter operatibility of ATM network clusters at national level the Institute for Development and Research in Banking ICT (IDRBT), Hyderabad has set up a National Financial Switch (NFS) to facilitate apex level connectivity of other switches established banks. The number of ATMS by the public sector banks nearly doubled from 3,473 as at the end of March 2003 to 6748 at the end of March 2004.[7] The first entrant in the plastic card (credit, debit and smart) was the credit card which has witnessed large scale acceptance as a medium of usage at many points of sale across different merchant establishments. "At the end of October 2004 there were 112.02 lac credit cards issued by banks to their customers."[8] All most all the categories of banks issue credit cards, with the largest share have been accounted for by ICICI bank, Citi bank and State Bank of India (SBI). Most of the card based payment authorization takes place in an online mode, with the reach covering about 10 lac merchant establishments across the country. The Reserve Bank of India (RBI) has introduced various liberalization measures such as the permission for banks to issue international credit cards to resident Indians. Apart from being a source of revenue for the banks, credit cards play an important role in the country in reducing the cost of currency management, increasing the safety of transactions, providing for traceability of transactions.

"Banks have been issuing other types of cards like debit cards, ATM cards and Smart cards. In recent years the growth of debit cards issuance and usage has gained greater momentum. By October 2004 banks in India have issued 378.52 lac cards."[9]

[6] Ibid
[7] "Report on trend and progress of banking in India 2003-04," Reserve Bank of India, Mumbai.
[8] Ibid
[9] Ibid

Literature Review:

Vasudevan (1998) observes that one of the basic goals of technology upgradation is to ensure efficient and effective decision making on the basis of MIS data. Process re-engineering should ensure the attainment of this objective instead of the current trend of technology which merely facilitates better work flow and not necessarily in better decision making.

Essinger (1999) identifies certain objectives which the banks would like to achieve through computerization and use of technology. They are- Increase the customer base, Increase overall quality of services, Decrease the proportion of routine transactions, Increase the proportion of profitable sales, Increase the customer satisfaction, Increase the speed of response, Increase the quality of marketing initiatives, Increase the retention of customers and staff, and Finally to reduce the overall operational cost. The study concludes that delivering bank services with the help of computer and information technology is almost only one sixth as expensive to the bank as delivering the services with the help of traditional system.[10]

Kaptan (2000) studies the benefit of mechanization and use of information technology in the banking sector. He finds that over the years the number of staff in the banks has increased. However, the rate at which it has increased well below the growth of business. Banks have been in a position to offer services with the help of information technology and at the same time kept their cost factor down. A successful bank is identified as the one which is having efficient MIS and strong technology adoption in working. Information Technology in action can be seen in a number of ways such as client services, automatic teller machines, home banking services, bank automated clearing system, automated payment system, tele-banking services, cash management services, electronic fund transfers etc. all of these innovations have given rise to convenience banking. [11]

Lindquist (2001) – studies the Effect of New Technology in Payment Services on Banks' Intermediation. In many countries, payment services in banking have shifted from paper-based giro and check payments to electronic giro and debit card payments. He has analyzed the effect of this change in payment technology within a multiple-output framework using Norwegian bank level panel data. The results show that the move towards electronic payment services has (i) decreased average costs, (ii)

[10] Essingner James, (1999) "Virtual Banking Revolution: The Customer angle and your own agenda," International Thomson Business Press, London, pp1-34.
[11] Kaptan S S, "New Concepts in Banking," Sarup & Sons, New Delhi (2000)

increased the economies of scale in the production of deposits more than in the production of loans, and (iii) affected input demand asymmetric. The input ratio between labour and both physical capital and materials have decreased.[12]

Kamesam (2002) opines that the major challenge faced by any bank today is to protect the falling profits margins. The reduction in the profit margin necessitates increasing the absolute volume of transaction so as to improve the operational efficiencies of Indian commercial banks. The technical efficiency of the banks can be optimized by exploiting the information technology. The use of technology provides the bank better leverage in house keeping, management information system, data warehousing, and enlarging the number of products offered by the bank. A modern bank which is fully equipped and backed by Information Technology can move to new areas of operation such as portfolio management, insurance etc. Adoption of Information Technology leads to product innovation and innovation in the way services are offered to the customers. It is an established fact that cost of servicing a transaction through electronic media is substantially lower. Since the society is moving away from cash based transaction to electronic transaction the Information Technology back bone provides an excellent opportunity for the banks to cut cost. [13]

Sreenivasan (2002) states that the influence of Information Technology has changed the Indian banking industry from conventional to convenience banking. The availability of new technology is forcing the bank to reengineer and to redefine their products and distribution channels. These products and distributional channels are not only innovative in nature but also cost effective. Consumers have adopted computer technology at a higher speed than any other technology in the history. New generation banks have managed to have small number of branches but carry out large volume of transaction with the help of computer technology. Today, the banks are forced to increase the volume of business by extending the working hours with the use of technology. It also has to widen the customer base by providing anywhere, anytime, any channel banking service to customers. Banks are forced to improve the services quality and operational efficiency. With he help of computer and Information Technology banks are in a position to cross sell different products to existing customers.

[12] Lindquist K, (2001), "The Effect of New Technology in Payment Services on Banks' Intermediation," Central Bank of Norway.

[13] Kamesam Vepa, (2002) "Indian Banking Paradigm Shift – Functional Aspect," Bank Economists' Conference (BECON).

The focal point of all the above activities is to reduce the cost and increase the economies of scale by spreading remote banking channels. [14]

Hayami (2003) - rapid revolution of information and communication technology has not only improved the efficiency of traditional business but also enabled the development of new instruments in the financial field. In Japanese economy banks have adopted internet and Information Technology for providing services at low processing cost. The article reveals that in United States the cost of processing business by the help of internet is estimated to cost less than one hundredth of what it does at the branch window. The Bank of Japan is adopting new technology so as to make the banking services more efficient and cost effective.[15]

Sahrawat (2003) has undertaken a study of commercial banks in New Zealand. He finds that the operating cost and charges for electronic banking techniques such as Eftops (Electronic Funds Transfer at the point of sale), ATMs and telephone banking have been reduced. This reduction in the cost was accompanied by reduction in the number of branches and reduction in the number of employees. As a result, there is a decrease in the operating expenses to operating income ratio i.e. cost to income ratio.[16]

Boss et al (2004) study the emergence of information technology and internet and its impact on banking sector. The existing traditional banks face serious threat from the new and innovative banks. The new banks offer better pricing and greater customer satisfaction. The existing traditional banks have also started offering technology enables services. The study has analyzed the consumer behaviour and profitability of technology enabled branches. It says that customers are opting for traditional banks which are information savvy. Therefore a large number of people choose those banks which are established and are offering IT enabled services. [17]

Hawke (2004) studies the internet banking scenario in the United States. 13 million US households would use internet for banking transactions. All the banks both nationalized and private bank in US are

[14] Sreenivas N, "Core Banking Solutions their relevance for banks," IBA June 2002
[15] Hayami Masaru, "The Impact of IT Innovation on Financial System," in India's Banking and Financial Sector in the New Millennium" Kapila Raj & Kapila Uma (Ed.) (Academic Foundation , Delhi 2003, Vol 2, Page 378-389
[16] Sahrawat Kiran, "Trends in Electronic Banking in New Zealand," the journal of Accounting and finance, Vol 17, No 2, April –September 2003, pp-16-25.
[17] Boss Sandra, McGranahan Devin & Mehta Asheet, "Will the Banks Control Online Banking," in "Banking in New the New Millennium," Rajshekharan N (Ed), ICFAI University Press, Hyderabad , (2004) pp 22-30.

offering full transactional capabilities online. Over the last five years the American banking sector has made significance inroads both in mechanization and use of information and computer technology. Banks which are positioned themselves to compete in the financial market of the future have to be technologically enabled. However, no one can predict the timing and the scope of the expansion of cross border banking with the medium of computers and information technology.[18]

Padwal (2004) in his study on data ware housing and customer relationship management in banking finds that banks having Customer Relationship Management (CRM) acquires business intelligence. With the help CRM business intelligence and data warehousing capabilities of a bank can avail the benefits of – cost reduction, revenue enhancement, customer loyalty, quick response, customer satisfaction, positive image of the company and reduction in the time used for the transaction. The study concludes that it is six times costlier to sell a product to a new customer than the existing one. A dis-satisfied customer will tell at least ten people about his experience. A 5 per cent increase in customer retention would mean an increase of profit by 85 per cent. The increase in business quality and volumes through customer satisfaction and considerable decrease in the cost would justify the cost incurred in Information Technology. [19]

Ram Mohan & Ray (2004), in their study of comparative performance of Public and Private sector banks, have used DEA (Data Envelopment Analysis). The result of the study proves that PSBs are significantly better than the private sector banks on revenue maximization efficiency. However, the private sector banks and foreign banks have outperformed the PSBs when it comes to technical efficiency. The intermediation cost in the PSBs is significantly higher than that of private sector banks and foreign banks.20

Suganthi et al (2004) study the impact of electronic revolution on Malaysian banking sector. They trace the electronic revolution in Malaysian banking sector from 1970 to 2004. Advances in

[18] Hawke D John, "Internet Banking : Challenges for Banks and Regulators," in "Banking in New the New Millennium," Rajshekharan N (Ed), ICFAI University Press, Hyderabad ,(2004) pp 16-21.

[19] Padwal Sharad M, " Data Warehousing and Customer Relationship Management in Banking", in Transformation of Indian Banks with Information Technology ," Padwal SM & Godse VT (Ed.), Himalaya Publishing House, Mumbai, 2004, pp-106-125.

[20] Ram Mohan T P & Ray C Subash, "Comparing Performance of Public and Private Sector Banks-A Revenue Maximization Efficiency Approach," Economic And Political Weekly, VoXXXIX, No12, (2004), pp1271-1276.

telecommunication and information technology have helped banks to offer financial services through personal computers located at the customers premises.[21]

The national and international literature on banking and use of technology reveals that the banking sector has gained tremendously due to the ongoing ICT revolution. But none of these studies see the impact of ICT on the efficiency of the banks. The studies which look at the efficiency of Indian commercial banks concentrate on cost, profit, income or revenue efficiencies [Das, 1997; Shanmugam and Lakshmanasamy, 2001; Kumar and Verma, 2003; Mohan and Ray, 2004; Das et al, 2005; Kumbhakara and Sarkar, 2003; De, 2004; and Sensarma, 2005].

Most of the studies use Data Envelopment Analysis (DEA) method as a technique of analysis. While these studies are no doubt relevant, it is important to note that there are only a limited number of studies that examine productive efficiency/operational efficiency of the PSBs in India. Moreover the studies do not reveal the impact of ICT on the efficiency in the banking sector.

Technical efficiency of a commercial bank gives a measure of the performance of a bank in producing financial services relative to the best performing bank. While Bhattacharya *et al,* (1997) use DEA to measure the productive efficiency of Indian commercial banks for the period 1986-1991, Keshari and Paul (1994) use Stochastic Frontier Analysis (SFA) to measure the same for the period 1990-91, Shanmugam and Das (2004) use SFA for measuring technical efficiency between 1992 to 1999. Many of these studies were conducted before the second phase financial sector reforms. There is a need to revisit the efficiency issue. This assumes all the more importance because after a decade of reforms the impact of ICT implementation is seen in the functioning of the PSBs.

Research Methodology

Based on the above observations the main objectives of the proposed study is

- To examine the levels of ICT and its implementation in PSBs,
- To examine the impact of ICT on the technical efficiency using Stochastic Frontier Approach.

On the basis of the objectives of the study the following hypothesis is formulated

[21] Sugnthi Balachander & Balachandran, "Internet Banking in Malaysia", in "Banking in New the New Millennium," Rajshekharan N (Ed), ICFAI University Press, Hyderabad ,(2004) pp 36-44.

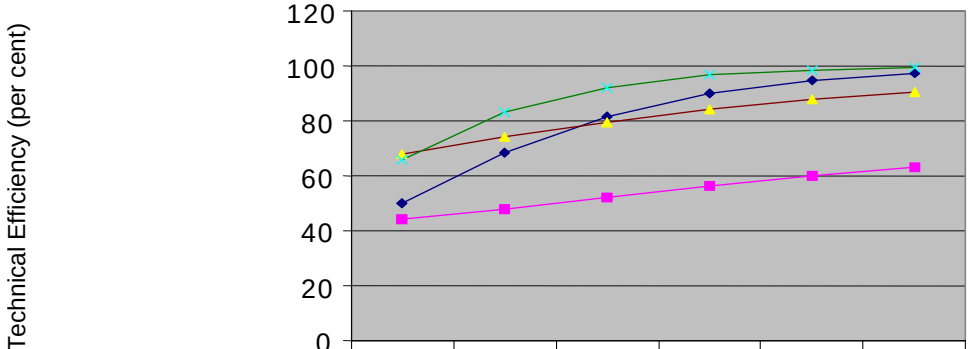
1. The higher the use of ICT the higher the chances of succeeding in competition. In other words the use of ICT has made it possible for the banks to reach wider population, increase the number of products offered to the customers and reduce the burden of wage bill.

2. Use of ICT has increased the efficiency and quality of banking services. This is based on the assumption that the use of ICT increases the speed, reduces the voluminous and cumbersome efforts put in by the staff and improves the working conditions. It facilitates the banks to deepen and widen their business. The net impacts are increase in efficiency and quality of services provided to the customers.

The researcher has selected Corporation bank for the purpose of study because with the similar kind of business environment like other PSBs, corporation bank is performing much better than its peers. Corporation bank is mid sized public sector banks. It has completed 100 years of banking services in the country. Its total business has crossed Rs 50,000 Crores. The bank has its presence in the rural, semi urban, urban and metropolitan area of the country. It fulfills most of the social objectives laid down by the government and Reserve Bank of India from time to time. The bank has posted profit for the last 10 years. Corporation bank can be compared with new generation private banks on ICT adoption parameters. It has been awarded techno savvy bank by IBRD twice. It has implemented core banking solutions in all the branches. For the rural segment the bank has installed bio metric ATMs. The number of ATMs installed by the bank has reached 790.

Present study is based secondary data for a period of six years from 2000-2001 to 2005-2006. The data is collected from various issues of Report and Trends in Banking on India and Statistical tables related to banks published by Reserve Banks of India, Annual Reports of Corporation Bank, Prowess data base of Centre for Monitoring Indian Economy and various issues of Indian Banks' Association's Performance Highlight of Public Sector Banks, Private Sector Banks and Foreign Banks.

Figure 1 Mean technical efficiency of PSBs



	2001	2002	2003	2004	2005	2006
Investment	50.14	68.47	81.61	89.84	94.57	97.15
Advances	43.95	48.12	52.18	56.1	59.85	63.41
Net Interest	67.81	74.25	79.7	84.17	87.78	90.63
Non interest	65.79	82.95	92.21	96.58	98.53	99.37

Years

Over the study period the growth in mean technical efficiency of investment is highest. It increased from 50.14 per cent in 2001 to 97.15 per cent in 2006. This followed by the non interest income which increase from 65.79 per cent in 2001 to 99.37 per cent 2006. Advances show the lowest mean technical efficiency in the year 2001 and lowest increase over the six years. This may be due to shifting of bank activities. A gradual reduction of controls on target oriented credit to priority sector and rural sector has caused the banks to shift from subsidies oriented credit to profit oriented credit like housing loans, educational loans, consumer goods loans, car loan and industrial loans. Other reason can be continues increase in NPAs in the asset portfolios of the banks gradually decrease their sanction of advances overtime.

The mean technical efficiency value of investment has shown the highest rise because the PSBs are putting their funds in the safety areas like government securities. The growth in the mean technical efficiency in Net interest income is not as good as investment and non investment.

Table 5: Output Variable wise Mean Technical Efficiency of Public Sector Banks from 2001 to 2006

	2001	2002	2003	2004	2005	2006
Investment	50.14	68.47	81.61	89.84	94.57	97.15
Advances	43.95	48.12	52.18	56.10	59.85	63.41
Net Interest Income	67.81	74.25	79.70	84.17	87.78	90.63
Non interest income	65.79	82.95	92.21	96.58	98.53	99.37

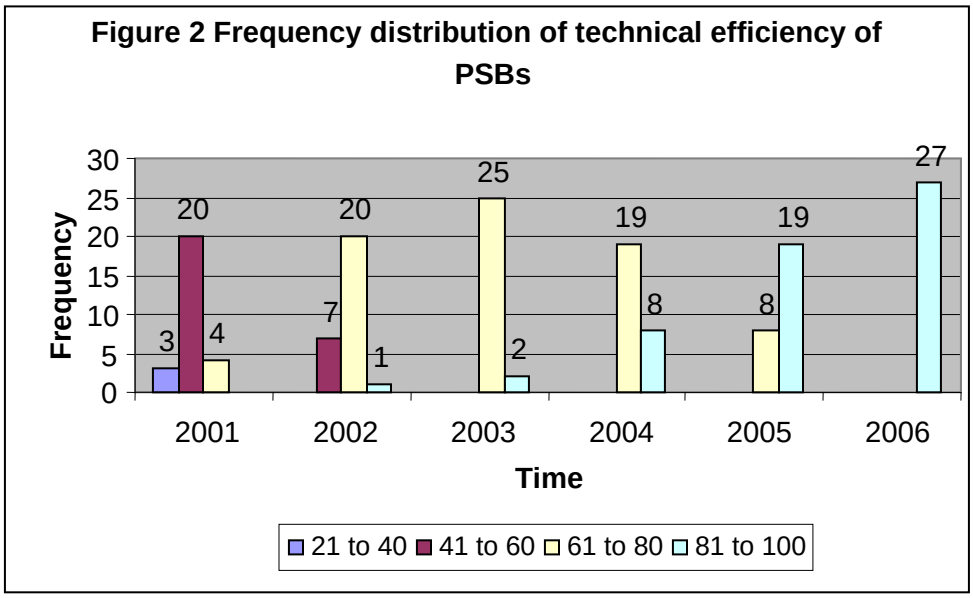
This is because of social commitment of providing the finance to poor and needy in the country. The higher efficiency in case of non interest incomes is due to government business transactions including major borrowing programs. Also the commission oriented business contributes towards the non interest incomes of PSBs. Over the study period it has been observed that the mean technical efficiency in non interest incomes increased faster than that of interest income. This rise is due the widening of services offered by PSBs which is possible due to increasing mechanization of PSBs.

Table 6 Frequency of banks according to Mean Technical Efficiency

	2001	2002	2003	2004	2005	2006
0 to 20	0	0	0	0	0	0
21 to 40	1	0	0	0	0	0
41 to 60	19	3	0	0	0	0
61 to 80	6	22	22	10	2	0
81 to 100	1	2	5	17	25	27

Table 6 presents frequency of the efficiency of PSBs form 2001 to 2006. An analysis of the table shows that PSBs efficiency is increasing. All the 27 PSBs have more than 20 per cent efficiency. There were 19 banks between 41 to 60 in the year 2001. This moved to 22 banks in 2002 between 61 to 80. Percentage of banks between 81 to 100 range gradually increased 3.37 per cent to 100 per cent. Hence one can conclude that the technical efficiency of the PSBs is increasing over the years. It is mainly due to

the competitive environment. Figure 2 presents a clear picture of the improvement in the efficiency of the PSBs.



A comparison of performance of Corporation bank with all the PSBs

In pursuit of niche banking with ICT as the competitive edge, the Bank has drawn up an IT Plan to provide better service to its customers. As a result all the branches of the Bank have been computerized and consequently, 100% of the Bank's business is computerized now. The Bank endeavors to provide high quality service to its customers.

As on 30th September, 2006, the aggregate business of the Bank stood at Rs. 66,022 crore comprising Rs. 38,017 Crore Deposits and Rs.28004 Crore Advances. With its strategic business focus and innovation, the Bank is striving for better performance in the coming years. Its total business is set to cross Rs.70000 Crore in March 2007. The Bank has an ambitious plan to raise its total business level to Rs.1, 00,000 crore by March 2009.

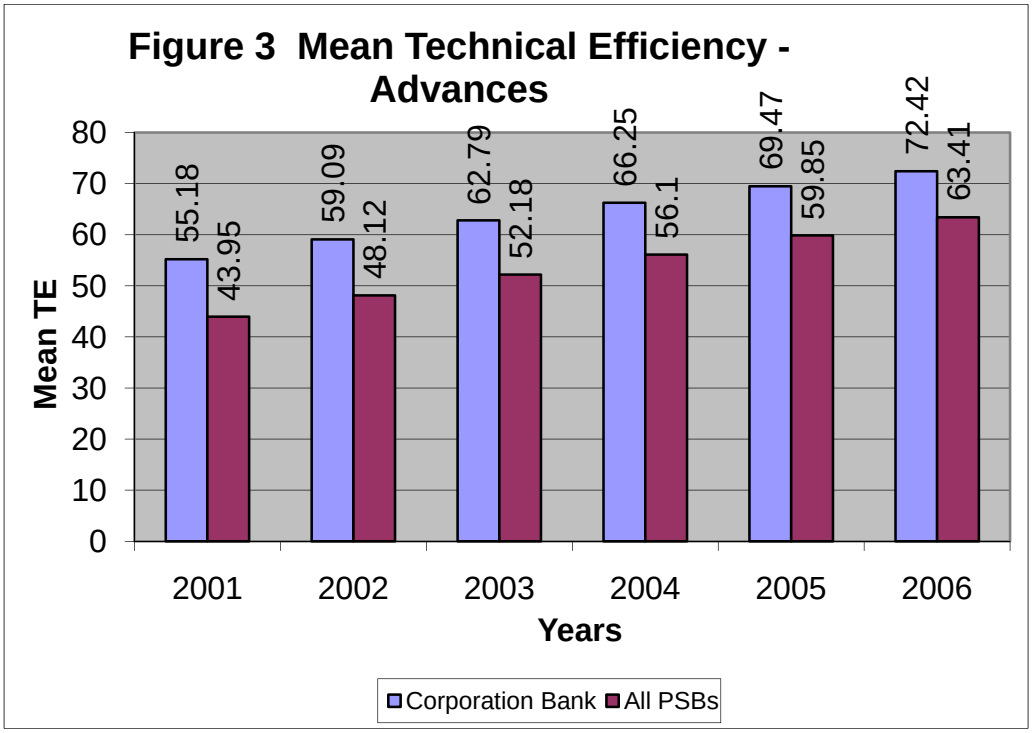
According to Cherian Verghese, ex chairman and managing director the key differentiator for attracting more retail customers is expected to be the use of ICT. Many banks are facing problems on two fronts. There had been little focus on the type of ICT being implemented. This had seen stunted development of all delivery channels. Networking and business process re-engineering are two other issues which need to be addressed along with ICT.

For staying ahead in the competition banks need to innovate and integrate their products. Innovation helps to develop newer products or services while integration helps to bring different products of the bank on the same plank. With expanding product range, banks, are moving from being merely transaction-based to customer centric entities, which afforded opportunity for cross-selling various products.[22]

The Comparison of the mean technical efficiency for all the four output variables:

A. Advances:

The Figure 3 presents the comparison of advances of the All PSBs and Corporation bank. The performance of Corporation bank is better than entire group. For the Corporation bank it increased from 55.2 per cent to 72.4 per cent whereas the group performance 43.9 per cent to 63.41.

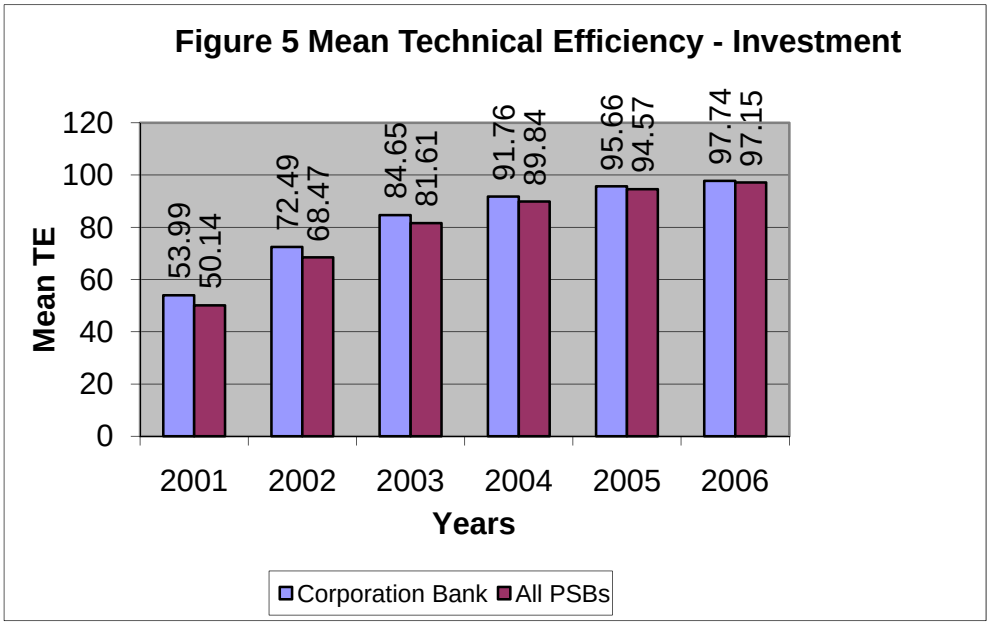


B. Investments:

A comparison between the mean technical efficiency related to investment of the corporation bank and mean technical efficiency of all PSBs as in Figure 5 reveals that for the entire study period the

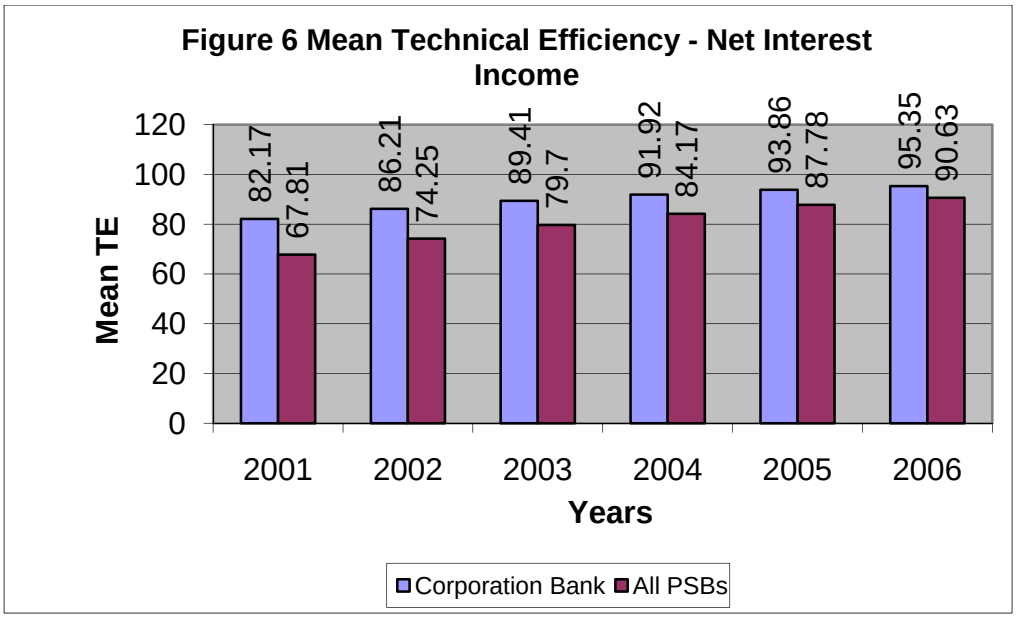
[22] "Technology alone can put banks on growth curve," The Economic Times (Bangalore), Nov. 02, 2002.

Corporation bank has performed better than the entire group performance. However, gradually the difference is declining from 3.95 in 2001 to 0.59 in 2006. We can conclude that the initial advantage of early bird is declining and many banks in the group are mechanizing their services and reaping the benefit. However, still the Corporation bank performs better than the entire group.



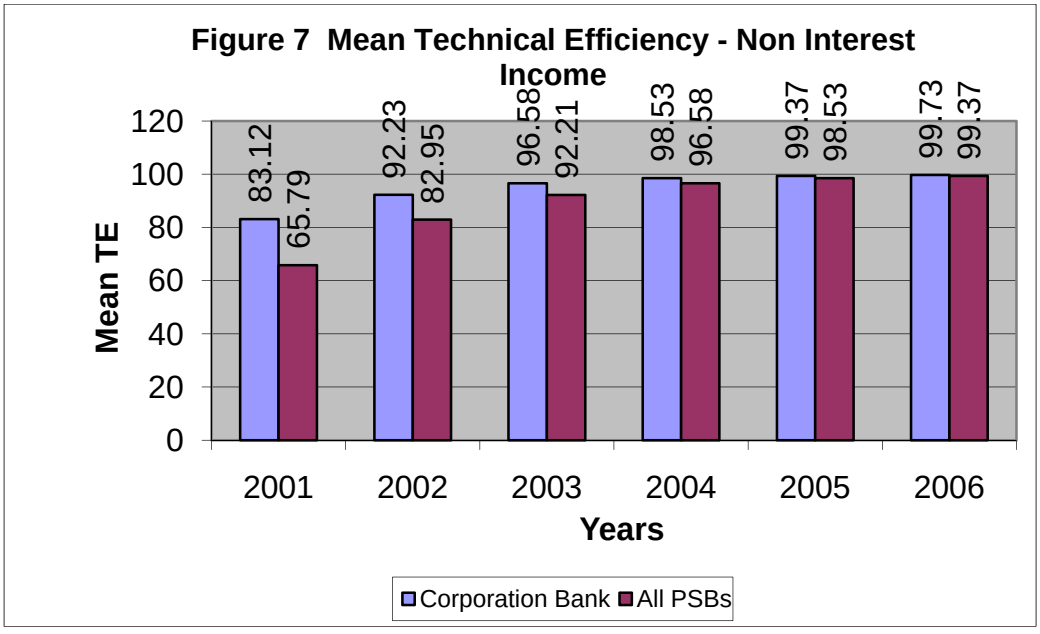
C. Net Interest Income:

Figure 6 presents the comparison of net interest mean technical efficiency of corporation bank with rest of the group. Like advances and investment here too the Corporation bank performance is better than the rest of the group.



D. Non interest income:

It is seen from figure 5.7 that the difference in mean technical efficiency of corporation bank and rest of the group is reducing. This is due to the increased mechanization level in other banks.



Hence to conclude we can say that there is considerable increase in the non interest income of all the PSBs and the increase is substantial in corporation bank. The tremendous increase in the turnover in business would not be possible without the help of mechanization. The growth of all the significant parameters such as deposits, advances, net interest income, non interest income employee turnover, employee profitability, and deceleration in the intermediary cost are not possible without the help of mechanization. It is also true that the process of economic reforms and liberalization of financial sector have helped the banks to go for improvement in the efficiency.

From the above analysis we may also draw the conclusion that the efficiency levels of all the banks are improving. However those banks having greater degree of automation are able to perform better than the ones without it.

Conclusion and Summary:

Public Sector Banks command Seventy five per cent of the banking business in India. The market developments kindled by liberalization and globalization have resulted in changes in the intermediation role of banks. The pace of transformation has been more significant in the recent times with ICT acting as a catalyst. ICT or Electronic banking is a cost-effective delivery channel for financial institutions. There are six levels of ICT architecture in the banks.

Information and communication technology has changed the banking operations. With the increasing expectations of the customers and to provide customized services each and every bank has taken keen interest in over hauling their operations. The impact of computerization is seen in the form of enhanced efficiency and profitability of the banks. There are different levels of development and implementation of ICT for the banking operations. Modern banks are using ICT for achieving cost reduction, effective delivery of various products, enlarging the banking activities and customer retention.

Retail lending is receiving greater focus. Banks are using multiple delivery channels to suit the requirements and taste of customers. In the ultimate analysis successful banks will be those which continue to leverage the advancements in ICT in reengineering process and delivery modes and offering state of the art products and services providing complete financial solutions for different types of customers.

The study analyses the efficiency of the public sector banks from 2001 to 2006. The data set is an unbalance panel of 27 public sector banks. Investment, advances, net interest income and non interest income are considered as the output variables for measuring the banks efficiency. Using the stochastic frontier approach for the measurement of the efficiency, the results indicate that employees are the dominant factor in determining all the output. An increase in the efficiency of the employees is certain to affect the performance of all the banks. The findings reveal that the coefficient of σ^2 is positive and significant for all the cases. The mean technical efficiency in raising net interest income is highest followed by non interest income. It is found that over the study period the growth in mean technical efficiency of investment in highest. It has increased from 50.14 per cent in 2001 to 97.15 per cent in 2006. The increase in non interest income is also considerable; it has increased from 65.79 per cent in 2001 to 99.37 per cent in 2006.

The higher efficiency in case of non interest income is due to government business transactions, commission oriented business, widening of services offered by PSBs, increasing mechanization etc. over the study period it has been observed that the mean technical efficiency in non interest incomes increased faster than that of interest income. The advances also show increase trend. However it is less than the other variables.

The comparison between the mean technical efficiency related to investment of the Corporation bank proves that corporation bank is way ahead of the other PSBs. The mean efficiency of advances for Corporation bank outscores the other public sector banks. Whereas, the difference between the mean TE of investment of corporation bank and the PSBs is negligible. In case of net interest income corporation bank outperforms the PSBs. The analysis depicts that the dominant position of corporation bank in non interest incomes is progressively bridged by the PSBs. This may because of the fast catching up of mechanization done by the other PSBs.

Future Scope of the study:

The study can be taken further –

- By analyzing the impact of ICT as the direct input towards productivity in the banks.
- By including new private sector banks, foreign banks and comparing the performance.

Usefulness of the study:

The results of the study would help to identify efficiency levels in the PSBs and the extent and reasons of technical efficiency. PSBs with lower efficiency can invest in technology and improve their performance. Further the study is useful to the policy makers and decision makers and society at large.

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