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Corruption in Public Service: Zero Tolerance Concept of Better Administration

N. Vittal

Existence of corruption in public administration is a widely acknowledged fact. However, it need not be accepted as a necessary evil. The author presents an action plan for routing out corruption from the organisational machinery by bringing Zero Tolerance Concept into practice.

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Does corruption have any impact on the administration of a country? In the age of global economy, we measure competitiveness of a country in terms of its capacity to attract foreign direct investment and also ensure that its goods and services are marketed in the rest of the world. How does corruption come in the way of effective administration?

Corruption – A Necessary Evil?

There are cynics who would say that corruption can help the process of administration. After all, in a developing country where resources are scarce corruption helps to fix priorities and aids decision making. However, in India we had dishonest corruption whereas in countries like Thailand there is honest corruption. The oxymoron honest corruption can be explained as follows – in Thailand if a bribe is given the work would be done and if it was not done, the bribe would be returned. In India, if you give bribe the work may not be done and the bribe also will not be returned. Perhaps, this sort of argument in favour of corruption might have been justified in times when countries like Thailand, Indonesia, South Korea were growing at double-digit rates. And were the economic tigers of South east Asia. But, since the 1997 financial crisis, the world has realized that corruption in financial sector may ultimately prove to be the undoing of a country itself. The argument that a certain degree of corruption can be tolerated as a necessary evil in the process of economic growth is not acceptable today.

That a certain degree of corruption can be tolerated as a necessary evil in the process of economic growth is not acceptable today.

There is need for greater transparency and integrity in administration. It is, therefore, natural that the collapse of Southeast Asian economies has coincided with increasing debates and popularity of concepts like corporate governance. While corporate management may be based on making the optimum use of the physical, financial and human resources of a country, it is ultimately the value and moral framework which ensures that decisions are not only justified from the business point of view but are also ethically valid. Corporate governance has, ultimately, ushered in Ethics Committees and Finance Committees and association of eminent professionals as part-time Directors. In the global economy today, the emphasis is on ensuring good corporate governance, ethical behaviour and greater transparency.

There is another direct relationship between checking corruption and improving administration. If individuals have to excel, they need commitment to the organisation and loyalty grows when company is fair in its dealings with customers and suppliers as well as with employees. For instance, Alacrity, a Chennai based company from the house building sector has been able to build up a reputation as an ethical company is a business like real estate where black money is the order of the day. This company deals only with white money and through cheques. This in turn has created such an environment that even corrupt public servants in Chennai do not ask for bribes when an executive of this company approaches them for work.

The evil effects of corruption on the economy of the South Asian countries was highlighted dramatically by the UNDP Report on Human Development, 1999 which pointed out the special features of corruption in South Asia.

Corruption happens everywhere. It has been at the centre of election campaigns in Italy and the United Kingdom, led to the fall of governments in Japan and Indonesia, and resulted in legislative action in Russia and the United States. But if corruption exists in rich, economically successful countries, why should South Asia be worried about it? The answer is simple. South Asian corruption has four key characteristics that make it far more damaging than corruption in other parts of the world.

First, corruption in South Asia occurs upstream, not downstream. Corruption at the top distorts fundamental decisions about development priorities, policies, and projects. In industrial countries, these core decisions are taken through transparent competition and on merit, even though petty corruption may occur downstream.

Second, corruption money in South Asia has wings, not wheels. Most of the corrupt gains made in the region are immediately smuggled out to safe havens abroad. Whereas there is some capital flight in other countries as well, a greater proportion of corruption money is actually ploughed back into domestic production and investment. In other words, it is more likely that corruption money in the North is used to finance business, than to fill foreign accounts.

Third, corruption in South Asia often leads to promotion, not prison. The big fish-unless they belong to the opposition – rarely fry. In contrast, industrialized countries often have a process of accountability where even top leaders are investigated and prosecuted. For instance, former Italian Prime Minister Bettino Craxi was forced to live in exile in Tunisia to escape extradition on corruption charges in Rome. The most frustrating aspect of corruption in South Asia is that the corrupt are often too powerful to go through such an honest process of accountability.

Fourth, corruption in South Asia occurs with 515 million people in poverty, not with per capita incomes above twenty thousand dollars. While corruption in rich rapidly growing countries may be tolerable, though reprehensible, in poverty stricken South Asia, it is a political dynamite when the majority of the population cannot meet their basic needs while a few make fortunes through corruption. Thus corruption in South Asia does not lead to simply Cabinet portfolio shifts or newspaper headlines, but to massive human deprivation and even more extreme income inequalities. Combating corruption in the region is not just about punishing corrupt politicians and bureaucrats but about saving human lives.

Corruption in Indian Administration

India's economy today is a standing monument to the corruption and inefficiency of four specific departments namely, Customs, Central Excise, Income Tax and the Enforcement Directorate. Evasion of taxes and the failure of these departments to check illegal activities have crystallized into the large percentage of black money in the economy. The quantum of black money has been estimated of at 40,000 crores-Rs. 100,000 crores. Whole industries today depend on the black economy. The film industry, a substantial part of the construction industry and a large number of small industries are run on the basis of black money. If by some magic and by applying the principle of zero tolerance, we are able to eliminate the menace of corruption, what will happen to all the people who are employed in these black money financed sectors of the economy?

Whole industries today depend on the black economy.

Our elections also involve a lot of black money which has brought about the criminalisation of politics, as highlighted by the Vohra Committee. The Hawala scam unearthed by the police stumbling to the Jain diaries in their effort to trace the money received by Kashmir militants brought out the linkages between corrupt businessmen, politicians, bureaucracy and criminals. The 1993 Bombay blasts which took away the life of 300 people was made possible because RDX could be smuggled by allegedly bribing a customs official with Rs. 20 lakhs. There is a close link between terrorism and corruption.

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India is ranked at 66th out of 85 in the Corruption Perception Index 1998 by the German non-government organisation Transparency International based in Berlin. This means that 65 countries were perceived to be less corrupt than India and 19 were perceived to be more corrupt. The entire Corruption Perception Index of 1998 can be seen in Table 1.

The Prime Minister while addressing the nation on 16.10.99, after the elections observed:

> One of our immediate tasks will be to firmly put down terrorism, which has come to cast its cruel shadow on innocent people. Our message is loud and clear, the life of every Indian citizen under our dispensation is precious. In our fight against terrorism, we will be guided by the principle of zero tolerance. The same principle of zero tolerance will apply while dealing with corruption that has bred contempt for the law. One of the first legislations we will take up is the Lok Pal Bill so that the rot can be checked from the top. A broad consensus already exists on electoral reforms to weed out the muscle and money power. We propose to soon introduce in Parliament, a comprehensive Electoral Reform Bill.

Zero tolerance became a popular expression when Rudolph Giuliani, the Mayor of New York applied it to tackle crime when he became the major of one the most crime ridden cities of the U.S. He succeeded spectacularly. One interesting aspect of applying the principle to crime is that the NYPD focussed on the petty and small fractions of the law instead of the large crimes. This counter intuitive approach by some curious logic seems to have brought excellent results by not only nabbing scofflaws but big time criminals also.

Table 1: Transparency International Corruption Perception Index 1999

1	Denmark	44	Zimbabwe
2	Finland	45	Malawi
3	Sweden	46	Brazil
4	New Zealand	47	Belarus
5	Iceland	48	Slovak Republic
6	Canada	49	Jamaica
7	Singapore	50	Morocco
8	Netherlands	51	El Salvador
9	Norway	52	China
10	Switzerland	53	Zambia
11	Australia	54	Turkey
12	Luxembourg	55	Ghana
13	United Kingdom	56	Mexico
14	Ireland	57	Philippines
15	Germany	58	Senegal
16	Hong Kong	59	Ivory Coast
17	Austria	60	Guatemala
18	United States	61	Argentina
19	Israel	62	Nicaragua
20	Chile	63	Romania
21	France	64	Thailand
22	Portugal	65	Yugoslavia
23	Botswana	66	Bulgaria
24	Spain	67	Egypt
25	Japan	68	India
26	Estonia	69	Bolivia
27	Costa Rica	70	Ukraine
28	Belgium	71	Latvia
29	Malaysia	72	Pakistan
30	Namibia	73	Uganda
31	Taiwan	74	Kenya
32	South Africa	75	Vietnam
33	Hungary	76	Russia
34	Mauritius	77	Ecuador
35	Tunisia	78	Venezuela
36	Greece	79	Colombia
37	Czech Republic	80	Indonesia
38	Jordan	81	Nigeria
39	Italy	82	Tanzania
40	Poland	84	Honduras
41	Peru	85	Taraguay
42	Uruguay	86	Cameroon
43	South Korea		

Zero Tolerance Concept

The approach to tackling the menace of corruption in our country has so far been lackadaisical. The

Supreme Court judgement in the Vineet Narain's case took a major step in the right direction by making Central Vigilance Commission (CVC) into a statutory body having supervisory powers over the CBI so far as anti corruption cases are concerned. The CVC is also to play an important role in another important agency, the Enforcement Directorate.

Zero tolerance means that no case of corruption will be tolerated and the corrupt would be punished. In our system the bribe giver and the bribe taker are both guilty – the only exception being the Members of Parliament. According to the judgement of the Supreme Court in the JMM case, the bribe receiving MP is not guilty but the bribe giver, even if he is a Member of Parliament, is guilty.

Zero tolerance means that no case of corruption will be tolerated and the corrupt would be punished.

The efforts made in the past to check corruption have failed because the guilty under the existing system of judicial process do not generally get punished. The conviction rate in the Indian courts is only 6%. There are three crore cases pending in the Indian courts and the average time taken for disposal of cases ranges from 10 to 20 years. So far as anti-corruption cases handled by the CBI are concerned, as of August 1999, 1173 cases are pending investigation, 501 cases of which are less than one year, 644 cases between 1-5 years and 28 cases more than five years. When it comes to prosecution, the figures are abysmal. As of August 1999, 3484 cases are pending as given in Table 2.

Table 2: Pending cases (as of August 1999)

Length of Pendency	No. of Cases
Less than 2 years	841
2-5 years	1198
5-10 years	818
10-15 years	432
15-20 years	125
20-25 years	49
25-30 years	20
Over 30 years	1
Total	3484

But any attempt at improving the judicial system and speeding up the disposal of our cases is within the jurisdiction of the courts themselves headed by the Supreme Court and the Chief Justice of India. We have to explore other areas which are within the jurisdiction of the Government and the CVC.

How do we still implement the zero tolerance strategy for checking corruption which means prompt effective punishment of the corrupt? To begin with, we have to understand the mechanics of how India became so corrupt a country. The growth of corruption in India after Independence has taken place through a two-stage process. The first stage was the corrupting of the institutions and the second stage was the institutionalization of corruption. We inherited from the British a working bureaucracy and we gave ourselves a constitution with the tree major wings of executive, judiciary and the legislature to ensure effective governance of the country.

1975, when emergency was imposed, is the watershed so far as Stage I is concerned when the principle that the bureaucracy must be committed was articulated. This meant that the bureaucracy must be committed, not to the Constitution, but to the Government of the day. From this started the systematic deterioration of the bureaucracy which became highly politicised. We inherited the British system of permanent civil service and the changing political executive dependent on elections. There is the veneer of British system which is supposed to be politically neutral but in effect is the spoil system of the United States where Andrew Jackson's famous dictum "let the victors have the spoils" is being practiced. We therefore find the spectacle of the bureaucrats getting aligned politically and labeled as belonging to one political leader or the other. Naturally, with every change of government, massive transfers of bureaucrats at various levels take place to ensure proper alignment of the political frequencies of the bureaucrats and their political masters.

The failure to deal with corruption has bred contempt for the law which combined with the criminalisation of politics has made the honest public servant who tries to implement the law a misfit.

The failure to deal with corruption has bred contempt for the law.

Entire sections of public life have become corrupt as S.S. Gill in his book. The Pathology of Corruption, points out there are five key players in Indian corruption scene, the corrupt political (neta), the corrupt bureaucrat (babu), the corrupt business (lala), the

corrupt NGO (jhola) and finally the criminal (dada). There are five reasons why our system encourages corruption. These are scarcity of goods and services, lack of transparency, red tape and delay due to obsolete rules and procedures which are time consuming and encourage speed money, cushions of legal safety which have been laid down by various pronouncements of the courts and CATs on the principle that everybody is innocent till proved guilty. The net result is that the corrupt are able to engage the best lawyers and quibble their way through the system. As Shakespeare points out in his Measure for Measure laws are like scarecrows. They are initially installed to scare the birds. Once the birds realise that the scarecrow is a harmless doll, they build their nests on it. Finally, biradri or tribalism, where the corrupt public servants protect each other. We talk about people being thick as thieves not thick as honest men!

These five reasons are a mutually reinforcing vicious cycle of corruption. This can be tackled only by setting in motion a virtuous cycle of anti corruption which will help achieve the goal of zero tolerance. Three elements are needed for this virtuous cycle. The first is goal of zero tolerance. Three elements are needed for this virtuous cycle. The first is simplification of rules and procedures so that scope for corruption is reduced to the minimum. One can deal with corruption like one deals with Malaria. One can either give medicine to those who have been affected by the disease or prevent the breeding of mosquitoes. Simplification of rules and removing the red tape that causes delay is like removing the stagnant pools which encourages the mosquitoes of corruption empowering of the public. Here the need for a Freedom of Information Act (FOIA) is very obvious. There is an urgent need for applying information technology in every citizen public office interface so that the common citizen can have access to information that he needs. The third element is effective punishment. This is where we have to go beyond depending only on the judicial system and see what other weapons can be thought of so that the effective punishment of the corrupt is ensured. Today corruption is a low risk high profit business. The principle of zero tolerance resulting in effective and prompt punishment should increase the risk. This should be the most important single element in the virtuous cycle to eliminate corruption.

In the light of the background the following plan of action will be implemented by CVC. All other authorities can try to implement it so far as their are concerned. This action plan can become a basis for evolving an effective strategy to implement the Prime Ministers vision of applying the principle of zero tolerance to check corruption.

The zero tolerance action plan

Corruption Perception Index

There is urgent need to make an exercise through competent bodies like IIMs, Industry associations, to list out in the order of corruption perception index all government organisations, public sector enterprises and banks within the purview of the CVC. Every year this list can be published. It can be monitored whether efforts are being made to bring down the level of corruption. This will also help authorities to focus attention on the most corrupt departments. It is also possible that the honest public servants in these departments will be moved by a sense of shame and try to check corruption in their respective departments. Recent World Bank observation that the Delhi Development Authority (DDA) is the most corrupt organisation in India (based on observations made by Shri K.J. Alphons) led to a protest by the DDA officials. Last year, when someone observed that the Delhi Air Customs were the most corrupt, there was a strike which was ultimately called off after the striking employees had their way. The peculiar aspects of our government systems and public organisation is that while everybody concedes that these organisations are corrupt; the moment anyone makes a statement officially in a report or in public, it becomes a matter of defending the "fair name" of the office and harassing the people and the government by going on strike. This bluff must be called. In other words, zero tolerance of corruption should begin with zero tolerance of strikes to defend the so called "reputation" of government departments or organisations.

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Zero tolerance of corruption should be a principle not only from the demand side of public servants and government department but also from the supply side.

The United States in 1970s enacted the Foreign Corrupt Practices Act(FCPA) by which American companies which give bribe in third world countries are liable to be prosecuted within US. Thanks to the American initiative, 34 OECD countries have by 1997 signed the anti bribery convention. A country which is perceived to be corrupt gets at least 20% less FDI. If a country is perceived to be more corrupt, it gets 35% less FDI. The South East Asian experience from 1994 also has shown how crony

capitalism and lack of control in financial sector can lead to disaster. Hence the Chambers of Commerce, especially CII, ASSOCHAM and FICCI should come together sign an anti bribery convention and ensure that their members will not bribe. If in the principle of zero tolerance we only focus on the receiving side of corruption, we will be missing the total picture. According to Supreme Court judgement in the JMM case, the bribe receiving MP may not be guilty but the bribe giving person, even if he is an MP is guilty of corruption. The bribe giver is equally guilty under the Prevention of Corruption Act.

Annual Property Returns by Members of Parliament and Ministers

The Prime Minister has already indicated in his speech that one of the first legislations the government will take-up is the Lok Pal Bill so that the rot can be checked from the top. Even before the Bill is passed one step can be taken. The JMM judgement laid down that the Members of Parliament and Members of Legislative Assemblies are public servants. Public servants who are employees of the Government and government organisations give their annual property returns. Why not insist that the MPs and Ministers must also give their annual property returns to the Speaker of the Lok Sabha or the Chairman of the Rajya Sabha as the case may be? An informal discussion with some MPs has elicited positive reaction. This will help in setting up a healthy tradition to check corruption in public life.

Mobilising the youth

Intolerance of corruption can be bred into the culture if education system is used to send the right signals. Like the National Cadet Corps, National Vigilance Corps and corruption clubs can be established in educational institutions can work in close coordination with the CVC. Members of the NVC may be authorized to check and expose cases of corruption which will result ultimately in effective punishment. This may be one method by which the entire nation can be mobilized to fight corruption.

Central Vigilance Commission Bill must be made into law

The CVC Bill must be taken up immediately in the Parliament and passed into law.

Trap and speedy disciplinary action through departmental action

We now come to the most important aspect of effective punishment. Today punishment is possible under two circumstances through prosecutions and departmental actions. Looking at the slow pace of which the cases are disposed of in the judicial system, effective punishment through the prosecution route may not be possible. We should therefore focus on departmental action. The CVC has already directed under its directive dated 18.11.98 that all departmental action should be completed within six months. This must be now rigidly imposed and implemented in letter and spirit. In every organisation people who are corrupt are known. Such corrupt public servants must be trapped with the help of CBI or police as the case may be and with in four days photocopies of all relevant documents should be submitted to the departmental authorities. While the police will pursue the prosecution process in courts, the departmental authorities should start action immediately against the corrupt. At the end of two months, after due inquiry such trapped corrupt people must be dismissed sending the right signals. There will be no double jeopardy because while the prosecution will be on the criminal aspect, the departmental action will be based on the misconduct aspect.

Encourage whistle blowing and pass the whistle Blower Act

Corruption is like AIDS and is due to uncontrolled financial behaviour. It is either a case of financial rape or financial adultery. Financial rape is where an inspector visiting a factory demands his cut for giving the requisite clearance, the industrialist being the victim. In cases of financial rape, arranging traps will be easy. Financial adultery is where the public servant and the citizen collude to cheat the system. It could be the Chairman of a bank and a corrupt industrialist or it could be a corrupt minister, secretary or CMD of a public sector colluding. In such cases, we should encourage whistle blowing. In Britain, United States and Australia, there are Whistle Blowers Act or Public Disclosure Act. The CVC has issued orders on 18.11.98 that even juniors can at as whistle blowers against seniors. Having a Whistle Blowers Act will further strengthen the system. CVC has already taken up the matter with the Chairman, Law Commission and the Law Commission is drafting an act on the lines of the Public Disclosure Act of UK.

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Freedom of Information Act for empowering the public

Empowering the public is another method of ensuring that the corrupt are brought to book. There is need for enacting a Freedom of Information Act. Work has already

been done and sooner it is implemented, if necessary even through an ordinance, the better.

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E-governance and the use of information technology

This is the age of information technology. The Prime Minister has gone on record to say that Information Technology (IT) is India's tomorrow. In Andhra Pradesh we are seeing what is possible by wide application of IT. The entire government of India should move on to achieve e-governance. Using IT widely in all government departments makes it easy for citizens to get information freely and get work done faster. For example, in Andhra Pradesh, the registration and transfer of property is done in a few hours instead of weeks of months as in other States. We can contrast AP experience with what happens in Delhi Development Authority for transfer of property or registration offices in Delhi and other states. Extensive use of information technology should be part of zero tolerance approach to corruption.

Extensive use of information technology should be part of zero tolerance approach to corruption.

Remove obsolete laws through sunset principles

Obsolete laws and time consuming bureaucratic procedures are the breeding grounds for corruption. No law will be on the statute book for more than five ten years unless it is re-enacted and repromulgated after careful examination. This will automatically ensure that obsolete laws do not clutter the system. The Jain Committee appointed by Government of India has recommended that out of the 2500 administrative laws, about 1300 should be scrapped. This can be done at one go so that the Government is not hampered by the presence of obsolete laws and time consuming procedures.

Remove laws and systems that promote corruption

Many a time, the path to hell is paved with good intentions. Legal and administrative measures taken with good intentions produce the opposite results. The Sick Industries Companies Act (SICA) and the BIFR are an excellent examples. They have helped the colluding corrupt industrialists and officials of escape punishment. SICA and BIFR must be scrapped.

Enact Corrupt Public Servants (Forfeiture of Property) Act

Stringent measures can be taken to ensure that zero tolerance gets a new meaning. So far the only effective method for punishment is the trap and speedy departmental actions as mentioned. Corruption which is a low risk high profit business in our country, need to be made a high risk activity. The Law Commission has already drafted the Corrupt Public Servants (Forfeiture of Property) Act which has been recommended by CVC on 1.1.99 to the Cabinet secretary, Law Secretary, Home Secretary and Personnel Secretary for implementation. This is to be done on high priority like the Lok Pal Bill so that the property of the corrupt public servants with wealth beyond their legal means of income, can be confiscated without the present elaborate procedure. As this has been drafted by the Law Commission headed by a Supreme Court Chief Justice, the constitutional validity and sustainability have already been gone through. Therefore on legal grounds there need be no doubt. What is needed is speedy action to give teeth to the concept of zero tolerance of corruption.

Implement the Benami Transaction (Prohibition) Act 1988

Another action that can be taken immediately is to prescribe procedure for confiscation of benami property under Section 8 of the Benami Transaction Prohibition Act (BTPA) which was passed in September 1988. It is surprising that even though Section 5 provides for confiscation of benami property and Section 8 says that Government can prescribe rules, for more than 11 years, nothing has been done. The CVC took up the matter with the Revenue Department on 7.1.99. The net result is that the Revenue Department now wants to scrap the Act! The CVC must be empowered under this Act and not the income tax authorities. The Chief Technical Examiner (CTE) of the CVC can be authorized to carry out the valuation process. The Law Commission fortunately has not agreed with the Revenue Department and the Supreme Court has also upheld the validity of the Act. It is high time that rules are prescribed so that the confiscation of benami property is also implemented by the CVC so far as public servants are concerned.

The issue of corruption can be tackled at the national level through the zero Tolerance Action Plan. This would ensure clean and efficient public administration paving the way for India to become a global economic power. □

Focus

Management of Change

S. Chakravarthy

Four major challenges have been identified for management of change and can be reckoned under one broad umbrella which we may call—LPG—Liberalization, Privatization and Globalization. This paper addresses the salient elements of the said LPG and what modern civil servants have to do to cope with the challenges of change.

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At the pivot of most economic activities is the human being. It is the human beings who make things happen and bring about a change. They need to be developed to initiate change, participate in it, facilitate it and manage it in desired directions.

Challenge of Change

Everywhere, all over the world and all the time, one cannot but notice the challenge of change. To change or not to change is not the question because change is inevitable. Challenge of change is faced by the society, organisations, families and individuals. The extent, nature and willingness to respond to change determine whether they will survive and prosper or face the consequences of status-quo. One is free to ignore the need to change or decide to do little about it but reactive and inactive orientations do not generally enhance the ability to manage change. Change may bring about new challenges and therefore there is an inevitable need to manage the change itself. Those who fail to provide leadership for change or to manage change may very well become the victims of change.

Like the biological process, changes may be evolutionary in nature and they also can be revolutionary in nature, largely pushed by strong external forces. Management of change therefore has to be understood in the sense that change can be initiated, planned, directed and controlled. The imperative for developing proactive and interactive orientation for redesigning the future and managing change to reach the desired destination needs to be underscored.

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While the challenge of change is continuing and universal, the speed and direction of change are creating an environment of unprecedented and discontinuous change. New opportunities and threats emerge every day with great speed and even surprise. In various fields and in particular, computers and electronics, technological innovation and obsolescence are taking place at a speed beyond comprehension. A new order is emerging everywhere. It is in this context, it is important to not only develop the ability to manage change but also to build systems and people to cope with the management of change.

Every change necessarily involves a change of behaviour of people. Without behavioural change, nothing changes. That's why, as noted earlier, people represent the key focus of change as actors, beneficiaries or victims of change. Those who may stand to lose in the new order of things are likely to resist change. Bureaucracy is generally regarded as being resistant to change. Management of change therefore involves identification of winners and losers and developing strategies for building and managing coalitions.

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Major Challenges

At an International Conference of the National HRD Network held in Hyderabad in February 1991, four major challenges were identified for the management of change. The challenges and the themes that are subsumed in each of them can be seen in Table 1. These challenges can be grouped under the broad spectrum of LPG (Liberalization, Privatization and Globalization).

LPG – A Brief Overview

The fundamental change, the world is witnessing and living through is the liberalization of the hitherto controlled, semi-controlled and closed economies. The erstwhile communist economies have undergone a relatively more dramatic and chaotic change in comparison with other economies with different ideologies. India has a mixed economy with a big private sector and a very large public sector with both competition driven markets and monopoly dominated markets. With the ushering in

Table 1: Management of change: Challenges

Major Challenges	Themes
Globalization	Strategic Alliance
	Export Culture
	Transnational Management
Growth and Turnaround	Family Business
	Turnaround Strategies
	Acquisitions and Mergers
Technological Change	Research and Development
	Technology Transfer
	Automation, Computerization and Robotics.
Quality and Productivity for Competitiveness	Total Quality Management
	Labour-management
	Cooperation of Productivity
	Skill Development

of LPG, a two way access for foreign inward investment and imports on the one hand and exports, global sourcing of factors and outbound foreign investment on the other have been opened up or enlarged. Another dimension of LPG is the privatization of State investment in marketable products and services. In politically sensitive democracies like India, privatisation may be a long drawn process and may be very difficult to achieve within a specified time frame.

The LPG paradigm not only comprises market led strategies but also market driven strategies. Essentially, the strategies seek the objectives of:

- Widening and deepening the virgin Indian market.
- Securing a higher share of the world market where India has comparative and competitive advantages.

LPG – Some Vignettes

India, since Independence, adopted the socialistic pattern of society as an ideology for social and economic growth. Due to political factors and the external environment (cold war etc.) the country entered a bureaucratic, socialist and low growth path. Emphasis was more on procedure than substance. Over a period of time, attempts were no doubt made to remove the shackles and unproductive fetters on Indian entrepreneurship, management and the market. It was in mid-1991, that a bold reform programme was ushered in with its main features still intact despite changes in successive Governments.

The LPG paradigm cannot be regarded as just a crisis management response. The Government of the

day in mid-1991 felt convinced of the economic logic of the benefits of freer investment, imports, exports and flexible markets. Perhaps one could add that the paradigm was a reactive response, no doubt a sovereign decision, to the unsatisfactory results of the policy frame of the previous past. The break-up of the Soviet Union, the end of the cold war, the reunification of Germany, the Uruguay negotiations and like factors and the refusal of the Indian populace to live on empty slogans and promises were a justification and logic for the LPG paradigm.

LPG comprises reduction of tariffs, delicensing of industrial investment, capacities and locations, reforms of capital markets, encouragement of foreign direct investment, and resort to external commercial borrowings.

LPG, though sound in its concept, has been spasmodic and hesitant in implementation. Privatisation is halting, if not absent. Right sizing of Government departments and agencies is still a dream. Disinvestment has all the trappings of directionless approach. The claim of building the country's infrastructure in power, roads, ports and telecommunications is more on paper than on site.

LPG has as many proponents as opponents. Many a bill like the insurance bill was for a pretty long period, stalled because of the absence of clear majority for any political party in the Parliament. Oftentimes, the statements of spokesmen of some political parties result in raising apprehensions in the minds of would-be investors abroad.

The civil servants have before them positive and opportunity related implications in the context of the LPG paradigm at play which is bringing about significant changes in the administrative economic polity of governance. There are also implications which could be unpleasant and threat based. A brief look at these implications has been attempted in what follows.

- Civil servants need to be proactive to the new environment. As the whole world is moving towards a market driven economy and India is no exception, there is the need for civil servants to not only familiarize themselves of the contents of the LPG paradigm but also get exposed to its ramifications, constituents and implications. The conundrums that surfaced from the constituents of the LPG policy must be precisely understood. For example, while competition is very important in the market in the interest of the consumers (better quality, reasonable prices etc.), it can directly run into conflict with the interests of domestic industries, given that there is adequate capacity in the country and freer imports can cause material injury to them.
- Despite the LPG paradigm and its vocal support from the affluent and higher middle income groups, there is a need to take into consideration the needs and aspirations of the remaining sections of the society, a large part of which is vulnerable and impecunious. Civil servants need to have empathy with the vulnerable groups and ensure that the LPG policies are so implemented that they result in a better quality of life for them.
- In delineating the LPG policy and in directing specific sectoral implementation, it is necessary that the macro interests of the country and its mission and objectives are not lost sight of. India has set for itself the goal of achieving an egalitarian society, of discouraging concentration of economic power, of providing equality and equal opportunities for its citizens and protecting the weaker sections. Essentially, this implies that blind adaptation of the policies of some of the developed countries should be avoided.
- Civil servants need to develop an approach of assuming trusteeship of the resources – physical, financial and human. In other words, in the changed and changing scenario, civil servants are to deploy resources in an optional manner to maximise the goals and objectives, the country has set for itself and at the same time maximise the quality of life of the weaker and impecunious sections. As there has been a change in the economic ideology, it is important that there is an appropriate management of such change to ensure that the betterment cake is availed of by all sections and not merely the top affluent few.

Civil servants need to develop an approach of assuming trusteeship of the resources – physical, financial and human.

- The LPG plan of organising economic activity can be looked at as a welcome change, *a positive discontinuity* in the direction of higher growth through the release of the people's energy from the shackles of bureaucratic self-imprisonment. It is a true, epochal paradigm and in terms of macro economy, this constitutes a move away from the rigidities of a fixation on

capital and from allocation and physical targets by central planning to the use of demand, supply, prices, profits and other such flexible parameters. For the public sector and the private corporate sector, this means a shift from a "regulated" to a "competitive" environment. As noted earlier, there could be threats from global competition but if the opportunities can be taken in time, the threats can be faced.

- The public sector and even the private corporate sector as a whole cannot afford to preoccupy itself with the interests of only stake holders, employees and union concerns. They have to be sensitive to the expectations of share holders, of whom, the customers are at the top of the list. The customers of today have expectations of better quality and availability of goods, price and service. Their relationship with dealers and vendors is changing from one of feudal relationship into one of strategic partnership. The public at large expects jobs with benefits in the catchment areas of business. The country desires growth, exports, technology development, price stability, job creation, reduction, if not elimination of pollution etc. Employees want competitive compensation, career prospects, job satisfaction and dignity. The civil servants, whether they work in the Ministries or the public sector have to harmonize these varied, high expectations and meet them optimally through strategic management, human resource development, live systems etc.
- Choice of goals needs to be more driven by opportunities and less by threats; more by strengths than by weaknesses. Exploitation of opportunities and utilisation of strengths will create the energy and resource to overcome the negatives. Each opportunity has a window which is narrow and shuts fast but civil servant who will be successful can identify the opportunities, look at the global environment, particularly, the business and the technological environment and avail of the opportunities while not underestimating the social and political forces at work.
- Liberalization has implications for the way departments, public sector organisations and firms are organised and run. Transformation in the three dimensions of organisational effectiveness is needed. The three dimensions are— structure, processes and culture. In terms of behavioural processes, there is a need to tap the self actualising potential of employees through empowerment, participation and ownership. Interpersonal relationship, team work and shared vision and values are the need of the hour.
- Liberalisation demands institutionalized systems and reductions in dependence on personal proclivities. The focus needs to be on strategic and operating systems. In a liberalized competitive environment, planning is necessary but it should be based on internal dynamism and self-generated changes.
- Feedback is a learning orientation. Civil servants will do well to develop four kinds of feedback related skills;
  - How to give feedback
  - How to receive it, especially, corrective feedback
  - How to invite it
  - How to perceive it
- India has the unenviable and unfortunate distinction of having a corrupt administration and low level integrity of those involved in governance. The civil servants have to lead from the front in taking the bull by the horns and impart into the governance system, a high level of ethics, reward systems for performance and integrity and deterrent consequences for the corrupt and the indisciplined.

Civil servants have to impart into the governance system, a high level of ethics, reward systems for performance and integrity and deterrent consequences for the corrupt and the indisciplined.

- Throughout their career, civil servants need to update their skills and knowledge and avoid professional and knowledge obsolescence.

Ten Commandments

The following profile is suggested for civil servants, particularly the younger lot; they are expected/required to:

- Be proactive to the new environment and the changes

- Develop empathy with the weak and impecunious
- Be committed to the country, its Constitution and its mission, goals and objectives
- Be trustee of all resources – physical, financial and human
- Avail of opportunities and utilise strengths
- Transform organisational effectiveness – structure, processes and culture
- Strategise planning with emphasis on internal dynamism and self generated changes
- Maintain a high level of integrity
- Usher in a governance system which rewards performance and integrity and deters the corrupt and the indisciplined
- Update skills and knowledge and avoid obsolescene

Finale

The principles advocated by Osborne and Gambler for developing the correct spirit in governance deserve scrutiny. They are;

- Catalytic Government: Steering Rather Than Rowing
- Community-Owned Government: Empowering Rather Than Serving
- Competitive Government: Injecting Competition Into Service Delivery
- Mission-Driven Government: Transforming Rule-Driven Organisations
- Result-Oriented Government: Funding Outcomes, Not Inputs
- Customer-Driven Government: Meeting The Needs Of The Customer, Not The Bureaucracy
- Enterprising Government: Earning Rather Than Spending
- Anticipatory Government: Prevention Rather Than Cure
- Decentralised Government: From Hierarchy To Participation And Teamwork
- Market-Oriented Government: Leveraging Change Through The Market.

The ten commandments listed earlier and the ten principles of Osborne and Gambler are more or less the obverse of each other. They constitute a kind of rule of thumb for civil servants in their endeavour to manage change. It may be appropriate to conclude by quoting a vision envisaged by Gurudev Rabindra Nath Tagore, as it epitomises what a civil servant should strive for – through the pursuit of knowledge, competition, innovativeness and ability to connect with each other.

Vision

Where the mind is without fear
And the head is held high
Where the knowledge is free
Where the world has not been broken up into fragments
By narrow domestic walls
Where the words come out from the depth of truth
Where tireless striving stretches
Its arms towards perfection
Where the clear stream of reason has not lost its way
Into the dreary desert sand of dead habit
Where the mind is led forward by thee
Into ever widening thought and action
Into that heaven of freedom
My father, let my country awake. □

Civil Service System in India: A Critical Overview

R.K. Mishra

The paper discusses the development of the civil service, delineates its internal labour market, and analyses its representativeness. Issues such as politicisation of civil service, the perception of civil servants about themselves, and the views that different sections of society have about them, are also discussed. The paper outlines the various measures introduced for reforming the civil service in India and the extent of their diffusion. Finally the paper suggests a scheme for the revamp of the Indian civil service system, it specifically centers around the Indian Administrative Service (IAS) which acts as the hub of the administrative machinery of the country.

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Civil service system is the backbone of the administrative machinery of the nation. The Indian civil service has a long history. It is one of the oldest civil service systems in the world. It had its origin in the Mauryan period during ancient India. Kautilya's Arthashastra lays down the principles of selection and promotion of civil servants, the conditions of loyalty for appointment to civil service, the methods of their performance evaluation, and the code of conduct to be followed by them. In medieval India, the Moghals set up their own civil service systems which centred around the management of land revenue, administration of government factories, and establishment of the welfare state. The East India Company, which ruled India for about 150 years, did not set up a civil service as its mandate was limited to commercial exploitation. The British rule came to India in the 1850s. However, as the Britishers had a long-term interest to stay in India, they consolidated their power and laid down the foundation for a unified India. This required the setting up of a strong civil service. They enacted a Civil Service Act and included the civil servants on the Council of Administrators, which resulted in the accrual of both political and administrative powers to the civil servants in India. Over the five decades of Indian independence, 1947-2000, the Indian civil service has more or less followed the British model, but the pressures emanating from within and outside are now forcing the Indian civil service to professionalise itself.

The Indian civil service had its origin in the Mauryan period during ancient India.

Indian Civil Service System

The Indian civil service system has followed the classical Weberian model. In the process of cooperating

with the politicians very often they tend to be conformists. The public opinion about the Indian civil service system is that they lack innovativeness, initiative, empathy, and drive for change. The civil servants hold exactly a different view of themselves. The Government of India and its 25 provincial governments spend about 3.5 per cent of the GDP on its civil servants employing about eight million which is 50 per cent of the employment provided in the organised sector.

The public opinion about the Indian civil service system is that they lack innovativeness, initiative, empathy, and drive for change. The civil servants hold exactly a different view of themselves.

The British government set up the Indian civil service in 1911, primarily with the objective of strengthening British administration in the UK. However, it could not succeed in that, but very usefully retained the idea for strengthening the administration of its colonial base in India. Initially the recruitment to the Indian civil service was confined only to the Britishers. However, due to pressures and demands raised by the Indian National Congress in 1921, Indians were allowed to take the examination. A ratio of 50:50 was decided for the British and the Indian people. In 1935 the British government decided to establish interim rule in the various provinces of India, which resulted in an exodus of the British subjects as civil servants and, as a result, the number of Indian subjects in the Indian civil service increased tremendously. The ethos of civil service in independent India changed from welfare-orientation in the late 1940s to development–orientation between the 1960s and 1980s and finally to the facilitator's challenges, collective choice mechanisms reflected in the manifestos issued by the various political parties during the 1996 general elections, and the challenge of meeting the democratic needs of the teeming millions.

Internal Labour Market

The Indian civil service is composed of the central and the provincial civil services. The central government has constituted the three All-India services and several other services categorised as Group A, B, C, and D services. The three major civil services at the centre comprise the Indian Administrative Service, the Indian Foreign Service and the Indian Police Service. Each provincial government has constituted 10-20 services, depending on its historical background and size of the province. Besides the three top Group A civil services mentioned above, the other important services include the Indian Audit and Accounts Service, Indian Customs and Central Excise Service, etc. In all the provinces the civil services mostly include the provincial civil services, education service, judicial service, medical service, engineering service, agricultural service, and forest service. The central civil services have about 4,00,000 employees presently, and the provincial civil services employ an equal number of people.

Table 1: IAS Movement Patterns, 1977-1986 and 1991-1993

Strength of IAS Cadre		Length of Time in Post (percentage of IAS)			
Year (as on Jan.)	Number	Less than One year	1-2 years	2-3 years	Over 3 years
1977	2901	54	28	11	7
1978	3084	58	26	10	6
1979	3236	55	30	10	5
1980	3404	49	32	13	6
1981	3373	60	22	11	7
1982	3239	52	31	9	8
1983	3734	51	29	13	7
1984	3797	56	26	12	7
1985	3910	51	31	11	7
1986	3970	58	25	12	6
1991	4497	58	25	10	6
1992	3951	56	27	11	6
1993	3991	49	13	13	8

Source: Potter David C., "IAS Mobility Patterns", Indian Journal of Public Administration, New Delhi, October-December 1987. Also see Potter, David C., "India's Political Administrators: From ICS to IAS", Oxford India Paperbacks, Oxford University Press, Oxford, 1996.

The civil service system, both in the provinces and at the centre, are rigid in nature. They have many grades/ranks. The Indian civil service system is rank-based and does not follow the tenets of the position-based civil services. Between 1986 and 1997 the central civil services of Group A had 53 grades, which have been reduced to 33 by the Fifth Pay Commission which submitted its report in January 1997. It has the domination of generalists, as the basic philosophy guiding its initial setting up and later its continuation, advocates the belief that as the civil servants have to face any challenge posed to them, they should have general skills to exploit and manoeuvre for problem-solving. Within this generalist approach, there has been an effort to allow the civil servants in the central government to specialise in certain areas. However, more frequently than never,

the civil service servants are shifted to assignments without having regard to their specialisation. The provincial civil service system has had no regard to the question of specialisation, and hence the provincial civil service cadres have by and large been generalists.

The Indian civil service system both at the central and at the provincial levels has provided very short tenures to civil servants. Many officers have made a vivid note of this in their writings, mentioning that their lives have been one of packing and unpacking. A study of the IAS movement pattern shows that the percentage of officers serving for less than one year has been more than 50 for the country as a whole (see table 1). The officers putting in one to two years of service are about 25 per cent of the total strength of the IAS in the country, and the number of IAS officers putting in two to three years of service has been on an average about 10 per cent of their total number. The percentage of officers serving over three years have been less than one digit, on an average, taken as a whole for the country. The officers of the Indian civil service system work both at the centre, and on deputation in the various provinces of the Indian union. What emerges is an interesting fact that the short tenures of less than one year for 50 per cent of the officers is a phenomenon common to both the central and the provincial governments. However, when a study of tenures enjoyed by the IAS officers in the various provinces is taken, it is found that some provinces such as Gujarat, Maharashtra. and West Bengal have allowed a greater proportion of the IAS officers on deputation to these services a tenure longer than one year, but provinces such as Haryana, Andhra Pradesh and Rajasthan represent the other extreme, where a majority of the officers were not allowed to continue in their positions for more than a year, and the percentage represented by these provinces turns out to be higher as compared to the percentage of IAS officers working in the central government in this regard (see table 2).

IAS movement pattern shows the percentage of officers serving for less than one year has been more than 50 for the country as a whole.

The ladder of promotion in the case of the central government for Group A services starts from Under Secretary and ends at the secretary's level. The Cabinet Secretary is the head of all the civil services of the central government. Between the Under Secretary and Cabinet Secretary, there are ranks of Deputy Secretary, Director, Joint Secretary, Additional Secretary, and Secretary. In the provincial governments, in Group A services, the lowest rank is that of Assistant Collector and the highest rank Chief Secretary. The functionaries in between include the ranks of Deputy Secretary, Joint Secretary, Secretary, Commissioner-cum-Secretary, Member of the Board of Revenue, and Chief Secretary. The civil service officers belonging to the IAS start with a junior scale and move upwards to senior scale, selection grade, super-time scale Additional Secretary, Secretary and Cabinet Secretary. The maximum period between which an IAS officer is promoted to the senior scale is six years. The super time scale is given to these officers by the time of the 17th year of their service. These officers face the problem of upward movement from the rank of Additional Secretary onwards. The central government empanels the IAS officers for the post of Additional Secretary. About 20 per cent of the recruits in the IAS get promoted to the post of Additional Secretary. About 10 per cent become Additional Secretaries. Only 5 per cent reach the top position of Secretary to the Government.

Table 2: Number of Officers in Position in the IAS as on 31.3.1988 and 31.3.1996

State	1988	1996
Andhra Pradesh	320	326
Arunachal Pradesh-Goa-Mizoram-Union Territories	388	*242
Assam & Meghalaya	186	211
Bihar	363	370
Gujarat	230	232
Haryana	182	198
Himachal Pradesh	115	130
Jammu & Kashmir	95	130
Karnataka	235	260
Kerala	155	162
Madhya Pradesh	372	391
Maharashtra	328	364
Manipur & Tripura	114	159
Nagaland	39	44
Orissa	203	202
Punjab	180	196
Rajasthan	231	248
Sikkim	41	41
Tamil Nadu	293	314
Union Territories	193	
Uttar Pradesh	504	540
West Bengal	283	301
Total	5050	5061

Source: Government of India, New Delhi, Civil Service List for 1988 and 1996.

* The number has declined due to the statehood given to Goa.

Table 3: Comparative Perceptions of IAS Officers by Police, Politicians, Technocrats and Academicians

	IPS (N = 118)			Politicians (n = 106)			Technocrats (n = 166)			Academicians (n = 138)		
	F	%	RK	F	%	RK	F	%	RK	F	%	RK
Projects self as an expert on most things	102	86.4	1	80	75.5	1	108	65.1	1	106	76.0	1
Concern for and focus on own career	106	89.8	2	8	64.2	2	108	65.1	1	82	59.4	4
Self-opinionated	100	84.7	3	62	64.2	2	108	65.1	1	82	59.4	4
Power-hungry	88	74.6	5	68	64.2	2	86	51.8	4	66	47.8	6
Shrewd and manipulative	94	79.7	4	54	50.9	4	90	54.2	3	61	44.9	7
Procedure and rule-focussed	88	74.6	5	40	37.7	6	76	45.8	5	82	59.4	4
Arrogant	84	71.2	6	62	58.5	3	60	39.8	9	72	52.2	5
Inaccessible	68	57.6	7	62	58.5	3	74	44.6	6	50	36.2	9
Judgemental and critical	30	25.4	8	36	34.0	7	68	41.0	8	86	62.3	3
Action and result focused	16	13.6	11	46	43.4	5	68	41.0	8	48	34.8	10
Concern for minor details	16	13.6	11	32	30.2	8	70	42.2	7	44	31.9	11
Committed to organisation/institution	22	18.6	9	22	20.8	12	60	36.1	9	28	20.3	12
Intellectually of high calibre	8	6.8	15	26	24.5	11	30	18.1	12	56	40.6	8
Understanding and helpful	18	15.3	10	30	28.3	9	44	26.5	10	22	15.9	13
Respects others' competence and capability	12	10.2	13	30	28.3	9	44	26.5	10	22	15.9	13
Conscientious	14	11.9	12	18	17.0	14	32	19.3	11	28	20.3	12
Trustworthy	14	11.9	12	28	36.0	10	32	19.3	11	8	5.8	17
Risk-taker	9	8.5	14	20	18.9	13	26	15.7	13	12	8.7	15
Treats others with dignity	14	11.9	12	4	3.8	17	20	12.0	15	8	5.8	17
Visionary and transformational	2	1.7	16	10	9.4	15	22	13.3	14	10	7.2	16

Source: Singh P. and Bhandarkar, IAS Profile: Myths and Realities, Wiley, 1994, pages 21-22.

For the top three IAS services, the strength of the various cadres is fixed by the Department of Personnel and Training in consideration with various ministries at the centre and the Chief Secretaries of the respective provincial governments. The Establishment Officer in the Department of Personnel and Training manages the Indian Administrative Services. The Establishment Officer is accountable for his actions and receives guidance from the Department of Personnel and Training. The IAS cadre for the different provinces is composed of direct recruits and promotes. The promotes in the case of the IAS are about 25 per cent of the total cadre strength. Recently a suggestion has been made to increase this to 33-1/3 per cent.

The central civil services and the provincial civil services have about eight million employees. About 60 per cent of the employee strength constitute attenders and peons. Thus, the Indian civil service system does not have an officer-orientation. Further, the strength at the top of the IAS has not changed significantly between 1988 (5050) and 1996 (5061) (see table 3). Several provinces have complained about the top-heavy structure of the IAS in their provinces. The central government, as a part of the new economic policy, decided in 1991 to surrender 10 per cent of the posts of the level of Joint Secretary and above. The Fifth Pay Commission in its report has suggested the right-sizing of the Indian bureaucracy to the extent of at least one-third of its present strength. The government spends Rs. 10,000 crore (about US$3 billion) per annum as the pay and perquisites. One of the limitations of taking a drastic step to cut down the size of the bureaucracy is that the members of the various civil services have been accorded a special protection under an Act, and unless a new legislation is brought about withdrawing a number of privileges and perquisites, or the present Act is scrapped, nothing much can be done. One of the solu-

tions suggested is to reduce the number of permanent posts to the bare minimum and incorporate a provision for contract posts. The figures obtaining presently point out that contract posts almost do not exist anywhere in the Indian civil services system. The posts of the advisors to the different ministries/departments can be cited only as one exception to this generalisation. The reward structure for the civil service personnel is rigid. Their salaries are determined by the Pay Commissions. It is said that the incumbents in the Indian civil service are under-worked and under-paid, and hence they under-perform. While this may be true of the members of the All-India services and Group A services, this is not true of the members of the Group B, C, and D services who are said to receive two to three times the emoluments of their counterparts in the private sector.

Fifth Pay Commission has suggested the right-sizing of the Indian bureaucracy to one-third of its present strength.

Promotions in the Indian civil service system are dual-track-based following a ratio of 66.67 : 33.33 upto junior level. Beyond this level, most of the posts are filled up by internal promotions of the officers manning the provincial or central cadres in the case of the Indian administrative services and by departmental promotion committees set up by various central and provincial civil services. Promotions to senior posts are based to the extent of 50 per cent on the recommendations of the departmental promotion committees constituted as per the guidelines given in the service rules concerning the various civil services.

Representativeness

The Indian civil service system reflects the characteristic of representatitiveness in multifarious ways. There is no bar of persons belonging to different regions, castes, and creed to join the civil services. There is no gender discrimination. There is no bias for people with a particular educational background which could facilitate their entry to the civil services. However, to enter the Indian civil service, one has to have a minimum age of 21 years and a maximum age of 28 years. One cannot make more than three attempts in a three tier examination. In so far as language is concerned, it is English which has taken the lead in the sense that English-speaking inhabitants have succeeded in much larger proportion as compared to candidates not proficient in English. Educationally, entrants with physics, mathematics and geology background have taken precedence over history, sociology, public administration, anthropology, psychology, and geography backgrounds. Of late even engineers, medicine, and management graduates have started participating in the Indian civil services examinations. More women candidates have started appearing both for the A and B Groups of the All-India civil service and the provincial civil service recruitments. A study of the financial background of the candidates shows that majority of them come from the upper middle income group families. Further, a majority of the candidates selected had parents working in government.

The Indian civil service is patterned after the administrative structure of the country. It is both centralised and decentralised. It is centralised in the sense that the recruitments to the Indian civil service, and in particular of the IAS and the civil services, are made by the Union Public Service Commission and the Staff Selection Commission. Once the candidates are recruited to the IAS, they are allotted to the provincial cadres and it is the responsibility of the respective provincial governments to manage their cadres. However, provincial governments cannot take disciplinary action on the members of the IAS without permission of the Establishment Officer of the Government of India. As explained earlier, though the officials of the IAS are alloted to various provincial cadres, 40% are deputed to the central government and thus they get an opportunity to have a wider experience. This pattern of the Indian civil service is a colonial heritage where initially the various sponsors of the Indian government had their own civil services, and later on central Act was passed for bringing in uniformity relating to appointment, promotion, and terms and conditions of services. The various provinces of the Indian union also maintain their own civil services. Recruitments to their civil services are mostly done through the State Public Service Commissions. Each ministry of a provincial government maintains its own cadre. Thus, it can be said that the pattern of the Indian civil service system has nothing to do with its political structure as selections are based on regime-type or party-system. The tenures of the officers of the civil services are invariably very long. A civil servant normally puts in 30-35 years of service and, therefore, enjoys a great deal of stability. Though there have been social dissensions in the country, these have never marred the stability of the civil servants in the country.

Politicisation

A number of constructs with regard to civil service

Weberian construct dominates the Indian civil service system. According to this concept, a civil servant has to be of steel frame, following an impersonal style of work.

systems have been presented, of which the classical one known as the Weberian construct dominates the Indian civil service system. According to this concept, a civil servant has to be of steel frame, following an impersonal style of work. Rules, regulations and procedures govern day-to-day working. Manuals are prepared to resolve conflicts. Innovativeness is a casualty. Seniority is regarded more important than merit. Hierarchy acts as the backbone of the system. Buckpassing is a common phenomenon. Result-orientation is not the goal, procedural accountability takes a lead over performance, faithful execution of orders is done single-mindedly without giving any regard to the final outcomes. Decisions do not emerge out of discussions and consensus. Orders flow from top-down to bottom. There is no communication channel at the bottom. The scope of the functioning of the civil service is limited only to implementation of the policy as conveyed by the politicians. Thus, the civil servants, both at the central and at the provincial levels, are charged with the responsibility of faithful execution of political programmes. They have to pledge their sincerity not to a particular political party but to the political regime in power at any point of time. This often necessitates changing colour like a chameleon with change in political regime. For instance, the present coalition government in power at the centre is backed by thirteen political parties which have developed a common minimum needs programme. This is very different from the programmes and policies of the previous regimes in power which representated a single-party government. The civil servants at the centre have no other go but to switch over their loyalty to the implementation of the common minimum need programme. This does not mean that they are now sold to the members of the political parties which are a part of the present coalition government. Their commitment is to the governmental programmes which happen to be usually the political and economic agenda of the party in power.

Result-orientation is not the goal, procedural accountability takes a lead over performance.

The political and administrative systems have to work together to achieve the socio-economic goals.

The impact of the civil servants on policy-making depends on their expertise in a particular area. Civil servants are in a privileged position of having access to all possible information necessary for evolving a policy. They also have at their disposal the manpower support. Over a period of time they develop their own network. At times they continue longer than the minister and, therefore, have become the spokesmen of the ministry and get very closely associated with the formulation and implementation of the policy. Further, the civil services system is blessed with continuity as compared to political regimes which change much more frequently, or at least once in five years. That the civil service system and the political system are seen as two different things is established by the fact that a negligible percentage of civil servants have become politicians, unlike France where the present President keeps his lien on the civil service. In India, a civil servant can not act as a politician and continue to be a part of the civil service.

The civil services system is blessed with continuity as compared to political regimes which change frequently.

Public Opinion

Public Opinion acts as a mirror about the effectiveness or otherwise of the civil service system in any society. What once used to be said about the British times and the civil service seems to stand true even today. For the Indian civil service during the British period it was said that they were neither Indian, nor civil, nor public servants. It was expected that with independence they would be Indian in thinking and action. The general perception is that the Indian civil service has hardly changed in terms of attitudes, more and culture. A study of the overall perception of the officers of the IAS by members of the Indian Police Service, politicians, technocrats, and academicians points out that they project themselves as experts on everything. Their concern for, and focus on their own career in very high. They are self-opinionated, power-hungry, shrewd and manipulative, procedure and rule-focussed, arrogant, inaccessible, judgemental and critical, and having concern for minor details. They have been rated very low on positive traits such as commitment to organisation, trustworthiness, risk-taking, conscientiousness, innovativeness, and creativity. Most of the studies have rated them lowest as visionaries and transformational leaders. They are considered to be no-change

Table 4: Self-perception of IAS Officers

(n-289)

	F	%	RK
Projects self as an expert on most things	51	17.65	18
Concern for and focus on own career	62	21.45	16
Self-opinionated	25	8.65	19
Power Hungry	13	4.50	22
Shrewd and manipulative	23	7.96	21
Procedure and rule-focussed	31	10.73	20
Arrogant	55	19.03	17
Inaccessible	65	22.49	15
Judgemental and critical	74	25.61	14
Action and result-focus	178	61.59	3
Concern for minor details	89	30.80	13
Rational and Logical	172	59.52	4
Committed to organisation/Institution	210	72.66	2
Intellectually of high calibre	222	66.82	1
Understanding and helpful	104	35.99	10
Respects others' competence and capability	98	33.91	11
Conscientious	166	57.44	5
Trustworthy	140	48.44	8
Risk-taker	160	55.36	6
Treats others with dignity	93	32.18	12
Innovative and creative	151	52.25	7
Visionary and Transformational	130	44.98	9

Source: Singh, P. and Bhandarkar, IAS Profile: Myths and Realities, Wiley, 1994, page 27.

agents (see Table 4). The self-perception of these officers (officers of the IAS) is exactly opposite (see Table 5). The thrust of the criticism of the Indian civil service system is on overstaffing, wastefulness, cautiousness, unfairness and non-responsiveness. Prof. Rajkrishna, an eminent economist, once observed that if the size of the Indian bureaucracy could not be reduced, the least that the government could do would be to keep its offices open only three days a week. 40 per cent of the 600,000 people working in the Andhra provincial government is in excess of the requirements. This is more or less the case with the other provincial governments in the country, and also with the central government. The manpower required – is not reviewed at fixed time intervals. Unfortunately, this work is done by the Pay Commissions both at the centre and at the provincial levels which in no way have expertise in ergonomics, time and motion studies, and work study. Recently, the Indian civil service system has come in a very poor light on the charges of corruption. The vigilance and income tax departments conducted raids on the houses of a number of bureaucrats that they have property/assets disproportionate of their incomes. One of the officials dealing with intelligence was caught trading secrets for monetary considerations. There are many more such cases.

The Indian civil servants feel that they do not have independence and are exploited politically to undertake jobs for which they are not answerable. For instance, a very senior civil servant in Karnataka was jailed by the Supreme Court in 1996 on the charge that he did not carry out the orders of the Supreme Court to promote a government servant. The explanation given by the civil servant was that he was prevented from implementing the Supreme Court orders by the political bosses in the province. The relationship between the politicians and civil servants has undergone a great change. A resolution passed by the Council of Ministers was not implemented by the Secretary of the Home Ministry during the early years of independence, and the Minister hailed the right of the civil servant to have his own opinion and went to the extent of withdrawing the proposal. Today not many civil servants would air their disagreement to the minister.

Reform and Diffusion

Civil service reforms have become a buzzword of today. The central and the provincial governments have started thinking in terms of reforms due to internal and external pressures. Internally, the central and the provincial governments. irrespective of the fact as to which party/parties are in power, want to present an image of effective institutions. They intend to become leaner and fitter organisations. They intend to have quick reflexes. Instead of bureaucratic-orientation they propose to have a customer-orientation. In India civil service reforms have mostly come at the initiative of the elected representatives forming the government of the day. In 1996 the Administrative Reforms Commission submitted its report appraising the effectiveness and efficiency of the systems and procedures of the various parts of the central government. The different provincial governments have set up administrative Reforms Departments and appointed

Civil service reforms have become a buzzword of today.

Table 5: IAS Location, 1993

State	District Administration	State Government	State or Central Public Enterprises	Govt. of India	Others	Total
Andhra Pradesh	87	127	39	48	15	213
Arunachal Pradesh - Goa - Mizoram - Union Territories	38	119	12	36	8	213
Assam & Meghalaya	41	77	14	41	19	192
Bihar	114	131	35	56	16	352
Gujarat	62	95	45	26	18	246
Haryana	48	88	28	27	12	203
Himachal Pradesh	29	54	10	17	21	131
Jammu & Kashmir	15	58	6	19	6	104
Karanataka	59	99	37	49	14	258
Kerala	34	67	22	25	13	161
Madhya Pradesh	129	142	25	56	21	373
Maharashtra	107	103	52	54	26	342
Manipur & Tripura	35	57	9	26	10	137
Nagaland	8	32	1	3	2	46
Orissa	44	104	19	39	9	215
Punjab	29	90	16	17	18	170
Rajasthan	58	105	20	33	7	223
Sikkim	5	32	1	3	2	43
Tamil Nadu	73	139	56	26	16	310
Uttar Pradesh						

Source: Civil Service List, Government of India, New Delhi. 1993.

Committees to look into their functioning. The whole effort has been to make the government efficient and effective by rationalising different laws, manuals, rules, and methods of functioning. What is lacking is the attempt to corporatise the government systems at the central and provincial levels. Business and professional-orientation has not been initiated nor the practice of questioning the value for money. There is a need to overhaul the civil service system in India, the main reason being the resource crunch faced by the governments at the various levels and shift in the thinking of the political parties with regard to state ownership.

The idea of privatisation is gradually gaining ground and has become a driving force to classify the government activities as core and non-core. There is wide agreement about the fact that the non-core, non-essential activities of the government could be given up to private parties. For instance, some major municipalities in the country have privatised the cleaning of garbage, sewerage work, and installation of electric poles and extension of electricity network. The public enterprises in the country are also being forced to categorise their activities as core and non-core, and concentrate on the area of their business competence. A number of local government institutions/public enterprises are approaching the capital markets for funding. Even the central and provincial governments are approaching the national and international institutions for funding their deficits and infrastructure projects in place of depending on the support of the central bank which could collaborate with the governments in deficit financing. The most important budgetary and financial reform that has taken place at the centre is sticking to the fiscal deficit of not exceeding 5 per cent. In the second stage of economic reforms, the provincial governments would also be expected to arrest their financial deficits. Both the central and the provincial governments attempted to introduce zero-based budgeting in the 1980s. Attempts have been made to imbibe the concepts of programme-cum-performance and perfor-

Non-core, non-essential activities of the government could be given up to private parties.

mance-budgeting. All these reforms have been effected under the dispensation of the new economic policy adopted by the central government in 1991.

The policy-makers and administrators have been talking for quite some time about a performance-oriented civil service and linking rewards with output and efficiency. The private sector in the country has been able to implement these ideas as they have a work cadre different from the Indian civil service and their ethos also happens to be different. They have been able to enmesh the concept of performance measurement and performance appraisal. In the case of the Indian civil service system there has been only an annual appraisal by the Senior of his subordinate and such an appraisal is always kept confidential. There is no goal congruity as the communications of the government do not traverse from top-down to the bottom. In the private sector the idea of performance appraisal goes far beyond its mechanical application. The private sector enterprises do even performance counselling and there is no question of keeping the performance appraisal records confidential. They practice management by objectives, the MBO system.

One source of reform in the government both at the central and at the provincial levels, and in their various organs, has been competition of the private sector enterprises, and it has been found that wherever such possibilities have existed, the government control systems have either reformed themselves or are under pressure to do so. For instance, the Steel Authority of India Limited (SAIL), a corporate major owned and managed by the central government, is in competition with the Tata Iron and Steel Company, a corporate major in the private sector in India, and corporate majors in the steel sector located abroad. The central government has allowed SAIL to formulate performance related pay packages, raise funds from abroad, redesign the capital structure, and restructure its internal operations.

The economic reforms in India have come about not all on their own. The global institutions, such as the World Bank and the International Monetary Fund, have been behind such reforms. India has adopted the general concept of reforms but redesigned it to suit its own needs. The country has largely succeeded in introducing the economic reforms. However, the administrative machinery has not been able to respond to the needs of time and has failed to make the full-scale changes so necessary to absorb the impact of the implementation of economic reforms.

Configurations

The configurations in the Indian civil services system can be discussed in terms of Ferrel Heady and Philip Morgan constructs. The market will play a significant role in the social, economic, and political systems in India in future. This would present a new context for the functioning of the civil service systems in India and they would adopt themselves to this change, one of the ramifications of which could be a shift from traditional government-oriented bureaucracy to managerial-oriented bureaucracy striving to achieve professionalism of a very high order. The civil service system in the central government is managed by the Establishment officer who allocates, in consultation with the Chief Secretaries of the various provinces, the officers of IAS to the provinces. The deputation of these officers to the centre is again done through this same consultative process. The central ministry places indents of demand on the Establishment Officer and signals broad choices which may or may not be accepted by the Establishment Officer. The disciplinary action, promotion/demotion and pension-related issues are settled by the Department of Personnel and Training. In case the officials of the central civil services intend to have a legal recourse to the decisions of the Department, they could approach the Central Administrative Tribunal whose decision is binding excepting for appeals in exceptional circumstances to the Supreme Court. In the case of the various provincial governments, a similar system has been adopted.

The performance of civil servants is commented upon by the controlling authority which normally is the head of the department. He rates the incumbents on several parameters, such as competence, punctuality, efficiency, capability, ability to work with the team, leadership qualities, etc. This is not to suggest that the Indian civil service system has been able to evolve a professional performance appraisal system as it squarely fails to measure technical competence and capability to carry out neutrally and impartially the policy directives of political decision-makers though this should be the spirit which guides their functioning. Each profession should develop its own code of conduct and performance appraisal system. By this reckoning, the civil service system in India should also respond to the need for developing its own system of performance appraisal and code of conduct. No law can offer an all-time solution in these regards. Most of the Indian Acts in their present form are adopted versions of their British editions. A perusal of such Acts clearly reveals that they were never intended to prescribe a code of conduct or a performance appraisal system. They only contained the powers and privileges, the service benefits, and the accountability mechanism which had to be followed by the civil servants. In the Indian Constitution, in Article 356, there is a provision to impose presidential rule in the provinces of the Indian union should the Governors make such recommendations when they feel that the democratic machinery cannot function under the nor-

Focus

Productivity in Public Administration: Concept & Application in India

Noorjahan Bava

The concept of productivity needs to be widened so as to embrace not only its economic aspect (ratio between inputs and outputs) but also the political, administrative, social, cultural, national, international dimensions. Many aspects of public sector productivity are qualitative and do not lend themselves to quantification and measurement.. A holistic approach to the problem is a virtual necessity.

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It is imperative to place the issue of public sector productivity in the broader context of political theory and philosophy, values, norms and ethical standards of public service, lest half-truths, false notions, biases and prejudices coupled with myopic vision create distortions in our understanding and perception of the central questions.

The Philosophy of Public Administration

In 1887 Public Administration was defined broadly as the practical or business end of government because its objective is to get the public business done as efficiently and as much in accord with the people's interests, tastes and desires as possible (Wilson, 1887). Public administration was perceived as the most obvious part of government, as government in action, as the executive, the operative and the most visible side of the government. "Public administration is the detailed and systematic execution of public law. Every particular application of general law is an act of administration. The broad plans of governmental action are not administration, though detailed execution of such plans is. The distinction is between general plans and administrative means" (Wilson, 1887, p. 212).

A broader and more realistic view holds that public administration is concerned with the ends of the state, i.e., with politics, the ends of the economy and values of national life. In addition to being practical, in a business sense, public administration must also be statesmanlike, philosophical. It must meet human needs.

Public administration is concerned with the ends of the state, with politics, with economy and values of national life.

If the major functions of the government of a democracy are: responsible and responsive governance of the country, provision of public services, promotion of all round development and nation-building, protection of the fundamental rights and freedoms of the people, promotion of international peace, understanding and cooperation and trade between nations, and ecological protection, then public administration system – public personnel, agencies, public resources, laws, rules and procedures – becomes the executive machinery through which the government performs these crucial functions. In each case, administration is centrally concerned and so is the citizen. It is through administration that government responds to those needs of the society that *private* initiative cannot or will not apply (Dimock & Dimock, 1975). The public services provided by the governmental administration are of an *urgent and essential social nature* – be it maintenance of law and order, public peace and tranquility, or supply of essential goods and services such as drinking water, food items, energy (power), maintenance of hospitals, health and hygiene, roads, parks, playgrounds and public places, educational institutions, public transport and communication facilities, protection of dalits, women and minor children from atrocities, crimes and violence, regulation of markets, weights and measures, maintenance of standards of quality, prevention of adulteration, effective enforcement of laws against monopoly and restrictive trade practices, hoarding, smuggling, drug and women trafficking, maintenance of prisons, remand homes and rehabilitation centres, care and development of the handicapped, etc.

Another way in which administration relates to the ends of the state is in the determination of public policy. The administrator not only carries out public policy but also shapes it, recommends it and often takes an active part in securing its enactment into law and making the necessary rules and regulations for its enforcement. In a democracy, the minister and the legislator, as the representative of the people has the final say in all political matters, the civil servant (administrator) must be not only practical and production-minded, but also be skilled in human relations, policywise, understanding of the needs of the economy and appreciative of its value systems (Dimock & Dimock 1975, p.4).

Public administration is an essential part of society and is culture-bound. It operates and interacts with an environment which is an integral part of a particular polity, society, economy and cultural setting. Not only are the public servants drawn from the same society, but also they share its value and belief systems. In return, public administration acts as a catalyst of social change, economic development and cultural enrichment. Public administration is of pivotal importance in developing nations like India which has launched massive programmes and projects of development to uplift the masses from poverty, disease, malnutrition, unemployment and inequality.

Public administration acts as a catalyst of social change, economic development and cultural enrichment.

As public administration is manned by and meant for human beings, it is defined as rational collective human endeavour in pursuit of human welfare – well being of the people (clients) as well as that of its employees. Every action of administration must serve public interest or the public good. Etymologically speaking the Latin word 'administratre' from which the English word 'administer' is derived means 'to serve'. The administrator, is, therefore a person who is the servant of the people and not its master. A test of good public administration lies in the competence, skill and ability of the public servants to serve the people, to their utmost satisfaction with equality of treatment, efficiency, economy and effectiveness.

Public & Private (Business) Administration

Public and business administration are species of the same genus – administration – both are practical, provide service, rely on common techniques relating to planning, organisation, budgeting, delegation and control. However, fundamental and far-reaching differences make them far apart. While Government exercises the sovereign powers of the state and makes laws which are binding on all, business houses, companies and firms have no such powers but on the other hand, they have to submit themselves to such laws.

Three aspects differentiate government from private administration, namely, breadth of scope, impact and consideration; public accountability; and political character (Appleby, 1945). 'The organised government comprehends in some way, it impinges upon and is affected by practically everything that exists or moves in our society. It involves policies and action of immense complexity. Its fullest possible understanding requires the wisdom of the anthropologist, the historian, the economist, the sociologist, the political scientist, the farmer, the labourer, the merchant, the industrialist, the banker, the politician, the philosopher, and many more.' (Appleby 1945, p.6).

Public accountability, the cornerstone of public administration sharply separates it from business ad-

of management or even to the elimination of jobs are some common problems from the labour perspective. Sometimes the productivity measurement programme may require performance of additional duties not included in the written job description of the Government. It is also possible that both labour and management within an organisation share a common perception or attitude such as resistance to change. To overcome such a problem, management must be sensitive to the fears of labour regarding the potential negative effects of productivity programmes. Labour must be involved in the development of such a programme from the initial planning stage to its implementation stage to avoid management-labour schisms.

Political-Constitutional Problems

The possibility of environmental and political problems arising in the course of introduction of productivity measurement schemes cannot be ruled out. These may include policies which impede productivity measures, restrictive laws, rules and regulations, collective bargaining, and impediments to policy development and implementations caused by the principle of separation of powers in the constitution. Experience demonstrates that executive-legislative cooperation required by both the principles of separation of powers and checks and balances renders the implementation of a productivity policy more difficult. Success of the policy depends not only on executive optimism but also on legislative funding. Since many policies are intergovernmental in scope due to the federal grants-in-aid system, productivity measurement programmes must frequently consider federal, state and local officials (Barton, 1982).

Another impediment to development and implementation of measurement programmes is likely to arise from government policies, legislative statutes, administrative rules and regulations and monopoly position of the government and its agencies (Tashiro, 1982). Japanese management techniques and practices involving, no emphasis on job description, life-time employment and seniority system, collective decision-making and shared responsibilities and concerns amongst all employees (Ringi-sei) and comprehensive and strenuous efforts of the nation have been found to be some of the key determinants of public sector productivity.

Japanese management techniques and practices involve, no emphasis on job description, life-time employment and seniority system.

Productivity in Public Administration in India

In the context of Indian public administration, the concept of productivity is linked with ideas of efficiency, economy, effectiveness, successful performance of duties and responsibilities by the government employee (civil servant/bureaucrat), realization of constitutional values and welfare-state ideal, achievement of development goals and objectives such as removal of poverty, unemployment, inequality, over-population, malnutrition and disease, and shaping India into a modern, vibrant federal, democratic. Secular Republic in which every citizen will enjoy justice, quality, freedom, fraternity, individual dignity consistent with unity, territorial integrity and sovereignty of the nation. Thus the concept of productivity involves both quantitative and qualitative aspects, long term and short term consequences, of public policies, administrative actions, inactions, aberrations, government-citizen relationships, active cooperation, participation and involvement of the people—both the general and targeted public in governance, developmental and nation-building activities.

Productivity involves both quantitative and qualitative aspects, long term and short term consequences, of public policies, administrative actions, inactions, aberrations, government-citizen relationships, active cooperation, participation and involvement of the people.

The issue of public sector productivity assumed a special significance in India with the adoption of various industrial policy resolutions, implementation of five year plans and emergence of a dominant public sector with control over the commanding heights of the Indian economy. The performance of public sector undertakings (PSUs) with the exception of a dozen or so public sector giants such as ONGC, IOC, HPL, GAIL, BHEL, etc. was dismal at the productivity front prior to the paradigmatic policy shift towards liberalization. Far from generating surplus resources for financing the country's socio-economic development, the PSUs became white elephants and proved to be a big drain on the public exchequer. Plagued by labour-management problems, excessive staff, bureaucratic culture, absence of competition due to monopolistic position of most of the PSUs, lack of modernization and use of obsolete technology, lack of commitment to the constitutional and statutory goals of the government, on the part of the civil and industrial bureaucracy coupled with political intervention with day-to-day administration of the

enterprises, corruption and criminalisation of politics, and adoption of populist policies by the Government including the disastrous pricing and subsidy policies, the performance of PSUs dipped to the bottom in 1990-91 when the nation was faced with the oil crisis, due to the Gulf War and the balance of payment crisis in 1991.

With the adoption of the liberalization, privatization, and globalization policy, the Central Government has taken a number of steps to bring about disinvestment of the PSUs so as to generate resources to meet the growing budgetary deficits and to create competition between public and private enterprises with a view to facilitate efficiency in public sector performance. That the ten year old economic reform policy of the Government has not resulted in revamping, restructuring and re-strengthening of the PSUs is an admission of policy failure and productivity erosion.

However, the political productivity of India in the past five decades, has been very impressive in terms of existence of a strong, stable, viable, democratic government – a functioning democracy with a stable government (1947-77), dynamic opposition, responsible and responsive governance, decentralized democratic development, freedom of the press, increasing citizen participation in government and a professional civil service. However, the political productivity record has been punctuated by aberrations such as criminalization of politics, communalisation and politicisation of the civil services, and the police, encouragement of political defections, misuse and abuse of political administrative authority, electoral violence and malpractices and corruption amongst politicians and civil servants.

In the social sector, India has registered a negative growth in productivity as is evident from the population explosion, growing illiteracy, neglect of the development of women, children and dalits and violence against the weaker sections and minorities, lack of adequate health care, education, housing and drinking water facilities. While life expectancy has increased, infant mortality rate is still high. Crime against the girl child and women is on the increase and half the female population of the country does not participate in governance and development activities, although a small dent has been made as a result of the 73rd and 74th Constitutional Amendments. In the sphere of science and technology, India's productivity has been phenomenal as India is a member of the Space Club and one among the nuclear power states.

Conclusion

The concept of productivity needs to be widened so as to embrace not only its economic aspect (ratio between inputs and outputs) but also the political, administrative, social, cultural, national, international dimensions. Many aspects of public sector productivity are qualitative. They do not lend themselves for quantification and measurement. To ignore the qualitative aspects is not correct since a holistic approach to the problem is a virtual necessity. Without the public services rendered by the Government, the high rate of productivity of USA and Japan would have been impossible. Adoption of new management techniques, job enrichment, participative decision-making, rewards and incentives, morale-building, motivation and human resource development can help increase productivity in public administration.

Adoption of new management techniques, job enrichment, participative decision-making, rewards and incentives, morale-building, motivation and human resource development can help increase productivity in public administration.

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These values are as important to good government in the future as they have been in the past. It is, therefore, not only desirable but most essential that the general confidence of the citizenry in public service should not get impaired (Singh, S.S. 1996).

However, as studies point out, major factors that hamper productivity in administration are: bureaucratic ethos (rigid rules, hierarchy), negative attitudes at all levels – individual, group and organisation, centralised decision making, too many controls, lack of accountability, lack of transparency, high input cost, ad-hoc decisions, irrational allocations of resources, constant intervention by political masters and senior officials, administrative corruption, lack of proper orientation, environmental limitations, social customs, etc.

There is widespread resentment with administrative performance. The masses who expect improvement in their living conditions stand thoroughly disillusioned. As people start growing aggressive and assertive, the state instead of undertaking more welfare programmes and improving the efficiency of administrative structures, has adopted a package of SAP and down-sizing the public organisations.

Liberalisation & the New Way of Governance

The key strategy adopted for growth and productivity in most developing countries, during 1950s and 1960s was heavy reliance on planned economy with emphasis on public sector participation in economic development. The public sector was expected to generate surpluses for accelerated economic growth and socio-economic growth and socio-economic development. Many developing countries, including India pursued this model of development, but within a period of two to three decades, became disillusioned with the results. Public sector investments produced less output, lower yield and consequently very little surplus, if any, for growth. Consequently pressures began to mount globally for a change in the strategies of growth (Jain, R.B., 1996).

To overcome the economic crises, Structural Adjustment Policies (SAP) first originated in the industrially advanced countries and then spread to other parts of the world. While in the developed countries such policies contained both the elements of continuity and a break with economic and social policies pursued in the post-world war period, in the developing countries including India, they constitute the reversal and a sharp break with the earlier policies of a state-controlled and planned economic system and growing reliance on administrative methods for resource allocation and modernisation.

Structural Adjustment Programme (SAP) laid emphasis on a package of globalisation and liberalisation of economy through a process of abolishing of import control over all items; spread of international trade in goods and commodities; capital flows from one country to another to help produce goods and services; finance (not necessarily linked to the production of goods and services) flows between different countries; transfer of technology between different countries; spread of print and electronic media; adoption of a better market economy to determine the pattern of investment and output; ensuring macro-economic stability; privatisation of public organisations, market-friendly and marginalised state etc. (Bagchi, A.K., 1999).

The Government of India and State Governments have been taking several measures since 1991 viz., encouragement of foreign investment in many areas; allowing foreign financial institutions to enter stock market; lending to priority sectors; bringing down subsidies to agriculture and welfare programmes; privatising the public sector organisations, etc., with a view to reorienting Indian economy based on market principles.

One of the objectives of this new way of governance has been to reduce the operational zone of the government and liberate market forces in a variety of ways such as deregulation and adoption of various monetary and fiscal measures. The second objective has been to import market concepts and incentives into the operation of government. Thirdly, liberalisation process is perceived as the only possibility for growth and increasing productivity in government, and private sectors. Fourthly, social concerns have been rejected as not deserving any consideration in assessing economic performance or in defining viability of economic activities (Arora 1996).

Liberalisation process is perceived as the only possibility for growth and increasing productivity in government. Social concerns have been rejected as not deserving any consideration in assessing economic performance or in defining viability of economic activities.

However, studies on Liberalisation process reveal that, it has failed to improve the macro-economic management of the Indian economy and to attain a better level of macro-economic capability. In the last two decades the high interest rate regime, vulnerability of the rupee and the response of India to the fluctuations in investor confidence have made the economy far more vulnerable to external shocks. Indian financial sector

reforms have failed to activate their goal of making the sectors more efficient, and there has been a hardening of interest rates instead of the cheaper credit that was promised. The reforms have had a disastrous effect on the industrial sector leaving Indian firms vulnerable to the foreign competitor. While Multinational Corporations (MNCs) have been allowed to bring in funds, institutional long-term finance for Indian firms has been curtailed. Thus the objective of making the industrial sector globally competitive for increasing productivity has been undermined by ill-conceived industrial and financial policies. In several sectors, there has actually been a decline in competition with the systematic buying out of domestic firms. The efforts of domestic firms to restructure have been made impossible by the confusion and chaos in the financial markets (Khanna, 1999).

On the eve of the Golden Jubilee of the Indian Republic the President of India commented that: "Our three-way fast lane of liberalisation, privatisation and globalisation must provide safe pedestrian crossings for the unempowered India also". The President wanted the energies of civil society to be mobilised against ecological and environmental devastation. The burden has to be shared equally by the Government and the people; and there is a need to improve the tone of our social and economic life through an improved work ethic and environmental behaviour (Khare, 2000, P. 1).

Former Prime Minister Sri. P.V. Narasimha Rao, who is the Architect of New Economic Reforms in India, recently observed that the second phase of economic reforms is losing its direction. In the name of disinvestment or privatising the public organisations, the present government is selling away the public organisations and helping the private investors and richer sections of the society. He has suggested that the government should encourage private investors to invest in the sectors or areas where government investment is not adequate and strengthen the hands of government in providing better services or facilities to people, particularly the needy. Former Finance Minister of Gujarat State Sri. Sanath Mehata observed that the "reforms, which have no human approach are ruling the economy" (Eenadu, 2000, P. 7).

Economic reforms alone are not going to solve the basic problems of our economy. Therefore for increasing productivity and improving the socio-economic conditions of the poor, the government has to bring necessary administrative reforms and improve the efficiency of bureaucracy.

Need for Administrative Reforms

Administrative reforms generally refer to a deliberate attempt to change both the structure and procedures of the public bureaucracy (i.e., reorganisation or institutional aspects), and the attitudes and behaviour of the public bureaucrats involved (i.e., attitudinal aspect), in order to promote organisational effectiveness and attain national development goals. We cannot simply apply market concepts or private sector techniques in public sector, as the former exists on the profit from the services it provides. It has to be partial to its shareholders. The bureaucracy, on the other hand, has to be impartial.

For increasing productivity and improving the socio-economic conditions of the poor, the government has to bring necessary administrative reforms and improve the efficiency of bureaucracy.

Administrative reforms refer to a deliberate attempt to change both institutional and attitudinal aspects.

The Government is reducing its share in the public undertakings with a view to reduce its fiscal deficit and inflation. The major reason for this state of affairs is the high interest rates on the Government loans and not the poor performance of public organisations. The government is spending an amount of Rs. 1,00,000 crore per year towards interest on loan amount and the revenue expenditure of Government every year is only Rs. 30,000 crore. Even if we close all the government departments we can not reduce our fiscal deficit and privatising the public organisations is not the correct solution to arrest the deficit of the Government (Mankad, 2000).

No agency/organisation/structure can be a substitute to the bureaucracy—whether in liberalised economy or controlled economy, as it has the information, knowledge and experience relating to policies and programmes. There is an unsubstantiated but half-expressed notion that productivity—particularly in government—can be improved by reducing the number of people doing the same amount of work. But the experience in developed countries reveals that productivity is increased on account of right-sizing the public organisations and also through the competence, intelligence and motivation of the employees, rather than down-sizing the organisations (Stahl, 1982). In the light of these factors there is an urgent need to seek measures to improve productivity in government.

Measures for Improvement of Productivity in Government

Personnel Practices

The most important step to be taken to enhance productivity in government is to evolve a sound personnel policy. It embraces everything from realistic staffing plans, workload forecasts, and performance standards to exploitation of job redesign, recognition of achievement, and enlistment of employee union collaboration, standard managerial techniques of emphasis upon objectives, careful planning of resource, modification of working hours, and intensive coaching of supervisors.

Job Enlargement

Job Enlargement of employees is another important reform to be introduced in public organisations. It includes making people responsible for whole integrals of function instead of its separate specialisations; permitting employees to follow through on tasks or projects from beginning to completion, rather than concentrate upon a single segment; introducing as much of diversity as feasible into a unit's activities; delegating maximum authority for decision making to each layer in the hierarchy; training employees to upgrade their skills; rotation of employees from time to time among different assignments to give them the flavour and stimulus of new experiences and challenges.

Consulative Management Council

Productivity improvement in public sector requires special emphasis on co-operation between the government representatives and representatives of employees. This effort must embrace: determining work goals; setting performance standards; agreement on methods of measurement with individual performance evaluation. These processes are more likely to be effective when there is complete openness in the relationship.

Continuous Evaluation of Goals of Organisation

Measurement of productivity implies evaluation of results or accomplishments by the existing management during a given period of time and comparing the same with evaluative standards. The standards may include adherence to a given policy, achievement of declared objectives; and economic utilisation of resources, especially men, money and material, as compared to other similar organisations. The broad indicators for evaluation can be capacity utilisation, labour productivity, labour cost, degree of absenteeism, frequency of accidents, mandays lost due to industrial disputes, the rate of inventory, profit/loss incurred and the rates of return on investment. An objective assessment of productivity in government requires an evaluation of goals continuously.

An objective assessment of productivity in government requires a continuous evaluation of goals.

Productive Initiative Training Programme

The government should organise productive initiative training programme consisting of research, programme development and measurement analysis. It should also establish productivity cells to monitor and coordinate the efforts of various organs/units of the organisation to increase the effectiveness of the programmes.

Use of Modern Technology

Another major area of focus is integration of Information Technology in administrative processes to automate data collection and general information through use of E-mail, Internet, computer etc., for effective planning, monitoring, controlling and decision making. This will enable the government to promote information access to trade, industry and public, besides improving services to the people.

A major area of focus is integration of Information Technology in administrative processes to automate data collection and general information.

Total Quality Measurement

Standards of administration can be improved by laying emphasis on Total Quality Management (TQM), a model discussed in academic circles and to some extent implemented by the private corporates in India. TQM is based on seven principles, viz, top management, involvement, strategic planning, customer focus, staff training and recognition, teamwork, performance measurement and quality assurance. TQM emphasises values as timeliness, innovativeness meeting-targets, customer/people focus and cost consciousness, in short, all the virtues of good management and administration (Sood, 1999).

Client Charts

Another step to improve quality of delivery systems is to introduce client charters in all service organisations, including Railways, State Transport Corporations, Commercial Banks, Licensing Organisations, Hospital etc., The client's charter is a written commitment and assurance by a public unit that its output will comply with the declared standards of quality in accordance with expectations of people/customers.

Promoting Quality & Excellence in Administration

A systematic attempt in identifying and rewarding the most efficient and quality oriented organisation, department or unit is necessary to promote quality and excellence in administration. Awards could be instituted for this purpose.

Attitudinal Changes of Employees

Attitude at all levels – individual, group and organisation – has an impact on enhancing productivity. Attitudinal changes are necessary to enforce the realisation that productivity in administration will eventually benefit all. Attitudinal changes should include: concern for objectives – the time, cost, clientele of the programmes, concern for people – dimensions of objectivity and a time bound response for improving productivity in administration, concern for high standards – upgradation of professional standards through responsive behaviour and performance, concern for the job – enthusiasm for the job and a sustaining need for achievement.

Attitudinal changes are necessary to enforce the realisation that productivity in administration will eventually benefit all.

Values of the Society

Productivity in public administration takes place within a particular valuational context in which choices and decisions and administrative practices are related to operational values of the society. Though desire for advancing national prosperity is virtually a universal aspiration, increase of productivity depends less on knowledge and technology, however necessary they are, and more on motivation, initiative, innovation, responsibility and responsiveness in public administration, which in turn reflect the operational values of the larger society including its urge to invent, to dare, to create.

Maintaining Standards in Public Life

The bureaucracy which is entrusted with public power should maintain high standards in public life. The holder of public office is a trustee of public power. It is conferred on him by the state for the sole purpose of discharging state responsibilities which includes supplying necessary information accurately and completely to the citizen and also includes treating every member of the public with courtesy, attentiveness and respect. Public servants must be accessible to all, regardless of social or economic status; free from bias, discrimination and unnecessary red-tape; constantly updated; equipped with efficiency of high standard and free of corruption, patronage and conflict of interest (Pathak, R.S., 1995).

Public servants must be accessible to all, free from bias and discrimination constantly updated, free of corruption and patronage.

Any reform of public service, motivated with the ideals of efficiency, effectiveness and economy, should also address the need of public purpose for which the public service exists. The core public service values of integrity, impartiality, objectivity and accountability need to be protected and enhanced in the reforms. Therefore the criterion of productivity in government will be different from that of private sector, with more emphasis on efficiency and economy. Public organisations are governed by the constitution which emphasises more on ensuring socio-economic justice to people than on efficiency and economy of the organisations.

Criterion of Productivity in Government

Generally productivity is defined as the ratio of output to input for a particular activity. But the difficulty with measuring most government service is that the measures of the amount of work being done do not adequately reflect the real service being provided. A major problem is the inability to visualise outputs in administration as discrete units. As a holistic perception, productivity is broadly concerned with the extent of satisfaction of needs and wants of the society compared to the resources invested to achieve the satisfaction. In administration, goods and services which are usually considered as final outputs can become intermediate output. In this perspective, maximising the output-input ratio is important, but not sufficient. For example, output indicators, such as the number of receipts disposed or

files cleared, are useful measures but they indicate nothing about the effectiveness of the service. Similarly, the number of patients treated in a government hospital does not indicate how many people are actually helped (Saxena, A.P., 1982).

Maximising the output-input ratio is important, but not sufficient. Output indicators, such as files cleared, are useful measures but they indicate nothing about the effectiveness of the service.

The output of government activity depends on a variety of factors. The main influencing factors are: adherence to a given policy, the availability of timely, reliable and relevant data, inter and intra department co-ordination, substitution of one factor by another, availability and use of resources (both physical and financial), infrastructure development, available administrative and organisational skills, changes in technology and use of modern technology; level of employees skills, level of morale and motivation of employees, response to people and to circumstances, and to changing needs and conditions, objective and rational decision making of the leader, conducive environment, demands of the society, willingness and capacity of people's participation, demands of pressure groups, commitment of ruling class, role of international organisations; regulation of markets, regulation of multinational corporate markets, etc. All these factors have to be taken into account while analysing the criterion of productivity in government.

The measurement of efficiency also requires consideration of product quality. How meaningful can the 'cost per file disposed of' be—file being considered as an unit of memory—unless it pays attention to the quality of the output? A reduction in unit cost achieved at the expense of reduction in service quality is not a true improvement in efficiency. Has the service degraded, through excessive paper work, for instance, or a shift to pushing papers? As an example, decrease in the number of reports/complaints registered in a municipality/police station or any government department may not mean increased efficiency , if the citizen is finding it increasingly inconvenient to register a report and complainants are turned away.

Productivity have to be emphasised as it is difficult to quantify productivity in all its aspects. Productivity in government can only be determined with due regard to the socio-economic structure of the society in which the administration functions today, and the expectations of the communities/parties/groups concerned and, above all, of the citizen whom the administration seeks to serve. This is also more true in the case of backward areas and poor people, whose development depends on the positive attitude of the bureaucracy.

Productivity in government will reject emphasis on size, impersonality, status, conformity and routine. The support will be for purposeful activities through a process of administrative reforms to be completed in a time period so that the quantitative as well as qualitative aspects of productivity are achieved.

Conclusion

Instead of strengthening the public organisations and boosting the morale of the bureaucracy, governments are resorting to privatisation of the public organisations in the name of efficiency-economy model. In the name of economic reforms public organisations are either closed down or sold to private investors and the government is in no way closer to the solving of problems, much less reducing the fiscal deficit or controlling inflation.

The experience of developed countries indicates that productivity depends on competence, intelligence and motivation of the employees, and not on down-sizing the public organisations. The basis of public organisation is not the principles of business administration, embedded in private law. It is based on public law—constitution, statutes, subordinate delegations, and judgement of the courts as a part of its overall public accountability.

Introduction of quality counter service and one-stop centres; establishment of consultative management councils; organising training programmes and right-sizing public organisations would contribute to increased productivity.

Administrative reforms should precede economic reforms. Core public service values like integrity, impartiality need to be protected and promoted. Evolving sound personnel policy so as to enlarge work use of modern technology such as computer, internet; emphasis on total quality management, introduction of quality counter service and one-stop centres; establishment of consultative management councils; continuous evaluation of goals of the organisation; organising productive initiative training programmes, right-sizing the public organisations etc., would contribute to increased productivity. Administrative reforms

should also attempt to bring attitudinal changes of the employees at all levels; higher level of motivation, initiative, innovation, responsibility and responsiveness of the employees; maintaining standards in public life such as selflessness, integrity, objectivity, accountability, openness and honesty. It should also ensure public participation and collective decision-making and shared responsibilities and concerns towards the society; providing safety-net to the poor; developing entrepreneurship or problem solving capacity of the employee. Reforms should also attempt at improvement in the operational values of the larger society including its urge to invent, to dare and to create. These steps would create the potential for higher productivity in government and enable the bureaucracy to face the challenges of economic reforms in the new millennium.

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"I have yet to find a man, however exalted his station, who did not do better work and put forth greater effort under a spirit of approval, than under a spirit of criticism."

– Charles Schwab

Electronic Government in Japan for Better Public Services

Ohashi Tomohiro

Public administration and services for citizens could be improved by applying information technology. Japanese government has started new projects for establishing an electronic government. Projects for one-stop services by virtual government and inter-ministerial task forces are on the anvil. There are institutional, operational and technological issues in actualizing the electronic government, even though infrastructure has been built. Under these circumstances, current status and major issues for the electronic government in Japan are described in this paper.

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Public administration in Japan is being revamped in accordance with "The basic Plan for Promoting Administrative Informatization" passed by the cabinet on 25 December 1994 and revised in July 1997. Electronic Government has been one of the targets of Basic Plan.

Policies for Electronic Government

The government established Basic Plan to promote informatization in public administration in a comprehensive and deliberate manner. Aim of informatization was identified as upgrading the quality of public administration and public services by applying information and telecommunication technology to various fields of public administration. Action Programmes of Common Issues were established under Basic Plan. In addition, each Ministry established "Actions Programmes of Individual Ministry". For Example, Kasumigaseki WAN; Inter-ministerial Network, was built by the Action Programme as a project common to all ministries, which built their own LANs connecting to the Kasumigaseki WAN along their Individual Plan.

The government established Basic Plan to promote informatization in public administration. Aim of informatization was identified as upgrading the quality of public administration and public services by applying information and telecommunication technology to various fields of public administration.

"What is an electronic government", was not described in Basic Plan; but approaches related with it were identified as follows:

- To establish information systems using informa-

tion and telecommunication technology to provide people with officially announced infor- mation like press release documents beyond restrictions of time and space

- To promote provision of administrative information to the public, on electronic media through public-services corporations and private information distributors
- To develop electronic systems or on-line systems for applications, notifications, reporting etc., which relate to various administrative procedures between the ministries and the people.

The Revised Basic Plan

Basic Plan was revised in July 1997 three years since implementation of the original plan, in order to meet new requirements, arising out of progress of the contents of Basic Plan and Action Programme.

Informatization of public sector is expected to play an important and innovative role in achieving an advanced information-telecommunication society. Information infrastructure in the government, such as one PC per person, LANs in the ministeries and Kasumigaseki WAN has already been established. Nevertheless, in the first Basic Plan, there is no description of the Internet which was considered as a network for academic use and entertainment but not evaluated as useful network for public administration, even though the Internet has spread remarkably and many individuals and private companies have been enjoying the merit of the worldwide network.

Informatization of public sector is expected to play an important and innovative role in achieving an advanced information-telecommunication society.

The term 'electronic government' was described in the Revised Basic Plan for the first time in official document of the government as follows:

"The government aims at realizing highly advanced electronic public administration, i.e. the Electronic Government, early in the next century."

Targets of the electronic government have been identified as follows:

Improvement of Quality of Public Services

Quality of public services shall be improved making full use information-telecommunication infrastructure inside and outside of public administration to cope with informatization of the society and to meet requirements of providing the public with various types of administrative information and of upgrading quality of public services.

Furnishing of Administrative Information

Various types of administrative information necessary for people's life shall be furnished widely through on-line network utilizing home pages of the Internet. In addition, an integrated clearing system shall be created by the end of fiscal year 1999, for reference services of administrative information which can be provided to the public.

Electronic Procedures of Application and Reporting

Application and reporting procedures shall be available in electronic format by the end of fiscal year 1998. In addition, issues for administrative procedures like user identification are resolved for promoting on-line procedures and the electronic procedures shall be enacted by the end of fiscal year 1998. While promoting electronic procedures, user convenience such as extension of service hours or 24 hours services through automatic delivery machines shall be taken into account. In addition, existing procedure that limits availability of public services to just offices shall be improved and extension of access points to public services shall also be achieved.

One-Stop Services

Integrated public services or what is called one-stop services such as guidance in administrative procedures, provision of administrative information, utilization of public facilities and reservation, admitting applications and reporting on the status/progress and submission of result shall be implemented step by step applying information-telecommunication technology including the Internet, getting cooperation of the local governments and resolving institutional and technological issues.

Electronic Procedure for Procurement

Informatization of procedures for procurement including publication of procurement announcement shall be promoted, consistent with the procedures of the private sector in accordance with progress in domestic and international informatization on EDI.

Guideline for One-stop Service

The guideline for One-stop Services was decided by the Inter-ministerial Conference for Informatization in Public Administration on 31 March 1999. The term was defined as follows:

> "One-stop services is a system that enables providing the people and private companies with various types of public services through PCs or other user convenient sites, using information telecommunication technology."

One-stop services is a system that enables providing the people and private companies with various types of public services through PCs or other user convenient sites, using information telecommunication technology.

The aims of the system are to enable application or reporting procedures that require visiting several organisations several times, to be completed in just one stop finally. Steps for one-stop services are as follows:

- The first step is to provide guidance, instructions or application forms on network.
- On-line systems for administrative procedures will be established, implementing measures for certification of individuals.
- Public services related with several organisations will be available in an integrated manner.
- On-line systems for guidance or instructions: Guidance, instructions and application forms shall be available on the Internet home pages of the ministries. The ministries shall allow people to apply or report on the forms downloaded from the home pages.
- System for integrated public service: Various types of public services, administrative procedures or information furnishing shall be available for the people or private companies from one page of a PC utilizing the Internet. The system consists of two functions: one is inter-ministerial rinks and comprehensive retrieval or guidance function, and the other is distribution of public services to the on-line system for comprehensive administrative procedures.
- One-stop services of specified areas: Procedures related with several organisations can be completed in an integrated manner by some interface among existing application systems that cannot utilize the Internet for the moment. Applications of this type are import and export, customs, procedures in harbors, procedures for examination and production of chemical material.

The Virtual Agency

The virtual Agency was established in December 1998 as a cooperative task force of concerned ministries under the direct control of the PM, to carry out projects that are under the jurisdiction of several ministries and cannot be achieved within the existing framework. Following four projects are now under development.

One-stop service for procedures related with acquiring motor vehicles: Various procedures in acquiring a motor vehicle, such as inspection, registration, certification of parking area, motor vehicle tax, and compulsory insurance shall be completed by one-stop service in order to reduce burden on people and to improve efficiency of administrative office work.

Electronic procedures for procurement: Procedures necessary in procurement such as vendor registration, qualification, inspection of vendors, terms of competitive contracts, notification of procurement, tendering, and contracts shall be completed in electronic manner to reduce burden on private companies.

Paperless office work: Using electronic media in ministry offices for decision making process, reference of official document and consultation among ministries could reduce volume of paper work to half and improve efficiency of administrative work.

Using electronic media in ministry offices for decision making reference and consultation could reduce volume of paper work and improve efficiency

Informatization of Education: Information technology shall be applied in schools to educate the younger generation and make them fit into information oriented society. For that purpose, installation of PCs, using the Internet in primary and junior high schools shall be promoted.

Network Infrastructure for Electronic Government

Nationwide network infrastructure, which covers public and private sector, will be necessary for achieving electronic government. It is only recently that full-scale networks among ministries have been built. There is no network among municipalities so far. Networks among central and local governments have not been built yet, nor is there any network among public and private sector.

Inter-ministerial Network

An inter-ministerial network was one of the major targets of Basic Plan. In parallel with installation of one PC per person and establishment of LANs in ministries, Kasumigaseki (name of area where all central offices of the ministries are located; symbolic expression for the national government) WAN was built in June 1997. Services of the network are as follows:

- E-Mail (1996)
- Database for permissions and licenses (1996)
- Parliament related information (1997)
- Database of council members (1997)
- Database of white papers (1998)
- Database of documents (1998)
- Database of statistics (1998)
- Database of common information (1999)
- Electronic official document exchange system (1999)

E-Mail among the ministries through the Kasumigaseki WAN is very popular and recently more than 10,000 e-mails per day are sent. It is remarkably contributing to easy, rapid communication between all the government staff. Earlier, procedures involving several ministries, as for example, drafting an Act used to be time consuming. Now e-mail is helpful in exchanging opinions and to reach some consensus.

In the same way real-time information on Parliament sessions obtained electronically is useful for each ministry it reduces the burden of collecting information on progress of the sessions because in many cases bureaucrats have to respond to questions by the member of the Parliament.

In addition to simple messages or informal information/communication, official document exchange among ministries is an important service of the inter-ministerial network. The Management and Coordination Agency (MCA) of the Prime Minister's Office is now developing an electronic official documents exchange system so that official documents can be produced on electronic file and transferred within each ministry for decision. A uniform specification for DTD (Documents Type Definition) of the Electronic official document exchange system was decided in the Inter-ministerial Conference for Informatization of the Government in March 1998. SCML has been adopted as the standard document type. Management of mailing list, measures for electronic authentication and establishment of certification authority for inter-ministerial document exchange as well as internal management of each ministry are now under development.

Informal information/communication, official document exchange among ministries is an important service of the inter-ministerial network.

Electronic authentication is an important issue for the system. Measures for electronic authentication of EC (electronic commerce) are under discussion among the ministries concerned. MITI (Ministry of International Trade and Industry), Ministry of Post and Telecommunication and Ministry of Justice have jointly made a draft that rather tends to encourage EC without tight regulation. On the contrary, National Police Agency has made a draft on the same issue that includes strong regulations to prevent electronic crimes. Consensus, (difficult but necessary) will have to be arrived at to complete a unified act or measure for EC.

Inter-municipal Network

It is more than twenty years since municipalities started computerization, but there is no network among them. It is especially strange that there is no network among resident registration systems considering the fact that more than 95 per cent of 3,300 municipalities have computerized registration procedures which are almost the same because they are regulated by the Resident Registration Act.

The reasons are as follows: Resident Registration Act was enacted before computerization and it means that the act does not necessarily cope with network society. Half the municipalities have some ordinance or regulation on protection of personal data owned by organisations. There is an article in most of the ordinances or regulations that "The Governor (Mayor) shall not connect the computer systems with other national organisations or municipalities". This article

was included mainly to prevent infringement of personal right and interest, but it has prohibited municipalities from constructing a network system with external organisations even if the application system is not related to personal data.

The Resident Registration Act was revised in August 1999 to upgrade the quality of public services and to improve efficiency of the office work by establishing inter-municipal network. Major issues of the revision are as follows:

Utilization of resident registration network

- Availability of resident registration certificates at any municipality
- Omission of moving out procedure at previous municipality when a resident shifts
- Provision of basic resident records (name, gender, date of birth, address, resident registration code) to national government

Construction of network

- Implementation of resident registration code
- Transfer of basic records from mayors to governors or prefectures through the registration network
- Transfer of basic records from a governor to other prefectures or national government through the network

Protection of personal data

- Measures for protection of the basic records in municipalities and nationwide center through security system, restriction of utilization and transfer of the basic records, duty of confidentiality, complaint procedures etc.
- Procedures for requesting disclosure of the basic records

Prohibition of utilizing resident registration code in private sector

- Prohibition on request of code by private sector
- Prohibition on private individuals to construct a database using the code

Utilization of the resident card

- Issue of resident registration cards
- Expansion of utilization of the cards for purposes described in acts or ordinances

Electronic Government: Major Issues

Institutional Preparation

Most of the existing administrative systems or procedures have been established before computerization and some of them are obstacles for improving efficiency of administrative work and for upgrading quality of public services by making full use of information technology. Major issues are as follows:

Paper-based administrative procedures

There are some administrative procedures that force on people or private companies unnecessary burden because of existing paper-based regulation or procedures.

A typical example of such procedures is preservation of documents in private companies. There are roughly 1,000 acts or regulations that force private companies to preserve documents on paper for many years even after the data has been computerized in most of the companies. Space for keeping the documents and time for manual handling cost the private companies heavily which is a major source for complaints.

Under these circumstances, the Steering Committee for Advanced Information-telecommunication Society chaired by Prime Minister completed a report on this issue. It requested the ministries concerned to allow the private companies to preserve documents on magnetic files and most of the regulations have been revised to meet the request except for documents regulated by taxation related acts. In case of taxation related documents, it would be difficult for the staff of the National Taxation Agency to identify the originality or authenticity of the documents if preserved on magnetic files. The agency is now under development and research to counter the difficulty from technological point of view.

Another example of cumbersome procedure is application or reporting from private companies to the ministries concerned. There are many acts or regulations that force the people or private companies to apply or report to ministries on paper-based forms even after most of the data has been computerized already and can be sent on magnetic files or through network. The Steering Committee has requested ministries to allow private companies to send data or application

forms on magnetic media or through network. Compared to preservation of documents, electronic applications or reporting are rather more difficult because of certification of applicants on network, standardization or interface between them, cost of on-line system, security and so on.

Paper-based documents management and decision making process

Document management in the central government is still based on paper-manual procedures in central offices of ministries even though most of the documents are produced on electronical file. In central offices, information infrastructure of one PC per person has been achieved and documents can be managed applying information technology throughout their life cycle of production, registration, transfer, utilization, update, authorization, preservation, retrieval and abrogation etc.

Document management in the central government is still based on paper-manual procedures in central offices of ministries even though most of the documents are produced on electronical file.

Documents in ministries have to be managed using information technology because most of the official documents will be exchanged through the Kasumigaseki WAN in a few years. In addition, documents management based on information technology will be important and rather indispensable for each ministry to meet new requirements caused by the Official Documents Disclosure Act that will be enacted 2 years later.

Traditional decision making process also has to be reviewed to cope with electronic document management and exchange system among ministries. Official seals have been put on paper documents as a certification, but they will be of no use on electronic documents. Instead of traditional authentication, electronic system and certification authorization procedures will be necessary.

Traditional decision making process has to be reviewed to cope with electronic document management and exchange system among ministries.

Review of existing responsibilities

In achieving one-stop services, some existing procedures have to be reviewed. For example, a public service is provided at each organisation concerned receiving some application forms or requests officially from citizens in existing procedures. If a citizen wants to avail public services related with several organisations in one-stop, one organisation has to receive the application forms or requests for other organisations concerned with the services. In these cases, who is responsible for receiving or submitting the documents and who puts the official seal on the documents?

Relationship among central and local governments

Some one-stop services of the central government will be related to municipalities. For example, income tax is collected by central taxation office and contents of tax declaration are sent to municipalities, prefecture level and city level as well. It is one of the typical procedures requiring typical one-stop services; however, they are not connected by network directly so far. New procedures will be necessary to actualize one-stop taxation system using inter-central-municipal network.

Establishment of Inter-public–private Network

Public services will be available through network in an electronic government for convenience of the citizens and for efficiency of the public organs as well. A nationwide information network infrastructure, an inter-public-private network, are indispensable for one-stop services. It is quite difficult to establish this kind of network because of security problems and there is no network of this type at the moment in Japan. Furthermore a citizen cannot access Kasumigaseki WAN at all, for getting information open to public or for sending documents or mail to the ministries.

Data is sent to the organs of ministries through on-line system in some specified applications, but these closed on-line systems are not information network infrastructure for inter-public-private relationship. The Internet is very popular in Japan for providing people with information or announcements, or exchanging e-mail. Recently many ministries are using the Internet for getting public opinion on a topic in question. Roughly 500 organs of all the ministries have opened their home pages as of May 1999. Kasumigaseki WAN could be connected with LANs of municipalities in the near future, but there is no plan to establish the inter-public-private network at the moment.

Unique Identification Numbering System

There is no unique numbering system in Japan so far. The Japanese have no official certificates at all and it means there is no official measure for civil servants to identify the person in question when they are requested to provide public services by a citizen.

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Driver's licenses or passports in some cases are utilized for certification as a makeshift because there are no other official certificates with picture. There are many people who do not have both and they cannot certify themselves officially. Social security cards are utilized sometimes as makeshift certificates but there is no picture on the cards. Under these circumstances, there is no institutional measure to prevent certification problems in public services or crimes by impersonators. This situation means that there is no way to identify a person in question on network, and that public services, especially one-stop services can not be availed by all the people.

There is no institutional measure to prevent certification problems in public services or crimes by impersonators.

The background for this state of affairs is the sensitivity of the Japanese, in being controlled by public power after the sad history of World War Two. There was a strong opposition from the people when the government started a project to implement a unique ID numbering system thirty years ago and the government finally had to suspend it.

The major reason was fear of control by public power using the unique ID numbering system. People were afraid that it would be easy to integrate various kinds of personal data gathered by the ministries using the unique number. It was and is impossible to match various kinds of personal data stored in the ministries because each organisation of the ministry can gather, store and utilize personal data within its authority when the individual responsibility of the governmental institutional system is considered. It, nevertheless, was difficult for the government to persuade the people because there was no act for protecting personal data stored in the ministries at that time except for some regulations of duty of confidentiality.

It has been a taboo for the government to plan an implementation of the unique ID numbering system after the suspension and there was no policy to implement the system for thirty years. The Resident Registration Act was revised in August 1999 so that an inter-municipal network of resident registration systems can be established. One of the important points of the revision is to implement the unique ID numbering system to identify a person in question on network. Each citizen has an ID number in a resident registration system in the city they live in at the moment but it is not unique in the nationwide system. There has been no problem as far as the system is closed within each city's resident records registration. It, nevertheless, would be indispensable to implement unique ID numbering system to actualize nationwide resident registration system that requires identification of a person in question on network.

In addition to unique ID by the resident registration system, official certificates would be available for the Japanese for the first time by this revised act and it could be utilized not only in resident registration application but also other applications of prefecture and the central government. It would lead to nationwide one-stop services by the inter-central-municipal network.

Protection of Personal Data

Fear of infringement of personal right and interests has been one of critical issues for the government to implement network-oriented public services and governmental activities. An act to protect computerized personal data stored in the ministries has already been enacted but this is just to protect personal data at the moment. There is no act to protect personal data in private companies at all and most of the problems or crimes have been caused by them. In the parliament session on the revision of the Resident Registration Act, this became a critical issue and the Prime Minister has promised to establish an overall institutional system to protect personal data.

Protection of personal data related with revised resident registration system has been secured by regulations. For example, private companies shall not request showing of the unique ID number of the citizen and they are prohibited to create a database system using the unique ID number. It is the first time that the activities of the private companies have been covered in terms of personal data protection.

Fear of personal right infringement is the key issue preventing the Government from implementing network-oriented public services and governmental activities.

A committee was established under the Steering Committee for Advance Information Telecommunication Society chaired by the PM to draft the fundamental measures. The committee issued a report on the issues in November 1999. The major issues of the report are as follows:

- Acts or regulations for protecting personal data shall be based on the principles of OECD Guideline.
- Personal data of all areas including private sector shall be protected adequately.
- Legal framework for protecting personal data shall consist of three level measures; a fundamental overall Act to cover all personal data, individual Acts for sensitive areas such as medical services, financial business and telecommunications business, and self regulation by each business group.

In accordance with this report, the government has started preparation of new Acts and measures.

Standardization

One-stop services will be related to several applications of ministries and municipalities and it means that procedures, definitions, codes of application concerned have to be standardized. Major items to be standardized in case of the nationwide resident registration system are as follows:

ID number

As described already, unified ID number is indispensable to identify a person in question on network.

Format and codes of data

There are 13 items registered as records of the resident registration and they have to be standardized for the nationwide resident registration network and for one-stop services through it.

Forms of documents

Resident registration certificate forms are not standardized at the moment because they are issued within a city so far. The certificates will be available at any city hall through the nationwide resident registration network by the revised Act. Standardization of the form such as items, description, layout and form of manuscript (horizontal or vertical) has to be established to enable the public service.

Characters

It is an issue local to Chinese language that there are more than ten thousand characters and some of them have several variations. Especially characters of names and addresses have many variations they could even be unified. It could be the most difficult problem to implement the service because all the municipalities have their own resident registration systems and the characters are not standardized.

Interface

The revised Resident Registration Act requires all municipalities to connect their resident registration system with inter-municipal network in three years. Each municipality will install a communication server that is connected with nationwide resident registration network. Some interface between the existing system and a system located in the communication server will be necessary.

Concluding Remarks

It has taken a long time for the government to establish a strategic plan for informatization in public administration and proceed to electronic government since computerization started thirty years ago. Now has come the time for the government and the people to come to a consensus on how to make public services convenient and improve efficiency of governmental activities. There are many issues to be resolved from institutional, technological and operational points of view. It, nevertheless, is expected that a national information infrastructure would be established in few years and the people would enjoy the benefits of electronic government fully. □

Focus

Measuring Productivity in Civil Service

G.D. Sardana

Productivity and its measurement have been generally considered as issues concerning labour in the manufacturing sector. Civil service in its traditional role of regulator and controller has seldom been considered a domain fit for productivity measurement. However, liberalized economy and globalization have changed the roles of the government and the civil service. There is a new focus on customer service and performance improvement. What requires to be improved has to be measured as what cannot be measured cannot be improved. This paper views the concept of productivity in its broader perspective. The three facets of Productivity termed as PQR: Performance, Quality and Recipient Satisfaction have been examined in detail. A framework has been developed to evaluate productivity as a family of ratios.

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Man by nature is social. He has been known to form tribes, communes, communities and associations. For the success of these groupings, he has had to devise laws, rules, regulations and norms of behavior. With the passage of time and as the human society became more complex, man entered larger groups creating necessities of working together and sharing the benefits of efforts. Simultaneously, there also arose a need to protect one's perceived rights to property, freedom, relationships etc. In order to bring an order in society, man developed administrative systems and rules of governance. Therefore, government and administrations are not new inventions. They are as old as the history of mankind. Government and administration have been essential features of civilized human society.

Public administration can be termed as the machinery used by the state to make plans and programmes and to implement the same for the benefit of its citizens. Khera [1979] explains that "there are two prime features of the whole matrix of governance and administration: the first of these is the making and pursuit of policies and the other concerns carrying into effect of those policies." The civil service has been the major instrument of the government for the implementation of its decided policies.

Changed Role of Government

Over the years, the role and the policies of governments have undergone changes for reasons of history, political thought and social environment. Economy, means of production, religious beliefs, status of available resources, are some of the factors which have moulded the role of a government.

Almost all nations in the present day world swear by democracy and elect their representatives for governance. Majority of the states are committed to the creation of an environment where the largest sphere of economic activity and generation of wealth is reserved for private enterprise. In a socialistic state, the public sector dominates and it becomes the concern of the

state to manage different sectors of economies. Under both extremes of capitalist and socialist economies, the state has undertaken several responsibilities, in varying degrees, in functional areas. In socialist economy, the state has justified its role in fighting unemployment, carrying out production, doing trading intervention to control prices and regulate economy. In capitalistic economy, the state assumes the role of stimulator of economy for the private sector reserving only such roles for itself which the private sector found unremunerative.

Over the last decade, the global economic and political scenario has undergone a major change. With the demise of communism in Eastern Europe and the dilution of socialism beyond recognition in China, equilibrium of the economy in many states got disturbed. For many nations which had accepted socialist economy as the role model, it proved disaster. It hastened the progress towards liberalization of economy from state regulatory controls. Public sector enterprises which once occupied the pride of place had to make way and get submerged in the private sector. WTO regime ordained globalisation has opened up national frontiers to free flow of imports and exports. As more nations sign WTO agreements on trade and commerce, removing quantitative restrictions, states all over the world tend to be developing a uniform code of governance. The futuristic scenario suggests discernible trends in the new role of the state. The changed role of government is to concentrate on core functions, which cannot be carried out by the private sector. Shukla [1998] mentions these as international relations national security, law and order and management of economy at macrolevel. The residual role of the state will be as facilitator of economic activity for development of infrastructure, as investor in social services and as initiator of programs for disadvantaged sections. The areas of economy including education, healthcare, post and telegraph, transportation, communications etc. which are still being managed by the state in varying degrees will get transferred to private enterprise.

Changed role of government is to concentrate on core functions, which cannot be carried out by the private sector such as, international relations national security, law and order and management of economy at macrolevel.

Customer Driven Focus

The new role of the government in no way shortens the functions of the civil service, but on the other hand enlarges its role and provides it more challenging opportunities. Revolution in information technology and free access to international trade have awakened the public at large. The public now shares information and the knowledge of what takes place in other parts of the world. A citizen is now aware of what facilities, services and quality of service are being made available in developed economies. As a result civil services all over the world are now facing increased pressures from the public for better services, new services, transparency, fast and accurate information, reduction in costs and speed in implementation of programmes or projects of public interest. Shukla [1998] rightly says that civil service has to perform an important and significant role in the transitional period (in passage from the existing role of the state to the futuristic vision) by way of supervising, de-introducing regulation for the liberalized regime, devising new systems nurturing decentralization and private participation etc.

In the light of the changed role of the government to that of guiding and facilitation of socio-economic development as against that of investor and regulator in the 1980's and coupled with new expectations of the citizens for efficiency and quality of public service, the civil service has to transform itself as a customer driven service. The civil service has to consider the expectations of the customer during formulation of policies and implementation of the same thereafter. The citizens at large are the customers. It is their satisfaction which counts. Civil service is not the ruler but is there to serve the citizens. The accountability, performance evaluation or measurement of productivity of the civil service has to be examined in this context.

Performance Evaluation of Civil Service: Some Perceptions

Downs *et al.*, [1986] point out that most governments have been perceived as inefficient, ineffective and venal. They quote a 1976 survey conducted in the US:76 per cent of the sample believed, "People in government waste a lot of money we pay in taxes". Situation is in no way different today. People carry similar feelings about government. As a matter of fact, public administration has come to be associated with delays, red tape, insensitivity and inefficiency in the regulation of cost and time. In contrast, the word 'management' has come to be associated with industry and is expected to deliver efficiency, productivity and returns. 'Management' has been used very rarely in connection with civil service. The fundamental attributes of 'management' of identifying goals, objectives, defining performance indicators, assessing, monitoring, stimulating and evaluation of performance or motivation of employees, as present in private enterprises are lacking

in civil service. There are of course historical reasons for this state of affairs. Civil service has always occupied an august position, possessing information on state secrets and knowledge about several sensitive issues which can carry impact on socio-economic developments. This has always left an air of superiority and hence a tendency to be viewed different.

Public administration has come to be associated with delays, red tape, insensitivity and inefficiency in the regulation of cost and time.

Shukla [1998] points out that lack of accountability is a major factor for the low productivity of civil servants. Poor performance is seldom exposed. Even if a civil servant gets exposed, shelter is available under the shield of collective decision making. The services are quite secure and well protected. Thus, there is predominance of 'I do not care' attitude, aloofness from public, secrecy, and hardly a concern for the satisfaction of the recipients of service.

Lack of accountability is a major factor for the low productivity of civil servants.

Another major cause for low productivity is the absence of an appropriate system of measurement of performance. What counts as the performance of civil service has itself been a subject of debate. Adherence to rules and regulations has been advocated as one such performance. Observance of procedures has been accorded more importance. Productivity and performance evaluation in terms of financial measures such as profits, returns on investment, turn over ratios has been ruled out as civil service has not been considered as an investor. Besides, developing and implementing an effective and efficient methodology for assessing and improving the performance of government agencies is a difficult and complex task. Civil servants are typically wary of efforts made to develop such measures because the resultant data may be used against them. Improvement in the performance of civil service is needed. What is required to be improved requires measurement. What cannot be measured cannot be improved. This is a fundamental imperative.

Productivity & Civil Service

There are major apprehensions and misconceptions in application of productivity measures to civil service. The concept of productivity has been traditionally associated with the industrial sector. It has been largely explained as relationship between the output of products and inputs of resources. Products are goods manufactured in physical form. Input is usually in the form of labour, although variations in models have also recommended inclusion of resources such as capital, land, plant and machinery, materials, energy etc. Different methodologies have been developed to aggregate the inputs and to convert the outputs and the inputs to common units and to common time based periods. Appreciating the problems of aggregation and conversion, some authors have advocated the use of factor-productivity, that is productivity related to one factor of input and index of productivity. Apparently this concept smells of labour efficiency and production process and its performance evaluation. The white collared office employee, knowledge worker or government employee has not taken kindly to it. Civil service accustomed to laying policies for others has considered itself beyond its application. However, the adequacy of this concept even in the context of manufacturing has been questioned by many scholars. This model does not provide any solution to the treatment of outputs which are intangible, qualitative in dimension, do not carry sale value as understood in normal usage, or carry negative value as pollutants, wastages, effluents etc. Concept of factorial productivity suffers from one more inconsistency: output from one factor of input can be sometimes at the cost of another input factor. It is also observed that sometimes one input can supplement the performance from another input. Theory of systems recognises that an organisation is a system and comprises sub-systems which interact with each other and impinge on other sub-systems to create a performance. It is the holistic performance which is more meaningful. Productivity, as per the theory of systems becomes a broad based concept. The measurement of productivity is in the form of family of ratios.

Productivity measurement models have been developed on this concept. These are rational, easy to apply and most importantly serve the principal objectives of productivity improvement. Sardana & Vrat [1983] had developed PO-P (Performance Objectives-Productivity) model to measure productivity which is unique in several respects.

Productivity Redefined

In the context of the PO-P model, 'Productivity as an index of a system's (or a sub-system's) performance indicates the extent of actual accomplishment of Performance Objectives in relation to the attainable level in a given External Environment.' This definition is valid for both the industry and service sectors. The following four

salient features stand out: System (or sub-system), Performance Objectives (actual accomplishment), Performance Objectives (attainable level) and External Environment

System: The emphasis is on the system. It is not intended to arrive at contribution of one for more factors of inputs. It is also not meant to evaluate the efficiency of an individual or a group of individuals. It is the holistic performance of a system (or a sub-system).

Performance Objectives (actual): No single ratio has been designed, although the PO-P model has a methodology whereby multi-ratios can be aggregated through use of ranking and prioritization to provide a single productivity index for a sub-system and thereafter for a system. The model relies on generation of a family of productivity indices taking into account multi-performances objectives which any organisation is likely to have. Both quantitative and qualitative performance objectives can be taken into account.

Performance Objectives (attainable): It lays stress on attainable level of performance objectives. The methodology calls for measuring productivity as an index of actual performance to attainable performance. It has two advantages: firstly it calls for prefixing of performance objectives and their attainable levels. An internal discipline gets created and a systematic planning exercise thus gets initiated to identify the performance objectives; to rank these in line with their priorities and to define bench marks for fixing attainable levels. Secondly, attainable levels are values which have been already achieved elsewhere or these represent the possibility of achievement based on internal assessment. Therefore, there is a built-in provision of motivation and challenge to perform a task. The possibilities of excuses for later poor performance get reduced and a fair analysis becomes possible.

External Environment: A close knit global society is under way. The politico socio-economic environment in the world cannot be ignored. An economic upheaval in one country will also create an impact elsewhere. Low economic growth, depressed market condition in one corner of the world, war like conditions in one region or events such as restrictions on aid, investments, trade etc. are likely to affect economy elsewhere as well. The attainable levels of Performance Objectives are therefore required to be fixed carefully after taking into account the external environment.

Function in Civil Service

As per Dayal [1979] the administration organisation of government is required to perform primarily two categories of tasks – support for formulating the policies of the government and administering the policies and carrying out the business of the government. These tasks, constitute four major functions of civil service.

Function 1: Formulation of policies is the start for any course of action. As per Khera [1979] policy making is a continuously changing process which is conditioned by many different factors. Policy has been defined as a course of action adopted and pursued by a government. Party manifestoes and party resolutions set the tone. But these are only broad objectives. Civil service is called upon to translate these into workable strategies and attainable policies. This requires an in-depth study and analysis whether the policies are within the ambit of constitution and other legal framework, are consistent and compatible and will be able to attract consensus from a large spectrum of society. The policies have to withstand the litmus test of acceptance by the people for whom these are meant. Most importantly, civil service has to advise policymakers on requirement and availability of resources.

The second category of tasks is a group of tasks which relates to the execution of the policies as well as to carry on the routines of the government. Dayal [1979] has identified the same over three areas of activities (Functions 2, 3 and 4).

Function 2: Revenue collection, maintenance of law and order, maintenance of services (roads, buildings, traffic etc.), supervision of public health. These activities are carried out at divisional or district level administration and are the traditional tasks. A major portion of civil service is occupied in these routine but important tasks. The public image which civil service develops is in these areas.

Function 3: Development tasks primarily concerning economic, social and cultural development. In many respects these require more stress and committment of resources as these help lay the foundations of future society.

Function 4: Supervision and control of 'productive' units such as Public Sector Enterprises, Post and Telegraph, State transport services, Research institutions etc. These activities happen to be with the civil service as the state decided to be the investor. This area has come under attack for poor returns.

Each of the tasks as mentioned has different characteristics and makes different demands on organisation, planning, control and strategic decision making. A strong customer focus, transparency, fairness, honesty and integrity in dealings are major job requirements.

Productive units as mentioned in Function 4 require defined financial and societal goals for achievement. Both Functions 2 and 4 tasks are easier subjects for measuring productivity. The outputs in most of these cases are discrete and are easily quantifiable. Similarly, inputs can be identified in terms of manpower, capital, material, energy etc. However, it is in the case of development activities that complexities arise. Many of the proposed activities are interdependent and require close co-ordination. Data and information are vital inputs. Many cases require specialist knowledge. Public participation is necessary. Controls and evaluation of performance are most needed.

Strong customer focus, transparency, fairness, honesty and integrity in dealings are major job requirements.

PQR: Key Performance Areas (KPA's) in Civil Service

Civil service is different in concept and operation from a private sector commercial organisation. Foremost, the bottom line concept of profits is not applicable. The organisation, functional controls, accountabilities are different. Some of the private sector concepts can be considered only in limited situations which have similarity of goals. This type of scope is limited to tasks which concern generation of revenue or are limited in application to deliver discrete outcomes.

What counts as the performance of an organisation has been a major subject of debate. The following constitute main areas of concern: Investor satisfaction, Employee satisfaction, Customer satisfaction and Supplier satisfaction (Aggarwal, 1981). It implies that an organisation should consider satisfaction levels of these stake-holders while evaluating performance. Kaplan and Norton [1992] in their celebrated paper on 'Balanced Scorecard' have suggested that the measurement universe can be sorted as Financial perspective, Customer perspective, Internal perspective and Innovation and learning. Any model to be developed for performance measurement should incorporate these parameters to obtain a 'balanced' measure of performance.

Thor [1998] has enlarged the scope and alternatively developed the concept of 'family of measures'. He has sorted the measurement universe into the following types of measurables – Productivity, Productivity/Cost, Customer Quality, Process Quality, Workplace and Partnering. Thor has recommended that with modifications and varied degree of emphasis, the concept can be used for any organisation, including civil service.

The following areas constitute KPA's in the civil service.

P : Policy/Programme/Project-Performance

Q : Quality of Performance

R : Recipient Satisfaction

PQR form three sides of a triangle representing the scoreboard of Productivity. It is a widespread belief that Quality is a separate independent attribute with no relationship with productivity. But this presumption is misplaced. Quality is a specific dimension of productivity. High productivity is not the outcome of lowered specification of products or services. A low quality product (or service) at so called high productivity is meaningless as it will not find acceptance. There is a strong Quality-Productivity connection. Quality is embedded in Productivity.

Recipient Satisfaction as incorporated in Productivity is more apparent. A product manufactured to specifications conforming to quality standards, manufactured at low cost but with poor customer acceptance is not worth manufacturing. Productivity therefore implies Recipient Satisfaction. 'Quality is what a customer wants.' Indirectly this affirms that quality and Recipient Satisfaction are inseparable dimensions of Productivity.

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P: Policies/Programmes/Projects-Performance

Programmes represent activities which are required to be carried out to accomplish a major policy of the government. A programme refers to an activity which calls for development of resources. Wholey [1989] defines it as a set of resources and activities with one or more common objectives. Programmes can be for several functional areas: for economic development (creation of jobs, resettlement of slums, shifting of industries, training for jobs etc.) for health care (polio immunization, prevention of mosquito breeding, cleanliness drives etc.) maintenance of services, crime prevention, literacy, etc. Programmes are generally meant for initiation at district/block levels. These are bound by limits of expenses and have a time span for

implementation. Formulation of programmes and their implementation is an important activity of civil service. The performance against the same, acts as a significant yardstick for evaluation. Routine tasks as complaint redressal, providing information, rendering of advice, revenue collection are also included in this category.

Projects are broad programmes in the context of large investments or operational improvements or expansions of existing activities. These are generally considered applicable to 'productive units' or such ventures which have revenue generation as one of the goals. Laying of new railway lines, setting up of new power plants, new research institutions, construction of dams, development of infrastructure, expansion or capacity increase of a mill are some examples. Projects have well defined objectives, a larger time span and accountability. The completion of a project is generally tied up with commitments to the public as a part of economic or social development. Projects carry larger allocations of resources as compared to programmes. Projects also require technological skills, very often specialized knowledge besides managerial acumen. Civil service therefore, normally entrusts these tasks to autonomous bodies, agencies or corporations created for a specific project. PSE's are examples in this context. Civil service has the role to set targets, supervise and monitor operations, take necessary corrective steps and most importantly take responsibility for the performance as its real management. The performance evaluation at operational levels is on the lines of private sector enterprises with emphasis on returns, efficiency of men, materials and machines, cost overruns etc.

Civil service has the role to set targets, supervise and monitor operations, take necessary corrective steps and most importantly take responsibility for the performance.

Q: Quality of Performance

The concept of quality has undergone changes. Starting from a simple perception of carrying out inspection of goods/products manufactured, it has travelled through stages of Quality Control, Quality Control System, Quality Assurance, Total Quality and Total Quality Management (TQM). Porter and Tanner [1996] point out that achievement of business or organisational excellence is at the core of TQM. TQM considers quality as a continuous improvement of individuals, groups, departments and organisations. In the context of programme, measurement of quality is indeed one of the most difficult tasks. As Newcomer [1989] says Quality is the elusive goal for program performance and identifying performance standards in terms of quality is especially challenging, because the notion of quality is itself such a relative value. As in any management system it is finally results which are the milestones of achievement and progress. In any system of evaluation of quality also, there is a need to know the results. Quality evaluation can have focus on products as well as on processes. Both the approaches have led to organisational excellence. However, in either of the situations it is necessary to make a choice. Cost of collection of data statistics for purposes of assessment can be very high and can lead to frustration if the same stands unused for reasons of unclear focus.

Focus on Products: Areas which have clearly identified products and their specifications as the outcome are most suited for this approach. One of the major functional areas under civil service includes control and supervision of 'productive' units as PSE's, State transports. TV-Channels, Airlines etc. These types of units fit the most in this category. Porter and Tanner [1996] point out that quality has been shown to be directly associated with profitability and there is a strong and identifiable link between a TQM approach and superior financial performance. Presently when financial performance has emerged the major criteria of success for a PSE, assessment of quality can be co-related to profitability or other measures of financial performance. Besides, the outcome from these units is in the form of physical products or service. These products have well laid down specifications and it is easy to assess quality on the basis of conformity to specifications. In case of units as Post and Telegraph, State transport, Airlines etc. it is the 'delivery process' which becomes a 'product'. Delivery rate of postal articles, arrivals and departures, unexplained accidents, delays, poor maintenance, come under measures of quality.

Focus on Process: Services rendered by the civil service cannot be easily measured in economic terms. Assessment of quality is a more complex issue. The approach, therefore comprises a focus on process and an all out effort to make the organisation quality oriented. Application of TQM and ISO 9000 framework are to be viewed in this context. Involvement of people and improvement of process are fundamental to both TQM and ISO 9000 system. The process of auditing an organisation for conformance to a quality management system and self assessment are important steps to evaluate quality.

Thor [1998] also refers to process quality measures and defines 'process' as a series of activities completed by a person that add value to inputs to create outputs

and outcomes. Quality is the prime indicator of how well a process is being performed. Some important measures of process quality include: Cost overruns, Time overruns, Queue time, Errors, Failures.

The key concepts that underline the requirements of a total quality organisation and become the basis of quality measurement include: clear understanding of the concept of quality; well documented and well designed systems and procedures; shortening of response time and cycle time of transactions on a continuous basis; decision making based on facts and data; development of goals and strategic plans to make the organisation quality conscious; transparency; integrity; a strong base of values; a desire to assimilate values into the operations; training and development and involvement of employees in quality activities. Quality systems certifications, extensive usage of information technology, a high audit score through external agencies of repute, a high self-assessment score, a higher index on performance of previous period are more measures in this direction.

Another set of measures of quality is related to workplace practices. As per well documented theories of OD and HRD, it is a well motivated and satisfied workforce which delivers quality in products and service. There are several factors which build up an atmosphere of motivation. Strong beliefs in participative work culture, focus on performance, recognition of merit, transparency, opportunities to innovate and excel and opportunities to enhance skills, learning and training go a long way to build up confidence of an employee. Workplace ambience, relaxed and informal work environment, teamwork and group identification are helpful in increasing work output. Quality of work place practices can be measured through indicators such as, Employee satisfaction level, housekeeping and ambience, innovations and suggestions received, low voluntary turnover of employees and high attendance, reduction in process costs, decrease in process errors; early completion of programmes etc.

R: Recipient Satisfaction

Recipient in this case is an ordinary citizen, very often a person bereft of protection and help from those wielding authority. He is already overawed by the civil service by its massive size, authority, concentration of power, aloofness and maze of regulations and procedures. He is no match to the civil servant in any transaction and has no alternative. In the changing environment of the new role of the government, eventually it is the satisfaction of the customer (recipient) which is going to be a major measure of productivity of any task of the administration.

For Function 1, recipient is the society at large or the community or a section of the population. A policy is not aimed at an individual. Besides, as a policy is aimed at a larger span of time, it is rather the effectiveness and not efficiency which carries significance. Recipient Satisfaction is achieved through a number of attributes:

Responsiveness: This involves meeting the needs of the customers fast and providing value for money. It signifies attention to the complaints and difficulties of customers. An organisation with high responsiveness will take steps to be in touch with customers, inform them of standard response time against routine tasks, monitor the feed back, work continuously to reduce response time. In practice it calls for declaring standards of performance to public so that a citizen can judge the actual level of performance.

Accessibility: A person seeking information or wishing to carry out a transaction with a government official should be able to do so easily. The government official should be available within easy reach of a citizen. Public is mainly concerned with routine transactions at block/district level. A citizen either requires information or advice or requires some forms to be deposited. It is in these transactions that there is poor accessibility, enormous time is wasted and dissatisfaction reaches high levels. Another dimension of accessibility is an easy access to information. A citizen has a right to information of reasons for denial and to knowledge as to how his case can be accepted.

A person seeking information or wishing to carry out a transaction with a government official should be able to do so easily. A citizen has a right to information of reasons for denial and to knowledge as to how his case can be accepted.

Politeness: Civil servants have to be courteous and citizen friendly. Even though a civil servant is not in a position to reach out and fulfill the desires of a citizen calling upon him, his polite attitude conveys sympathy and a healing touch. A person leaves with a feeling that probably he was expecting something which he did not deserve. A curt and arrogant attitude on the other hand will leave a customer disdainful of administration even though his work has been carried out.

Public Esteem is the general image of a civil service department. A customer approaches an official with the perception of the public image. If the image is of unhelpful attitude, arrogant behaviour and corrupt environment, a customer's behavior will also be cautious,

calculative, with hardly any respect and courtesy. A public image of friendly and helpful attitude will help customers to call with an openmind.

Ambience: A congenial atmosphere in the government office, sitting/waiting accommodation protected from vagaries of nature are important factors. The old maxim that civil service rules is not valid. The rules, procedures and regulations require to be customer friendly and created for his convenience.

Performance Objectives (PO's)

Identification of PQR's is only an intermediate stage between the policies and Performance Objectives. Whereas programmes and projects represent the translation of policies into areas for action, PO's provide concise and clear information as to what is required to be achieved under P, Q and R. Establishment of PO's is the central task in an exercise on measurement of productivity. PO is the stated target for achievement and measurement of efficiency. It is in the form of a family of statements which clearly specify the tasks. The PO's to be defined should fulfill the following prerequisites:

- The central approach to define PO's is to bring about improvement in performance. PO's which become means for improvement are to be identified.
- PO's are not defined to judge the efficiency or performance of an individual. These are to be identified to assess the productivity performance of the department/division/block etc.
- The PO's should be within the competency level of the department/group entrusted with the task of implementation. They should not be a set of pure theoretical or philosophical set of statements desirable for achievement but should be clear and concise objectives possible to be achieved.
- Apparently, P, Q and R can have a number of PO's. All these PO's will not be equal in importance; some of these will be more important than others. Therefore, these are required to be ranked in priority and importance.
- The PO-P model specifies the measurement of productivity in the form of an index as ratio of actual performance to Objectivated Output. "Objectivated Output is the optimal level of output, which is possible to be attained by a system under the given constraints of input resources and a set of performance objectives. Objectivated Output thus represents performance level that is attainable" (Sardana, 1987).

Table 1: Illustrative Examples of Policies, Programmes and Performance Objectives

Policies	1.	To reach literacy level of 75% from present level of 62% by 2005
	2.	To increase agricultural production by 25% by 2004
	3.	To provide drinking water to every village by 2002
	4.	To increase Av. life expectancy of a citizen by 5 years by 2010
	5.	To achieve 25% growth in power generation by 2004
		By 2010:
Programmes (relate to Policy No. 4)	1.	To provide one primary health center for every 5000 population. Every primary health center to have one qualified doctor and ten persons of para- medical staff.
	2.	To cover 95% of population under public health scheme
	3.	To bring down child mortality rate by 10%
	4.	Every village to have drinking water supply system
	5.	To bring down infant mortality rate by 10%
	6.	To reach 100% immunisation again polio, MMR
	7.	Compulsory medical check for every school going child
	8.	To create 5000 more seats for MBBS admissions to meet demands of doctors.
	9.	Every district to have one speciality hospital
	10.	To create 10,000 more seats for nurses training to meet demand of nurses.
Performance Objectives (For one District for Programme No. 1)	1.	No. of primary health centers opened/No. of primary health centers planned
	2.	Buildings actually ready/Buildings planned
	3.	Lab., infrastructure actually installed/Lab., Infrastructure planned
	4.	Adequacy of medicines-actual status/Adequacy of medicines – planned
	5.	No. of doctors – actual available/No. of doctors-planned
	6.	Paramedical staff-actual/Para medical staff-planned

For every PO its 'Objectivated Output' value must be specified. This acts as a benchmark and is generally based on past performance, performance level already achieved elsewhere or on confidence level developed within the department for achievement.

- PO's can be both tangibles as well as intangibles. This is rational, as intangible, qualitative types of PO's also consume resources and therefore cannot be excluded from performance evaluation.

Table 2: Computation of Productivity Index (Illustrative for a PSU)

KPA	Wv	Performance Objectives	Wyv	Oyv	O*yu	PI (KPA)
P	$\sum_{y=1} Wy = 1$	1: Turnover (Actual)/Turnover (obj.) 2: Growth (Actual)/Growth (obj.) 3: Gross Margin (Actual)/Gross Margin (obj.) 4: Market diversification (Actual)/Market diversification (obj.)	$\sum_{y=1}^{4} Wyv = 1$			$\sum_{y=1} Wyv \cdot \frac{Oyv}{O^*yv}$ v = P
Q	$\sum_{y=1} Wy = 1$	1: Internal losses (Actual)/Internal losses (obj.) 2: Product complaints (Actual)/Product complaints (obj.) 3: Employee satisfaction level	$\sum_{y=1}^{3} Wyv = 1$			$\sum_{y=1}^{3} Wyv \cdot \frac{Oyv}{O^*yv}$ v = Q
R	$\sum_{y=1} Wy = 1$	1: Responsiveness 2: Accessibility 3: Public Esteem 4: Ambience	$\sum_{y=1.}^{4} Wyv = 1$			$\sum_{y=1}^{2} Wyv \cdot \frac{Oyv}{O^*yv}$ v = R

PI (Programme): $\sum_{v} \sum_{y=1} Wv \cdot Wyv \frac{Oyv}{O^*yv}$

- PO's must project relationship of ends with means. In simple language it means that inputs must get specified. This ensures that requirement of resources has been worked out for a smooth process of implementation.

Some illustrative examples of Policies, Programmes and Performance Objectives have been explained in Table 1.

Ranking of PQR and Performance Objectives

It is not necessary that for various functions, P, Q and R will be in equal proportion or these will have equal rank and weightages. The programmes, projects, Performance Objectives and the measures of Quality and Recipient Satisfaction will have their own relative importance and priorities. Therefore these are required to be ranked to signify their relative priority. The ranking is generally carried out by assigning of weightage factors. The weightage factors are on a scale of 0-10 or 0-100. Vrat *et al.,* [1998] have discussed some of these techniques. It is easier to use 0-100 scale with weightages expressed in percentage. It is apparent that any item with a weightage factor of less than 5 per cent is not likely to make a significant impact to the computation of productivity index. From another angle, as the basic goal of productivity measurement is improvement, it is desirable not to have more than 5-7 measures under each dimension so that these remain in the limelight and not get lost in the game of numbers. The priority ranking has been illustrated in Table 2.

Computation of Productivity Indices

With the primary objective of improvement it is imperative to compute productivity of each of the KPA's (P, Q and R) of a Policy, Programme or Project.

As per approach of PO-P model, Productivity Index (PI) of P, Q and R is arrived as:

$$PI(P) = \sum_{y=1} Wyv \frac{Oyv}{O^*yv}, \text{ for } v = P$$

$$PI(Q) = \sum_{y=1} Wyv \frac{Oyv}{O^*yv}, \text{ for } v = Q$$

$$PI(R) = \sum_{y=1} Wyv \frac{Oyv}{O^*yv}, \text{ for } v = R, \text{ where,}$$

v = KPA - P, Q or R

y = Performance Objective (PO)

W = Weightage factor

Oyv = Actual Performance value of PO-y in KPA-v

O^*yv = Objectivated Output value of PO-y in KPA-v

$$\sum_{y=1} Wyv = 1$$

PI for the Programme/Project can be arrived as:

$$PI = \sum_{v} \sum_{y=1} Wv\ Wyv\ \frac{Oyv}{O^*yv}, \text{ where, } \sum_{v} W_v = 1$$

Following this approach, PI's can be built up for higher levels of administrations or for particular programmes/projects as the national level. The computation has been illustrated in Table 2.

Conclusions

It is a widespread belief that civil service provides poor service, has low degree of responsiveness and incurs large expenses which are difficult to justify. These are symptoms of low productivity. Comparison with private corporate sector is not logical. There is goal complexity, accountability is not well defined, motivation is lacking and there is a long route from measuring productivity to improving it. However, there is no denying the fact that the changed role of the state as a promoter of economic and social development demands a greater thrust on customer focus. Productivity measurement has a potentially important role to play to enhance efficiency, effectiveness and performance of civil service. PQR: Performance, Quality and Recipient Satisfaction form the three sides of the Productivity triangle. Following the concepts of the theory of systems it is possible to develop a family of ratios representing the measures of productivity. Multi-ratios, if desired can also be aggregated to form a single index of productivity.

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New Public Management: An Analytical Review

Abu Elias Sarker & R.D. Pathak

Since the late-1970s, public management systems in both developed and developing countries have experienced a fundamental restructuring. This article aims to provide a critique of the emerging perspective of public management, popularly known as the new public management (NPM). The available evidences suggest that NPM has not been able to fulfill all of its promises, particularly in developing countries; and the status of implementation and outcome of NPM is not satisfactory. Therefore, a reassessment of the appropriateness of NPM in the context of developing countries has been advocated.

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Public Management (PM) as an intellectual enterprise has undergone changes over the years. Its meaning, rubric, scope, functions and modus operandi have come under severe scrutiny particularly, since the 1980s, apparently because of its failure to cope with the exigencies of modern society. Hence the emergence of the New Public Management (NPM). Traditional administration took its impetus during the heydays of industrial revolution when new concepts and new ideas flourished. Large scale industries adapted quite rapidly to the changing environment and so did the governmental system. However, with passage of time, the system fell short of playing its promised role in society. The proliferation of Fabian ideas, economic recession, labour movements etc. posed stupendous problems for traditional administration. There was a clamour for a more lenient and humanistic approach to management, which called for adding new ideas to the existing stock of knowledge, not replacing the conventional concepts. While there were concerted efforts throughout the 1950s and 1960s to implant new ideas in the disciplinary boundary of PM for making it presentable to the wider society, yet no real break-through in conceptual development took place and this resulted in failure to address crucial socio-economic and political issues facing modern organisations. The final onslaught on traditional administration started in the late 1970s with the call for reduced bureaucracy, economic liberalisation, deregulation, commercialisation and privatisation. The logical outcome, therefore, was the emergence of NPM to reorient traditional administration with new ideas and concepts.

The onslaught on traditional administration started with the call for reduced bureaucracy, liberalisation, deregulation and privatisation. The logical outcome was the emergence of NPM.

New Public Management (NPM)

Borins (1995: 12) defines new public management (NPM) as:

> a normative conceptualization of public administration consisting of several inter-related components: providing high quality services that citizens value; increasing the autonomy of public managers, rewarding organisations and individuals on the basis of whether they meet demanding performance targets; making available the human and technological resources that managers need to perform well; and, appreciative of the virtues of competition, and maintaining an open minded attitude about which public purposes should be performed by the private sector, rather than a public sector.

NPM is different in many ways from traditional public administration. Despite its tremendous appeal, traditional public administration all over the world failed to take cognizance of some vital environmental forces. Accordingly, NPM emerged in response to a number of environmental forces which governments everywhere have faced in the last 20 years. First, large and expensive public sectors put pressures to cut programmes and/or increase efficiency. Second, there have been massive technological innovations over the years, particularly, the development of information technology. Third, the globalization of economy with increasing competition has become order of the day. Fourth, it has become inevitable to liberalise the economic sector following heavy burden being imposed upon the national exchequer as a result of mismanagement, corruption, inefficiency in resource management, bureaucratic bungling etc. More importantly, increasing efficiency in resource management is also expected as economic recession and competition simply demand it. Fifth, in the competitive world, the people are demanding quality goods and services. They are now keen to compare services of all organisations (Borins, 1995; Minogue *et al.,* 1998; Hughes, 1998).

While these factors provide an insight into the genesis of NPM, no less important is the theoretical development that has taken place over the last three decades. In the 1960s and 1970s, many academicians made extensive applications of such ideas and techniques as decision making and organisation theory, policy analysis, corporate or strategic planning and strategic management in their analysis of administrative affairs (Gray & Jenkins, 1995). It is important to recollect that the new public administration movement had viewed conventional public administration as failing to come to terms with the needs and aspirations of common people (Marini, 1971; Frederickson, 1996). Of particular importance here is public choice theory, which is built on the basic premise of neo-classical economics. This is essentially based on the arguments made by conservative market economists who tend to view that government bureaucracy restricts the freedom of the individual and does not provide an equivalent structure of incentives and rewards to those of the market. In essence, public choice theory is the application of micro-economic principles to political and social arenas (Ostrom, 1974).

Public choice theory is the application of micro-economic principles to political and social arenas.

Although the NPM model has several incarnations such as Managerialism (Pollitt, 1990), New Public Management, Market- based Public Administration (Lan & Rosenbloom, 1992), and Entrepreneurial Government (Osborne & Gaebler, 1992), the basic premises are same. However, it represents a major shift from the conventional public administration in various ways. For example, Lan and Rosenbloom (1992) observe that the chief aim of market based public administration approach is that public administration can achieve its historic quest for both efficiency and responsiveness to the public through competitive market-like practices. Osborne and Gaebler (1992) even called for a cultural shift away from bureaucratic government towards an entrepreneurial government as it is both competitive and customer driven. They had put forward the following ten principles for reinventing the government.

- Catalytic government: steering rather than rowing
- Community-owned government: empowering rather than serving
- Competitive government: injecting competition in service delivery
- Mission-driven government: transforming rule-driven organisations
- Results-oriented government: funding outcomes, not inputs
- Customer-driven government: meeting the needs of the customer, not the bureaucracy
- Enterprising government: earning rather than spending
- Anticipatory government: prevention rather than cure

- Decentralised government: from hierarchy to participation and teamwork
- Market-oriented government: leveraging change through the market.

Christopher Hood's (1991) approach to the new public management contains seven major elements, which are quite elaborate and comprehensive. These are:

- Hands-on Professional Management
- Explicit Standards and Measures of Performance
- Output Controls
- Desegregation of Units
- Competition
- Private sector Styles of Management
- Discipline and Parsimony

It, therefore, is obvious that there are fundamental differences between the traditional mode of administration and the emerging paradigm of NPM. Market-based service delivery system, flexible human resource management practices, measurable organisational and personal objectives, use of performance indicators and customer orientation are some of the vital aspects of NPM system. The roles and functions of the government have also been redefined in view of the changes. In many countries, both developed and underdeveloped, the preferred role of government has changed from acting as the principal vehicle for socio-economic development to that of guiding and facilitating that development (Kaul, 1997). The tasks, structure and objectives of NPM are fundamentally different with overtones of efficiency and economy, not public welfare (Mascarenhas, 1993).

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From Rhetoric to Implementation

One significant aspect of NPM is a clear stress on implementation. This is a discernible feature in both developed and developing countries. However, the contents of the reform and their mode or implementation vary from country to country (Masser, 1998). Despite this, there are some commonalities among reform programmes undertaken across the world. The contents of reforms are of varied nature. Rightsizing the structure, breaking-up the structure, bringing public sector activities to market contestability, streamlining financial management system, commercialising, corporatising and privatising public enterprises etc. constitute areas of public sector reform.

There is now a reassessment of the role and size of the government. The first step toward this end is downsizing the public sector. For instance, Britain aimed to reduce number of employees in the public sector from 732,000 to 630,000 between 1979 and 1984. Uganda, a developing country, also aimed to reduce number of public sector employees from 320,000 to 286,000. Both countries were successful in the retrenchment programme. Similar attempts have been taken in other developed and developing countries (McCourt, 1998).

Another important measure to reduce the role and size of the government has been to contract-out public services to the private sector and non-governmental organisations. The governments concentrate only on strategic aspects of the service provision (Metcalfe & Sue, 1990; Savas, 1987; Quiggin, 1996; Boston, 1996). For instance, in UK local government, the total contract value for different services was 2396 million sterling pounds in 1994. Of the total volume of works, in-house bidders accomplished 58.8 per cent and the rest was completed by outside bidders (Domberger, 1998). Some developing countries are also experiencing such type of contracting out of public services, but at a smaller scale (World Bank, 1997; Botchwey, 1995).

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Another important way to reduce the size and role of government is privatisation of state-owned enterprises (SOEs) in both developed and developing countries. New Zealand, Australia, UK and other OECD countries have privatized a good number of SOEs over the years (Duncan & Bollard, 1992; Savas, 1987; Collier & Pitkin, 1999; Guslain, 1997: Bishop & Thompson, 1993). Similar reform attempts are being made in developing countries to streamline the public enterprise sector in order to reduce government expenditure and

public sector borrowing, curtail rent-seeking opportunities, stop sustaining unproductive enterprises, improve productive efficiency etc. Some countries such as India, South Korea, Malaysia, Taiwan and Argentina have taken concerted moves in this direction (Commonwealth Secretariat, 1991; Thynne, 1995; Guislain, 1997). The transitional economies in East Europe and central Asia have also undergone massive privatization measures over the years. However, during the period 1988-1992, 7,000 enterprises were privatised globally, of which three quarters of assets sales were in developed countries. Privatization in developing countries has been concentrated in a few countries. For instance, assets sales in Africa constitute only one per cent of the global total, and only 5 per cent for Asia-Pacific countries (Minogue, 1998).

The current reform programmes simply replace the state-dominated system by a system that signifies a tripartite relationship between the state, the private sector and the civil society. Examples of more balanced public-private sector cooperation come, significantly, from some of the Asian tigers (Amsden, 1989; 1997; Yu, 1997; Borins & Warrington, 1996; Kaul, 1997). Non- governmental Organisations (NGO) are also rendering community development services (Sarker, 1997, Turner & Hulme, 1997; White & Robinson, 1998). Such strong cooperation is also expected to fulfill many requirements of good governance in developing countries (Turner & Hulme, 1997; World Bank, 1992; Hussain *et al.,* 1994).

The main focus of the structural reform has been to create executive agencies around a service or product. These agencies have contractual relationships with departments or ministries. The role of the ministries is to provide strategic guidance. The agencies are fully empowered and provide services as per provisions of the contract between them and the departments or ministries. The UK experience provides the best example of executive agencies (Metcalfe & Sue, 1990; Greenwood & Wilson, 1989). Similar arrangements have also been made in New Zealand where large multipurpose ministries were split into focused business units headed by managers on fixed terms of output based contracts with considerable autonomy, including the right to hire and fire (Metheson, 1998; Boston *et al.,* 1996). The relationship can also be explained in terms of purchaser-provider relationship. A clear distinction is made between the purchaser who decides on what is needed and what standards to be achieved, and the provider who enters into a contractual arrangement to provide it (Shafritz & Russel, 1996).

Following British and New Zealand's experience, many developing countries are now trying to reengineer the structural relations between policy and administration. For example, Singapore has organised its civil service around the concept of statutory boards, and Jamaica has selected eleven pilot agencies for conversion into executive agencies. In Ghana, Customs and Excise and Internal Revenue Departments were separated from Ministry of Finance to constitute separate agencies in the 1980s. The rationale was to free them from civil service rules and conditions and give them more autonomy (Larbi, 1997).

Commercialisation is the process of public bodies adopting management practices of private sector businesses.

Public enterprise reform in the form of commercialisation and corporatisation has also been undertaken in many countries. Commercialisation is the process of public bodies adopting management practices of private sector businesses (for example, by setting commercial and profit goals as the basis of decision-making and accountability). On the other hand, corporatisation refers to the process of transforming the structure and organisation of government departments and statutory authorities to resemble that of companies (Collier & Pitkin, 1999). In New Zealand, most of the erstwhile commercial departments and statutory bodies were successfully corporatised. Within a couple of years, these enterprises showed remarkable progress in terms of profitability and eventually these were privatised (Massey, 1995). In Australia, corporate plans now serve as the key accountability document between the enterprise and the government (Dawkins, 1995; Wittenhall, 1998; Brown *et al.,* 1999; Collier & Pitkin, 1999).

Corporatisation refers to the process of transforming the structure and organisation of government departments to resemble companies.

Developing countries, including the transitional economies in Eastern Europe, have also embarked on public enterprise restructuring. Both commercialisation and corporatisation have been their preferred options (Knapman & Saldanha, 1999; Islam, 1993; Commonwealth Secretariat, 1991; McCarthy & Puffer, 1997, 1995).

Concerted efforts are also being made to devolve significant authority to front-line managers regarding

financial management and human resource management practices. It means giving more powers to managers and lower levels within the public sector with clear accountability. Current practices include the devolution of budgets and financial control to managers and creating budget centres or spending units. Britain, Australia and New Zealand have taken efforts in this direction (O'Faircheallaigh, *et al.,* 1999: Mountfield, 1997; Boston *et al.,* 1996). Singapore, Malaysia and Ghana have also started a process of devolution of financial management (Kaul, 1997). Similarly, the devolution of human resource management practices has empowered to deal with crucial aspects of recruitment, promotion and firing of officials (O'Faircheallaigh, *et al.,* 1999). However, the trend of structural reform in the public sector in many developing countries does not imply a break-up of the traditional civil services (Huque, 1996; Kaul, 1997; Borins & Warrington, 1996; Hamid, 1995; Shafie, 1996).

Customer and performance orientation is another aspect of reorganisation. Attempts are being made to find out what customers expect, for example, by way of surveys or user groups. Britain's 'Citizen Charter' is a classic example as to how the quality of public services is increasingly being measured by consumer satisfaction. It requires public agencies to set explicit standards monitored and published for the services that individual users can expect, to provide full and accurate information about services, provide choice where possible and regularly consult service users' views (Shafritz & Russel, 1996). Following Britain's 'Citizen Charter', a number of developing countries such as India, Malaysia, Namibia, Ghana and Mauritius have established similar Charters to improve service delivery system (Kaul, 1997). Malaysia's 'Total Quality Management' involves setting targets, designing measures of performance, work improvement process and the service recovery system (Chiu, 1997). In Bangalore, India, through 'report cards' citizens and businesses evaluate the services of public agencies (World Bank, 1997). In Ghana, ministries, departments and agencies use beneficiary surveys as means for making them more responsive to the users of their services (Larbi, 1999).

Many developing countries are endeavouring to implant strategic management system, programme budgeting and accrual accounting and performance measurement systems with an avowed objective of improving performance of public sector (Kaul, 1997; Borins & Warrington, 1996). Many South Pacific Island countries have adopted strategic management model in the public service (Knapman & Saldanha, 1999; Public Service Commission 1993). Brazil offers one of the best examples of strategic management and action planning at the municipal level. Similar measures have been taken by other developing countries such as Ghana, Malaysia and Uganda (World bank, 1997).

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In order to develop a performance-based accountability system, the use of performance measures is a common practice in many developing countries. In Sri Lanka, the Urban Programme Unit has developed a fairly extensive range of indicators for the purpose of assessing grant entitlement and adjudicating competition among local authorities for performance awards. In the South Pacific, Fiji Islands has adopted a fairly comprehensive performance measurement system (Public Service Commission, 1998). The focus on performance measures has also changed the nature of performance appraisal system. Malaysia's performance appraisal system includes setting annual targets, a mandatory mid-year review of the work performance in relation to targets set, a coordination panel in each ministry or agency to ensure fair and objective appraisal, and the selection of excellent employees for reward and recognition (Shafie, 1996). All these efforts of performance management aim to create an entrepreneurial culture in public service (Grindle & Hilderbrand, 1995; Hamid, 1995).

Major Areas of Concern

The fundamental aim of the NPM model has been to supplant the traditional model. While in terms of structure and processes, it has offered new dimensions, still it is premature to derive definite conclusions about the outcome and impacts of NPM. The following are some of the major areas of concerns that the practitioners of NPM are still struggling with:

There is apprehension over the conceptual basis of the new model. There are conflicting value positions underlying the debate. This is compounded by a tendency to blur the distinctions between public and private sectors and perhaps, as importantly, often to treat the public sector as homogeneous in organisational terms rather than as a differentiated system of organisations with different tasks, values and relationships often linked into complex policy networks (Dunleavy & Hood, 1994; Gray & Jenkins 1995).

Concerns are also expressed regarding the structure and accountability of administration. Accountability in conventional system rested on certain practices such as fixed salaries, rules of procedure, tenured service, clear lines of division between public and private sectors. On the surface, it appears that lack of such well established practices might encourage non accountability and ethical problems (Hood, 1991). The much-publicised British and New Zealand models have proved controversial, with anxieties developing about public accountability (Minogue, 1998).

One of the obvious problems in implementation of NPM in developing countries has been the lack of proper infrastructural facilities such as technology, skill base etc. South Pacific Island countries (Fiji Islands, Cook Islands) Ghana and Tanzania have faced these types of problems (Chand, 1999; Knapman & Saldanha, 1999; Turner & Hulme, 1997). There are now strong arguments that developing countries cannot apply a decentralised, fragmented model of reform if they do not have a traditional unified civil service to begin with (Minogue, 1998).

Kiggundu (1989) in an analytical study on Africa has even questioned the usefulness of strategic management to NPM practitioners. Moreover, like strategic management, some other sophisticated management practices have also faced serious setbacks (Hughes, 1998; Knapman & Saldanha, 1999; Scott, 1993). Pollitt (1990) tends to relate the problem of application of NPM to the distinct domains of both public and private sectors. According to him, economics has some validity in relation to its use in private sector. Its application to government is ill conceived. So the generic relationship between management and consumers is not applicable in public service (Pollitt, 1990). Haque (1996) also extended this line of reasoning and argued that in the domain of public sector, the lesser specified objectives, unquantifiable outputs, accountability to the pressure groups, and its focus on distribution and equality do not permit such performance measurements as adopted in the private sector.

In the domain of public sector, the lesser specified objectives, unquantifiable outputs, accountability to the pressure groups, and its focus on distribution and equality do not permit performance measurements adopted in private sector.

Commercialisation and corporatisation measures have created confusion. The number of success stories is small; the rate of failure is an incessant phenomenon. Following New Zealand experience, many South Pacific countries corporatised SOEs. However, evaluation studies reveal that the performance of these enterprises has not improved; governments still intervene to realise their political objectives; corruption is still rampant; there is still lack of institutional and organisational capability etc. (Bulai, 1996; ADB, 1998). Zhu (1999) reports on China's corporatisation and observes that the worsening agency problems and excessive welfare burdens, as well as increasing competition have contributed to increasing losses. In China, managerial problems in joint ventures are also extensive. Their lack of hands-on experience with technology, particularly in the case of machinery and its maintenance, not only creates serious problems in the manufacturing and distribution process but extends to after-sales service as well (Stanbury, 1997).

The social and economic costs of the reform may be enormous. Likewise, a short term focus on efficiency might reduce the development of human resource potential in the long run. In a small country like Cook Islands with a population size of around 18,000, more than 50 per cent of the total public service employees were made redundant overnight, thus causing economic hardships and large scale migration of skilled workforce (NZODA, 1997; Knapman & Saldanha, 1999). Cook & Kirkpatrick (1998) have provided ample evidence as to how restructuring programmes have caused various problems, particularly unemployment in numerous developing countries.

The issue of privatization has raised serious concerns about the whole question of the existence of public management as a distinct profession and discipline. Some argue that privatization ideology has disparaged the legitimacy, ethics and morale of the public service and thereby created threefold serious intellectual crises in public administration as a field of study: the credibility crisis, the normative crisis, and the confidence crisis (Haque, 1996).

Critics have also raised concerns about the applicability of NPM model in the developing country context. Since NPM insists on implanting market principles in its operations, doubts are raised about the level and extent of 'market' in developing countries. A market-oriented system requires institutional and organisational capacity to flourish and work efficiently. Many developing countries often have little experience in the operations of markets. More importantly, these countries lack institutional and organisational back-up to foster market-oriented system (Hughes, 1998). The proponents of NPM need to examine whether human

resources and organisational capacities within a developing country are sufficiently developed to make market or quasi-market based competition feasible (Turner & Hulme, 1997).

Proponents of NPM need to examine whether human resources and organisational capacities within a developing country are sufficiently developed to make market based competition feasible.

There are particular problems with regard to the privatisation of public enterprise. Firstly, there is hardly any situation where a case-by-case analysis is followed. This is important because some enterprises are well managed and serve governmental and societal purposes as well as commercial ones. Secondly, there are circumstances in which privatisation will inevitably mean foreign ownership or ownership by one particular ethnic group thereby risking societal cohesion. If markets are undeveloped, privatisation will mean foreign ownership and public utilities will need to be carefully regulated (Ramanadham, 1993).

In most of the developing countries, it is difficult to find concrete evidence regarding efficient performance of privatised enterprises. More importantly, the way state enterprises were sold out to private entrepreneurs has engendered controversies and scandals. The privatisation measure in Bangladesh is a case in point. First, the numbers of default loans are increasing day by day. Second, many of the privatised enterprises have become sick, Third, patronage networks and bribery play instrumental role in the process of denationalisation. Fourth, the programme itself provides ample avenues to both the bureaucracy and the corrupt political leaders to accumulate unearned surpluses (Khan, 1989; Muhith, 1993). Overt politicisation and corrupt practices are also observed in contracting out of numerous public service (World Bank, 1997). Even in a country like United States, this has been a problem. Quoting many examples of corrupt practices, Thayer observes: Such outcomes are to be expected when operating environments are designed in ways that encourage all those competing for survival in those environments to lie, cheat, and/or steal. In the realm of commerce, business people need not be 'natural or 'born' criminals to know that they will lose business if they are not corrupt (Thayer, 1990: 157).

Russia's experience, in particular, is quite relevant here. As Russia moved toward a market-based economy in 1992, the situation for enterprise managers changed dramatically. Many enterprises operated with outmoded plants and equipment and were grossly overstaffed. Bank loans were scarce, and if available, came with exorbitant interest charges. Inflation during that period was reported to be 2,600 per cent, a factor contributing to a near catastrophic devaluation of ruble. Restrictive and ever-changing government policies, coupled with onerous and unpredictable tax laws, added to the extremely difficult environment facing managers. Along with this, political instability and massive corruption further aggravated the situation (McCarthy & Puffer, 1997, 1995).

It appears that there might be a fundamental fallacy in the application of NPM in developing countries. Lessening the government was the slogan in the West because of its over-governance, proliferation of institutions and multiplication of obscure legislation. Measures are required to increase efficiency and competition through cost cutting. Developing countries can't fulfill any of these objectives. So the context is different. We are not arguing that efficiency, productivity and competition are not needed. Our concern is whether it can be achieved through NPM. Turner & Hulme (1997: 249) argue:

> Whatever the reasons—naivety, historical and environmental blindness, or ideology—a powerful international lobby is promoting a 'one size fits all' approach to public sector reform in spite of the evidence accumulated from organisational and management theory and from empirical study that the outcomes of planned changes in organisations are conditioned by many contingent factors, especially those in the organisation's environment. In some context, NPM may yield its promised benefits, but in others the possibility of it contributing to reduced performance, and even political instability must be recognised.

What we want to emphasize is that institutional and organisational set-up in the developed and developing countries are quite different. What is appropriate for the West may be unsuitable for the developing world. North, a novel prizewinner in economics, has put it in this way:

> ...societies that adopt formal rules of another society—will have very different performance characteristics than the original country because both the informal norms and the enforcement characteristics will be different. The implication is that transferring the formal political and economic rules of successful Western market economics to Third World and Eastern European economies is not a

sufficient condition for good economic performance. Privatization is not a panacea for solving poor economic performance (North, 1995: 18).

Kiggunda's (1998) analysis provides insights into incompatibility between NPM and the developing country context. First, there is a lack of strategic visioning linking public service reform to the broader aspects of the country's political economy. Second, in most countries, reforms lack sustaining political and community support. Third, public service reform carries with it a greater burden of expectations than most governments have the capacity to deliver on a sustained basis. Finally, there is a lack of equipment, supplies, computers and vehicles, physical plants, and a general lack of positive work values, motivation and attitudes which impede the effective and sustainable implementation of reform.

However, this critical appraisal does not imply that NPM is altogether unacceptable. Certainly it has some promises which, if properly implemented, can help improve the efficiency and effectiveness of the public sector. The old model has some chronic flaws. NPM is expected to address severe administrative problems and holds definite promises for developing countries, the administration performance can be improved if the reform programmes are cautiously designed and implemented. But NPM is just another Western model superimposed over the developing countries without considering the local socio-political and economic issues. Moreover, a radical rather than incremental approach has been adopted, thus resulting in dysfunctional consequences of the NPM for most developing countries. Dia, (cited in Minogue, 1998), a keen observer on African administration, suggests a governance approach to reform, i.e. economic reform packages should be designed for the particular needs of the individual country. There are some general stages a reform programme should follow to begin to resolve the problems. These involve improving the institutional environment, better economic management and coherent public service management. A strategy is required which changes the whole culture of the civil service.

Conclusion

The NPM framework, in both developed and developing countries, was proposed as an appropriate response aimed at making the public sector administration more efficient, effective and responsive. A number of measures such as small government, professional management, output orientation, performance-based accountability system, performance measures, strategic planning, quality management, contracting out, privatisation, output budgeting, accrual accounting, contract employment and so forth have been suggested for improving the performance of the public sector in both developed and developing countries. All the developed countries and developing countries have endeavoured, over the years, to implement reform measures, though the intensity of the implementation of reforms is much lower in case of developing world. It is too early to assess the impact of the reform programme, but early signs indicate its relative success in the developed countries. Only a handful of developing countries (e.g. India and China) and a few of emerging industrialising countries have shown some prospects. A large majority of developing countries including former Soviet block countries are struggling hard to cope with the new situation.

Although the reform programme is at the early stage, it is facing problems of numerous types in both developed and developing countries. Critics argue that the argument in favour of introduction of NPM system is not convincing, particularly as it has failed to address the crucial issues of ethics, accountability, non-partisan distribution and administration. More importantly, the fundamental logic of the supremacy of the private sector over the public sector in terms of the efficiency criterion is inconclusive, the link between privatisation and economic growth has not been demonstrated and profitable and efficient public enterprises exist in all types of economy. It has also been argued that the very institutional and organisational structure of developing countries poses stupendous problems to successful implementation of the reform programmes. Particularly, in least developed countries, the reform programmes have further deteriorated the already fragile administrative system.

NPM has failed to address the crucial issues of ethics, accountability, non-partisan distribution and administration.

Now the question remains as to whether NPM will provide lasting solutions to the problems of public sector. Based on the developments taking place in the developed world for the last two decades, it can be safely said that the NPM has come to stay. There will be more market orientation to the public sector. The tripartite relationships between the public sector, NGOs and the private sector will be strengthened. There is likely to be more politicisation of administration. More flexible administrative system in terms of organisational dynamics, staffing and finance is likely to emerge. Participation is likely to take a firmer place in organisation as opposed to the traditional mode of administration. In the case of developing countries, the situation is relatively uncertain. Most developing countries are adopting

the model without considering the socio-economic and political implications. Perhaps because of their vulnerable position at the international level, these countries are being 'forced' to adopt the model. However, recently, a couple of open demonstrations have taken place in Washington against the International Monetary Fund and the World Bank for their alleged roles in misery in the developing world caused by reform. Although there is an obsession with the experiments with market solutions, still there is a long way to go to replace the traditional model. In some cases, some precepts of the traditional model might help to restore order in the administrative system i.e. getting the fundamentals right—a prerequisite for economic growth and development.

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Indonesia: Women in Civil Service

Lukman Idrisalman

Retrogade social cultural milieu and negative stereotype creation of women and men through mass-media have strengthened the trend that political power remains men's domain. Women's representatives are also fewer in decision making positions of arts, culture, sports, media, education, religion and law, making women less influential in most important institutions. This article delineates the position of women in civil service in Indonesia, the issues involved and a few recommendations.

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The universal declaration on Human Rights justifies that everybody has the right to participate in the government. However, though democratization movement has spread in most countries, women are still in minority in government institutions, especially in certain departments and executive boards. There has also been little progress achieved by them in getting political power in the legislative body. In some countries including those facing the process of political, economic and social change, the total number of women representatives in the legislative bodies is declining. Worse, in most countries, only half of the women voters have the right to choose and occupy positions of power.

Traditional working patterns of political parties and government structures still become stumbling blocks for women to participate in the state's activities and high expenses needed for candidature dissuade women from joining political positions including government decision making. However, the process of empowering and autonomy of women has enhanced their social status, in all fields of sustainable development in Indonesia, including government administration.

Gender-Based Approach

A review of past practices and field observation of the present reality show that equal partnership between men and women has not yet been fully achieved. Efforts to enhance the status, role and participation of women in the government and national development can be consolidated by the use of gender-based approach and this outlook has been developed by the Indonesian government since The Sixth Five Year

Efforts to enhance the status, role and participation of women in government can be consolidated by the use of gender-based approach.

Table 1: Civil Servants in Governmental Departments/Agencies

Agency	1997		1998		1999
	Women	Men	Women	Men	Women
Dept. of Internal Affairs	33,657	148,899	33,844	148,310	34,705
Dept. of Foreign Affairs	786	3,163	785	3,164	779
Dept. of Security and Defense	43,571	109,320	43,107	107,047	42,830
Dept. of Law and Legislation	11,119	44,021	11,171	44,136	10,805
Dept. of Finance	11,906	55,468	12,087	56,238	12,272
Dept. of Mines and Energy	1,388	8,677	1,384	8,611	1,364
Dept. of Industry and Trade	6,802	23,540	6,794	23,482	6,644
Dept. of Agriculture	15,793	71,720	15,733	71,241	16,332
Dept. of Forestry and Plantation	3,058	33,076	3,055	32,942	3,265
Dept. of Transportation	6,011	74,763	6,009	74,638	6,428
Dept. of Man Power	5,099	18,307	5,090	18,183	5,376
Dept. of Health	162,094	134,972	161,640	134,135	169,421
Dept. of National Education	903,146	1,134,921	903,991	1,134,780	992,424
Dept. of Religion	60,818	148,038	62,485	146,725	61,655
Dept. of Cooperative & PKM	4,168	12,720	4,145	12,552	4,098
Dept. of Art and Culture	975	2,725	975	2,723	971
Dept. of Public Works	4,442	36,374	4,418	35,968	4,554
Dept. of Trans. & Population	3,677	13,844	3,691	13,714	3,792
Board of Nat. Information Coord.	14,397	38,932	14,527	38,950	14,650
National Agency of Social Welfare	7,912	14,446	7,875	14,357	7,952
State Secretary	492	2,337	492	2,337	478
Sec. of People's Cons. Assembly	56	166	57	165	55
Sec. of Supreme Adv. board	73	246	73	240	71
Sec. of House of Representative	247	934	247	935	243
Supreme Court	319	888	319	888	309
General Attorney's Office	3,853	14,104	4,036	14,424	3,885
Finance Supervisory Board	459	1,623	575	1,731	680
National Agency of Code	84	307	82	311	94
Nat. Agency for Personnel	979	3,442	1,054	3,577	1,073
Nat. Agency for State Adm.	177	455	177	456	194
Nat. Space Aviation Council	16	37	16	37	16
Board of Comm. of Telp. & Com.	2	7	2	7	2
National Space Aviation Board	224	1,187	224	1,187	228
State Intelligent Coordinating	25	1,136	24	1,133	23
National Institute of Science	970	3,802	987	3,833	981
National Atom Agency	758	3,254	767	3,283	756
Central Bureau of Statistics	2,541	10,275	2,572	10,337	2,621
National Planning Board	196	637	196	637	191
National Archives Board	185	436	185	436	202
Co. Agc. of Nat. Survey & Mapping	135	590	135	590	136
The Nat. Family Planning Board	20,360	34,422	20,339	34,369	20,087
Nat. Dev. Coordinating agency	129	383	129	383	130
Nat. Security & Defense Council	15	53	15	53	15
Board of Tech. Research & Dev.	425	3.012	450	3,115	449
B. of Finance Supervisory & Dev.	1,483	6,197	1,481	6,190	1,560
The National Land Agency	4,405	22,766	4,381	22,541	4,419
National Library	832	922	830	923	825
Env. Impact Monitoring Board	176	227	176	229	176
Board of Logistics affairs	661	5,652	698	5,652	723
Civil Servants for Autonomy Reg.	103,146	402.369	103,175	401,443	106,076
Total	1,444,242	2,649,791	1,285,060	2,643,338	1,547,015

As on: March 31st, 1997 - March 31st, 1999 *Source:* State Personnel Board

Development Plan. This concept has been formulated as follows:

> "Harmonious gender partnership between men and women is a dynamic condition in which men and women have equal rights, obligations and opportunities based on mutual respect, appreciation, support and mutual help in the context of national development in various fields."

National development based on gender approach is defined as an approach to development which integrates the aspirations, needs and participation of women and enhancement or empowerment of the status and role of women in both policy and development strategies in various fields and sectors, as well as in family life. Since the launching of this concept in 1995 by the State Ministry for The Role of Women to the efforts of the present State Ministry for the Empowerment of Women, its impact remains to be seen. This study attempts to present the facts, figures and implementation of this concept regarding Women in Civil Service.

The Government Apparatus

There are two types of Government Systems in Indonesia – a management system, with institutions, in charge of governmental procedures and supervision; and another apparatus as a group of people who serve the Country and Government needs (the Civil Servants). As the Indonesian Constitution (1945) mentions, the success of the administration system depends on the loyalty of the state administrators. It is therefore the loyalty of the civil servants that fully determines the success or failure of the state in achieving developmental goals.

From 1969 to 1994, the numerical strength of Civil Servants has grown, from 1, 4 millions, in 1974 to 3, 9 millions in 1993. In other words, the number increases approximately 130,000 annually. The highest increase was in the years of 1979 and 1984, where approximately 250,000 people a year were recruited as civil servants. The high number of civil servant appointments was needed for primary school teachers and medical personnel in order to enhance basic education and healthcare.

Since 1994 the government has been applying zero growth policy. Ministries and Non-Ministerial Agencies have to reorganize their personnel. Civil Servant recruitment orientation was initially designed to give more opportunity for people to work for the social function of government has now shifted to emphasis on implementation of main government and developmental tasks. For this purpose, Ministries and Non-Ministerial Agencies set their personnel standard for all their organisational units. This standardized system helps in the assessment of surpluses and shortages in manpower. The number of civil servants in 1997 that was 4,094,033 decreased to 3,928,398. However, the number increased to 4,005,460 in 1998. This increase was due to political demands and the enhancement of development activities in certain sectors and provinces. Out of these figures, heavy female concentrations could be found in the departments of National Education, Health, and Religious Affairs (see table 1 as many as 1,126,058 in 1997, 1,128,116 in 1998 and 1,223,500 in 1999). They are not so dominant in other government institutions. Among the various government institutions/agencies, the lowest number of women is found in the National Defense Council which is only 15 females compared to 53 Men. The number of women working in the Local Government Institutions was 103,379 in 1997, 103,397 in 1998 and 106,132 in 1999 (see table 2).

Table 2: Civil Servants according to Agencies

Type of Service	1997	1998	1999
Work in Departments	539,812	542,567	515,907
Assigned on DO/ other agencies	749,276	749,048	758,036
Employed in DO/ other agencies	51,775	51,686	51,940
Local Civil Servants	103,379	103,397	106,132
Total	1,444,242	1,446,698	1,432,015

As on: March 31st, 1997 - March 31st, 1999

Source: State Personnel Board, 2000.

Indonesian Civil Service recognizes two positions: structural and functional. Structural positions are for those occupying echelon I (Secretary General, Director General, and others), echelon II (Director, Center Head, and others), echelon III (Sub Directorate Head, Division Head, and others), echelon IV (Section Head or Sub Division Head) and echelon V (Sub-Section Head). Functional positions are educators (starting from kindergarten teachers upto professors in the university), functional trainers (those responsible for education and training for Civil Servants), researchers and others.

Among these two positions women are catching up in the functional position. Table 3 shows that the number of women is 860,825 in 1997 compared to 863,724 men in the same year and in 1998 the number of women is higher than men. As primary school teachers, women hold more positions than men. As researchers women occupy almost 50 per cent of available positions (table 3, Fig. 1). In the structural position, on the other hand,

Table 3: Data of Civil Servants According to Positions and Gender in 1997 & 1998

Position	1997		1998	
Educational Position	863,724	860,825	868,848	871,104
Lecturer	317	39	359	41
Madya's Lecturer	621	87	688	99
Senior Associate Prof.	1,731	324	1,817	371
Senior Imd. Ass. Prof.	2,472	603	2,712	677
Associate Professor	7,123	2,152	7,299	2,289
Intermediate Ass. Prof.	5,434	2,336	5,813	2,563
Junior Associate Prof.	8,175	3,830	8,692	4,071
Skilled Assistant	7,213	3,676	6,888	3,649
Skilled Assistant of Madya	9,892	5,376	9,429	5,109
Kindergarten Teacher	1,652	28,994	1,646	29,000
Elementary Teacher	582,038	624,172	584,726	632,521
Junior High Teacher	142,341	121,582	143,381	122,511
Senior High Teacher	94,715	67,654	95,344	68,203
Research Position	2,702	958	2,872	1,032
Skilled Researcher	168	23	168	23
Researcher	653	149	754	178
Ajun of Researcher	1,044	410	1,088	427
Researcher Asst.	837	376	862	404
Structural Position	231,115	37,679	229,922	37,845
Echelon I	236	11	294	15
Echelon II	2,391	95	2,397	100
Echelon III	22,483	1,777	22,502	1,799
Echelon IV	90,179	13,020	89,122	12,966
Echelon V	155,626	22,776	115,607	22,965
Other Positions	1,552,469	544,874	1,460,401	436,462

Source: State Personnel Board, 2000

women only occupied 16.30 per cent in 1997 and 16.46 in 1998 (table 3 and Fig. 2). The increase of women in this position is only 0.16 per cent annually. In echelon I position, there are only 11 women compared to 236 men (0.04 per cent). In short women's position in structural positions is still a big question mark, Why? Functional positions are not so difficult for women to compete because the requirements for this position can be achieved through individual independence (credit points based on personal achievement). The requirements for structural position are competitive and based on professional achievement such as seniority in rank, good human relations, good communication skills, working experiences, good results, as judged by the Superordinates and passing the test for education and training programs. In addition to these formal requirements, there are various extra activities needed such as internal or external coordination, overtime work up to several hours after formal office hours and field visits for several days either within or outside the city and travel to various remote areas due to duty obligation. For certain positions in local governments, the geographic peculiarities of the region, more particularly the component local areas and bodies of water make it imperative for management to give preference for males because of the demand for physical fitness and capability to undertake official travel under unfavorable conditions. Women especially married ones are unable to accept challenges or seize opportunities because of their priority to family affairs or fear of broken marriages.

It is also acknowledged that gender bias does exist in government bureaucracy, causing frustration, demorali-zation, and disillusionment among women employees who have been harassed or discriminated against. Other problems are embedded in the general mindset and unfavorable cultural environment which foster gender discrimination. Because of the invisibility of much of women's work, and the double burden they carry everyday, many of them cannot avail themselves of the resources and opportunities around them. Men continue to be more advantaged in the structural position while some government agencies continue to employ them more. For harmonious gender partnership, these imbalances should be corrected or overcome, not only by women themselves but also by the whole society including the government.

For men and women to become equal partners as desired, the society must address a number of factors which cause inequality between genders. Women in Civil Service as mentioned earlier is one of the factors to be considered and solved accordingly. Goals set by the State Ministry for the empowerment of women and policies employed in achieving of harmonious equal partnership between women and men in national development are designed to improve women's status, role and opportunities through improvement of women's skills and self-reliance, including mental and spiritual resilience.

Other factors that should also be considered are the low status and inferior treatment meted out to women by the society. Women are subject to poor health services, lower salary, and unsatisfactory working conditions. In general women have lesser opportunities in terms of education and skills, especially in the field of science and technology. Societal norms make them timid and unable to express their opinions, aspirations

The structural forms for improving OB may be drawn from Western experience, while the ways of making them effective can be indigenous.

being likely to yield an optimum result. The new wave in management focuses on empowerment and accountability of managers. As Napoleon said, "there are no bad soldiers, only bad officers".

The leader is one who motivates employees to bring out their best to achieve job performance; develops and trains people to be adaptable to the job requirements; instils confidence in them, entrusts them with a sense of responsibility, holds them in respect and finally provides them support and encouragement for the effective implementation of the organisation's policies and programmes. However, as Pastermack and Viscio (1998) observe, there is no longer a need for a centre in the corporation in the familiar sense. Instead, the real centre of the centreless corporation is an extended leadership team. The world moves too rapidly for any company to rely heavily on a few leaders. In the Centreless Corporation, leadership is spread throughout the pieces of the company. Rather than managing the activities of the company, the CEO creates the context for growth with a heavy emphasis on the enablers of growth. The context provides direction in terms of vision and culture. The enablers make growth actually happen. Who are these enablers? Are they necessarily the leaders? Here, one remembers Percy Barnevik, CEO of ABB, who observes 'there is tremendous potential in our people. Our organisations ensure that they only use 5 to 10 percent of their abilities at work. Outside of their work, they engage the other 90 to 95 percent to run their households, lead a Boy Scout troop, or build a summer home. We have to learn how to recognise and employ that untapped ability that each individual brings to work everyday.'

Reengineering – the Concept

The latest management technique in the 1990s refers to people and reengineering. Michael Hammer popularized the concept of Business Process Reengineering (BPR). It basically refers to fundamental rethinking and radical redesign of work processes so that the company becomes lean and develops quick response capabilities to face competition and to exploit new opportunities. This led to several organisations delayering and down sizing, cutting swathes through the layers of middle management whose role was to supervise the work of others and transmit information up and down the hierarchy. Tough international competition is pushing many Asian companies into reengineering. Asia's reengineering experts often disagree about how to implement it, but one point they all agree on is that organisations in the region should be doing it, and sooner rather than later. Reengineering has not been an unqualified success – there are numerous reports of reengineering failures (Hammer & Stanton 1995). While many of these reports are misleading or even mistaken, it is true that many companies have undertaken reengineering efforts, only to abandon them with little or no positive result. These failures are significant. They reflect a fundamental fact of reengineering.

As Champy (1995) observed, what must be abandoned by management is a whole ideology, a whole way of thinking about power. Reengineering has worked when OB has been addressed simultaneously. An American mining company saw its revenues increase by 30 per cent and market share by 20 per cent, while cost went down 12 per cent and cycle time 25 per cent. After reengineering its inventory replenishment process, a U.S. clothing manufacturer doubled sales, increased its market share by 30 per cent, and cut cycle time by 25. Such success stories call for attention on issues managers must address such as issues of purpose, issues of culture, issues of process and performance and issues of people. If successful reengineering requires a change in a company's whole culture, how is it to be accomplished by the same management? Since reengineering is unlikely to succeed where the corporate atmosphere is charged with fear, how do we generate a better environment? How do we set norms and standards, or measure results for worker performance, management performance, and the performance of the whole organisation? Reengineering usually demands radical objectives and leadership and political skills.

Successful reengineering requires a change in a company's whole culture.

Industrial engineers redefine reengineering as the rapid and radical redesign of strategic, value added business processes and the systems, policies and organisational structure that support them – to optimize work flows and productivity in an organisation. After all, reengineering is the fundamental rethinking and radical redesign of business process to achieve dramatic improvement in critical contemporary measures of performance such as cost, quality, service, and speed. RE is also defined as the use of tools combined with enabling technologies to provide an explosive mix to make dramatic change throughout the organisation and to

The six core areas for implementing reengineering are: roles and responsibility, measurements and incentives, organisational structure, information technology, shared values and skills.

deliver what the customer requires. RE is not just business improvement programmes. It is not just restructuring or down sizing to produce flatter organisations. Quality improvement concepts like TQM, TQC, Kaizen are different from RE as the former work within existing processes and try to improve it. The six core areas of the organisation for implementing reengineering are: roles and responsibility, measurements and incentives, organisational structure, information technology, shared values and skills. The guiding principles of reengineering include:

- Organize around outcomes, not tasks
- Involve those who use the output of the process and perform that process
- Subsume information processing work into real work that produces information
- Treat geographically dispersed resources as though they were centralized
- Link parallel activities instead of integrating their results
- Put the decision point where the work is performed and build control into the process
- Capture information once and at the source.

OB Features for BPR

Business Process Reengineering (BPR) demands that employees must hold the following core values:

- Customers pay our salaries; I must do what it takes to please them.
- Every job in the company is important and essential; I do make a difference.
- Showing up is no accomplishment; I get paid for the value I create.
- I must accept the ownership of problems and solve them.
- Constant learning is part of my job.
- I belong to a team; we fail or succeed together.
- Managers change from supervisors to coaches.
- Executives change from scorekeepers to leader-managers.

In the global context, the benefit that a company can receive is a direct result of the extent of change implemented and the starting point. Dramatic changes produce dramatic results. The following changes are possible: 30-35 per cent reduction in the cost of sales, 70-75 per cent reduction in delivery time, 60-80 per cent reduction in inventory, 65-70 per cent reduction in cost quality, an unpredictable but substantial increase in market share. The tangible benefits as highlighted above are great dramatic improvements in performance and competitiveness. The intangible rewards like people's attitude towards managing and work can even be greater. At the same time we should remember Alan Fowler's observations that enthusiasm without a framework of procedure is likely to be as ineffective as systems operated without commitment.

While quality has become a global management concern, the approaches to it are by no means universal. Quality management in the west focuses on *controlling* quality, while in Japan, it is aimed more at *improving* quality. Dr. Hitoshe Kume, Professor of Engineering, University of Tokyo, observes that this difference arises from contrasting views of the proper role of quality for new products. Dr. Vaniel Hunt writes, "The key to competitiveness is to avoid emulating one nation's approach: keep an honest set of business priorities firmly fixed in your minds, and allow them to guide your actions." Most quality initiatives are examples of three approaches widely used in the West and Japan. One approach emphasizes TQC (total quality control), which blends the ideas of Deming and Ishikawa, with heavy emphasis on statistical process control and quality circles. Another focuses on 'culture change'—the radical change in behaviour and values of a company and its people. The third approach attempts to follow the IBM model, which puts heavy emphasis on improvement teams. Each of these approaches has aspects which are useful. However, the situations for which they were developed are different in many ways from those which face Asia's companies.

Dr. John Romanga, (1995) Managing Director of Hong Kong-based QSA-Mortiboys, identifies six important characteristics of Asian companies: strong entrepreneurial orientation and high staff turnover; diversity of outlook—confucian emphasis on family and hard work combined with an openness to Western management methods; quiet quickness—a paradoxical blend of wanting to avoid conflict along with willingness to make quick and what sometimes appear to be arbitrary

decisions; radical technological opportunism – companies in the region actively seek out and introduce new technology, wherever it comes from, as soon as it is available; diversity of work experience; and, finally sheer strength in numbers, there are more small businesses in Asia than there are in the West. Family controlled groups, in particular, often spin off into two or more companies which are focused on a different category of customers, or geographical location, or product type. Companies which have these characteristics have different needs than those for which the three typical quality approaches were created. They don't need to create a new commercial culture to replace a bureaucratic outlook. Instead, they need a system which enables them to take advantage of their diversity of outlook and experience. They don't need to carry out radical downsizings. Instead, they need a flexible mechanism for growing in which they can know how all the parts support the whole. They don't need to carry out Kaizen – like improvements to a system which was created quickly, and sometimes haphazardly, to meet the demand of growth. Instead, they need to put in place core systems which are flexible, facilitate growth, and which can serve as a basis for Kaizen in the future.

Romanga identifies six characteristics of Asian companies: strong entrepreneurial orientation and high staff turnover; diversity of outlook, quiet quickness, radical technological opportunism, diversity of work experience and strength in numbers.

OB in Indian Context

In the Indian context, what is required, is: Reengineering Organisational Behaviour (ROB). ROB's priority is on developing organisational culture. This could be achieved through different phases – by developing corporate mission and strategic planning, (this gives birth to the culture), developing a human resource plan (it defines the culture), by appropriate recruitment and selection (it helps in locating the bearers of the culture), training and development (it facilitates instilling the culture), target setting and appraisal (it promotes the culture), reward management (it facilitates reinforcing the culture), and, succession planning and exiting (it focuses on maintaining the culture). This culture building refers to change management in organisations. Resistance to change is normal, and organisations sensitive to the human element understand it well. Kotter and Schlesinger (1979) identified six strategies to overcome resistance to change. They also placed these strategies along a continuum representing the increasing potency of each strategy: Communication, participation, facilitation, negotiation, manipulation, and coercion in that order. They emphasized that an appropriate strategy or a set of strategies should be selected by the manager depending on the level of resistance. More potent strategies, such as manipulation and coercion should be used if resistance is likely to be more deeply rooted. The right climate of change can be created by building trusting relationships, communicating openly, encouraging two-way feedback, addressing individual concerns, and explaining readiness to change. Involving people in planning a change helps in preparing them for it, and thereby reduces resistance. Managing change could be fostered by reengineering organisational behaviour.

The human resources strategy for the new millennium should be broad-based, flexible, and based on empowerment (Rath, 1998). Empowerment strengthens motivation and manages conflicts positively. It incorporates authority, resources, information and accountability. Integrating HRM with Corporate Strategy (CS) can be done in two ways: Breakdown Maintenance Strategy (BMS), and, Preventive Maintenance Strategy (PMS). BMS is followed by Indian companies under circumstances when managements fallout with trade unions and adopt the ABCD formula (Agitation, Bargain, Confrontation and Demand). Some progressive companies follow PMS by encouraging group activities through which management-union relationship is safeguarded. In view of these, integration is necessary. It could be facilitated at core level, structural level, and the implementation level. These include changing the mindset, developing awareness of goals and objectives, comparing data at all levels, understanding customers, and, enabling shop-floor employees to implement top decisions. Reengineering OB goes beyond strategic planning towards 'strategic thinking'. Human resource still remains the primary fall-back for corporations to achieve greater productivity and corporate excellence (Ray, 1998). Quality and value-adding performance management of human resources would be the key contributor and determinant factor for survival and growth in fast changing and highly competitive business environment because other management resources (material, money, information) have virtual limitation. Only human resource has unlimited potential and

Involving people in planning a change helps in preparing them for it and reduces resistance.

capacity, whose performance management shall ultimately matter.

Reengineering OB also looks forward to a new kind of leadership in Indian organisations. Marked by flexibility, openness, and an ability to integrate the human quality, something which should be consciously learnt by current and aspiring managers alike. A total leader is a synergy of the two styles of leadership: transactional and transformational. The high-performance, competency-based work place requires emphasis on learning as the key to future competitive success. The leaders have to not only possess these premium skills themselves, but must also hire people who possess these skills, to work in association, co-operation, and collaboration with one another (Sabat, 1998).

OB & Learning

In times of drastic change, it is the learners who inherit the future. Reengineering OB looks for learning organisations. Learning in an organisation means the continuous testing of experience, and the transformation of that experience into knowledge—accessible to the whole organisation, and relevant to its core purpose (Ross et al., 1998). The core of learning organisation work is based on five learning disciplines such as personal mastery, mental models, shared vision, team learning, and systems thinking. These disciplines help us see how to change systems more effectively, and to act more in consonance with the larger processes of the natural and economic world. The ROB model strongly believes that, like individuals, organisations learn; they sense circumstances within their environment and respond. They observe the results of their responses and remember the results, along with information gathered from other sources, for reference in designing future responses. The learning organisation of the future will incorporate diversity into its internal processes by encouraging the expression of different points of view (Heil & Tate 1994). Diversity of experience, education, gender, ethnicity, sexual orientations, expertise and opinion can aid an organisation to understand customers, competitors, and suppliers, anticipate future trends and provide a challenging work place for the employees. If the requisite level of diversity does not exist or is not effectively managed, the organisation will be unable to adopt to a rapidly changing, external environment. This is possible only when we reengineer organisational behaviour and develop personal effectiveness, to achieve corporate excellence.

Learning in an organisation means the continuous testing of experience, and the transformation of that experience into knowledge.

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Feature

Organisational Ecocycles & Mind Stock: Beyond Lifecycles

R. Srinivasan

The concept of lifecycles has been applied to organisations, industries, products, brands, and even processes and has proved to be useful in explaining phenomena like the sudden decline of fairly stable entities. The concept provides a framework to analyze changes over time, drawing parallel from biological sciences, and talking about evolution (birth), growth, maturity, and decline in the form of disjoint, sequential "S" shaped curves. Are these curves related? How does an organisation shift from one curve to another? It is these questions this paper seeks to address.

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Modern corporations of today are increasingly realizing the need to realign themselves to withstand the changing work cultures, including tele commuting and virtual offices. All that these firms have in the form of resources is "mind stock." And managing this mind stock is the key to success in the modern corporation. In this context, Hurst and Zimmerman's (1994) paper, commendable for its innovative association of organisation theory to ecology, has far reaching implications for strategic management literature.

Lifecycles

In the traditional sense, conceptualization of the lifecycles model has four stages. The first stage is known as "evolution" or "birth" and is associated with tentative development or growth. Here the system is small, weak and slowly growing. It experiences problems in terms of adjustment with the environment, and takes its own time to settle down. As the system settles down, and reconciles with the environment, the "growth" phase starts. This period is marked with rapid growth of the system in terms of performance, and the rate of change is very high. The growth phase is followed by a phase of relative stability called the "maturity" phase. This phase marks intensification of competition in the environment for the resources required for survival, and saturation of system growth. The system then begins its tailspin in the form of a "decline" phase, when it cannot stand the intensity of competition, and new systems with better resources and capabilities rule the environment (see Fig. 1). This con-

Conceptualization of the lifecycles model has four stages: Evolution, Growth, Maturity and Decline.

ceptualization of lifecycles fails in explaining many organisational phenomena such as where organisations come from, what happens after decline. Nor do we have any idea as to what to do in each of these phases. Some of the specific issues that remain to be addressed by the organisational lifecycle conceptualization are organisational decline, organisations' relation with the environment, and organisational renewal.

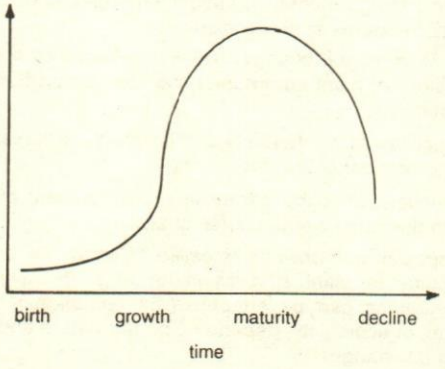

Fig. 1. Traditional conceptualization of lifecycles

Organisational Decline

Is it inevitable that every organisation has to decline? Or are there ways and means by which organisations can mitigate, if not totally avoid, the decline phase? Is there a way to manage maturity and remain at that level? Why do organisations decline at all in the first place? These questions and others remain unanswered by the singular concept of lifecycles. We need to go further into organisation theory and describe/elucidate these processes for organisational survival and success.

In the growth phase, the environment offers organisations opportunity for growth and survival. When the organisations enter the maturity phase, the environment has matured and organisations become vulnerable, plainly because of their systems where rigidity has been inducted into, for dealing with a more unstructured and organic environment. There are also cases when the organisations and the environment co-evolve – the organisations impact the environment significantly and vice versa. This co-evolution cannot be explained by the lifecycle concept that looks at organisations and other systems as different from the environment. Given this dichotomy, we are saddled with a framework that analyzes the environment's impact on the organisation and not the other way round.

What happens to organisations after they "die?" We do not subscribe to the idea of organisational immortality, but then we see there are organisations that survive much longer than others; there are organisations that manage their decline so well that process of renewal starts as soon as the organisation reaches the maturity stage; and there are organisations that consciously "die," in a process called "creative destruction." The lifecycle concept is silent on this issue of organisational renewal. It is not known as to how organisations shift from one "S" curve to another, and how this renewal process is managed (Mintzberg & Westeley, 1992). It is in this context that the concept of "ecocycles" is proposed (Hurst & Zimmerman, 1994).

There are organisations that manage their decline so well that process of renewal starts as soon as the organisation reaches the maturity stage.

Ecocycles

The ecocycle can be differentiated from the traditional conceptualization of lifecycle by the addition of a backward loop to the "S" shaped curve. Hurst and Zimmerman (1994) have adapted the curve from ecology to organisational sciences as an endless loop. Figure 2 illustrates the infinity shaped (∞) ecocycle curve. Contrary to the time dimension in the lifecycle curve, ecocycle curve is conceptualized under different dimensions.

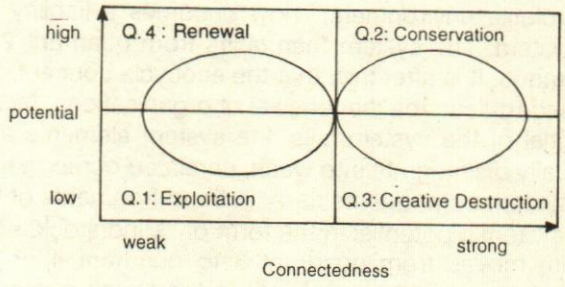

Fig. 2. Organisational Ecocycles

The vertical axis, *potential* represents the possibilities that the system carries. The system's potential refers to the product of all the possible outcomes and their respective values. In the organisational context, the potential, if measured in terms of market criteria, represents the product of all possible market scenarios (for example, sales) and their respective probabilities of occurrence. The *connectedness* dimension on the horizontal axis represents the strength of the networks in the system. It can be measured in terms of density, hierarchy, and connectivity. In the organisational context, one can conceptualize weakly connected systems as "loosely

connected systems" (Weick, 1976). In such systems, elements (for example, policies, procedures, people, rules, etc.) affect each other "suddenly (rather than continuously), occasionally (rather than constantly), indirectly (rather than directly), and eventually (rather than immediately)" (Orton & Weick, 1990). Hence, in a strongly connected system, the relationships among the elements are continuous, constant, direct, and immediate. The networks are rigidly established and there is very little scope for deviation.

In a strongly connected system, the relationships among the elements are continuous, constant, direct, and immediate.

Considering two levels each for the two dimensions, we get a 2 × 2 matrix. The four quadrants are numbered 1 through 4 in the sequence that organisations follow over time. The systems (organisations) move from the initial position in quadrant 1, which is characterized by low potential and weak connectedness, to the quadrant 2 (high potential and strong connectedness). This is the phase concerning the lifecycle concept. The system's "death" is represented by the gradual loss of potential, whereas the system remains strongly connected. What was once seen as desirable in the form of achieving strong connectedness (may be, to deal with a hostile and volatile environment), now becomes a liability on the system. The system then shifts from quadrant 2 to quadrant 3. It is after this, that the ecocycle concept can be used to describe the renewal of organisations. As the potential of the system fails, the system elements also gradually disintegrate into weak, unrelated components. The system components carry in them fragments of the total system's potential in the form of "Mind stock." The system moves from quadrant 3 to quadrant 4 of the ecocycle in the renewal phase. In the fourth quadrant, these fragments reform "... into a new, high potential configuration, that of a large weakly connected network" (Hurst & Zimmerman, 1994). Thus, the systems move dynamically back and forth different potentials and extreme conditions of connectedness. This conceptualization can be used effectively to study systems at different levels of aggregation (brands, products, organisations, societies, etc.).

To analyse each of the quadrants separately, boxes 1 and 2 are used which respectively describe the concept of "succession" and "root stock" as related to forestry ecosystems, to enable us understand the ecocycle conceptualization.

Box 1: Succession

The forest ecosystem is characterized by its ability to regenerate itself (unlike any other ecosystem) through what is called the process of "succession." It refers to the gradual change in the composition of the forest ecosystem as external forces act on the system. The system is forced to forego certain species while a new mix of species is included. This change happens gradually over time and at the end, a species mix that is best adaptive to the prevailing environmental conditions emerges. Khanna (1977) lists the basic features of succession:

- There is continual change in the vegetation as a result of interaction of plant community and the habitat factors (environment)
- The succession is inherently and inevitably progressive and the end-product is the climax; and
- The succession is the progressive development of vegetation on the *same site* in course of time.

The final species composition is called "Climax." It is the culmination stage in plant succession for a given environment. Climax conditions can be edaphic (soil conditions), climatic, hydrological, or ecological, depending on the nature and force of environmental change.

Box 2: Rootstock

In the forest systems, succession takes place with the help of what is known as "root stock." Even when the super terranean structure of the forest ecosystem is destroyed due to environmental pressures, the sub terranean system is preserved in the form of living root systems. These root systems have the potential to regenerate themselves into appropriate phyto systems given the right environmental conditions. As soon as the environmental conditions improve, the system starts renewing itself. The renewal can be traced in three stages. First is the removal of the allogenic factor (adverse environmental factor) that was responsible for the retrogression (destruction) of the system. Once the inhibiting factor is removed, the system is initially occupied by the first set of species called "colonizing species," depending on the speed and extent of change. These colonizing species then slowly increase the soil fertility and moisture by covering the land, and with the help of their nutrient cycles. Soon, other species, whose root systems were so far dormant in the sub terranean system, sprout and increase the variety in the forest. Slowly, the species mix that is best fitted to the habitat is selected by the environment and the system reaches the climax.

Quadrant 1: Exploitation

In this stage, the system is establishing itself in the environment. There is a lot of "space" and "resources" available for the system to grow and stabilize. There are relatively fewer number of trees and species in the forest, and the competition is low or virtually non-existent. Forests in this stage are typically growing out of grasslands. The odd trees that adorn these wild open spaces are expanding, new trees are growing above the grass cover, and the expansion is lateral. New trees spring up in areas where there is no tree cover, and the soil is deep. The forest

grows by the number and variety of trees that spring up in that locality.

Organisations experience this phase typically in the early years of the industry evolution. The industry is evolving, either because of a new innovation or a new product-market scope has evolved. In this case, the innovator or the first few entrants have the market for themselves and they exploit the market completely. The phase is marked by considerable investment in expanding operations through standardization (of both products and operations). Typically, "operations" is the main emphasis and "R&D" is aimed at improving operational efficiency. Competition is low, and only among a few players. Even then, the demand far surpasses the supply, and firms feel little threat from competition. Investments in capacity building and enhancing capacity utilization are the critical success factors in this phase.

Quadrant 2: Conservation

As the system grows, the number of species and trees increases due to the emergence of a favourable environment. The optimum conditions for the growth of a certain species foster their growth and hence they spread vigorously. New organisations come into existence in response to the lure of fast and quick profits. The demand is well defined and the market is growing. In the case of the forest, competition for light, air, water, and other nutrients increases, and the system becomes "crowded." In this case, efficiency becomes the key, and the fastest growing species/trees survive and become hardy.

With the entry of large number of new organisations, the competition for organisational resources increases similarly. A dominant design emerges in the industry, when one finds all the firms in the industry adopting similar forms of organising, undifferentiated products, and similar practices. "Industry standards" emerge in this phase, and these standards drive the market. The focus thus shifts from capacity expansion to increasing efficiency of operations. The expansion is therefore based on building complementary assets like establishing efficient distribution systems, training manpower, brand building, etc. (Teece, 1986).

With the entry of large number of new organisations, "Industry standards" emerge and drive the market. The focus thus shifts from capacity expansion to increasing efficiency of operations.

This shift has been characterized in strategic management literature as a shift from strategic to tactical decisions (Chandler, 1962). Strategic decisions deal with long-term allocation of existing resources and the development of new resources to assure continuous health and future growth. Tactical decisions are involved in ensuring efficient and steady use of current resources whose allocation has already been decided. These two types of decisions can be compared to the r-selection and K-selection environments and systems in ecosystem literature (Hurst & Zimmerman, 1994). The r-selection environments favour systems that grow and accumulate as much resources as possible. The K-selection environments, on the other hand, force the systems to consolidate their niche in the environment, and adapt/react to threats from competition. Table 1 describes and differentiates the two environments.

Table 1: r-selection and K-selection Environments

Type	r-selection	K-selection
Climate	Variable, unpredictable and uncertain	Fairly constant, predictable and more certain
Population	Variable in time, below the carrying capacity of the system	Constant in time, at or near the carrying capacity of the system
Competition	Variable, often lax	Usually keen
Selection favours	Rapid development, many trials, small sizes	Slower development, fewer trials, large sizes
Locus of control	Bottom up	Top down
Economy	Immediate return	Delayed return

This transition from r-selection to K-selection is the crucial phase for both forests and organisations. Species that are unable to adapt to the emergent microclimate perish and give way to dominant species that are best suited for the locale. Similarly, in the case of organisations, this marks the exit of all "fly-by-night" operators, who enter the market to make the fast buck. Consumers become more quality conscious; market leaders emerge and rule the product-market with their superior organising skills, access to information, and marketing efforts. Product differentiation and value added services become the key success factors in the long run. As the market matures, the space is filled with a few large players, who are satisfying their respective niche markets. In the process of institutionalizing their success and pursuing efficiency, organisations sacrifice flexibility and resilience, and hence become more vulnerable to environmental threats. For example, organisations pursue a path of "super specialization" in their efforts at product differentiation, and confine their products/operations to a small niche market. This kind of specialization renders them prey to the slightest of

variability in the market. In an effort to make themselves more stable and protect themselves from shocks, they have created hyperstable systems, that are actually brittle and vulnerable. The organisation has by then invested in a variety of sunk assets, and organisational learning is streamlined to the extent of blinding the members to the changes in the environment. The case of Facit, AB is a case in point to illustrate "organisational blindness" (See Box 3). An internal "shock treatment," akin to the idea of "forest fire" has proved to be very effective in dealing with this blindness.

Organisations pursue a path of "super specialization" and confine their products/operations to a small niche market. This renders them prey to the slightest of variability in the market.

Box 3: Facit, AB

Facit is a manufacturer of calculators in Europe. It was faced with the problem of declining sales of mechanical calculators, due to intense competition from electronic calculators. The organisation was blinded for considerable period of time and the strategy was focused at increasing the sales of mechanical calculators. The marketing pitch was to highlight the physical sturdiness of their mechanical calculators as compared to electronic calculators. All this despite the fact that a superior design of an electronic calculator existed within the firm, but it took a major change in the top management composition for the design to get noticed, appreciated, and commercialized. This inertia was broken by an overall change in the organisational leadership (Starbuck, 1983).

Quadrant 3: Creative Destruction

This phase is called creative destruction because the system is not completely destroyed, but it is destroyed to the extent that it can be renewed. Like the forest that gets proliferated by the dominant species, selecting out all other species, the "fittest" organisations survive. These homogenous systems are extremely vulnerable to the smallest of changes in the environment, as in their growth phase, they have made a virtue of their stability and inflexibility. Such a forest ecosystem will be highly vulnerable to pest attacks, fire, and other natural calamities. All that is needed to bare the forest floor is a single pest. The system is completely destroyed and only the species that can survive these extreme conditions are retained. Even these species remain dormant for a long time, till the conditions improve.

Organisations, similarly become vulnerable. The great depression of the 1930's, the US stock market crash of October 1987, the Indian stock market scam are some examples of "Schumpeterian shocks." These shocks are analogous to the concept of forest fire. What is significant in this stage is the speed with which the system transforms itself from the conservation phase to creative destruction, as compared to the transformation from exploitation to conservation. Two questions then arise: Is this creative destruction necessary, at all? And if so, how can organisations come out of this, and proceed to the next phase?

The motive of a well managed creative destruction is to control the process of breaking the inflexibilities and rigidities in the system. The impact of these "destruction" activities could be minimized through relocation programmes, education, and maximum involvement. The organisation needs a new lease of life as it moves over to new and unexplored product-market groups, introduces new and differently trained personnel, or adopts innovative work practices like tele-commuting.

Many a time, the organisation is forced to review its *raison d'être*—the meaning of its existence. The organisational transformation that follows, might even change the core business itself. The organisation might need a host of new skills, technology, systems and even new management styles to suit the transformation. This change takes place as the organisation moves on the backward loop of the organisational ecocycle.

In this phase, organisations disintegrate into small units or components that have entirely different skills. The organisation becomes weakly connected as the systems and structures that were consciously built in the transition to, and in conservation phase become redundant. What was once looked as necessary for strength and stability becomes a burden on the organisation. These kinds of systems have been variedly called as "loosely coupled systems," "dissipative structures," "far-from-equilibrium systems," "non-linear dynamics," or "butterfly effects" (Hurst & Zimmerman, 1994). Being loosely connected and un-coordinated, the system potential is considerably lowered. What is required is the generation of the right kind of environment to facilitate renewal.

Quadrant 4: Renewal

In this phase, the system is broken down, and contains small, individual, disjoint components, each of them with very high potential. There exists no coordination between these components, and collective action is lacking. The forest ecosystem is characterized by the exposure of forest floor to the vagaries of nature. A good

monsoon season might cover the place with grass, and hence facilitate the generation of soil resources suitable for all kinds of species. As the dominant, upper crown trees are destroyed, solar energy and other critical resources required are available freely. But, the resources that were freed by the death of the dominant species are widely scattered and given the existence of the forest "root stock," the system has high potential.

As with forests, organisations that enter this phase are un- identifiable, because, there are only "memories" of the system, and no components exist in their original form. The trees have died and become humus; the organisation has broken down into different individual and loosely connected networks. What is left of the organisation is just the learning that the organisation experienced in its exploitation and conservation phases. The members carry in them these learnings, and they become pioneers when these learnings are applied to the formation of new organisations. What is carried from the creative destruction phase to renewal is what we call "mind stock."

It is when the organisation tackles a new environment, with the help of new structures and systems, that renewal takes place. Visionary leadership and a strong corporate culture is a pre-requisite in fostering this change process. Networking and harnessing skills and potential scattered within the system is the foremost task in this phase. The case of Nike in its early days (1930's) explains how a weakly connected system which hardly had any properties of a formal organisation, evolved into an organisation (Hurst & Zimmerman, 1994). It is this phase that is most interesting in the study of organisations, and the ecocycle framework attempts to describe.

Mind Stock

As compared to root stock in the case of forest ecosystems, one can visualize "mind stock" in organisational systems. This mind stock carries the organisation from one life cycle to another. The root stock in forestry refers to the inherent, sub-terranean root system that lies dormant within the surface, which, given the right mix of nutrients, and provided with the right micro-climate, would generate and seek to establish itself. This process of natural regeneration can be thought about in organisations, as when the learning imbibed in its members is brought forward to use in turning around a dead/dying organisation. What is the nature and composition of this "mind stock?"

The mind stock comprises more of intangible resources than physical and material resources. A form of tacit knowledge system is developed in the organisation during the course of its existence. The hardware (assets) and the software (processes) of the organisation might have been dissolved, but the human beings in the system, with their individual and group learning (along with their specific skills) remain dormant. It is this learning, that one has to identify, and harness for taking the organisation through the renewal phase.

How does one discover, identify, and operationalize this mind stock? Similar to managing innovations in organisation, the change process could be designed to facilitate sharing of this knowledge and experience among other members. A variety of approaches (focusing on either organisational structure, strategy, and processes) have been documented for fostering innovation and binding individual learning to create organisational level knowledge (Spender & Kessler, 1995). Based on Thompson (1967), they propose "nesting" an organic system within the largely mechanistic technical core of the organisation. This process of fostering innovation and creativity in the organisation should be institutionalized when the organisation is in the conservation phase itself. At that stage, the organisation will be able to identify alternatives for creatively destroying itself and building capabilities for enriching and documenting its mind stock. In doing so, the organisation instills a sense of involvement in its members by providing them freedom and responsibility as well as enhancing their individual skills. Creative management of dissent and conflict can also help in good mind stock creation and management.

Process of fostering innovation and creativity should be institutionalized when the organisation is in the conservation phase itself.

Conclusions & Implications

Before we discuss the implications of this model for management practice, let us recapitulate the model.

- The shift along the ecocycle is continuous, although in varying degrees of pace and stability. The change from exploitation to conservation phase is smooth, whereas the shift from conservation to creative destruction phase is sudden. The system seems to be stable in the conservation phase, and highly volatile in the creative destruction phase.

- Renewal of the organisation necessarily means that the system has to undergo the process of destruction. The degree of control the organisation has on the destruction pro-cess, can vary and determine the success of the renewal process.
- The dimensions are non-traditional – the concepts of *potential* and *connectedness* emphasize the complexity of organisations. It is important to understand that organisations exist in different forms in the four phases of the ecocycle (and hence we cannot actually trace the organisation around the infinity loop).
- Self-organising processes are critical in the process of renewal. The concepts of succession and selection in organisations need to be emphasized. As the environments change, they select entirely newer forms of organisations that are fundamentally very different from the beginning.

The main implications of the ecocycle concept center around the backward loop. The idea of creative destruction might be disturbing for the practicing manager. Especially, for somebody within the system, it can be extremely difficult to accept such drastic changes in the environment and the organisation. Only for somebody one level above the creative destruction activity or somebody outside the system, it seems to be creative. The catastrophic changes in organisations leave the organisation members with feelings of fear and uncertainty, and loss of control.

The second major implication is the inevitability of organisational decline. Even though decline is inevitable, the process can be prolonged. One can opt for a sequence of partial destructions and renewals by managing the destruction process well. Hurst and Zimmerman (1994) suggest the adoption of what is known as "firebreaks" – clearings in the forest floor that act as deterrents for the spread of fire – in organisations. These attempts at compartmentalization should be carefully done in such a manner that the organisation does not lose its identity.

Another significant implication concerns the vision about the newly renewed organisation. Although having a vision about the future might be beneficial in most cases, this is likely to be detrimental to organisational renewal. In so much as the organisational vision is derived out of organisational learning, what is successful today has significantly contributed to the inertia the organisation is wishing to cope up with.

It is also important to note that the new organisation is expected to require different sets of knowledge, skills, and attitudes in the members. What was painstakingly built as a specialization in the exploitation and conservation phases now becomes a liability on the system and deserves a serious relook. Similarly, all other elements of successful organisation contribute to organisational inertia – the compensation system, the information system, hierarchies and rules, etc. For the organisation to be successfully renewed, it needs to undergo preemptive crises in all spheres of successful operations. "One can't stop the forest from having fires, but one can mitigate their destructive effects by keeping the fires small and perhaps even starting some fires to create firebreaks. It is for this reason that renewal demands constructive damage to status quo" (Hurst & Zimmerman, 1994).

Renewal demands constructive damage to status quo.

The management of this crisis is another important factor in determining the nature and success of renewal. The existence of a strong leadership is in itself a liability on the organisation's efforts at creative destruction and renewal. In most cases, there is no visionary leadership to lead the organisation from creative destruction through the renewal phase. In such situations, what is important is to create the right "environment" to foster the "activation" of mind stock in organisations. Changes in structure, strategies, processes, or all of them can create these conditions.

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Feature

Venture Capital Financing: The Indian Experience

N.K. Bishnoi & K.P. Singh

This article analyses the status of venture capital in India. It enumerates the fiscal and legal hurdles in the path of success of this sector and presents a few recommendations.

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Promoters turn to venture capital financing when conventional means of funding are not available and it is not possible in the routine course to procure funds to meet the requirement of equity capital for a contemplated project which has been the result of some innovative ideas. The main reasons for limited availability of funds for innovations, as highlighted by studies, (Mansfield, 1995; Naffziger, *et al.,* 1994; Bockhalt, 1995) are primarily imperfections in the financial system, specifically asymmetry of information, adverse selection and agency problems. Given the unique nature of innovation financing, chances of success are reasonably on higher side. Obviously, expected rewards must also be on the higher side to induce the investor to enter into the market.

Venture capital is the response of market forces to fill the void between sources of funds for innovations and traditional lower cost sources of capital available to ongoing projects. The venture capital industry is required to provide a sufficient return on capital to attract private equity funds, attractive returns to its own participants and sufficient upside potential to entrepreneurs to attract high quality ideas that will generate high return. In other words, it is a challenge to earn a consistently superior return on investment in an inherently risky business of innovations financing. The findings of studies already made in this field establish venture capital as a highly successful experiment in making the functioning of free play of market forces possible, despite odds like market imperfections.

What is Venture Capital?

Venture capital is the early stage financing of new and young enterprises seeking to grow fast. According to Pratt (1985), "there is a possible misconception that high technology is the principal driving factor behind the investment decisions of Venture Capitalists; in reality, only a small minority of venture capital investments are

in new concept of technology where potential technical problems add significant amount of risk to the new business development". There is, however, no doubt that young, high-tech companies look to the venture capitalists for making risky capital available to them. In broad terms, venture capital is the investment of long-term equity finance where the venture capitalist earns his return primarily in the form of capital gain. The underlying assumption is that the entrepreneur and the venture capitalist would act as 'partners'. The true venture capitalist does not remain confined to high technology—rather any risky idea could be financed by the venture capitalist. The main attributes of venture capital financing may be summarised as follows: (Lorenz-I, 1985).

Venture capital is the early stage financing of new and young enterprises seeking to grow fast.

Equity participation: Venture financing is equity participation through direct purchase of shares or instruments convertible into shares in future. The objective may be to keep the management under influence and to force it to perform in the best interests of the project so financed.

Long-Term Investment: Venture financing is a long-term investment not repayable on immediate demand. Long term financing is the commitment by the venture capitalist, which signals to the entrepreneur that the venture capitalist, is equally committed and hopeful for the better future of the project so financed.

Participation in Management: The venture capitalist generally follows "hands off and eyes on" policies, which protect and enhance the value of investment. Basically, the venture capitalist believes in the philosophy of the management of risk. More than finance, the venture capitalist gives his marketing, technology, planning and management skills to the entrepreneur.

Stages in Venturing Financing: A distinct and peculiar practice adopted by venture capitalists is stage financing. Early stage financing, developmental stage financing and expansion stage financing generally coincide with important milestones in the life of a project. Through stage financing, the venture capitalist minimizes his risk.

Evolution of Venture Capital Financing in India

The concept of venture capital as an industry was born in U.S.A. The surge of enthusiasm for venture capital gathered pace during late sixties. It has been developing spectacularly world wide since the second half of the seventies. Venture capitalists have been catalytic in bringing forth technological innovations in the U.S.A. Companies like Federal Express, Intel, Sun-Micro-System, Micro-Soft, and Apple computers have been backed by venture capitalists. Little wonder that in the year 1997, venture capitalists invested a record $11.4 bn in 1848 companies. United Kingdom occupies the second place as far as the venture capital industry is concerned. In the UK, there are more than 16500 companies, which have got venture capital financing since 1983. As per the survey carried out by the British Venture Capital Association and Coopers and Lybrands over a period of four years from 1990-91 to 1994-95, on an average venture financing companies' sales rose by 34 percent per annum or five times faster than in case of FT-SE 100 companies, export grew by 29 percent, investment increased by 28 percent and 88 percent companies benefited from their venture capital financiers who provided more than just money. The findings also revealed that 90 percent companies have grown less rapidly without venture capital financing.

The government of India, vide its fiscal budget for 1987-88, for first time mooted the concept of venture capital in the country, when a cess of upto 5 percent was introduced on all technology import payments. Funds so available were to provide, interalia, venture capital financing to projects.

Subsequently in Nov.1988, according to the first set of guidelines, venture capitalists who operated within the framework of these guidelines were given concessional tax treatment. On the repeated requests of venture capitalists and experts, SEBI issued new guidelines on 4th Dec. 1996. These guidelines relaxed the eligibility conditions considerably for the purpose of tax concessions to the venture capitalists. Now venture capitalists have the freedom of making investment in enterprises which are neither technology based nor promoted by new generation entrepreneurs, having professional and technical backgrounds. The new guidelines simply mention that investment in unlisted companies and financially weak listed companies would be treated as venture capital investment for preferential tax purpose. With the announcement of new guidelines and liberalization of the economy, the venture capital activity has picked up momentum in India.

Thanks largely to Infosys Technologies and the Indian brains ruling Silicon Valley, Venture capitalism has taken off in India (R.A. Thakur & M. Senapati, 1999). Eleven venture capital funds registered with SEBI in 1999 as against only 8 in 1998 confirming that the evolu-

tion of venture capital finance has reached its developing stage in India during recent years.

Major Trends

There has been an increase in the pool of funds available for venture capital activity to Rs.2988.4 Cr. in 1999 from Rs. 2559.4 Cr. in 1997. Investment has gone up to Rs. 1256 Cr. in 758 projects, from Rs. 1006 Cr. in 691 projects in 1997. Average investment per project has increased to Rs. 1.725 Cr. in 1998 from 1.447 Cr. in 1997. There has been an average increase of almost 20 percent in project size from 1997 to 1998 (IVCA–Venture Activity Report, 1998).

An important factor behind the sudden surge in inflow of funds into venture capital industry is the growing interest shown by foreign institutional investors in the past three years. Prior to 1997, it was All India Financial Institutions who contributed the most to the pool of funds available for venture capital financing. In 1998, Foreign Institutional Investors and All India Financial Institutions contributed Rs. 1517.8 Cr. and Rs. 772.7 Cr. respectively to make funds available for venture capital financing, in 1997, they contributed Rs. 1342.6 Cr. and Rs. 625.3 Cr. respectively as against Rs. 549.8 Cr. and Rs. 468.2 Cr. in 1996. (IVCA Venture Activity Report, 1998).

Investment convertible into equity remains the preferred route of investment by the venture capitalists. In 1998, equity shares accounted for 64.26 percent against 66.3 percent in 1995; convertible debt accounted for another 19.75 percent in 1998 against 20 percent in 1995; and preferences shares contribution went upto 7.6 percent in 1998 against 1.4 percent in 1995. This pattern proves that financial engineering in India has a long way to go as in developed countries, the complex financial engineering of preference shares and convertible debt instruments occupies the pride of place.

Financial engineering in India has a long way to go as in developed countries, preference shares and convertible debt instruments occupy the pride of place.

Almost all players in venture capital industry have been making investment in all stages of financing. In the countries of the west, notably USA, venture capital industry is quite advanced and venture capitalists operate in specific areas. While some invest in seed stage projects, a few invest in later stage or expansion stage projects. This is, perhaps advantageous to both the venture capitalists as well as to the project-implementing firm. The venture capitalists have a ready exit and entrance route respectively and the unit benefits from the expertise of these venture capitalists in their respective areas of operation.

The venture capital industry in India being in its growing phase at present, such specifications are not existent so far. Information is available to support this argument. In 1998, out of the total venture capital investment, 41 per cent went into start-ups, down from 45 percent in 1995; the percentage share of seed stage also came down to 5 per cent in 1998 from 15 percent in 1995; the percentage share of other early stages increased to 17.6 per cent in 1998 from 10 percent in 1995; and later stage financing also gained significantly going upto 35 per cent in 1998 from 29 percent in 1995. The average amount of investment per project also makes an interesting study. It is Rs. 80.4 lacs per project in the seed stage and Rs. 92.1 lacs per project in the turn around stage. Further, it is Rs. 145.1 lacs per project, in the start-up stage, Rs. 187.2 lacs per project in the other early stages and Rs. 269.8 lacs per project in the later stage. It reveals that the average investment per project is the maximum in the later stage and minimum in seed stage. The trends are as expected in a developing market like India where the later stage projects generally require larger amount of finance while carrying comparatively lower risk. Such stages are bound to be popular among the venture capitalists. As and when the industry develops further and the competition for profitable ideas becomes more intense, it is expected that the interest of venture capitalists may favour the financing of seed capital and start-up stages also.

In 1998, the total of investments in computer software and hardware put together exceeds investments in industrial products and machinery. In the years 1993-96 for which data is available, the total investment in industrial products and machinery exceeded that in the computer industry. However, there is clear indication from Table 1 that recently investment in Information Technology Industry, as a whole, is attracting higher attention compared to other industries. This is also logical in keeping with global trends.

Growing Popularity of Venture Capital

The venture capital industry started in the 1940s in the United States of America, it picked up momentum there in the 1970s and 1980s. The amendment to the

Table 1: Venture Capital Investment In Different Industries,(Rs. in Crore)

Industry	1998		1996		1995		1994		1993	
	Rs.	No.	Rs.	No.	Rs.	No.	Rs.	No.	Rs.	No.
Industrial Products & Machinery	295.7	219	195.6	184	163.48	169	143.6	159	85.4	115
Computer Software & Service	250.9	100	48.1	58	40.5	33	26.2	38	12.7	22
Consumer related	138.1	52	91.4	51	57.3	48	44.7	37	30.7	31
Medical	81.7	47	44.3	39	40.6	40	33.12	38	28.7	37
Computer Hardware & Systems	73.5	30	25.8	28	18.4	24	16.7	20	16.4	29
Food & Food Processing	71.9	50	52.4	51	47.2	48	33.6	38	23.5	29
Tele & Data Communication	47.2	18	21.2	13	18.4	12	15.9	14	12.6	13
Bio-Technology	44.9	27	32.3	28	25.8	24	14.3	19	11.9	16
Other Electronics	42.6	40	33.9	40	30.4	38	29.2	35	28.3	48
Energy Related	23.0	18	20.9	18	13.04	16	9.9	14	9.8	16
Others	186.5	127	107.0	112	117.6	128	58.7	76	57.3	72
Total	1256	728	672.9	622	572.5	602	425.8	488	317.8	428

(No. number of Projects)

Source: Different issues of IVCA—Venture Activity Report.

Employee Retirement Income Security Act in 1979, when the 'prudentman' rule governing pension funds investments was amended, the limitation of limit to invest sufficient amounts in venture capital was overcome. This increased the percentage share of contribution by pension funds to venture capital industry from 15 per cent in 1978 to more than 50 per cent presently. The remaining 50 per cent comes from endowments, foundations, insurance companies, banks, individuals and other entities. In USA, a major portion of the venture capital funds goes to information technology sector. In 1997, out of the total investment of $11.7 bn by venture capitalists, 7.1 bn were for information technology, 2.6 bn for health care and 1.7 bn for the retail and consumer industry.

The story in India is, however, a little different. Unlike USA, Information Technology could not attract top priority till recently. But over the last two years, things have changed substantially. The logic behind this highly expected change in favour of information technology vis-a-vis venture capital is the dramatic publicity received by the Indians in the Silicon Valley in USA, the Mecca of high-tech innovations and motherland of venture capital. Recently a survey conducted by, 'The Washington Post' revealed that out of the 500 fastest growing US companies, more than 200 are promoted by Indians and most of these companies are in Information Technology sector backed by venture capital industry. The significant point to note in this connection is that the foreign institutional investors and venture capital firms who supported Indians in USA are now coming to India and it is expected that these investors and firms have great potential to deliver the goods in India.

Not only this, a number of successful managers like Ashok Soota of Wipro Infotech and Jerry Rao of Citi Bank are turning to entrepreneurship with the active support of venture capital industry. Venture capitalists love backing successful professionals having vast experience and clear vision to their credit. Successful corporate managers starting their own venture gives an emerging signal to the venture capital market's future and growth because their chances of success seem fairly bright. It gives a new upward thrust to the venture capital industry.

Information technology is not the only sector that is getting the attention of venture capitalists; there are other sectors as well which include entertainment, retailing, bio-technology, energy, medical, communication and pharma as exhibited by Table 1. There is a strong bias toward knowledge driven industries—recent trends give fair evidences in this connection.

"Among those who are aware of venture capitalists and their importance in catalysing growths are both government and policy makers", (Joshi, 1998). The response of policy makers, to issues relating to venture

capital has throughout been confused. In the seventies and eighties, government policy makers committed a mistake in terms of defining venture capital financing as simply the commercialization of unproven technology and confining it to the first generation entrepreneur. Though after the new guidelines issued by SEBI in Dec., 1996, the restrictions for eligibility for concessional tax treatment have been relaxed to a large extent, still a number of issues remain unresolved. Some underlying amendments in existing laws are needed without any further delay for enabling government, financial institutions and commercial banks to create an environment, which may give further impetus to the growth of venture capital financing in a big market like India. These amendments are broadly classified into three categories viz, Fiscal, Monetary and legal measures.

Fiscal Measures

There are a number of issues pertaining to the fiscal policy of the government regarding venture capitalism. Most important is the unfavourable tax treatment extended to the venture capital sector. The present tax structure is levied at three stages i.e. at the level of recipient venture , then at the level of venture capital fund and finally in the hands of contributors. For this purpose, the relief under section 2 (22) 80L and 80M should be further liberalized (Mishra, 1998). Deduction under section 80CC, which was abolished in 1992-93, needs to be given a fresh look to strengthen the venture capital industry. Such benefits should be extended both to the public and private companies engaged in this sector. Recurring returns in the form of dividend and interest is subject to tax u/s 193 and 194 of the Income Tax Act, 1961. Exempting the dividend, interest and royalty income received by venture capital funds from tax or taxing them at a concessional rate, may encourage more resources toward venture capital in future. The losses of venture capital companies should be allowed to be set off against the profit of operations in venture capital funds. Moreover, the provision of section 115J should be further relaxed in case of venture companies. The benefit of capital gain under section 48 of the Income Tax Act also requires more favourable treatment to venture capital. Samuelson (1997), a great economist, has concluded that the success of Silicon Valley in USA lies mostly in the post-Reagan cuts in capital gains tax and favourable tax treatments as these measures helped in creating a conductive environment for the growth of venture capital sector. The same environment, in terms of fiscal policy, needs to be created in a country like India where venture capital sector has fairly good scope to grow in the times to come.

Monetary Measures

The Reserve Bank of India is the apex institution in the country for dealing with the monetary policy of India. RBI issues guidelines from time to time for monitoring and regulating the functioning of all financial institutions including venture capital funds and commercial banks. At present, the attitude of RBI is not liberal and financial institutions do not have much liberty to work. However, in its latest monetary policy, RBI has started signaling some sort of autonomy to financial institutions but this process has a long way to go till an environment of competition and quality service may be created. It may directly help the growth and development of venture capital sector. The Ministry of Finance, Govt. of India, should also come out openly in support of venture capital by way of certain changes in terms of notifications for the better future of venture capital in India.

Legal Measures

There is also disharmony in the existing guidelines for venture capital industry. Venture capital firms are under the governance of three authorities, viz, CBDT, SEBI and RBI. Unfortunately, all the three institutions have been functioning in isolation, creating complex and contradictory norms to the players of this sector. Therefore, uniformity has to be ensured in this connection, which is also an essential principle of efficient and effective management in any organisation. A comprehensive revision of all these guidelines should be made without any further delay. Besides, some changes are required to be made in the existing company law so that a number of restrictive provisions may be swept away. Security Contract (Regulations) Act, 1956 has also to look afresh at venture capital companies for providing a conducive environment to this sector. In toto, a complete legal harmony is urgently required.

Future of Venture Capital in India

The recent past is encouraging for the venture capital industry. Indians have been known for better planning and idea creation and now the time has come in terms of venture capital sector where such ideas and plans are sine-qua-non. Even in USA, Indians have been doing great and have given enough indications that there is a vast pool of untapped talent which needs to be exploited. Therefore, despite the number of anomalies and restrictions in the present venture capital environment, the sector is surging ahead and it is beyond doubt that sky would be the only limit to this sector if the yardsticks are properly dealt with by the government of India.

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"Productivity is a measure, not reality, says Gerald Nadler, Professor and Chairman of the Industrial and Systems Engineering Department, University of Southern California. Productivity is only a description of the current state of affairs and the past efforts of people. We might say that quality control, too, is a measure and not reality. Then what is the reality and what has to be done? The answer to this question is that the efforts put in to improve both Productivity and Quality are the reality. The key words are efforts and improve."

– Masaki Imai

* * *

"A Company will get nowhere if all of the thinking is left to management. Everybody in the company must contribute..... We insist that all of our employees contribute their minds. Today we get an average of eight suggestions a year from each of our employees, most of the suggestions have to do with making their own jobs easier or their work more reliable or a process more efficient."

– Akio Morita

Feature

Framework for TQM Performance Measurement System

Ayoob A. Wali, S.G. Deshmukh & A.D. Gupta

Total Quality Management (TQM) is an organisation wide philosophy implemented in order to gain competitive advantage in today's dynamic markets. TQM helps in achieving the primary goal of enhancing productivity and reducing costs. A system of performance measurement is to be developed commensurate with the objectives of TQM. A systematic approach is needed to synchronize an organisation's activities in relation to its objectives. Integrated Performance Measurement system provides a basis for monitoring such organisational performance. The present research work analyses the Critical Success Factors (CSFs) for supporting Performance Metrics and develops an empirical framework for performance measurement in a TQM environment.

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Driven by globalization and liberalisation of economies, much of the world is passing into a new phase of social and economic development. The next few years will see the completion of a transition already underway since the 1990's driven by the quality revolution. It is apparent that harnessing the benefits of quality management has become paramount for the survival of an enterprise. As the process of globalization spreads leading to increasing need for competitiveness, management of quality assumes greater significance. Today quality is no more a winning criterion in the global market place but it has become a qualifying criterion. Indian companies have to prepare themselves to take up the challenge of competing in the global Marketplace. The practice of TQM acts as a catalyst for taking up this challenge.

Total Quality Management

Total Quality Management (TQM) is an integrative philosophy of management for continuously improving the quality of products and processes to achieve customer satisfaction. It is based on the premise that an organisation must build quality into its products and processes, and that everyone in the organisation has a responsibility in this effort. The customer is the focus of all the efforts to improve the product and process quality. The basic philosophy of TQM can be applied to any type of organisation; manufacturing or service, small or large, public or private. TQM is applicable to a wide range of manufacturing organisations, regardless of the type of industry: repetitive or customized production, high volume or low volume.

The Malcolm Baldrige Award has identified seven broad dimensions along which any application organisation must excel (Ahier & Kiran 1995). These are: leadership, information analysis, strategic quality planning, human resource management, quality assurance of product and process, quality results and customer satisfaction. An organisation must link these dimensions

in a coherent long-term campaign for continuous improvement in the overall business performance reflected in better market shares, better financial performance, and better employee satisfaction (Bounds *et al.,* 1994).

The past few years have seen considerable evidence presented on the importance of products and service quality for corporate health improvement and survival in the marketplace. Initially, manufacturing companies attempted to emulate TQM in the hope that the resulting shop floor efficiencies would solve all existing productivity problems. The benefits of implementing TQM are: better quality, continuous improvement, increasing flexibility, enhanced profitability/productivity, faster organisational learning, safe and healthy communities, better customer service/greater loyalty, strong organisational economy and market share improvement.

Even though the benefits are well perceived, it is necessary that an organisation must have some system of measuring the performance in a TQM framework, so that the benefits are quantified, analyzed and made to motivate and sustain TQM programme.

The practices involved in TQM have developed from traditional quality control philosophies and practices first proposed by Shewhart which have diversified since the 1950s publications of Juran & Gryna (1955) into a host of fields including supplier management, employee involvement, team work, leadership, customer focus, service and strategic planning (Feigenbaum, 1983; Garvin, 1987; Oakland, 1989, Deming, 1986). Although TQM literature remains based on the personal prescriptions of a relatively small number of established writers and practitioners including Deming, Juran, Crosby, and Ishikawa no consensus on the approach has really emerged. Compounding this diversification of disciplines are the variations in practices within different industries which have often resulted in different interpretations of TQM by any one organisation. At the very least, this has caused confusion for companies wishing to develop a method for implementing TQM from the array of ideas now available (Waldman, 1996).

Although there has been a significant increase in research into TQM in the last decade (Oakland & Leslie 1996) most studies fail to establish any of the accepted theories and are based on hard research evidence. One response to this has been a shift in emphasis within literature towards a consideration of generalizable frameworks for understanding TQM (Bossink et al., 1992). These frameworks have aimed to provide a basis for diagnostic assessments of organisational TQM practice for the purpose of directing breakthrough and continuous improvement action. More significant has been the development of the Malcolm Baldrige National Quality Award in USA; European Quality Award in Europe. The aim of these awards is to promote the use of quality management principles and practices within industries (Gundogan 1996), either self-assessment or for applying for the award scheme.

Literature Review

Initially, performance measurement research focused on measurement problems attributed to traditional cost accounting systems in manufacturing firms adopting world-class manufacturing techniques. Kaplan & David (1983) were among the first to point out the short comings of traditional cost accounting in today's dynamic manufacturing environment. In 1989, Finch and Cox wrote an article which challenged the assumption that inventory was an asset and illustrated how this assumption misrepresented plant and business performance. Also in 1989, Fry and Cox wrote an article on how traditional cost accounting systems promote local optimisation of resources within a manufacturing facility. The authors called for the adoption of global measures which optimize the performance of the entire business (Lockamy, A. & Cox 1995). As performance measurement research progressed, researchers began to explore the relationship between functional and business unit performance. In recent literature, the majority of useful evidence is based on case studies (Kristensen et al., 1992; Bossink et al., 1992). A few papers involve more generalizable research methodologies (Morrison & Rahim 1993); and number of research papers attempt to synthesise established theory into a practical framework (Bossink et al., 1992; Oakland & Lestie, 1996; and Saraph et al., 1989).

The literature has also focused on factors which contribute to success of TQM. Lu, & Sohal, (1993) identified improvement opportunities in the approaches adopted by Australian organisations. They also list some common myths concerning TQM and its implementation in Australia. Factors likely to contribute to success are:

- Identification of the strategic direction of the business (mission, vision, and policies)
- Determination of customer expectations and measurement of perceptions (market research, surveys, and focus groups)
- Definition of strategy for implementation of the programme (time-frame, resources to provide leadership, and training)
- Formal structure to control, monitor and maintain improvement initiatives (steering committee, improvement teams)

- Train the trainer concepts (participants to train own staff eventually)
- Quality assurance system (ISO 9000, other standards)
- Use of external consultants.

Capon, et al., (1996) provide evidence in their research that measuring and displaying results increase the chance of success in a TQM programme. They recommend a set of six monitors based on the Baldrige award. They carried out a study in one of the industries of UK by forming different teams and checked the effects of such monitors. Kasul & Motwani (1995) identify critical factors supporting performance measurements of TQM in the manufacturing environment. Their study which depended only on the review of literature on quality and world class manufacturing management was performed for the purpose of clarifying the critical factors and measures that constitute TQM. The study by Sink, (1991) shows that the performance of an organisation system is composed of seven interrelated criteria: effectiveness, efficiency, total quality, productivity, quality of work life, innovation, and financial performance. Saraph et al., (1989) have used data collected from 162 general managers and quality managers from 20 companies in the Minneapolis/St. Paul area to identify the critical factors for quality management practice. These authors identify eight factors which are defined by only a small number of assessors: the role of management leadership and quality policy, role of quality department, training, product/service design, supplier quality management, process management, quality data and reporting, and employee relations. These factors were preconceived on the basis of literature which still provides only patchy understanding of the subject.

Sinclair, and Zairi, (1996) highlight a case study which examined the implementation of a total quality-based performance measurement system. The organisation selected is engaged in repair and maintenance of photographic, photocopying and medical imaging equipment. The analysis revealed that there is a gap between information sought by people and what they tend to receive. It also shows that personal involvement in performance measurement is vital for effective performance measurement. The performance measurement criteria which they mention are: quality, productivity, financial performance, customer satisfaction, employee factors, and environmental performance. Lokamy & Cox (1995) carried out exploratory research by examining the integrated performance measurement systems of six manufacturing firms identified as world class by academic and practitioner experts. A case study methodology was used to collect detailed information on division and plant strategic objectives, performance measurement systems, and performance measurement system linkages. The result of this study was the development of principles on the above issues.

Madu, et al., (1996) attempted an empirical study to test if there is any significant association between quality dimensions, (customer satisfaction, employee service quality) and organisational performance. They used middle managers' perceptions to make some inference about the association between the variables that are compared. They validate some of the claims made by quality experts and practitioners regarding the importance of TQM to organisational success.

Venkatraman & Ramanujam (1996) focussed their study on different approaches to the measurement of business performance in strategy research and the benefits and limitations of each approach. Operationalization of key strategic management concepts such as organisational strategy; business-level strategies; and organisational slack along with specific data-analytic issues and their implications for operationalizing business performance in future strategy research were highlighted. This study provided a two-dimensional classificatory scheme highlighting ten different approaches to the measurement of business performance in strategy research. Table 1 gives a summary of literature on critical success factors (CSFs) and TQM performance measurement (PM) and the findings.

The literature survey leads to the conclusion that the following CSF's are important for Indian organisations.

- Management behaviour
- Quality strategy
- Communication for TQM
- Training for TQM
- Employee involvement
- Process system management
- Quality technologies
- Customer focus and satisfaction.

Many researchers (Crosby, 1979, Hardie & Walsh, 1994, Ishikawa, 1976, James, 1996, Juran, & Gryna, 1995, Juran, 1974, Lakhe & Mohanty, 1994, Oakland & Leslie, 1996, and Ross, 1993) have discussed the importance of the critical factors such as top management involvement, leadership for quality, supplier quality management, process management, employee training, and employee involvement in quality. The literature

Table 1: Summary of Literature on CSFs and Performance Metrics on Quality Management

Author (year)	Article intent (research stream)	Methodology	Findings
Saraph et al., *(1989)*	Formulation of Hypothesis	Empirical study	Lists eight critical factors based on literature for implementing, improvement of programmes at organisation level
Sink (1991)	Formulation of Hypothesis	Discussion	Lists seven criteria measuring the performance of an organisation and way to implement QM.
Janz., & Gedalichu (1993)	Prescription	Discussion	Illustrates team approach as the basic building blocks of organisation
Kolay, M.K. (1993)	Discussion	Case study at Iron and Steel plant	The total performance of an organisation is reflected not by the returns alone but also by its impact on the consumers, the national economy and the society at large in relation to it investment base
Lu, E. & Sohal (1993)	Prescription	Discussion	Provides a review the progress to date of TQM in Australian organisation.
Spencer, B.A. (1994)	Formulation of Hypothesis	Discussion	Examines the role and impact of QM culture model in an organisation.
Schlnberg, M.V. (1994)	Discussion	Case Study at Library	Necessity for performance measurement as an instrument for quality management.
Kasul & Motwani (1996)	Prescription	Discussion	Lists factors that support performance measurement of TQM in manufacturing environment.
Sinclair & Zairi (1996)	Formulation of Hypothesis	Case study	Shows how personal involvement in performance measurement, is vital for effective performance measurement system.
Capon, N. et al., (1996)	Formulation of Hypothesis	Field study of a UK Company	Studies the effect of six monitors of NMBA on teams.
Venkatraman, N., & Ramanujam (1996)	Discussion	Discussion	Provides two-dimensional classificatory scheme highlighting ten different approaches to the measurement of business performance in strategy research.
Lokamy, A. & Cox (1995)	Formulation of Hypothesis	Case study	Building the principles on strategic objectives, performance measurement systems and performance measurement system linkages for improved organisational coordination.
Madu, C.N., et al., (1996)	Formulation of Hypothesis	Empirical Study	Finding an association between quality dimensions (CS, ES, ESQ) and organisational performance, and proving these dimensions are valid and reliable.

implies that as the decision makers of an organisation focus on better management of critical factors, improvements will occur in quality performance and ultimately result in improved financial performance for the organisation (Hardie & Walsh 1994).

To date, there has been only a few systematic attempts in the literature to organize and synthesize the various sets of critical success indicators identified by different authors. Hence, the present research work was undertaken with the objective to find out a workable model of critical success factors and related performance measurement system.

Performance Measurement System & Performance Indicators

The use of performance measures in business is hardly new. Companies have been measuring various attributes such as costs, quality, quantity, cycle time, efficiency, productivity etc. of products, services and processes (Reed & Montgomery 1996). Performance measures are recognized as an improvement element. Managers and supervisors directing the efforts of an organisation or a group have a responsibility to know how, when, and where to institute changes. These changes cannot be sensibly implemented without appropriate information and there is currently no standardized approach to developing and implementing performance measurement systems (Sinclair & Zairi 1996).

Performance measures quantitatively tell something about products, services, and the processes that produce them. They are a tool to help understand, manage and improve what organisations can do. Perfor-

mance measures enable organisations to answer the issues of how well the organisation is doing, whether the organisation is meeting its goals, if the customers are satisfied, if processes are in statistical control and if and where improvements are necessary.

In today's competitive business environment it is imperative that organisations monitor organisational performance. For years this has been done primarily in terms of purely financial indicators such as Return On Investment, Return On Assest, Operating Profit Margin, Profit After Tax, Earning Per Share etc. However, these are both too simplistic and too backwardly focused to be efficient for modern competitive organisations. If a company's existing performance measurement system is largely financial it may undercut its strategy especially if the latter focuses on customer service and satisfaction which is valid in a TQM environment.

Enhanced competitiveness of an organisation depends on:

- identifying the important measures of performance for a given strategy
- understanding the inter-relationships of these measures
- focusing on measures which truly predict long term financial success of the business.

Income based financial measures are better at measuring the consequence of yesterday's decisions than they are at indicating tomorrow's performance. What organisations need to do is to evolve a 'Balanced Scorecard' (Kaplan & David, 1992), which provides a composite set of performance measures comprising both financial as well as non financial ones with more emphasis on latter, and use it for tracking performance. Many organisations are already doing so. As part of TQM and related programs leading manufacturers and service providers alike have committed substantial resources to developing non financial measures such as defect rates, response time, delivery performance, customer satisfaction rating etc. to evaluate the performance of their products, services and operations. Quality measures represent the most positive step taken to date in broadening the basis for business performance measurement. Quality awards such as Malcom National Quality Award (Kaplan & David 1993) require that a company before applying for the award must devise criteria to measure the performance of its entire operation, not just its product/services.

Quality measures represent the most positive step in broadening the basis for business performance measurement.

Figure 1 shows the linkage of organisational culture and organisational response.

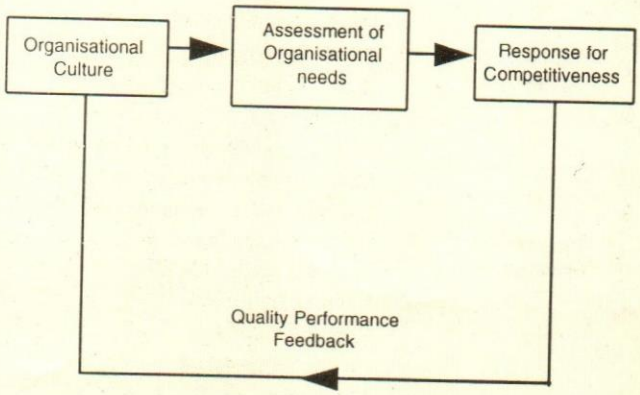

Fig. 1. Linkage of Organisational Culture and Organisational Response

Just as quality related metrics have made the performance measurement revolution more real, so has the development of Benchmarking tools. Firstly benchmarking gives managers a methodology that can be applied to any measure, financial or non-financial metrics. Secondly it has a transforming effect on the mindsets and perspectives. The externally oriented approach of benchmarking makes people aware of improvements that are order of magnitude beyond what they would have thought possible. In contrast, internal yardsticks that measure current performance in relation to prior period results or current budgets rarely have such an eye opening effect. Therefore organisations first have to devise a suitable performance measurement system which is 'balanced' (Kaplan & David 1992) in its approach and then use that for benchmarking to gain a competitive advantage in the market.

Most performance measures can be grouped into one of the following general categories. However, certain organisations develop their own categories as appropriate depending on their mission (Holloway *et al.*, 1995).

- *Effectiveness:* A process characteristic indicating the degree to which the process output conforms to requirements.
- *Efficiency*: A process characteristic indicating the degree to which the process produces the required output at minimum resource cost.
- *Quality:* The degree to which a product or

Table 2: A Partial List of Performance Indicators

		Performance Indicators
WITHIN ORGANISATION	Top Management	Impact on society
		Speed of change
		Level of commitment
		Quality of leadership
		Market share
		Business results
		Rapid innovation rate
	Middle Management	Speed of learning
		Speed of training
		Team format
		Level of process and function design
		Speed of communication between top and operational management.
	Operational Management	Extent of adopting of 7s tools
		Speed to solve problems
		Productivity growth
		Inventory turnover
		Customer deliveries
		Timeliness
		Response to new technology
	Shop Floor	No. of defects
		Rate of output
		Rework/Scrap
		Total cycle time
		Absentees
OUTSIDE ORGANISATION	Supplier	Quality of incoming material
		Lead time
		Vendor rating
		Quality standard (ISO)
		Inventory turnover
		Timeliness
	Customer	Service level/After sale services
		Satisfaction in terms (Customer Value) of
		• lower cost
		• working condition/ease of access
		• Features
		• Safety
		• reliability and durability
		• quality

service meets customer requirements and expectations.

- *Timeliness:* whether a unit of work was done correctly and on time. (Criteria must be established to define what constitutes timeliness for a given unit and work. The criterion is usually based on customer requirements.)
- *Productivity:* The value added by the process divided by the value of labour and capital consumed can be a measure of productivity.
- *Safety:* Overall health of the organisation and the working environment of employees.

The success or failure of any quality programme, to a large extent, depends on the team's ability to define useful indicators of measurements. A list of some performance indicators is given in Table 2.

A Model for Performance Measurement in TQM Environment

There exists a need for a model that will identify the logical links between the components of a TQM approach and thus allow the identification of those components necessary for successful application of TQM. This model will be used as a reference point for further analysis. Most of the reported literature in TQM include a model of some kind. More recently, descriptive models for TQM have become more pronounced with different national quality awards. Our model for TQM performance and the linkages of various components

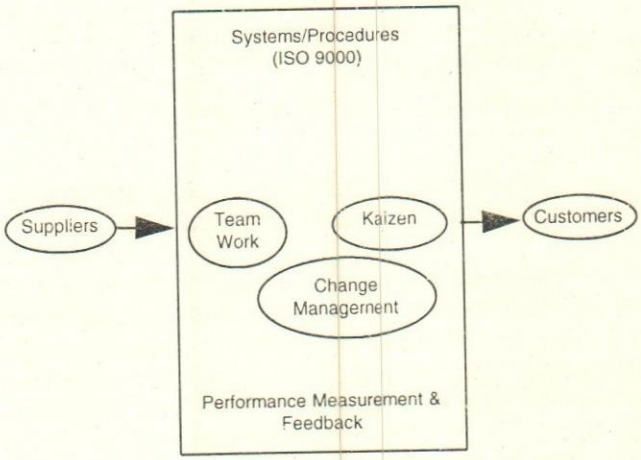

Fig. 2. Improvement Model

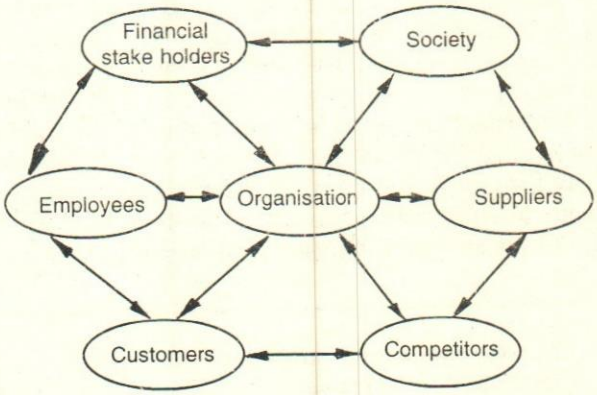

Fig. 3. Various Agents Involved in Performance Measurement System

are shown in Fig. 2. This model shows that performance measurement and feedback is central to an organisation and linkages have to be developed with customers and suppliers. The various agents involved in the process are shown in Fig. 3. Effective TQM implementation reports a very good liaison between horizontal and vertical links. Further research is needed on how to achieve vertical and horizontal co-ordination between organisational levels (e.g. division and plant) and across functional areas (i.e. manufacturing, marketing and sales). Table 3 gives a select list of indicators of US Malcolm Baldrige National quality Award (MBNQA) companies.

Table 3: A Select List of Indicators of US MBNQA Companies

Performance Indicators	Average Annual Improvement in %
Operations Related	11.3
On time Delivery	4.7
On Processing time	12.0
Product Lead time	5.8
Inventory turn over	7.2
Cost of quality	9.0
Employee Related	
Employee Satisfaction	1.4
Attendance	0.1
Turnover	6.0
Safety/Health	1.8
Suggestions Received	16.6
Customer Satisfaction	
Customer Complaints	11.6
Customer Retention	1.0
Overall satisfaction	2. 5
Financial Performance	
Market share	13.7
Sales/employee	8.6
Return on Assets	1.3
Return on Sales	0.4

Source: Wiele Van der A, 1997, Beyond Fads, Eburon Publishers Netherland

Concluding Remarks

The philosophy of TQM encompasses all business functions within an organisation. However, for effective implementation, it is necessary to align a few critical success factors (CSFs) with organisation's philosophy. Investment in quality must also translate into business results. For this, it is essential to evolve a performance measurement system in line with TQM philosophy. The model proposed in this paper is expected to provide directions for further research in this important area.

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"Three facts stand out about Productivity in most organisations.

- *Productivity is at a fairly low level and most managers know it;*
- *Productivity varies widely among people who are doing the same job and getting paid nearly the same; and*
- *Companies don't have any systematic process in place to improve productivity over time."*

– John H. Zenger

Feature

Collective Bargaining & Productivity: Current Trends & Emerging Patterns

Subesh K. Das

This study on collective bargaining discusses how productivity issues are bargained and settled, drawing examples from various collective agreements in West Bengal. Bargaining for productivity takes different forms. In productivity bargaining increase in wage is associated with increase in productivity. In revival bargaining revival of a unit becomes the main concern and there may not be any increase in wage. The agreements cover various issues like discipline, increase of workload, rationalization of manpower, introduction of technological changes, contracting out of jobs and linking wages to productivity. Though, the discussion is based on examples from West Bengal, it is equally valid for organisations in other parts of the country and also has relevance for other developing countries having similar social and economic environment.

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Productivity Improvement—The Human Aspect

"Productivity is the relation between physical output and one or more of the associated physical inputs used in the production process."—This physical process conceptualization is the most widely used definition of productivity (Kopelman, 1986:3). The concept can be applied to various entities, ranging from individual or machine to company, industry or national economy. Inputs used in producing goods and services can be classified into two categories—physical inputs and human input. Physical inputs include materials, machinery, building space, etc. and human input refers to direct and indirect labour employed in the production process. The combined productivity of all factors taken together is known as "total factor productivity" and is defined as:

$$\text{Total Factor Productivity} = \frac{\text{Value of the Product}}{\text{(Labour Input + Non-Labour Inputs)}}$$

Non-labour inputs or physical inputs by themselves do not produce, they are utilized by human beings. Therefore, the productivity of all inputs eventually depends on the efficiency with which human resources are employed and managed. However, management of human resources is a difficult and challenging task. Each unit of this resource is unique and requires human treatment. Organisations often compute labour productivity as the ratio of increase in value of product to increase in labour input. Although computation of labour productivity is not uncommon, we are concerned with total factor productivity, which results from contribution of all factors of production.

Productivity of all inputs eventually depends on the efficiency with which human resources are employed and managed.

In an organisation, there are four primary determinants of productivity—the environment, organisational characteristics, work characteristics, and individual characteristics. The environment in which the organisation functions affects one or more of the controllable determinants of organisational productivity, but is largely uncontrollable by an organisation. Organisational characteristics or practices like reward system influence individuals, their work behaviour, and job performance. Performance of an individual also depends on the work characteristics or nature of work like task variety and autonomy. The organisational practices and work characteristics, which are controllable by the management, are translated into observable end results through their attributes such as belief, values, attitudes, knowledge, goals and intentions. They affect individual characteristics by changing the motivation and ability of the worker, which in turn influence individual job performance (Kopelman, 1986). Changes in organisational characteristics and work characteristics are introduced to change motivation and ability of workers for greater output. Workers often individually or collectively oppose the changes, which results in conflict and creates tension in the organisation. The conflicts are generally reconciled through collective bargaining.

Bargaining takes different forms in different industries and in different regions depending on the extent of industrialization, the prevailing economic and political atmosphere, the ownership pattern, background of workers, the legal frame work and the extent and nature of trade unions. As industrial relations environment varies from region to region, it is necessary to have region wise studies on productivity related collective bargaining. This study tries to identify emerging patterns in productivity related collective agreements in West Bengal. It also includes some of the innovative approaches[1]. West Bengal is one of the industrialized states in India and it is also one of the labour sensitive states. Existence of large number of old industrial units in the state provides an excellent opportunity for the study on collective bargaining and productivity.

Productivity Bargaining & Revival Bargaining

Collective bargaining is 'a mode of fixing the terms of employment by means of bargaining between an organised body of employees and an employer or an association of employers usually acting through organised

Bargaining takes different forms depending on the extent of industrialization, prevailing economic and political atmosphere, ownership pattern, background of workers, legal frame work and the extent and nature of trade unions.

agents' (Hoxie, 1951). It involves collective participation of workers in trade unions to bargain with their employers. In the process each side applies pressure on the other during negotiation (Clegg, 1978, Mamoria & Mamoria, 1991), when increase in wage is associated with increase in productivity it is productivity bargaining. It covers "any type of collective bargaining in which an increase of price of labour is associated with an increase in its productivity, regardless of how the latter is achieved." (Flanders, 1971) In productivity bargaining increase in productivity may result from increase in workload, improvements in machine use, change in work allocation and methods of work, reduction of wasteful practices, and flexibility in utilisation of manpower. Increase in productivity increases the capacity of the employer to pay. This alone justifies payment of higher wages. There is, however, no formula to allocate certain fixed percentages of productivity gains between capital and labour. Sharing gains of productivity is generally achieved through the process of bargaining, which takes into consideration many other factors besides increase in productivity. Recent trend shows that workers demand for higher wages are often accompanied by employers' demands for increase in productivity, indicating a shift from 'nothing for something' to 'something for something'. Here are some examples of productivity bargaining:

ITC Limited, Kidderpore Branch: The long-term agreement (1997) provided for increase in wage through revision of basic wage, dearness allowance, and other allowances. It also provided for productivity improvement through modernisation, reorganisation of work, revision of production norms, revision of incentive schemes, and payment of bonus linked to productivity. The agreement spelt out that the goal was to make the factory a world class manufacturing facility, by benchmarking itself against the best in the world in terms of productivity, quality and safety standards.

Hindustan Lever, Debgram: The long-term wage agreement (1998) was signed at bipartite level and registered under the Industrial Disputes Act, 1948. It provided for revision of scales of pay, dearness allowance, house rent allowance, and other allowances. It

1. This paper draws examples from a number of bipartite and tripartite agreements of some industrial units in West Bengal signed during 1993-99. The author was posted as Labour Commissioner, West Bengal during this period, which provided him opportunity to know about the agreements.

also provided for revision of incentive scheme linked to production and incentive for wastage reduction.

Increase in productivity is not always accompanied by increase in wages. There are examples where workers and unions have agreed to increase productivity without increase in wage. Sometimes they have even agreed to variety of concessions like wage cut, freeze in wage and other benefits, cuts in employment, change in work practices, and flexible deployment of work force. Such bargaining can be called Revival Bargaining, as revival of the unit becomes the main consideration. Workers agree to such sacrifices, only when they realise that there is threat of loss of job. The best examples of this type are from jute mills in West Bengal. Most agreements on lifting of prolonged lockout in jute mills involved reduction in working days and increase in workload. Such agreements are also common in sick units and particularly in units referred to the Board of Industrial and Financial Reconstruction (BIFR). When a sick industrial unit is referred to BIFR, the Board asks for preparation of a joint revival package agreed by the management, unions, financial institutions and government[2]. The labour-management cooperation pacts for revival of units are arrived through bargaining. Here are examples of revival bargaining:

Jay Engineering Works, Calcutta: The unit manufacturing electric fan and sewing machine was referred to BIFR in 1994. The BIFR directed the management to submit a revival proposal including an agreement with the unions on improved production norms. After prolonged discussion, an agreement was signed on 15.5.95, which provided for increase in production norms by 10-30 per cent, revision of incentive scheme, merger of two units in Calcutta, sale of surplus land and payment of wages as per industry wide agreement.

Hindusthan Development Corporation, Howrah: The unit manufacturing railway wagons was in trouble in 1993 due to acute shortage of wagon orders. After protracted negotiation, management and unions entered into an agreement which provided for five-day work in place of six-day week for all workmen in the factory. The additional off day was treated as special weekly off day without wages. It was also agreed that productivity and production targets will be increased by 20-25 per cent and that once the critical phase is over, management will restart six-day work.

2. The BIFR was set up to revive potentially viable sick industrial companies and to recommend closure of non-viable companies. As on 28.2.99 out of 203 units in West Bengal referred to BIFR, revival package had been approved for 46 units and winding up order had been issued for 53 units. Approval of schemes in most cases involve prior agreement between parties.

Texmaco Limited: The textile machinery division of Texmaco was in trouble due to poor demand. Its production had to be totally stopped. Other divisions of Texmaco were not in position to absorb workers of this division. Management and workers entered into a bipartite agreement which provided for three days work in a week and payment of four and half days wage. A voluntary retirement scheme was also introduced.

Productivity bargaining and revival bargaining are the two main forms of collective bargaining that leads to improvement of organisational productivity. A pre-condition of revival bargaining is that the workers must be convinced about the need for the sacrifices. With liberalization and globalization, manufacturing units in our country have to be more productive to survive and prosper in the competitive environment. Productivity bargaining will thus become important for all organisations.

Productivity bargaining and revival bargaining are the two main forms of collective bargaining that leads to improvement of organisational productivity.

Agreements on Discipline & Work Load Increase

Discipline is a pre-condition for stability in workforce and increase in productivity. It implies abiding by established rules and regulations, which ensures orderliness, and gives a sense of direction. The rules prescribe the manner in which duties and task should be carried out. Many agreements have general clauses on maintenance of discipline, co-operation of workers, and non-interference with normal functioning of the management[3]. However such general clauses in agreements do not automatically ensure discipline, which has to be achieved through a series of planned action on the part of management. Agreements on attendance bonus, incentive for regular attendance, leave travel assistance linked to attendance, and gate control are examples of specific clauses for improvement of discipline through regular and timely attendance[4].

3. Clauses on improvement of discipline are seen in many agreements and agreements on non-interference with management activities are common in organisations where there were strained industrial relations in the past. Example – Dunlop India Limited, Hooghly agreement dated 2.5.94.

4. There are many examples – (a) Dunlop India Limited wage agreements (1994) provided for attendance bonus and leave travel assistance linked to annual attendance. (b) National Carbon Company, Division of Union Carbide India Ltd., Calcutta wage agreement dated 10.10.94 provided for payment of reward for good attendance.

Discipline is a pre-condition for stability in workforce and increase in productivity.

Increase in workload of individuals increases productivity. While this is the most straightforward method for increase in productivity, there are limits to this, as it often requires more physical output by the workers. Periodic revision of workload without change of technology is possible as efficiency of a worker increases with his continuous involvement in the same job. As an operation is repeated, workers can perform it more quickly and more accurately. Organisations also gain in effectiveness by doing jobs repeatedly (Gupta, 1994). The effect of learning on productivity differs from industry to industry and thus experiences in one unit may not be replicable in the other. Table 1 presents examples from agreements in two jute mills on increase of production norms in some sections/departments.

Table 1: Increase in Production Norms

Department	Bally Jute Mill[5] Agreement Date: 30.7.93		Hastings Jute Mill[6] Agreement Date: 7.9.93	
	Existing	Proposed	Existing	Proposed
Softner	3.3 M.T.	4.0 M.T.	3 M.T.	5.0 M.T.
Drawing Efficiency %	60	70	67	75
Spinning Efficiency %	73	80	80	86
Winding Hessian	300 kg/shift	385 kg/shift	325 kg/shift	350 kg/shift
Winding Sacking	320 kg/shift	400 kg/shift	350 kg/shift	375 kg/shift
Beaming Hessian	7020 yard	8450 yard	9750 yard	10000 yard
Beaming Sacking	7500 yard	8500 yard	9750 yard	10000 yard
Weaving Hessian %	61	70	65	68
Press: Average/shift	35 Bales	45 Bales	40 Bales	55 Bales

(Spinning efficiency is for side carpet backing)

These examples show increase in different sections/departments at different rates. Overall productivity increase will result from the combined effect of changes in different sections. There are also agreements on increase in overall productivity in a unit[7]. These are common in small units. In large organisations, agreements on overall increase in productivity are to be followed by a series of section wise agreements. Efficient deployment of work force for effective use of manpower, through better utilization of resources is important for higher productivity. Increase in workload may involve change of work processes, elimination of unnecessary work and wasteful practices. There are agreements on incentive payment for reduction of wasteful practices[8].

Agreements on Incentive Schemes

There is growing interest in the use of wage incentive to raise productivity and there is emerging consensus between all parties in negotiations that such practice should be increasingly used in all organisations. It involves stimulation of human effort to provide positive motivation for greater output. Incentive schemes in general provide for payment of incentive on production above certain level. Payment on piece rate basis, is more in small units. Incentives are calculated by quantifying production or by computing some productivity index based on production in different sections, capacity utilization and manpower engaged. A simple form of incentive scheme is reward schemes, where workers are rewarded for achievement of certain qualified production, productivity or productivity index norms in any week or month[9]. Incentive schemes can

Incentives are calculated by quantifying production or by computing some productivity index.

5. Bally Jute Mill, Howrah, West Bengal: Agreement dated 30.7.93, between management and the five operating unions. The agreement was signed after lockout for one and half years. Initially unions opposed management's proposal for reduction of workforce, but finally they agreed for reduction of workforce in certain areas.

6. Hastings Jute Mill, Hooghly, West Bengal: Agreement dated 7.9.93, between management and the operating unions was signed after lockout in the unit. There were problems in implementation of the agreement. This was further discussed and reinforced through agreements in 1996 and 1998.

7. Flender Macneill Gears Limited, Kharagpur, West Bengal: Agreement dated 20.10.93, with five operating unions provided that, "the productivity of the factory will be increased by 20 per cent in terms of Kg per man-hour, with product mix comparable to 1992".

8. Hindusthan Lever Limited, Debgram long term wage agreement (1998) provided for payment of incentive for wastage reduction. The incentive scheme is based on actual consumption of raw material vis-a-vis standard consumption of raw material. The difference between the two is calculated as wastage.

9. ICI India Limited, Rishra Works. Memorandum of settlement dated 18.2.94 between management and two unions provided for payment of reward on the basis of achieving qualifying productivity index.

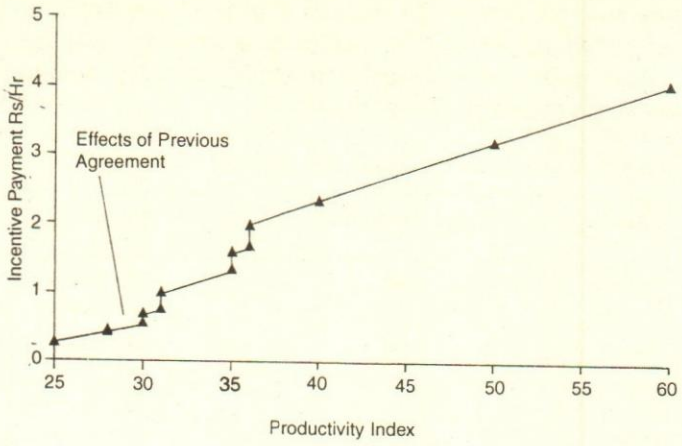

Fig. 1: Incentive Payment Rates

be of classified into three categories depending on their coverage – individual schemes, group schemes and general schemes. There are also schemes that are combination of these schemes.

Dunlop India Limited Group: In the agreement (1994), workers are divided into several benchmark groups depending on their functions. Each group is provided with manning called benchmark manning and is expected to produce benchmark output. When a worker in a bench mark group produces benchmark output, he gets benchmark money in addition to standard wage, which includes basic, dearness allowance and other components. If the output is less than the benchmark output he is booked for hours pro-rata to the output provided there is no fault of management. If the output is higher than the benchmark output, then he additionally receives incentive according to an agreed incentive scheme.

Eveready India Industries Limited (1997): The scheme provides for incentive payments linked to productivity index. Workers in different groups are paid at different rates. In each group different categories of workers receive payment at different rates depending on their role in production process. The indirect workers get at a rate, which is 75 per cent of the direct workers; and the auxiliary workers get at 50 per cent rate. Computation of productivity index takes into consideration capacity utilization and actual number of men in place of agreed man strength. Incentive is calculated in the following way:

Productivity Index = (Production × Conversion Factor)/ Actual Man-hours

Modified Productivity Index = Productivity Index/ Capacity Utilization Factor

Payment = Number of Hours Worked × Payment Rate × Additional Multiplication Factor.

Different products have different conversion factors. The agreement also provides for revision of agreement "in case of change in process improvement, equipment, equipment speed etc." The incentive payment varied with modified productivity index as shown in Fig. 1.

Past practice in the organisation is an important factor in incentive schemes. The schemes can be a part of a long-term settlement, or they can be separate agreements. Alternatively a long-term agreement can provide for higher production norms and upgradation of incentive base; and the incentive scheme may be bargained and settled afterwards[10].

Payment of annual bonus may also be linked to production. This is more like an incentive scheme, where calculations are made annually. Section 31A of the Payment of Bonus Act, 1965 provides for payment of bonus linked to production, in between the limits of minimum (8.33%) and maximum bonus (20%), provided an agreement is signed by the employers and employees. Effectively this is an annual incentive scheme covering all workers in the unit. ITC Tribeni Tissue agreement (1993), provided for linking of bonus to annual production. The bonus payable as percentage of annual earnings was linked linearly to annual production. There are only few examples of such agreements.[11] In most cases bonus rates are fixed through bargaining, which generally does not take into consideration productivity or profit and the past practice in an organisation becomes the main consideration. In competitive environment it is expected that bonus should be linked to performance. In Japan one third of establishments with more than 30 employees provide for bonus linked to productivity (Inouye, 1994).

Wage incentives are best installed in situations where output can be standardised and quantified. A well designed incentive scheme can raise productivity, increase worker earnings and lower the cost of production. However, careful planning is required. A rushed job may lead to trouble in future. Each industry has to design its own scheme in consultation with the workers and implement in an atmosphere of good industrial relations. Further, no incentive scheme can remain valid for

10. The long term agreement of Flender Macneill Gears (1993) provided that, "the revised base point of incentive scheme will be 1.38 kg/per man-hour in place of 1.15 kg/per man-hour." It was also agreed that the scheme would be revised after implementation of the long term agreement and achievement of new production norm.

11. Other examples of agreement on payment of bonus under section 31A of Bonus Act are – ITC Limited, Kidderpore, Calcutta Agreement (1997), and VXL Landis and Gyr. Limited Agreement dated 24.7.98.

Wage incentives are best installed in situations where output can be standardised and quantified. Incentive scheme requires periodical revision or modification particularly with modernisation or reconstructing of organisation.

long periods, it requires periodical revision or modification particularly with modernisation or reconstructing of organisation.[12] It is not enough to have high productivity, the quality of product is equally important. It will be disastrous if increase of productivity affects quality. There can also be incentive schemes for improvement of quality.[13]

Agreements on Rationalization of Manpower

Excess manpower is often a major problem and rationalization of manpower may substantially increase productivity. The first step is redistribution of work to increase the fit between man and machine, and efficient use of resources. It may be with or without increase in workload. With better utilization of machines and reduction in labor, cost productivity is increased. Table 2 presents a typical example of redistribution of work in some sections in a jute mill. Once redistribution plan is finalised, adjusting the excess workforce can be done in different ways. In Britannia Industries Limited, Calcutta the agreement (1997) provided for adjustment of manpower by increasing number of shifts per week. This is possible when there is demand for higher production. Reduction of workforce is generally achieved through adjustment of casual workers, particularly in labour intensive units with large proportion of casual workers. Almost all jute mills in West Bengal adjusted their manpower during the last decade by adjusting casual workers. Immediate reduction of manpower through natural wastage may not be always possible. It depends on composition of workforce, age profile of workers, skill required for different jobs and nature of industry. The problem is sometimes resolved by creating a 'central pool' with the excess workers, who are then assigned different jobs including absentee coverage. This allows manpower reduction through natural wastage over a period of time.

Table 2: Reduction of Manpower-Bally Jute Mill (1993)

Job	Existing	Proposed	Manpower Reduction	Remarks
Spooler Carrier	2/Shifts	Nil	6	Winders to carry spools
Oiler	5	Nil	5	Sardars to look after this job
Silver Freeder	1/10 Machines	1/15 Machines	6	Increase in workload
Maintenance: Fitter	9/Shifts	7/Shifts	6	Line Sardars to help

The working complement was reduced by 150 workers mainly through change in work practices and increase in workload and through use of Electronic Data Processing in office work. While 'sardars' were earlier involved only in supervision of work, they were now given some direct responsibility.

When natural wastage is not an option, employers generally have two options for reduction of workforce—one legal and other negotiated agreement. The restrictive provisions of the Industrial Dispute Act, 1948 on lay-off and retrenchment; and refusal of government to grant permission under section 25(N) or 25(O) in almost all cases, make it impossible for employers to find a legal solution to the problem of excess staff. In such situation, voluntary separation schemes are found to be the only acceptable solution to both employers and the employees. The Union Government has also encouraged such schemes by giving income tax exemptions and by introducing it in public sector enterprises. It involves payment of compensation with terminal benefits to workers leaving the organisation. The schemes are voluntary in nature and it is up to individuals to accept it or reject it, but employers often force the workers to take voluntary retirement by putting them in difficult situations like transfer to distant places. Unions also get involved by bargaining separation schemes. Excess manpower is a major problem in many public sector enterprises. With introduction of new economic policy and curtailment of budgetary support, many units have rationalized their manpower. All BIFR—schemes of PSE-s have provision for reduction of manpower. (Das, 1998a). In the early 90-s, unions often opposed such schemes but now they generally bargain for higher benefits.

Rationalisation of manpower is seen in almost all revival bargaining and sometimes it is a part of productivity bargaining. It invariably requires transfer or redeployment of workers and often demands training,

12. There are many instances where old incentive schemes have become non-functional and in some cases they have become a burden for the organisation. In jute industry 50 per cent of wage was linked to productivity in 1963, which became only 1 per cent in 1998.

13. Hindusthan Lever Limited, Debgram agreement (note-3) provided for incentive payment for improvement of quality. The scheme provided for computation of "defect" in production and use of excess material and payment based on these two factors.

retraining of workers including multiple skill development. Unions often find the proposals irrational and oppose them. They agree to such proposals only if there is no retrenchment, no loss of job, or the workers are not expected to do work of lower status when deployed. Industry wide agreements[14] in jute, engineering, and textile provide for general clauses on retraining and deployment without adversely affecting the service conditions of workers. However, most agreements on rationalization of manpower are done at unit level with more involvement of workers in the bargaining process. There are agreements on deployment of workmen at different locations in their respective grades and in higher grades with additional allowance, but most agreements do not allow deployment at a lower position. Only few recent agreements provide for acting in lower designations.[15]

Rationalisation of manpower is seen in all revival bargaining and invariably requires transfer or redeployment and demands training, retraining.

Bargaining Technological Change

Productivity can rise in two distinct ways: first through more intensive effort on the part of the worker and secondly through greater mechanisation, and improved technology. The latter is usually referred to as productivity from "technological progress", which can lead to significant increase in productivity. Any modernisation program involves change in work practices and adjustment of workforce. It is always accompanied with other changes like rationalization of manpower and reduction of wasteful practices. Disputes generally arise on manning, production norms, effects on earnings, and sharing of gains of productivity. A delay in settlement of the disputes delays use of new machines causing loss. Long-term wage agreements often have general clauses on modernisation and immediate installation of new machines. The Cotton Textile Industry Agreement, West Bengal, 1995 provided that, "the plant and machinery installed by the mills for expansion/modernisation, should be started as soon as erected and are ready for operation. The workmen will co-operate with the management in introducing further new machines, products, new processes of work". Despite such general clauses in agreements, disputes often arise at the time of installation of new machines. Agreements on modernisation are generally done at unit level, which provide for use of new machines and procedures with rationalization of manpower[16]. Agreements in advance on implementation of modernisation programme, installation of new machines and production norms can reduce time loss in implementation. However, this is possible only when parties are clearly aware of the future changes and there is high level of trust. There are only few examples of such agreements. (Fig. 2 & 3 extracted from Tribeni Tissue agreement).

Tribeni Tissue Agreement on Modernisation: The unit planned an increase of production capacity to almost threefold through technology upgradation. The long-term wage agreement (1993) included clauses on smooth implementation of the modernisation programme. It was agreed that the existing workers would operate new machinery and equipment during trial runs, and pilot production in addition to their normal work. The incentive scheme was also changed. During implementation of modernisation programme, the incentive was a fixed amount for all workers, subject to full co-operation. This payment would remain in force until a monthly production of 2430 MT was achieved. Once this level was achieved, a new scheme would become operative which provided for increase/decrease in payments with increase/decrease in monthly production between 1590 MT to 3631 MT per month.

Contracting Out of Jobs

Current trend indicates increase of contract labour in all sectors of production activities, the extent and nature varying from industry to industry. Some organisations engage contract labour for temporary jobs or in indirect activities, while others engage for perennial jobs or in main production activities. Many firms also get semi-processed materials from small firms. There are

14. Industry wide agreements provide for general clauses on training and redeployment. Examples: (a) tripartite settlement dated 10.2.97 between Confederation of Indian Industry (Eastern Region) and ten federations of unions for engineering industry in West Bengal (Covers 300,000 workers); (b) tripartite settlement in industry between Indian Jute Manufacturers Association and federations of unions. (Covers 250,000 workers).

15. (a) Siemens Ltd, Calcutta Works: Settlement dated 10.6.1998 provided for broad classification of job for greater flexibility in redeployment. For example seven different categories of clerks were given one designation. (b) ITC agreement (note-2) provided for flexibility in deployment including acting in higher or lower designation and transfers between section/shifts whenever required. (c) Hindusthan Lever Limited, Calcutta agreement (1998) provided for work in step up or step down job to increase productivity.

16. Almost all agreements have clauses on modernisation. Some provide specific clauses on use of new machines. Lipton India Limited agreement dated 21.7.93 provided that new machines will be started and stabilised in line with manufacturers' specifications within a maximum period of one month.

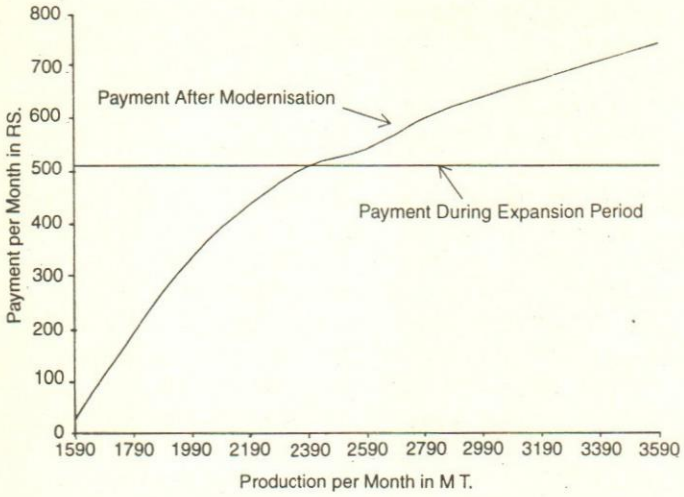

Fig. 2. ITC Tribeni Tissue: Incentive Payment for Full Attendance: F-Grade Workers

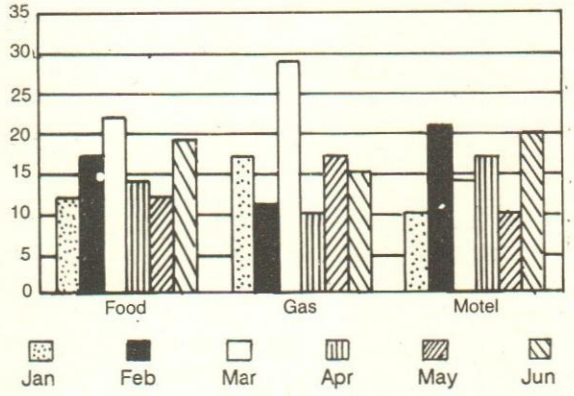

Fig. 3

both benefits and drawbacks in contracting out of jobs. Benefits of contracting can be grouped under four headings: specialising, market discipline, flexibility, and cost savings. The drawbacks are identified as loss of in-house skill, corporate memory, and innovative capacity. Contracting leads to increase in productivity by cost savings, provided the organisation is able to receive the potential benefits at reasonable cost. While contracting out of jobs has potential for increase of productivity and flexibility, there is debate whether it can provide for continual growth of the organisation.

Benefits of contracting can be specialising, market discipline, flexibility, and cost savings; drawbacks are loss of in-house skill, and depletion of corporate memory, and innovative capacity.

In industrially advanced countries, many organisations have been able to remain competitive through contracting out of jobs. In fact a new strategy based on linkage of various firms (named flexible specialisation) has replaced the dominant principle of mass production technology. (Piore & Sabel, 1984) In this strategy, a large firm devolves a range of manufacturing activities to its orbiting suppliers. Experiences of this are mostly seen in Japan and North Germany. Very large corporations such as Mitsubishi, Toyota and Siemens achieve flexible specialization through internal networking, in which different affiliates or highly linked subcontractors work in close co-operation. (Kaplinsky, 1993) The changes in India towards contracting out of jobs, indicate emergence of some characteristics of flexible specialisation. But, they fail to satisfy some of the most important ones, especially those relating to collective efficiency, continual innovations for continuous growth, and prosperity of workers. (Das & Panayiotopoulos, 1996) Due to labour surplus in developing countries, competition amongst contractors often results in sweating of labour than innovation. As contracting often leads to loss of permanent jobs, it is generally opposed by the unions. Inspite of this, there are agreements on contracting out of jobs. (Beckitt & Coleman of India Limited agreements dated 25.3.94) However, only few agreements have explicit clauses because of restrictive provisions in the contract labour legislation. In most units there is tacit understanding between the parties.[17]

Bargaining Process & Productivity

Coverage of collective agreements vary widely, ranging from section wise bargaining, to bargaining for single unit, to local agreements covering a few units, to agreements covering large number of workers in the whole state. Most industry wide agreements provide only general clauses on productivity increase as they can include specific clauses only when workers in all units do the same type of job. The agreement for tea-plantation workers in West-Bengal, provides for payment of incentives in the form of 'extra leaf price' for plucking of tea-leaves above a certain range.[18] This was possible because all pluckers do the same job in all tea gardens. In this case garden to garden variation is accommodated by changing the task. (Govt. of West Bengal, 1994) Agreement for textile workers in West Bengal provided that, the issue of fixation of workload and

17. The Cotton Textile wage agreement is probably the only industry-wide agreement, which included specific clause for unit wise discussion to increase productivity.

18. Anantpur Textile (7.11.96), Birla Synthetics (26.10.95) Jayshree Textile (30.4.97) and Saktigarh Textile (15.4.97).

production norms will be taken up at unit bipartite level and will be finalized within three months. If the matter is not settled within three months, the matter will be taken up for conciliation at tripartite level and settled within one month. (Govt. of West Bengal, 1994) Subsequent to this agreement, unit level agreements were signed. However, in many units it took several months and in some cases agreements were signed only after lockout. Industry wide agreements are not very effective on productivity issues. As the level of technology and working arrangements vary from unit to unit and location to location, it is difficult to accommodate specific productivity issues in wide ranging agreements. Further, in the changing environment there has been shift from industry level agreements to plant level bargaining, with more reliance on market forces.

Bargaining is a complex process that calls for skillful negotiation between employers and employees or their representatives to reach mutually satisfying agreement. It is not built on any standard practice and varies in each situation, time span, industry and organisation. It is also influenced by the prevailing practices in the organisation. Documentation of any bargaining process is an impossible task, as numerous interactions take place between different individuals and groups at different points of time. The following are the main events in the bargaining of Union Carbide that lead to settlement in 1994.

Bargaining Process: Union Carbide

Discussions Prior to Submission of Charter of Demand: (Tripartite Wage agreement dated 10.10.94) The management apprised the workers and unions about the position of the industry in the economy, the need to be competitive in terms of productivity, labour cost, product quality, efficiency, capacity utilization, and the need to adopt a new and more efficient production system. They informed that, "all increase in labour cost must be matched with improved productivity."

Charter of Demand: Three operating unions submitted their charter of demand in February 1992. Their demands included demand for increase in basic wage and dearness allowance, upward revision of allowances and benefits, and improvement of working conditions.

Unity Amongst Unions: On management request the three unions revised their demand and submitted a common statement. They also formed a joint action committee. This involved negotiations amongst the unions.

Discussions and Clarification of Issues: Discussions were held at different levels both in bipartite and tripartite forum. The management spelt out the requirements in terms of cost per unit of production, capacity utilization, convertibility of production, redeployment, rationalization of manpower, modernization, discipline etc. The issues raised by the unions were also clarified. The requirements were gradually spelt out in detail. Most discussions were held at bipartite level, and the matter came to the conciliation officer only when there was impasse on any issue. The conciliation machinery was always kept informed about the developments at various stages.

Agreement: Finally, an agreement was signed on 10.10.94, giving retrospective effect from 1.5.92 with validity to 31.12.97. The agreement was explained to the workers.

There are various reasons for worker resistance to change and there are many mechanisms that can facilitate the change. (Kopelman, 1986) One of the tasks in the bargaining process is to make the workers ready for the change. There has to be clear message about the need for the change and that the workers are capable to bring the change. (Armenakis, Harris & Mossholder 1993) In order to achieve this, besides persuasive communication about the change, there must be active participation of the workers. Effectiveness of any productivity agreement will not only depend on the content, but also on the bargaining process or how the agreement is arrived at.

Review

Productivity is also important in the informal sector, where most workers in our country earn their living. The long term well being of workers in the lower rung of the earning distribution depends ultimately on increasing their productivity. (Freeman, 1996) Government intervention in the informal labor markets is mainly through fixation and implementation of minimum wages. Minimum wage notifications can take productivity into consideration. Once minimum wages rates are fixed the production norms and payment of higher wages for higher production may be bargained and settled. The best examples of agreements need not necessarily be from the best units in the economy. The success of any agreement to a large extent will depend on how far the employees at various levels are involved in the bargaining process. Participation of workers is essential both in formulation and implementation of the productivity plan. Manufacturing process is a configuration, a whole that is greater than the sum of its parts. In the modern concept, the manufacturing manager must work with an awareness of the business and he will be responsible for integrating people, material, machines, and time. (Drucker, 1990)

substantially decreased with automated machines aided by computers. Thus, the contribution of direct labour is diminishing while that of indirect labour is steadily increasing. Now, cross-functional teams are performing more work and overheads have greatly increased in high-tech environments. So, manufacturers need a more reliable costing method and decision-makers have

Over emphasis upon what can be done by workers to increase production may not always yield results. Modernisation and technology upgradation, full utilization of installed capacity and elimination of wasteful practices should be main concerns in all bargaining. We have to take into consideration the social and economic environment in which the workers live. Large scale un-

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been actively involved in redesigning the old-fashioned costing system. Activity-Based Costing (ABC) emerges as a promising new methodology because it calculates overheads more accurately than traditional methods.

Activity-Based Costing

A number of recent case studies indicate that ABC method is being widely accepted by industry (Borden 1990). This system has been successfully implemented in small, medium as well as large manufacturing industries producing a wide mix of high and low volume products. Manufacturing activities consume resources and products demand the manufacturing activities (Park & Kim 1995). Activity-Based Costing (ABC), developed by Harvard's Robin Cooper and Robert Kaplan, allocates staff and overhead costs to the product on the basis of actual consumption of the resources and the activities required in manufacturing the product (Cooper & Kaplan 1988; Cooper *et al.*, 1992). ABC is a recently developed costing methodology that identifies business activities performed, measures the cost and performance of activities, resources and cost objects, assigns resources to activities and activities to cost objects; and recognizes the causal relationship of cost drivers and activities (Bharara & Lee 1996). Activity represents repetitive tasks performed by each specialized group within a company as it executes its business objectives. It is viewed as usage of a resource. Cost drivers are systematic cause and effect linkages between products and costs. These drivers reflect the consumption of activities by products. Given a better understanding of cost, management can make far better decisions in terms of competitive advantages by the use of ABC approach. Furthermore, the improved understanding and localization of cost can be used to eliminate low value high cost activities and hence reduce the cost. This new cost management philosophy of Activity-Based Costing has been considered as a building block for Total Quantity Management (TQM).

ABC identifies business activity performed, measures the cost and performance of activities, resources and cost objects, assigns resources to activities and activities to cost objects; and recognizes the causal relationship of cost drivers and activities.

ABC encourages significant breakdown of work activities and proper allocations of costs, automatically making a number of potentially hidden costs more visible. It permits the important distinction between resource usage and resource spending. The difference is unused capacity. Elimination of this unused capacity permits costs to be reduced. With ABC, the activities are determined and associated with their specific costs. The eventual costs depend on the number of activities (each with their specific costs) necessary to complete the product (Cooper & Kaplan 1992).

ABC provides a far more actual portrayal of cost than traditional methods. The fundamental difference between ABC and TCA systems is that the traditional costing assumes products cause cost, whereas, ABC assumes that activities cause cost and the cost objects create the demand for activities. Traditional cost systems use a two-stage procedure to assign as organisation's indirect support expenses to outputs. Operating expenses are assigned first to cost pools and second to the outputs of the production process distorting product costs considerably. The traditional system assign costs to outputs using volume-drivers such as machine and labour hours, material purchased and units produced. In this process, distortions in the cost of products could occur (Cooper *et al.*, 1992). Activity-Based costing system differs from the traditional systems by modeling the usage of all organisational resources on the activities performed by these resources and then linking the cost of these activities to outputs such as products, services, customers and projects, as shown in Fig. 1. In particular, Activity-Based system measures more accurately the cost of activities where intensity is not proportional to the volume of units produced. The major differences between ABC and TCA systems are shown in Table 1.

Traditional costing assumes products cause cost, whereas, ABC assumes that activities cause cost and the cost objects create the demand for activities.

The ABC system is an economic representation of what is going on in the company. The focus of ABC is not on the end product, but on the manufacturing processes and the activities required in manufacturing the product. This focus on activities has been extended to management in a philosophy known as Activity-Based Management (ABM). ABM is a discipline that focuses on the management of activities as the route to improving the value received by customers and the profit achieved (Park & Kim 1995). ABM uses ABC information to manage activities and business processes by providing a cross-functional and integrated view of the firm. One of the goals of ABM is continuous improvement and this is achieved by managing activities. In

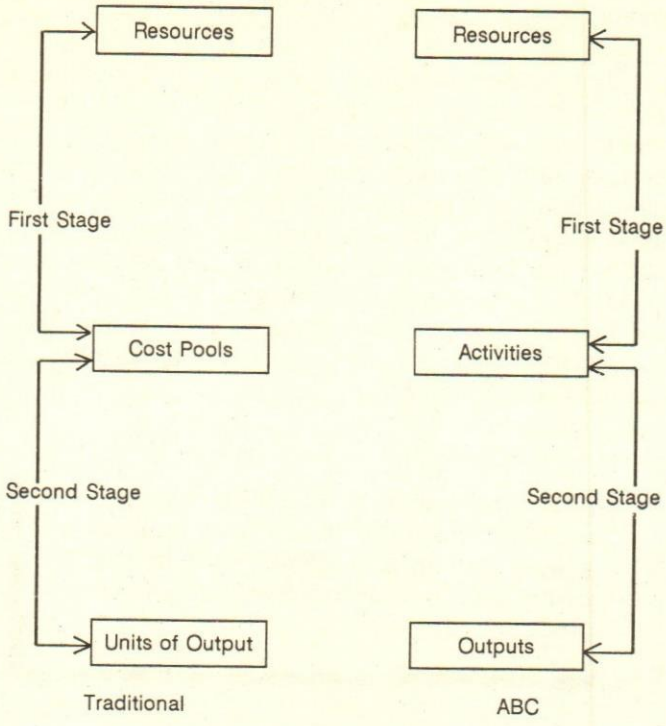

Fig. 1. Traditional vs. ABC: Two-stage Approach
Source: Cooper *et al.* 1992)

Table 1: Comparison Between TCA and ABC Systems

	TCA Systems	ABC Systems
Cause of Costs	Products	Activities
Capacity Expenses	Budgeted Production Volume	Practical Capacity
Cost Classification	Fixed And Variable Costs	Variable Costs
Cost Driver	Labour Hours, Material Cost Machine Hours	As Many as Needed
Counting Intangibles	Unable to Count	Able to Count
Depreciation	Straight-line Method	Machine-Hour Usage Method
Expenses	Fully Absorbed	Partially Absorbed
General Administration	A Period Expense	Assigned to Products
Marketing and Selling Expenses	A Period Expense	Assigned to Products
Overhead Calculation	Inaccurate	Accurate
Prediction of Life-Cycle Costs	Fails to Predict	Able to Predict
R&D Expense	A Period Expense	Assigned to Products
Main Purpose	Financial Reporting	Product Costing

developing ABC model, management must first identify, analyze and understand the activities involved in the business process. This is the key to process improvement. The next step in the development of ABC and ABM will be Activity Resource Planning (ARP), on which many industrial engineers, accountants and consultants are working. ABC is an aid to Business Process Reengineering (BPR).

ABC is clearly a team effort. There should be representations from operations, industrial engineering and accounting. The person most associated with the manufacturing processes at the company should be included in the team. The team will have to become familiar with ABC principals and experiences, typically through an examination of the case studies and articles available on the subject in journals and magazines.

Available Literature

Some case studies have been presented for large companies. Berlant *et al.* (1989) discussed the implementation of the ABC system for a PC board assembly operation. Shank and Govindrajan (1989) conducted a field study in a large paper company. Shraman (1990) also presented a case study on a large company. Mangam (1995) talked about implementation issues of the ABC system at Harris Semiconductor. The company embarked on a project to establish ABC system with two main aims: to provide better product cost for the company's world-wide manufacturing operations and to integrate the results of the ABC analysis into existing standard cost system. Harris had a new system which was fully integrated and on-line. It not only provided product costs, but was also used for valuing inventory, handling excess capacity and providing cost control through variance analysis.

Park and Kim (1995) developed an economic evaluation model under the ABC system for Advanced Manufacturing Systems (AMSs). Today's companies need to invest in AMSs to remain viable in highly competitive marketplaces. Investments in AMSs have changed entire manufacturing processes and eventually the cost structure of these processes. AMSs significantly reduce direct costs and greatly increase overhead costs. Under this cost structure, labor-based TCA systems fail to signal the actual overhead costs incurred in manufacturing. Recent manufacturing experience suggests that TCA systems are no longer valid for AMSs.

Angelis and Lee (1996) applied the natural logic of the ABC system to strategic investment decisions. They presented a methodology that tied investment decisions

to ABC concepts using Analytical Hierarchy Process (AHP). By using AHP, both monetary and non-monetary benefits could be included in the analysis. They first developed the relationships between goals, activities, cost and performance measures and then used the relationships to make two models: one for cost impact and the other for performance impact. The goal of their decision process was to evaluate investment alternatives based on their impact on activities and their contribution to organisational goals. Bharara and Lee (1996) successfully implemented the ABC system in a small and high technology medical devices company. They demonstrated that the methodology adopted could be applied to medium and large-scale industries too, the major difference in implementation being the complexity of the system because of decisions on inventory carrying cost, batch level activities, research and development failures, etc.

Fujii *et al.*, (1999) presented a mathematical model under the ABC system in a high-tech environment. This decision model was based on integer programming approach and had the objective function of minimizing the cost subject to a set of constraints. It was proved that a detailed and precise cost analysis of each product through the whole manufacturing system was attainable in this approach. In India, the ABC system is just beginning to be implemented. A few implementation issues of the ABC system in Indian context are described in Seshan (1998).

ABC System: Strengths & Weaknesses

Some significant strengths and weaknesses of the ABC systems are as follows:

Strengths

Completeness, ease and simplicity

The advantages associated with using ABC over TCA systems rotate around the former's simplicity. It is being widely accepted by big, medium and small organisations that implementation and utilization of the information provided by this system are simple. This approach is practical and can be easily adopted. Completeness, ease and simplicity are important factors in its success.

Lower operating cost

The ABC system has lower operating costs. It can be implemented with existing resources with little or no further capital investments. It can bring costs down by 5 to 10 per cent.

Better product strategy

After implementing the ABC system, it has been seen that strategic insights have been gained simply due to a dramatic shift in the perceived profitability of a company's product line. This allows companies to react, alter product strategy and plan better for resources and activities required for supporting this approach. This system discourages making more components and products to support sales because it penalizes the product with higher costs the longer it sits in the shop. It constantly reminds manufacturers about the cost associated with inventory.

After implementing the ABC system, strategic insights have been gained simply due to a dramatic shift in the perceived profitability of a company's product line.

New direction for cost accounting research

The ABC system has introduced a new direction for cost accounting research. It is a better way to maximize the output with the same resources.

Continuous improvements

One of the benefits of implementation of ABC is that it provides data for continuous improvement. Engineers have found it as a tool to involve the workforce for continuous improvement. Unlike conventional cost structures, ABC enables understanding costs as they are incurred, by allocating resources as they are consumed. It also helps in a more practical level for long-term measures like product modeling and pricing. This is achieved by managing activities. In developing the ABC model, management identifies, analyses and understands the activities involved in the business process. It improves manufacturing process and product design. Products are designed for manufacturability and maintainability under the ABC system.

Helpful in bidding large contracts and pricing scenario

Bidding is a competitive process. The management has to be extra careful in developing a bid. It is one of the major goals of implementing ABC system in a company. This system has an ability to estimate the cost of special orders; once the costs of various activities are identified, by knowing in advance the activity costs and

the proportionate consumption of resources, better estimate of the cost of the special orders can be made, and accordingly, an acceptable price can be negotiated. Special orders cost a lot and some orders may not be worth the costs and the efforts for the company to accept them. Special orders are an opportunity for the company to increase its market share by entering into new markets, which in turn will increase profit and reputation.

Better overhead allocation

TCA systems have deficiencies in calculating accurate overhead costs. In ABC system, overhead allocation is based on the actual consumption of resources. Since ABC system focuses on the activities, overhead allocation under this system is much more sophisticated than TCA approach.

Better management decisions

Conventional costing does not answer many of the queries related to business effectiveness. ABC provides an opportunity to plug the grey areas seen by the accountants in conventional costing. Information provided by ABC system can be valuable not only for product costing, but also for taking better business decisions. The most important factor for competitiveness, profitability and success of organisation is control over processes. Activity-Based Costing records the costs of processes and provides information for controlling and improving these processes. It benefits both strategic and operational decisions. Organizations are using this information to make major decisions on product lines, market segments, and customer relationship, as well as, to stimulate process improvements and activity management. ABC can also make significant contributions to some manufacturing management areas such as manufacturing performance analysis, capital expenditure analysis, strategic investments analysis and manufacturing strategic assessment.

ABC provides an opportunity to plug the grey areas seen by the accountants in conventional costing.

Accurate product cost

ABC measures more accurately the cost of activities whose intensity is not proportional to the volume of the output. It can also provide a new product development cost. There is less costing error in the ABC system.

Identification and performance improvement of value-added activities

ABC model identifies both value-added and non-value-added activities as it encompasses all activities in the organisation. It focuses on value-added activities and minimizes or eliminates non-value-added activities to streamline processes. It has an ability to identify those activities which have maximum impact on the success of the organisation. It also identifies activities which support the company's goals and controls the cost of each activity.

Identification of life-cycle activities

ABC system has an ability to identify life-cycle activities like, for example, design and development of new products, engineering change orders, establishing quality systems, establishing cost systems etc., which relate activities to products. These activities depict the interdependencies of activities in different periods. The thrust of life-cycle accounting is that the distribution of costs among various stages of product life-cycle (introduction, growth, maturity, decline and obsolescence) changes over the life of the product. This system can also predict life-cycle costs and their benefits. This is one of its major strengths.

Distribution of costs on various stages of product life-cycle changes over the life of the product.

Maximum utilization of resources

In TCA, many indirect and support resources are not used in proportion to the number of the output units produced. Activity-Based Costs are allocated to products based on actual consumption of resources. ABC system uses all the organisational resources on activities performed by these resources linking the cost of these activities to outputs, such as products, services, customers and projects. It identifies the role of different employees of the organisation in terms of activities, and accordingly, responsibilities can be assigned to them.

Ability to count intangible

ABC system is capable of measuring intangibles, such as product quality, manufacturing flexibility, response to market shifts, customer satisfaction, manufacturing lead-time, inventory levels, setups, equipment idle time, part waiting time etc. It develops manufacturing

performance indicators that are more consistent with long-term competitiveness and profitability.

Deficiencies in ABC System

Some significant weaknesses of the ABC system are highlighted here.

Not forward and a priori accounting system

Like TCA, ABC is still a backward and a *posteriori* accounting system. ABC allocates overheads to departments and then to each product by tracing the activities (costing drivers) that cause the costs to occur. However, it is too difficult to backtrack cost drivers accurately in a real manufacturing system. It is difficult to value the intangibles properly with a backward and a *posteriori* accounting system. Therefore, tremendous benefits of reducing manufacturing lead-time may not be shown in ABC. The costing system should be forward and a *priori* accounting system.

Irresponsible in real time

ABC is still not responsive to the cost drivers in real time, whenever they occur. In this system, first the activities are identified. Then the cost drivers are identified for these activities and costs are allocated to activities based on the drivers. Cost accounting should begin at the earliest stage of production and go forward along with material flow, so all the cost drivers can be traced in real time, whenever they occur.

ABC is still not responsive to the cost drivers in real time, whenever they occur.

Elaborate

The mechanism of ABC is complex and difficult to communicate. The real issue is how ABC will be used to improve manufacturing competitiveness. Important managerial implications may be hidden or distorted behind the complexity of relationships. So ABC in its detailed form may not be suitable for some practical applications. Some modifications can make this system useful. Many activities in the list can be aggregated into an identifiable discrete activity. The effectiveness of ABC system depends on how well it is designed by taking into account the process characteristics, operating conditions, product mix and management requirements for cost information.

Too many cost drivers

In a big organisation a large number of cost drivers exist and this can be a problem (Shraman 1990). It is not uncommon to identify 40 or 50 cost drivers but 10 is believed to be the optimum number. In a large company, factors like interdepartmental relationship can assume a larger role. A list of all activities in big organisations can be long. More activities mean large number of cost drivers and higher accuracy in allocation of cost. However, there are many practical limitations against using a large number of cost drivers' data–collection and manipulation problems may outweigh any additional benefits in accuracy and can be too voluminous for management to use the ABC system effectively.

Resistance to change

In any organisation, there are problems with the acceptance of a new method replacing established methods. Resistance to change has been an impeding factor for ABC's successful implementation.

Most of the weaknesses are associated with the implementation issues of the ABC system. These can be overcome by careful application of the methodology. Proper expertise and experience help in obviating most of these weaknesses.

Conclusion

Activity-Based Costing (ABC) system improves many of the shortcomings of the traditional costing methods. It is a new methodology for accurate product costing and is being widely implemented in industry. Effective decision making regarding product pricing and profitability, capital investment justification, continuous improvement, and performance measurement is possible with the use of the ABC system. The ABC approach will play an important role in the coming agile manufacturing era. The basic perquisite for the success of such a programme in any organisation is motivation and involvement of employees at all levels. ABC has introduced a new innovative idea for costing accounting research, but there is still scope for further developments. Simulation packages may be developed in such future work. Integration of discrete manufacturing simulation and Activity-Based Costing may be effective.

Integration of discrete manufacturing simulation and Activity-Based Costing may be effective.

Simulation can provide detailed manufacturing activity data, which is required but normally difficult to collect, for the ABC approach.

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"We will not get productivity if we do not engage ourselves in the education process both inside and outside our companies."

– Jack Welch

Feature

Productivity & Human Resource Management: An Empirical Study

Kishalaya Dasgupta

This study examines the relationship between productivity and industrial relations in a sample of five organisations situated in and around Durgapur industrial belt of West Bengal over a period of ten years starting from 1980-81 to 1989-90. On the basis of these empirical findings, the paper recommends appropriate measures for improvement of IRs vis-a-vis productivity of those organisations.

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Labour productivity (LP) is measured in terms of Gross Value Added Per Employee (GVAPE) in rupees while industrial relations (IRs) is measured in terms of three parameters namely, absenteeism (Abs), misconduct (Mis) and labour turnover (LTO). However, these parameters have often been ignored by the management as insignificant as they do not directly affect the production of a concern. Consequently, the basis objective of this study is to examine whether these three parameters really influence productivity. The collective and individual impact of these parameters on labour productivity in respect of sample enterprises is also studied.

Measurement of Labour Productivity

Productivity measurement of industries is generally based on physical output, economic unit and value added (VA) methods. VA method has been adopted in the present study as a measure of output variable of the productivity equation and input variable has been measured in terms of "Total number of employees". Value Added has two distinct forms namely Gross Value Added and Net Value Added (both in lakhs of rupees). Net Value added (NVA) can be derived by deducting depreciation of fixed assets from the Gross Value Added (GVA) by the Company. But, depreciation being a non-cash transaction, is calculated only notionally, therefore, it invites subjectivity. Hence Gross Value Added (i.e. after deducting of costs from the value added) has been adopted as a measure of output of productivity. In the present study total number of employees means summation of both white collar and blue collar employees. Gross Value Added (GVA) in a financial year has been divided by the total number of employees to obtain Gross Value Added per Employee (GVAPE) which has been adopted as a measure of labour productivity (LP) for the sample organisations.

Measurement of Industrial Relations (IRs)

Measurement of IRs is always a difficult task as it is a qualitative phenomenon. Hence, it clogs any attempt to translate it into quantitative terms. Nevertheless, there are some indices which may be used as surrogates to understand the state of IRs of an organisation. In particular, percentage of absenteeism, misconduct and labour turnover have been selected for measuring IRs and it is assumed that these parameters are inversely related to labour productivity.

Standardisation of Formulae

$$\text{Total Absenteeism Rate (\%)} = \frac{\text{Actual Mandays lost due to authorised and unauthorised absence}}{\text{Mandays scheduled to work}} \times 100$$

While expressing absenteeism rate, mandays lost due to economic factors (e.g. price rise, shortage of raw materials etc.), technical factors and employer initiated action which have no direct consequence on IRs have not been considered. Only human related factors or worker-initiated actions having cognigible consequences and direct connection with IRs, have been considered. Nine elements of IRs which are primarily responsible for mandays loss namely strike, bandh, demonstration, deputation, gate meeting, agitation, picketing, habitual long absences, sickness and casual level have been taken in the calculation of absenteeism rate.

Misconduct rate has been formulated as follows:

$$\text{Misconduct Rate (\%)} = \frac{\text{Total number of incidence of misconduct in financial year}}{\text{Total number of employees during the period.}} \times 100$$

Several criteria of IRs have been taken into account in working out the total number of incidence of misconduct cases such as incidence of theft, subletting of company quarters to outsiders, submission of false LTC/LLTC bills, assaults, corrupt practices, bribes etc.

Labour turnover (LTO) has been expressed as follows:

$$\text{Labour Turnover Rate (\%)} = \frac{\text{Accession Rate (\%)} + \text{Separation Rate (\%)}}{2} \times 100$$

$$\text{Accession Rate (\%)} = \frac{\text{Total number of accession}}{\text{Total number of employees}} \times 100$$

$$\text{Separation Rate (\%)} = \frac{\text{Total number of separation in the form of quits, resignation, VRS, terminations, retirements etc.}}{\text{Total number of employees}} \times 100$$

In working out LTO rate, cases of promotion and transfer from one department to another within the same concern have not been taken into account as those cases do not in any sense mean instability of employment at company level. Eight elements of IRs which are responsible for instability of employment of a concern namely retirement, voluntary retirement, discharge, termination, dismissal, resignation, quit, accession have been considered in the expression of LTO rate formula.

Methodology

Five industrial enterprises having diverse features were identified using random sampling method to examine the impact of industrial relation (IRs) on labour productivity (LP). Specific norms like average fixed capital per employee; forms of ownership; industry affiliation and single or similar product firm, were considered and those organisations which are basically loss making concerns, subsidiary companies and multiple product firms were rejected. Durgapur industrial region of West Bengal was selected for this empirical study. At the hub of industrial activity, Durgapur a vibrant industrial city of West Bengal has 117 registered industrial enterprises of which 94 are small and medium concerns, the remaining 23 being large scale enterprises. Only large scale industrial enterprises are dealt with in this study. Out of 23 large scale concerns, ten belong to public sector units while thirteen are private sector units. Five large organisations were selected for the study of which two are from public sector and three from private sector.

Company wise data pertaining to productivity and parameters of IRS in respect of the five sample organisations were collected and tabulated for a period of ten years starting from 1980-81 to 1989-90. Data was collected from two different sources; Productivity related data from published annual reports, returns and accounts of sample organisations and data pertaining to absenteeism, misconduct and labour turnover from records and reports maintained in the department of personnel management and industrial relations (Table 1). After collecting the necessary data, a tabulation plan was worked out. For finding out the collective and individual impact of the three parameters of IRs on labour productivity (LP), a linear regression equation was applied with labour productivity as dependent variable and the three parameters as independent variables. First, the collective impact of the parameters on labour

Table 5: Significance level of Absenteeism (X1) at company level

Particulars	No. of observations	DF	CV $t_1 = \frac{a_1 - 0}{SE \text{ of } x_1}$	TV at 99% significance level	Difference
ASP	13	11	32.629789	$t_{.05,11} = 1.796$	CV>TV
MAMC	11	9	4.2318252	$t_{.05,9} = 1.833$	CV>TV
PCBL	12	10	10.594932	$t_{.05,10} = 1.812$	CV>TV
Graphite	12	10	10.331761	$t_{.05,10} = 1.812$	CV>TV
IAEL	11	9	6.7991335	$t_{.05,9} = 1.833$	CV>TV

t_1 = Test statistic of Abs (x_1) coefficient
a_1 = Regression coefficient of (x_1)
CV = calculated value
TV = tabulated value
SE = Standard error

Table 6: Total absenteeism rates and their distribution on basis of contributory factors

Particulars	Combined		Public Sector		Private Sector	
	AM	SD	AM	SD	AM	SD
Total absenteeism rate (%)	14.52	0.69	15.27	0.265	14.02	0.369
Authorised rate (%)	10.61	0.40	10.99	0.235	10.35	0.255
Unauthorised rate (%)	3.91	0.32	4.25	0.020	3.67	0.151
Factors						
Strike (%)	0.86	0.14	1.01	0.056	0.76	0.103
Day to day IR problems (%)	0.90	0.13	1.02	0.030	0.81	0.097
Other factors (%) habitual absenteeism	2.15	0.13	2.25	0.109	2.09	0.967
Personal, Social-religious causes (%)	7.36	0.17	7.48	0.140	7.28	0.142
Sickness (%)	2.63	0.18	2.80	0.082	2.51	0.135
Accident (%)	0.62	0.09	0.72	0.019	0.54	0.125

Table 7: Value of R^2 along with significance level of misconduct (X_2) with GVAPE (Y)

Particulars	Value of R^2	DF	CV $t_2 = \frac{a_2 - 0}{SE \text{ of } x_2}$	TV at 99% significance level	Difference
ASP	96	11	16.304295	$t_{.05,11} = 1.796$	CVTV
MAMC	94	9	12.929635	$t_{.05,9} = 1.833$	CVTV
PCBL	92	10	10.594932	$t_{.05,10} = 1.812$	CVTV
Graphite	91	10	6.4680176	$t_{.05,10} = 1.812$	CVTV
IAEL	69	9	10.170273	$t_{.05,9} = 1.833$	CVTV

CV = Calculated value
TV = Tabulated value
t_2 = Test statistic of Misconduct (x_2) coefficient
x_2 = Misconduct
a_2 = Regression coefficient of (x_2)
SE = Standard error

Allied Machinery Corp. Ltd., and 0.7 per cent, 13 per cent and 0.2 per cent for the remaining three organisations respectively (Table 8). These data indicate that the impact of labour turnover on labour productivity is negligible. Furthermore, test of significance model also clearly indicates that LTO has no significant relation with LP of a concern (Table 8) contradicting the common view regarding the association between labour turnover (LTO) and productivity. High rate of LTO would definitely affect the productivity of a concern adversely as new employees who replace the old and efficient workers may not be equally productive. But, the paradox noted here may be the effect of technological advancement. Modernisation has taken place in almost all sample organisations during the last decade, as a result, some of the employees become redundant which leads to separation of employees in the form of voluntary retirement, quit, resignations etc. The findings of the study reveal that excess and unproductive employees have left the organisation; as a result labour productivity has

Impact of labour turnover on labour productivity is negligible contradicting the common view regarding the association between labour turnover (LTO) and productivity. The paradox noted may be the effect of technological advancement.

not been affected, albeit, it does not lead to conclude that labour turnover (LTO) has no relation with labour productivity (LP). Before coming to any definite conclusion, further investigation should be conducted on this issue.

Table 8: Value of R^2 along with significance level of LTO (X_3) with GVAPE (Y)

Company	Value of R^2	DF	CV $t_3=\frac{a_3-0}{SE\ of\ x_3}$	TV at 99% significance level	Difference between TV and CV
ASP	0.2	11	1.515853	$t_{.05,11}$ = 1.796	CV<TV
MAMC	10	9	0.7425454	$t_{.05,9}$ = 1.833	CV<TV
PCBL	0.7	10	1.5197423	$t_{.05,10}$ = 1.812	CV<TV
Graphite	13	10	1.2281088	$t_{.05,10}$ = 1.812	CV<TV
IAEL	0.2	9	0.1942195	$t_{.05,9}$ = 1.833	CV<TV

CV = Calculated value TV = Tabulated value
t_3 = Test statistic of LTO (x_3) coefficient x_3 = LTO
a_2 = Regression coefficient of (x_2) SE = Standard error
< = Less than

Collective Impact

From the analysis of the multiple impact of the three parameters on labour productivity, it has been observed that all these parameters have inverse relation with productivity (Table 9). The computed coefficient of correlation between these three parameters and labour productivity generally for the sample organisations has turned to be very high as its R^2 records 94 per cent and the company wise coefficients of correlation in respect of sample organisations mark 99 per cent in Alloy Steel Plant (ASP), 97 per cent for Mining and Allied Machinery Corp. Ltd. (MAMC), 93 per cent each for both Philips Carbon Black Ltd. (PCBL) and Graphite India Ltd. and 89 per cent for Indo-American Electricals Ltd. (Table 9). For finding out the particular parameter having highest influence on labour productivity, company wise graphical representations have been resorted to using the respective company wise regression equations. The regression equation applied for the company wise study usually consists of three variables. Two variables of the equation are kept constant and the third one is allowed to vary in the year of assessment. In this way, LP values of a company for the study period have been worked out. Thereafter, these LP values and the corresponding values of the variable which has been allowed to vary, are then plotted in a graphic to draw best fit curve for the three variables which will help to find out the individual influence of a particular parameter on labour productivity. In this way, fifteen best fit curves for five sample concerns have been drawn. It is observed that all the curves are downward sloping signifying, higher the rates of absenteeism, misconduct and labour turnover, lower would be the labour productivity and vice-versa. Comparing the nature of the curves, it has been observed that absenteeism has highest influencing power on labour productivty. Application of test of significance model indicates clearly that the relation of absenteeism and misconduct with labour productivity is significant at the 99% significance level while influence of labour turnover on labour productivity is insignificant.

Table 9: Regression output and collective influence of X1, X2 and X3 on GVAPE (Y)

Company	Value of R^2	Constant Value	Abs (X1) Coef (SE)	Misconduct (X2) (SE)	LTO coef (X3) (SE)
ASP	99	8.361611 (.126239)	−.376347 (.078575)	−1.260301 (.673039)	−.136131 (.0887731)
MAMC	97	.612985 (.019150)	−.00934 (.00121)	−.663157 (.12976)	−.009341 (.004925)
PCBL	93	23.5855 (.933049)	−1.06479 (.57350)	−.40082 (.66110)	−.96126 (.82216)
Graphite	93	14.680976 (.627572)	−.611129 (.32813)	−.388643 (.53861)	−1.241392 (1.131017)
IAEL	89	9.307837 (.271104)	−.5012806 (.14590)	−.189340 (.10786)	−.058006 (.27419)

Recommendations

In the light of these findings, some recommendations have been suggested for improvement of productivity.

- The management should take proper steps to control absenteeism among employees. For reducing absenteeism rate, particularly that caused by leave taken according to rules and regulations, the management should introduce suitable incentive plans and leave encashment facilities.
- Reward for maintaining punctuality may be effective in reducing late attendance. Proper incentives with monetary and non-monetary benefits should also be provided so that

employees become reluctant to take leave and develop regular attendance.

- The impact of incentive schemes should also be assessed from time to time. However, the experience of Alloy Steel Plant (ASP) and Mining and Allied Machinery Corporation (MAMC) of our sample enterprises indicates that granting adequate incentives and benefits has not always served the purpose. For reducing unauthorised absences the rules and regulations should be strictly enforced.
- The management should provide adequate facility of outdoor and indoor medical treatment for workers and their family members. In case of indoor treatment of family member of a worker, nursing facility should be adequately provided so that workers may not be absent on account of attending on the patient. There should be proper and speedy treatment for employees. Accident at the site and elsewhere may be one of the reasons for absenteeism. The management must ensure adequate safety rules to mitigate them.
- In order to improve productivity, employees who are usually committing misconduct should be identified and proper programmes according to the nature of misconduct should be prepared for their counselling. For controlling minor offenses which are comparatively high in private sector units, management of such organisations should insist on employees adhering strictly to the rules and regulations.Interviews reveal that bad habits and two or three visits a year to native villages during harvesting season are principal reasons of chronic absenteeism.
- To uproot bad habits like alcoholism and gambling, personnel management should visit the house of the concerned worker and include the worker and his family members in discussions, meetings and personal contact programme.
- For controlling corrupt behaviour of employees in public sector units, greater emphasis should be laid on individual discipline. Attention has to be focussed on group dynamics, specially for controlling violent behsviour which is comparatively high in public sector units. They should also involve trade union leaders. so that such behaviour can be discouraged and isolated.
- Training programmes should be arranged regularly so that the potential of available human resources of a concern are better utilised. Proper performance appraisal scheme should also be developed and implemented to highlight the potentialities and deficiencies of employees. Accordingly, training and developmental programmes should be formulated.
- Training programmes designed for behaviour modification and changes have a considerable impact on absenteeism. Training and orientation programmes helping self development should not only be arranged but also evaluation of these programmes should be made from time to time.
- To develop work culture in the organisation, it is imperative to nurture, develop and motivate team spirit to perform the assigned jobs confidently and efficiently. Attitude of cooperation and sense of belongingness among employees improves the morale, accordingly welfare facilities should be introduced.
- Trade union leaders and managers should give greater emphasis on productivity improvement. It is important to highlight that productivity improvement is not a specialised function, but concerns everyone from top management to the lowest category of workers, hence all should be associated with productivity improvement efforts.

□

Feature

The Human Face of Service Quality

Harsh V. Verma

Markets are now becoming fiercely competitive. The scramble for customers is getting intensified. Securing edge over rivals is a major challenge facing marketers. Taking customers as a number causes deemotionalisation and dehumanisation of the marketing process. The focus tends to be limited to the rational aspects. A strategy that focuses on the human side can be an effective way to competing in the current environment. The marketer must concentrate on the human aspects of service delivery to create bonds with customers.

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Competitive pressures are forcing managers to research the logic behind practices they have inherited from previous generations. Each and every aspect of marketing is under close scrutiny. Questions frequently asked include: does the concept hold true in present day context? One such battered practice is the view of market. The market should not be taken as an aggregate number either in rupee or volume or percentage terms. How could a marketer really provide satisfaction working backwards on the concepts of 'takers' as market, an emotionless construct?

There has been a clean sweep in managerial mindset in the nineties. The focus seems to have shifted from markets to the customer or consumer. The result is, instead of being totally glued to numericals that indicate market performance, managers now focus on micro constituents. The star now is customer. And the concern now is on 'through put'—that the customer once subject to a firm's experience is retained for a long time. The idea is to keep and preserve a customer—in the form of a cherished relationship. It is a marketing imperative, not manager's benevolence. There just aren't enough customers to maintain a running flow of 'incomers' to the firm.

Instead of being totally glued to numericals that indicate market performance, managers now focus on micro constituents. The idea is to keep and preserve a customer.

Benefits from Loyalty

As markets approach saturation levels, the supply of new customers is becoming limited. In order to replace the displaced customers, poaching is essential. It costs more to attract others' customers. Also, they need reasons as to why they should quit the existing supplier. Luring competitor's customers requires a lot of

advertising, distribution, promotion, and persuasion efforts. However, these are all hard to come by in tough competitive conditions. Product parity is another reason why customer attraction is difficult.

On the other hand, customers that are likely to stay with the firm longer are advantageous in a number of ways. Various studies document (Reichheld & Sasser, 1990) the benefits of customer retention. A greater proportion of long term customers helps save on customer attraction costs, provides scope for premium prices, reduced operating costs, increased purchases and profits from referrals. Studies conducted in past have demonstrated that a modest increase in retention rate can contribute very substantially to a firm's profitability. Thus there seems to be a case for making customers loyalty prone. But important issue is—what motivates a customer to stay loyal to a marketer, especially in tough competitive conditions?

Customer retention helps a firm save on customer attraction costs, provides scope for premium prices, reduced operating costs, increased purchases and profits from referrals.

All Satisfiers Now

The pivot of marketing concept—achieving customer satisfaction has long been buried in the text books. American enterprises learnt the lesson that quality is not elimination of defects—the hard way. Also, quality is not something that is a matter of concern for the production manager, rather it is an organisation wide responsibility. And finally conformance to specification is not the end to quality. It is conformance to customer purpose. Japanese are to be credited to have taught the world the quality lesson. For example, it is not appropriate to look at defect in percentage terms, rather they saw defects 'per million'.

It is known that 'me-toos' kill a product category. Product aping at mass scale destroys differentiation. It erodes competitive edge of differentiators by shifting competition to price. Me-tooism appears to be descending in the field of quality too. From a state of pervasive inferior quality in the early phases of industrial revolution, many firms gained edge over others by adoption of quality. Then came a divide between quality players and inferior quality players. Manufacturing was the sector to hit this phenomenon first. The case in point is American manufacturers and Japanese manufacturers. The wedge between satisfiers (Japanese) and dissatisfiers (American and the western companies) gradually got blurred as firms realised the value of quality. American companies, to a great extent, successfully adopted quality to combat the onslaught of Japanese.

Markets seem to be again on the threshold of a change. Quality, once a powerful differentiator is losing its lustre. There has been a commoditisation of quality. Increasingly quality is becoming a common denominator. It is minimum entry ticket for any firm to be able to take part in the marketing game. Provision of quality goods and services is fast becoming a norm rather than exception. If SAS and BA took the lead in quality service provisions, it is now the rest of the pack of international carriers that have duplicated their moves. If Toyota and Mazda pioneered quality in automobile to start with, better-late-than-never American firms like Ford and GM have succeeded in achieving great closeness. Advance in technology is the basic drive behind this quality revolution. Acceleration in diffusion of technology is fuelled by information technology. Nothing remains proprietary for long. The time gap between pioneers and followers is getting narrowed. Concepts like zero defect, competitive bench marking, poka yoke, continuous improvement have contributed to releasing quality from the bastion of a few marketers to masses.

Provision of quality goods and services is fast becoming a norm rather than exception.

Effect on Consumer

The great sufferers in this whole quality revolution are some marketers—those who lag behind in the quality development race. Marketers have long relied upon uniqueness of their offerings to attract customers. The commonness of quality among marketers is emerging as the main reason of customer indifference. It is product parity syndrome. First, products went into parity spiral. Now it is services that are on their path towards commonness. For example, about 60 per cent of customers feel no real differences between the big banks (M O R I Poll, 1991). In their bid to retain customers, some international carriers introduced frequent flier programmes. But their uniqueness was lost as other airliners started their own version of FFP. This copying of FFP rendered the pioneers at par with the others. The result of this degeneration is evident in passengers opting for multiple FFP offered by various carriers.

Marketers have conventionally focused on deliver-

ing customer satisfaction on a fundamental premise that a satisfied customer would be kept on a long term basis. Satisfaction is key to loyalty generation. The important issue here is why would a satisfied customer tend to continue purchasing from a supplier? In other words, what is it which discourages a customer not to switch a supplier that offers satisfaction? This school of loyalty has its rationale in consumer problem solving perspective. It assumes consumer as cognitive and rational. Hence a customer would continue to stick to a satisfying supplier because a shift may expose him to the risk of dissatisfaction. Not any more. All suppliers, in the present competitive world are satisfiers. They all offer quality product and services. It is not something that is unique to a few. This phenomenon is fundamentally altering marketing equations. It puts to question the notion that quality leads to customer satisfaction and hence erects a buffer against competitive onslaught. Does quality ensure creation of a protected enclave of satisfied loyal customers?'

Marketers have conventionally focused on delivering customer satisfaction on a fundamental premise that a satisfied customer would be kept on a long term basis.

The developments point to the contrary. The reasons why a customer should patronize a satisfying supplier on long term basis are becoming thin. The present day customer does not seem to move amidst satisfiers and dissatisfiers. Earlier the logic was that a dissatisfied customer may switch. Now even a satisfied customer has no disincentive in switching—for he has nothing to lose. For instance an international traveller who flies British Airways would not be a loser in anyway if he switches to KLM or Lufthansa—because all carriers offer 'similar' packages. A bank customer would hardly miss anything if he moves his business from Grindlays to Hongkong—for both banks offer similar core and supplementary services. They come dangerously close to each other in terms of operations and marketing. The difference tends to be entirely 'perceptual' which is also on the verge of being blurred. 'An unhappy customer will switch, unfortunately a satisfied customer may also switch, on the theory that he could not lose much, and might gain', observed Demming.

Losing a Satisfied Customer

Marketers are now on a slippery path again. Receiving high customer satisfaction score may not get translated into long term customer patronage. Customer loyalty is both a function of intrinsic satisfaction embedded in a firm's marketing offer as well as satisfiers offered by the other marketers. When other marketers offer poor quality—either really or perceptually—a customer is likely to develop tendencies to stick to a supplier. However, if other marketers also excel in quality, the tendency to become loyal would be weakened, for switching would not entail any risk and uncertainty. Change of supplier is not likely to expose him/her to something undesirable. The quality improvement globally is altering the customers' mind—the buying environment is becoming risk free and safer with the passage of time.

High customer satisfaction may not get translated into long term customer patronage.

The important issue, therefore, is whether a satisfied customer is a safe bet or not. The answer seems to be in the negative. The ability to satisfy may lure a customer but may not guarantee his retention. On an average 65 to 85 per cent of customers who defected their suppliers said that they were satisfied or very satisfied with their former supplier (Sellers, 1993). Another study exploring the relationship between satisfaction and loyalty threw startling findings. It discovered that conventional wisdom that the relationship between loyalty and satisfaction is a linear function does not hold true. This relationship is neither linear nor simple. Basing the findings on extent of satisfaction, it concluded that in markets where competition is intense, there is tremendous difference between the loyalty of satisfied and completely satisfied customer. A light drop from complete satisfaction may cause drastic drop in loyalty (Jones & Sasser, 1995).

This is also true in services. A study of loyalty of retail banking customers discovered that completely satisfied customers were nearly 42 per cent more likely to be loyal than merely satisfied customers (Jones & Sasser, 1995). Similar startling findings were reached in another study (General Accounting Office, 1990) exploring the relationship between customer satisfaction and retention. It puts the very purpose of customer satisfaction being pursued in an Award like Baldrige to question. On the basis of quality programmes of 20 companies that scored high in 1988 and 1989 awards, the study revealed that while customer satisfaction levels had increased in these companies, customer retention levels had remained almost unchanged. British Airways also discovered that satisfaction may not truly indicate future behaviour of customer. It found defection

rate of 13 per cent among its satisfied customers which was exactly the same rate of defection among its dissatisfied customers (Mudie, 1997). That is, satisfied customers also abandoned the company at the same rate as dissatisfied customers.

Quality & Right Quality

The whole issue of customer retention and defection revolves around the fact of what are customer 'satisfiers' and 'dissatisfiers'. What are the important determinants of quality from customer point of view? In goods, quality tends to be more product driven. It is the product's functional performance on the evaluative criteria of a buyer that determines the perception of quality. In services – there are two dimensions of quality – the technical and functional quality (Berry, et al., 1983). Apart from the *'what'* of services (the technical solution) *how* services are rendered to the customer is critical. The key constituents of functional dimensions are accessibility, attitudes, behaviours, service mindedness, appearance, etc. – the human dimensions of service quality. The technical quality-'what'-of service is transferred to customer during consumption and functional quality is produced and felt by the customer in the whole process.

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How should a service firm develop and deploy its competencies? Is it the technical core of the service which holds greater promise of competitiveness or is it the functional core? The answer to this strategic issue can be given only if one knows the customers' priority. The findings of Gallup Poll (The Gallup Organisation, 1985) seem relevant here. This poll is based on interviews with 1005 customers on the issue of how the quality of service is determined. A single most important factor that emerged as major determinant of service quality was the employee factor. This included dimensions like employee behaviour, attitude and competences. (67 per cent from a total of 179 per cent – multiple responses) The service consumers put the responsibility of quality of services directly on the shoulders of the personnel. Poor service is related with problems associated with employees. This reveals a matching between criteria customers employ to evaluate service quality and the failure of service firms on this criteria.

The most important factor that emerged as major determinant of service quality was the employee factor which include dimensions like employee behaviour, attitude and competences.

Service firms seem to underperform on people related dimensions which makes customers feel the poor service provision. Finally Gallup Poll explored reasons for poor quality across a number of service industries – autorepair, bank, hospital, insurance, airlines etc. Even across the industry, on the whole employee behaviour was among the top most reasons for poor perceived service quality, except for auto services. Thus the principal finding is that the customer places most emphasis on three attributes related to quality of services: first being the attitudes and behaviour of personnel followed by time required to render service and the price charged.

Another study, also acknowledged the importance of 'little things' (supplementary to the core service offer). The 'little things' that surround the core offer and mostly emanate from 'interface' are something that deserve greater attention of marketers (Lele & Sheth, 1991).

A service experience of a customer may lead him/her to feel happy/unhappy. That is, some elements/attributes of a service may have a greater potential to cause dissatisfaction while others are likely to make a customer highly satisfied. Borrowing the idea from Herzberg's two factor theory, one can argue that some elements in a service package are likely to be dissatisfiers – failure on these elements causes the customer to get dissatisfied, irritated while excellent performance on these may not cause happiness; these are taken for granted. The other set of attributes are motivators – excellent performance on these leads to high satisfaction or delight while their absence or poor performance may not cause dissatisfaction. A study (Cadotte. & Turgeon, 1988) of complaints and compliments in hospitality industry also pointed to the critical role of human factor in creating customer delight. The most important source of compliment is helpful attitude of employees. There seems to be a great potential for earning compliments (indicator of delight) through quality interface. It appears that human dimension in service provision is very critical. It promises tremendous scope for creating edge over rivals.

Rediscover Human Side of Service

Services, for long, have enjoyed dubious reputation for poor quality. Dissatisfaction and frustration were

what customers got at the end of a service experience. Most service sectors lagged behind in quality. Manufacturing dominated in all aspects of quality. This was the reason why customers were happy in their encounters with goods providers, while services frustrated them most of the times. Several reasons could be traced to quality excellence in manufacturing—quality-control starts in factories; products have strong engineering background; foreign competition first hit the goods; quality in goods is easier to define. For a variety of reasons, quality problems have been pervasive in services. The inherent variability, lack of standardisation, difficulty in quality definition and human dominance were the major hurdles to quality in services. Obviously, in order to overcome poor quality, service managers typically moved on goods oriented path. Hence the key solution in most cases came in the form of displacement of human factor in service provision, technology intensification, standardisation, and shortening the encounter period. It was a factory oriented response to quality.

As most customer feedback about quality of service revolve around poor provider—customer interactions, marketers began to correct the problem by either elimination or minimisation of this contact. The result, was reengineering the service delivery process in which customer—provider interface is made limited. In many cases, service marketers completely did away with these qualitative interactions. Case in point is ATMs and automatic vending. The idea was to root out the source from where dissatisfaction originated. Information technology is also replacing conventional encounters with internet-based buying and selling. The social dimension seems to be getting eliminated in many service settings.

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A whole array of services which were inherently interaction driven are becoming information technology driven where the social interface is no longer significant. The face-to-face encounter is becoming a wired transaction. People order meals by phone, books can be bought by click of buttons, class room teaching is getting obsolete, doctors' advice can be accessed on internet. The issue is whether this dehumanisation of service delivery is productive? Limiting or completely eliminating these occasions of customer—provider encounter may mean lost opportunity especially in the current marketing environment when technology duplication is common. The core of the service is not something different. The personal moments of truths, in fact, are the true spots in the delivery process that could be exploited to add uniqueness to service experience. Otherwise, there is hardly any difference between one supplier and another in airlines, fast-food joints, hotels, hospitals, retail outlets, etc.

Information technology is also replacing conventional encounters.

Is dehumanisation of service delivery productive? Limiting or completely eliminating occasions of encounter may mean lost opportunity.

Our understanding of customer needs (Maslow, 1954) suggests that human beings have a powerful desire for social interactions through which one satisfies the need for love, friendship, affection, care and belonging. At the same time humans have psycho-social needs and strive for recognition, self esteem, status, respect, admiration and achievement. As the customer class is shifting towards a state of affluence, the psycho-social aspect is gaining importance. These are becoming powerful drivers of consumer behaviour. Consumers seek these gratifications through their interactions with service systems. Hence, service marketing needs to be viewed in this light. Service organisations are not only the transferors of functional utility rather they also provide an opportunity to seek social and personal gratification. A service encounter is more a social encounter. It offers scope for building customer satisfaction on dimensions that normally do not figure in quality assessments. Most managers tend to view customers as mere economic entities engaging in a rational utility oriented business transaction. This approach ceases to focus on psycho-social aspect of exchange where enormous opportunities lie for customer relationship creation and winning compliments.

Managers often follow quality approach that is too narrow, which focuses on issues like transportation logistics, response time, or repair service efficiency. But they forget crucial intangibles. "Customers do want well designed, cheap, efficiently delivered services, but they also want to be treated respectfully and to know that the service provider cares about their satisfaction" (Bitran & Hoech, 1990). As the core of market offerings is becoming par and indistinguishable, the customer—provider

interaction, if managed properly, may offer unique ways of service differentiation. Marketers must look into the social dynamics of service exchange.

Human Side of Quality

The manner in which customers are treated has tremendous influence – it is a powerful context shaper. It is against this backdrop that the total service outcome is likely to be evaluated. A service consumer who has been dealt with in a personal manner is likely to absorb service failures (less than competitive performance). The human touch builds up some zone of tolerance by the creation of a positive mood. The customer would give some amount of leeway to the service providers for occasional failures. Also, a positive mood is likely to amplify the perceived performance. That is, a little better delivery would be viewed even better. The human touch can add positive bias to service evaluation.

The human touch can add positive bias to service evaluation.

There are several attributes or determinants of service quality (Parasuraman, Zeithaml & Berry, 1985). The customer mentally evaluates a service on the basis of reliability, tangibles, responsiveness, assurance (competence, courtesy, credibility and security) and empathy (access, communication and understanding the customer). In Fig. 1 the quality dimensions are divided into two categories. At the center of quality circles is the core content of service consisting of service attributes that are amenable to standardization. These are procedure or engineering aspects of service quality. It is because of this that the service provided tends to become similar. The pervasive commonness of these dimensions is diminishing their importance in the customers' minds. Customer expects them to be available. These act as dissatisfiers – their absence causes dissatisfaction but presence or excellence does not yield delight.

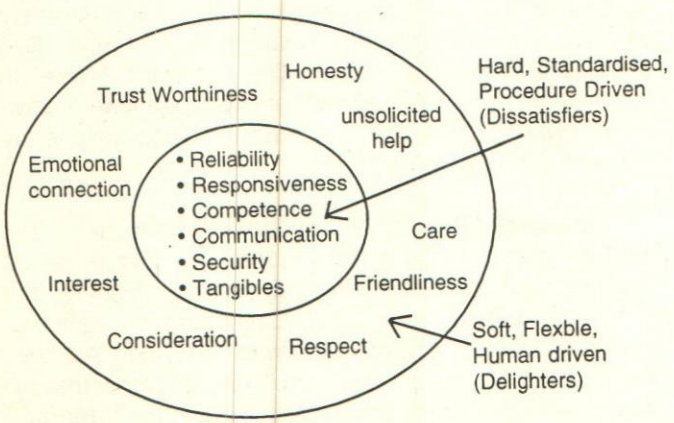

Fig. 1. Service Quality

The outer of the quality circle contains service dimensions which are human driven. The credibility, understanding the customer, personalised attention, consideration, friendliness, emotional identification, honesty, courtesy, aspects of service delivery are quintessentially rooted in the conduct of service providers. The important side of this quality is that these dimensions tend to be soft and do not easily permit standardisation. An attempt to standardize these attributes would suck the spirit out of the performance. It would render the service delivery soulless. By and large a service marketer has to leave it to the voluntary, spontaneous and natural conduct of the providers. It is this operational difficulty that makes excellence in this aspect of service rare. But what is difficult is not impossible and in this aspect one can have 'bells and whistles'. Firms that excel in human aspect of quality are likely to win compliments. Absence of superior delivery on these dimensions may not cause dissatisfaction (because it is uncommon) but excellence surely delights customers.

Shoppers' Stop is a Mumbai based retailer. It offers some branded goods at the same prices as other shops or company showrooms. The Store's turnover zoomed from Rs. 50 lakhs in 1992 to Rs. 74 crore in 1997. It sits on a large base of loyal customers. What attracts and retains the Shoppers' Stop customer is the 'international experience' it provides. It is the feel that customer gets at the store. Its strategy focuses on making the customer involved and special in shopping experience (Hostoke, 1997).

It is not very cumbersome for firms to clone whatever can be standardised. It is only the softer aspects that hold potential for differentiation. A hotel firm may construct property similar to Marriott, an international carrier may duplicate operations and planes of British Airways, a theme park could be developed similar to Disney, but the soul that drives these businesses cannot be copied. All of these service providers enjoy exceptional loyalty – it is not because of the hard dimension of quality but human contact that makes customer's' experience unique and deeply satisfying. "A competitor tomorrow could match us on our tangible offerings, but may find it hard to match our delivery. Where there's product parity, what is important is how you make the customer feel. The human touch makes the difference between satisfying and delighting the customer. The tangible benefits are expected. You are

measured on the basis of delivery beyond that." (Gupta & Rodrigues, 1999) observed a spokes person of Jet Airways. It is this focus on operational and human aspects of service that has contributed to the success of Jet Airways. The company regularly monitors its performance on what it calls key service areas (KSAs). These KSAs include dimensions of quality that are valued by the travellers. Some of these are checkin time, meals, boarding time, speed of response, friendliness and willingness to help. The human factor, according the airline, is a great differentiator (Bhattacharjee, 1999).

Where there's product parity, the human touch makes the difference. The tangible benefits are expected. Businesses are measured on the basis of delivery beyond that.

The staff at Nordstorm a Seattle based retailer is trained to perform in a highly personalised fashion. It is this accouterment to the core service (speciality retailing) that creates exceptional customer loyalty. Over 60 per cent of its customers are repeat customers. The employees remember customers' names, send birthday flowers and personal notes (Dunkin, 1985). The key to customer delight here is performance from the heart, not from mind.

BA has successfully made its transformation from being the 'airline of the last resort' to the 'most preferred airline' by paying attention to human side of service quality. The shift of focus was initiated through the programme 'Putting the people first' (PPF). "Staff were encouraged to utilise delays, bad weather, running out of preferred food, lost baggage and so on to show their ingenuity and concern in the shape of personal initiative designed to compensate for such difficulties (Turner & Hampton, 1990).

Figure 2 – The Focus of Service at British Airways, shows how the various service attributes are organised. At the center are the core or essentials that are inherent in an airline package. Their absence causes dissatisfaction but excellence on these dimensions does not correspondingly create greater satisfaction. But what factors contribute to customer delight?

British Airways went against the prevailing logic that minimization of customer contact is key to service quality. It discovered that various contacts provide opportunity to personalise and provide care to the customers. While other airlines, for example, concentrated too much on quantity and variety of food offered to

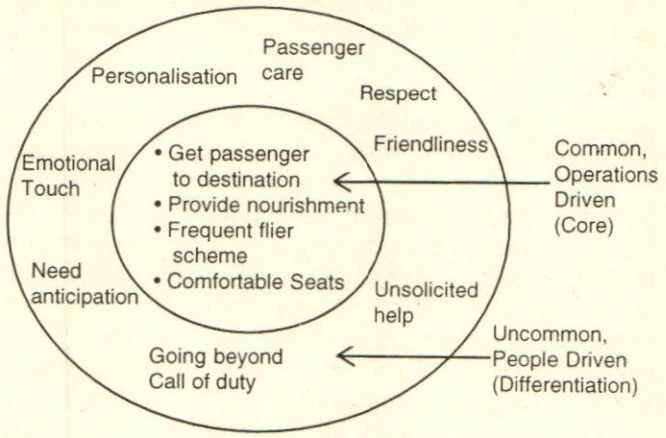

Fig. 2. Focus of Service at British Airways

customers on board, the BA concentrated on human contact. BA learnt that pushing loads of food on to the customer does not satisfy customer as does the presence of staff. Helping old and disabled to the toilets is also something that customers valued.

Keying on the idea of personalisation and importance of human touch, Pune based grocery supermarket – Homeland has become a runaway success. Its owner – manager Asha Chavan has turned the grocery buying into a wonderful social experience. Homeland grew from a meagre daily sale of Rs. 700 in 1991 to Rs. 1.5 lakh now. The store, through a newspaper contest tried to learn why people shop at Homeland. Many customers gave the reason: to chat with Asha. Homeland gives attention to all little finer points of customer care. For example, check out girls hand over change in customer's hands. They are instructed never to put it on the table. The shop assistants rush forward to relieve shoppers of their laden baskets and give empty ones. The staff are told not to watch shoppers because people don't like being watched (Shehan, 1999). The world leader in express transportation, DHL, has recently recognized the service parity in express business. DHL discovered "an apparent level of parity which seems to be due to brand relationship being driven by functional interaction." It now uses emotional hook to connect with its customers. The focus now is on employees (Sharon, 1997).

The important issue facing a service marketer is that all 'big things' of service operations get the attention of most managers. Hence, the result is commoditisation of certain dimension of quality. The face of hotel industry is changing. Good hotels like Taj, Welcomegroup, Oberois and Hyatt are bending the rule of standarised service. All of the hotels have made great strides in service customisation through the use of information technology. The hotel's data base store customers' history and

preferences. The result—as soon as the customer talks to the reservation the conversation is personalised. Upon arrival the guest is greeted with name, the stationery carries the name, the room is made up according to guest's preferences, even bath robes carry guest's initials, the flowers and fruits in the tray are also of guest's preferences. Thus information technology permits intimate customer knowledge which is harnessed to customise service package. This kind of customisation surely satisfies the customer. But the flip side of this is that this kind of service is not unique to any hotel. It is common to all hotels. Hotels again would have to come back to human aspect to achieve differentiation. "The great hotels in Asia are far superior in their quality than great hotels in the west. This is primarily because in the west they are over dependent on machines because labour is their scarce resource. Whereas in East, labour is not a constraint, and there is no doubt that properly motivated, human beings can provide a far higher standard of service than impersonal machines" (Singh, 1989).

It is 'little things' that get overlooked by the managers. The plain ordinary things like friendliness, personalisation, appreciation, concern, emotional touch, trust, dependability, honesty, offer great opportunity to secure an edge. However the operationalisation of these aspects is difficult. These cannot be 'engineered'. An attempt to standardise the 'human aspect' of service is likely to defeat its very purpose. It can originate only from the spontaneous actions of the service providers. Standardization would kill its basic essence—rendering the performance soulless. The customers can easily differentiate between a plastic smile, programmed 'thankyous' and 'you are welcomes'. Gaining control and managing these illusive aspects of service is key to securing edge in the marketplace.

Road to Human Driven Quality

Competing on human based quality requires excellence in employee conduct. It is impression management through the acts of the people who interface with the customers. The issue is how can a firm go on to compete on the basis of human driven service quality. The following issues require careful attention of the manager.

Rediscover the Value Proposition: The literature on strategy proposes that a firm may choose differentiation or cost advantage as basis of winning customers. This gets translated into standardisation or customisation of services as value proposition to cultivate edge in the marketplace. The standardisation approach relies on automation, procedures, minimisation of customer contacts while customisation is based on empowerment, flexibility and human contact. McDonald is icon of standardisation while Nordstorm, Marriott and Disney are driven on customisation. Even when the core of service offer is standardisation, and the firm limits the points of contacts, tremendous opportunity exists to pass on quality with a human face. Even in price sensitive—mass services, customers prefer to be treated like an individual. The vital question is not whether or not human quality, rather how much? After all, each customer is a living human first, then a soulless number.

Standardisation approach relies on automation, procedures and minimisation of customer contacts while customisation is based on empowerment, flexibility and human contact.

Recognize Role of Frontliners: Service in a customer's mind is summation of interactions with the frontliners. Hence Carlzon of SAS first directed attention on the lowly paid, often neglected frontliners. He saw middle management as a major obstacle between planners (top management) and doers (frontliners). Accordingly he sought to eliminate the middle management to enhance frontliners' responsiveness to customers. The front liner's role needs to be explicitly recognised. It is for this reason Nordstorm has inverted the organisation chart, in which top of the chart are sales and sales support people and top management is at the bottom.

Hire People with Service Orientation: For excellence in customer care, service must become second nature of the frontliners. But in the absence of appropriate personality profile, all efforts would fall flat. Going beyond mediocre performance would be impossible. Thus the frontliners must be screened for service inclination and orientation toward serving the customers (Schneider, & Schechter, 1991).

Emotional Labour, Emotional Support: Relating with customers in emotionally satisfying manner—smiling, making eye contact, striking friendly conversation, showing genuine interest, communicating warmth, exhibiting concern,—is no easy task. Especially when the customers vary in their nature, origin, backgrounds, temperaments. The labour that goes into making these encounters satisfying is more than physical and mental. It is emotional labour (Hoschild, 1983). The content of job often implies suppressing one's own feelings and natural urges. And the sheer diversity of encounters makes the roles of frontliners full of stress. This causes frequent burnout. The role of the management in service intensive firm should be to provide technical-system and

equipment and emotional support to the frontline.s. "Service providers need to be in a supportive understanding atmosphere to deal with these demands effectively" (Adelman & Ahuvia 1995). In order to maximise their contribution they must be enabled with support, trust, care and freedom to use their judgement.

Clarify of Roles: One of the difficulties in managing services is the onset of ambiguous situations at the point of service delivery. Variability seems to be inherent to service encounters. No amount of research can generate list of possible encounters and scripts applicable to each situation. Some degree of improvisation or customisation of response is inherent in customer-provider encounters. The challenge therefore is how to make the service people behave in customer and service oriented ways. What lies behind excellent service companies like Walt Disney, Federal Express, McDonald, Nordstorm, Frank Perdue, Marriott, Ritz Carlton, is the organisational ability to focus their service providers on key values, roles and goals. British Airways turned the whole human system to focus on 'criticals' of servicing in air transportation business. It was achieved through Change Programme PPF (Putting People First) and MPF (Managing People First). SAS achieved a remarkable feat by concentrating in the MOT (Moment of Truth) and urged employees to make 'impressions' at these. Ritz Carlton Hotel gives a wallet size card to all its employees that carries 'Gold Standards". It contains the hotel motto (We are Ladies and Gentlemen Serving Ladies and Gentlemen) and three steps for achieving high quality. It focuses employee attention to sincere greetings, anticipation and compliance with guests' needs and fond farewell. Stew Leonard communicates its focus on customer service through two rules (Rule No. 1 – Customer is always right. Rule No. 2 – If the customer is ever wrong, reread Rule No. 1). The fabled service provider Nordstorm, gives its employees a rule 'use your good judgement in all situations. There will be no additional rules'. The key idea is to clarify employee roles and give them clues as to what is coveted by the firm. Here mission statements, newsletters, bill boards, announcements, rewards, communication from the top, and training play a great role.

Concluding Remarks

The market is becoming at tough battle ground. Now quality has become a common denominator. The danger it has created is that now even a satisfied customer is likely to quit for he/she has nothing to lose. It is in this context that the marketers have to work out strategies. The human interface offers opportunity for creating customer delight. The marketer can develop an edge over rivals by concentrating on the soft dimension of service quality which is totally interface driven. Competing on human touch requires careful focus on issues like selection of people with service orientation, provision of emotional support and role clarity.

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Feature

Inequality, Poverty & Prof. Amartya Sen

Pundarik Mukhopadhaya

This paper discusses Prof. Amartya Sen's research on poverty, inequality and welfare in simplistic terms. It first addresses, in brief, the concept of welfarism and Sen's criticisms against that. Sen was totally fascinated by the normative aspect of the Gini coefficient, one of the most widely used inequality indices. The paper also describes how Sen interpreted the Gini coefficient and how he arrived at his social welfare index and poverty index using the underlying normative interpretation of the Gini coefficient.

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The Royal Swedish Academy of Sciences conferred the Bank of Sweden Prize (constituted in the Memory of Sir Alfred Bernhard Nobel and thus called Nobel Prize) in Economic Sciences to Prof. Amartya Sen in the year 1998. Quite a number of scholarly pieces have been published after this announcement in various national and international journals. However, the essence of Sen's work still has not reached the non-specialists. As most papers concentrate on Prof. Sen's recent research on entitlement, capability, freedom, this paper is mainly concerned with Sen's research on developing different indices on social welfare, inequality and poverty.

The Welfare Economist Who Does Not Believe in Welfarism

Social Welfare Function is a decision rule to rank alternative social states in a complete manner. Traditionally social welfare functions are assumed as a function of individual utilities (or welfare). Sen (1979a) termed this procedure as welfarism and vigorously criticised this. To the welfarists social welfare should be uncontroversially dependent on individual welfare. However, owing to lack of complete information about individual utilities, one may wish to base his/her social decision on the objective information about the various social states or alternatives. Sen (1979a) criticises welfarism 'even when utility information is as complete as it conceivably be' even with completely cardinal, unique and interpersonally comparable individual welfare indices. Specifically Sen believes that value should be placed on principles of liberty, non-exploitation, non-torture etc.,

Sen (1979a) criticises welfarism even when utility information is complete. Sen believes that value should be placed on principles of liberty, non-exploitation, non-torture etc., besides their contribution in promoting individual welfares.

besides their contribution in promoting individual welfares. Thus even if two social states are exactly the same with respect to individual welfares, one should prefer the one that adheres to those principles to the one that violates them. Let us consider Sen's illustrative example.

Sen discusses three social states, x, y and z with the following interpersonally comparable cardinal welfare numbers for a two person community:

	x	y	z
Person 1's welfare	4	7	7
Person 2's welfare	10	8	8

In situation *x*, Person 2 is eating a great amount of food while Person 1 is hungry. In situation y, Person 1 consumes more of the given food supply. While 2 is made worse off in comparison to *x*, 1 is made better off by a larger amount and the sum of welfare becomes larger (with the assumption of diminishing marginal welfare). It is clear that *y* must be judged to be better than *x* by utilitarianism, and also by virtually all the criteria that have been proposed using data on individual welfares. Let us consider *y* to be socially better than *x*. Sen argues: Consider now *z*. Here Person 1 is still as hungry as in *y*, and Person 2 is also eating just as much. However, Person 1, who is sadist, is now permitted to torture 2, who—alas—is not a masochist. So 2 does suffer, but resilient as he is, his suffering is less than the utility gain of the wild-eyed 1. The utility numbers in *z* being exactly the same as in *y*, welfarism requires that if *y* is preferred to *x*, then so must be *z*. But *y* is socially preferred to *x*, so *z* is preferred to *x* as well, thanks to welfarism.

He further adds in the footnote: It is assumed that there are no indirect consequences of torture, e.g. in attitude formation. These indirect effects do not change the nature of the difficulty, even though they can be properly accommodated only in a much more complex analysis.

Sen (1970) defines "a value judgement can be called *basic* to a person, if the judgement is supposed to apply under all conceivable circumstances, and it is *non-basic* otherwise" (p. 59). And to most people it is basic judgement to believe that it is wrong to inflict harm on others even if pleasure of doing so exceeds the direct and indirect sufferings caused. And that is why Sen rejected welfarism (and utilitarianism in particular[1]) at the immediate intuitive level.

1. For more general criticism on utilitarianism see Sen (1973d) and Sen (1978).

Sen's belief that the consensus of social choice theorists on welfarism is 'based on not examining explicitly the problem of conflict that can and do arise' (Sen, 1981a, 532) has made economists seriously consider issues raised by him and a significant portion of them now reject welfarism. Even, the welfarists have started regarding the poor utility information (non-cardinalism and non-comparability) with great respect following Sen's criticism.

Sen & Inequality

Dalton (1920) mounted an attack on conventional inequality measures from a welfare standpoint and fifty years later Atkinson (1970) revived the discussion among the economists in his seminal paper. The criticism focused on the fact that the aspect of income inequality has a normative notion of social welfare, however, the measurement considers the statistical sense of dispersion of income. Dalton proposed an inequality measure based on the concept of proportional welfare loss resulting from income inequality. Atkinson criticised this measure as it is variant with respect to linear transformations of the utility function and proposed an alternative measure. Though Atkinson's article attracted good deal of attention, because of its technical nature it would have remained overlooked by more general audience if it were not for Sen's Radcliff Lecture at the University of Warwick in 1972 *On Economic Inequality* (Sen, 1973a). For the last two and half decades the literature of economic inequality has been enlarged. However, the recent publication of the same lectures with couple more chapters[2] proves the vibrancy of the speech.

The inequality measure that implies a social welfare judgement of a particular economic situation can be termed as normative measure. However, Sen (1973a) argued that the distinction between the normative and positive measure of inequality is not a firm one, and that every positive measure embodies some form of social welfare function. The particular form of social and individual welfare functions depend on personal value judgement. Even the individual welfare function might be different. Atkinson (1970) proves that whatever be the form of individual utility function (which are strictly concave functions of income), if the social welfare function is the sum of individual welfare functions, *Lorenz Dominance*[3] provides the welfare ranking of alternative situations. Atkinson's approach to the measure of in-

2. Foster and Sen (1997).

3. Lorenz curve is a popular graphical device to measure inequality. If the Lorenz curve of one economic situation is completely inside that of another situation, then it is a situation of Lorenz dominance.

come inequality is obviously utilitarian. Sen (1973a) generalised Atkinson's result considering the social welfare function defined over individual income, 'implying neither the necessity to go through the intermediary of individual utilities, nor the use of utilitarian additive framework, nor even the necessity of strict concavity' (p. 53), which is symmetric and strictly quasi-concave.[4]

Atkinson's Inequality Measure & Sen

Atkinson's inequality measure is widely used in empirical and theoretical economics, however, Sen approached the measurement of welfare-inequality-poverty from a different perspective. To clarify Sen's criticism on Atkinson's measure, we need to explain the latter first. Atkinson's measure can be defined as:

$$A = 1 - \frac{\mu_E}{\mu} \qquad (1)$$

where μ_E is called equally distributed equivalent level of income, is the uniform level of income which if equally distributed among individuals would give same level of welfare as the actual level of distribution with average income μ.[5] That means μ_E is implicitly defined by a welfare function:

$$W = \sum_i U_i(x_i) = W(\mu_E, \mu_E, ..., \mu_E), \qquad (2)$$

assuming preference of all individuals are same and the utility function of individual i, U_i be concave to his/her income x_i but not strictly concave.

As already mentioned, the specification of welfare function depends totally on the value judgement of the person concerned, Atkinson restricts the class of welfare function by using some concepts from the researches of risk aversion. Atkinson considers the utility function as:

$$U(x_i) = \begin{cases} A + B\dfrac{x_i^{1-\varepsilon}}{1-\varepsilon}, & \varepsilon \neq 1 \\ \log_e(x_i), & \varepsilon = 1 \end{cases} \qquad (3)$$

where $\varepsilon \geq 0$ guarantees the concavity of utility function and represents the weight attached to the inequality by the society. If ε is zero, that means the society is indifferent between distributions and as the value of ε increases, the concern of the society towards the poor increases.

Specification of welfare function depends totally on the value judgement of the person concerned.

Sen's criticism is again on the utilitarian form (which is concave but not strictly concave). He considers distributions between two persons with the same total income (0, 10) and (5, 5) and argues that if the same utility function is chosen which is proportional to income (that is, if marginal utility is constant), with a utilitarian social welfare function, both the distributions will produce same Atkinson's measure of inequality.

"We are confronted with two distinct problems here. First, being based exclusively on a normative formulation, the measure of inequality has ceased to have the descriptive content that is associated with it in normal usage, and the idea of inequality has become totally dependent on the form of the welfare function. Since under the assumption both the distributions produce the same level of social welfare, they appear to have the same measure of inequality. But, of course, in the sense in which the word inequality is used in normal communication, it has a straightforward descriptive content as well. And it would be odd to describe (0, 10) and (5, 5) as having the same degree of inequality. The second problem concerns the use of utilitarian framework whereby the value of U of each person are simply added to arrive at the aggregate social welfare. If, instead of that, social welfare is taken to be a strictly concave function of individual utilities -...- then these two distributions would not have had the same measure of inequality and indeed (0, 10) would have been more unequal than (5, 5). (Sen, 1973a, 38-9).[6]

Sen proposes an alternative, by considering social welfare as an increasing function of individual income level (thus avoiding the problem of an individualistic

4. See Dasgupta, Sen and Starret (1973).

5. Thus inequality measure, here, is actually defined as a 'welfare loss' due to adverse distribution of income.

6. See Sen (1992: 97-100) also, where Sen is more precise on the criticism: 'The Atkinson's measure and other normative measures of inequality are, in fact, measures of distributional badness – according to the chosen social welfare function – of the particular configuration of personal incomes: they are not specifically measures of inequality *per se* – neither of incomes, nor of utilities. With a given configuration of personal incomes (and thus, one obvious sense, a given inequality of income distribution), a less concave utility function can make the Atkinson index *go down* – precisely when different persons' utilities move further apart and the inequality of utilities goes up' (pp. 98-99).

social welfare function) which is symmetric and quasi-concave:

$$W = W(x_1, x_2, ..., x_n). \quad (4)$$

He further defines a generalised equally distributed equivalent income 'as that level of *per capita* income which if shared by all would produce the same W as the value of W generated by the actual distribution of income'—let us call if μ_f. Thus with the above social welfare function, $\mu_f \leq \mu$ for every distribution of income. And, therefore, the measure of inequality can be written as:

$$S = 1 - \frac{\mu_f}{\mu} \quad (5)$$

A and S are the equivalent if one uses the additive utilitarian social welfare function.

Gini Coefficient & Sen

Gini coefficient is one of the most widely used inequality measures defined as:

$$G = \frac{\text{Area between Lorenz curve and diagonal}}{\text{Total area under diagonal}} \quad (6)$$

Where Lorenz curve is a graphical representation showing percentage of population arranged in ascending order of income on the horizontal axis and percentage of income enjoyed by the bottom x per cent of population on the vertical axis. Thus in Fig. 1 the Gini coefficient is twice of the shaded portion.

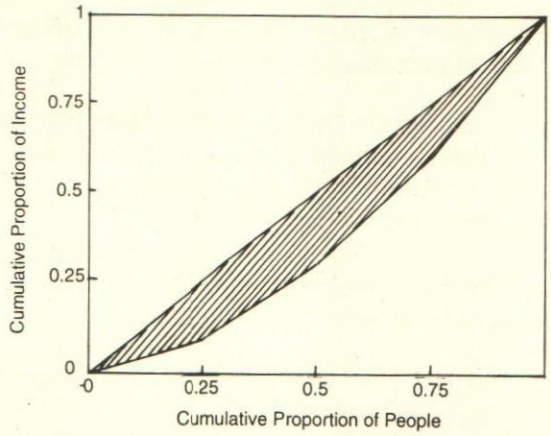

Fig. 1. Lorenz Curve

This coefficient can be represented in various ways. Sen was quite fascinated with the normativity lies in this measure of inequality which is a 'direct measure of income difference, taking note of differences between *every* pair of incomes' (Sen, 1973a), represented as:

$$G = \frac{1}{2n^2\mu} \sum_{i=1}^{n} \sum_{j=1}^{n} |x_i - x_j|, \text{ for all } i \text{ and } j \text{ and } n \text{ is the total number of people in the state,} \quad (7)$$

'that is exactly one-half of the relative mean difference, which is defined as the arithmetic average of the absolute values of differences between all pairs of income'. By taking differences over all pairs of income, the Gini coefficient is a better measure of inequality compared to variance (V), concentration coefficient (C) or standard deviation of logarithm (H) which generally take account of difference of income from the mean which is 'one one's income'.[7] 'In avoiding the arbitrary squaring procedure of *C, V,* or *H*, it may seem to be more direct approach as well, without sacrificing the quality of being sensitive to transfers from the rich to poor at every level'. Sen (1973a) interprets the above expression of the Gini coefficient as:

> In any pair-wise comparison the man with the lower income can be thought to be suffering from some depression on finding his income to be lower. Let this depression be proportional to the difference of income. The sum total of all such depressions in all possible pair-wise comparisons takes us to the Gini coefficient.

If the incomes are arranged in descending order, the Gini coefficient can be represented as:

$$G = 1 + \frac{1}{n} - \frac{2}{n^2\mu}(x_1 + 2x_2 + ... + nx_n) \quad (8)$$

Here, 'the Gini coefficient implies a welfare function which is just a weighted sum of different people's income levels with the weights being determined by the rank order position of the person in the ranking by income level'. Rank order weighting procedure is extensively used in social choice theory which originates from

Gini coefficient implies a welfare function which is just a weighted sum of different people's income levels with the weights being determined by the rank order position of the person in the ranking by income level.

7. Standard deviation is a measure of dispersion. It is the root-mean-square deviation about the mean income. Variance is the square of standard deviation. Coefficient of variation is the ratio between standard deviation and mean income.

the ordinal approach to voting decision by Borda. Sen (1970) and others showed that the general positional approach underlying it provides 'useful ways of weighting competing claims with simple ordinal information' (Sen, 1992). Sen showed this Borda method of weighting leads to the Gini coefficient. This characteristic of Gini coefficient influenced Sen extensively in formulating his social welfare function and poverty index.

For the following expression of the Gini coefficient

$$G = \frac{1}{n^2 \mu} \sum_i \sum_j \text{Min}\,(x_i, x_j) \qquad (9)$$

Sen's interpretation is

> Suppose the welfare level of any pair of individuals is equated to the welfare level of the worse-off person of the two. Then if the total welfare of the group is identified with the sum of the welfare levels of all pairs, we get the welfare function underlying the Gini coefficient (Sen, 1973a, 33).

Which clearly resembles Rawsian maximin principle of justice applied in the context of pair-wise comparison.

For a number of alternative economic states with same mean income, if the Lorenz curves do not intersect, their Gini coefficient will rank them in the same order as any quasi-concave, symmetric social welfare function. Atkinson (1970) criticised the Gini coefficient on this ground. His argument is that if the Lorenz curves intersect, one can always find a social welfare function that will rank the situations in a reverse order to that given by the Gini coefficient. Newbery (1970) further argued that there exists no additive social welfare function that ranks alternative economic situations in the same order as the Gini coefficient. Also, Dasgupta, Sen and Starrett (1973)[8] demonstrated that there exists no strictly quasi-concave welfare function that would give the same ranking of alternative states as the Gini index would give. Because of these reasons Atkinson's measure is quite popular among economists. Though Sheshinski (1972) proved that ranking based on the Gini coefficient and that for a quasi-concave non-additive welfare function is the same. However, Sen, himself, is not at all serious about the strict concavity of the implied group welfare function and he is quite comfortable with concave welfare function and with the Gini coefficient as it satisfies the Pigou-Dalton condition of transfer of income.

8. Rothschild and Stiglitz (1973) as well.

Sen's Axiomatic Approach To Formulate A Social Welfare Function

As an alternative to the utilitarian approach, Sen (1974) followed an axiomatic approach to the measurement of social welfare. He derived a welfare function satisfying a set of axioms that gives the ranking of situations in the same way as the Gini coefficient. Sen started with a welfare function of type (5), where total welfare is the weighted sum of individual incomes:

$$W(\mathbf{x}) = \sum_{i=1}^{n} x_i v_i(\mathbf{x}), \qquad (10)$$

where $\mathbf{x}=(x_1, x_2, ..., x_3)$ is the vector of income distribution of the situation and $v_i(\mathbf{x})$ is the weight attached to the income of the person i. The welfare function (10) is distinctively different from the general utilitarian welfare function of the type:

$$W = \sum_i a_i U_i(x_i) \qquad (11)$$

where a_i is the weight attached to the utility of person i.[9] Thus for (10), each weight depends on the whole distribution, not just on the relevant individual's income. Let us denote $(\mathbf{x}, i)$ as the position of being individual i having income x_i in the distribution $\mathbf{x}$. To determine the exact weights Sen considers following four axioms:

Axiom W1 (Weighting Equity): If everybody in the society prefers $(\mathbf{x}, i)$ to $(\mathbf{x}, j)$, then the corresponding weights must satisfy: $v_j(\mathbf{x}) > v_i(\mathbf{x})$.

That means a poor person's income must get higher weight than that of rich person's income.

Axiom W2 (Limit Equity): Each distribution of income, $\mathbf{x}$, with a constant mean μ over a constant population must have the same maximal $v_i(\mathbf{x})$ and the same minimal $v_i(\mathbf{x})$ for variations of i.

That means all distributions of a given income will have weights lying within the same range.

Axiom W3 (Ordinal Information): If every one prefers $(\mathbf{x}, i)$ to $(\mathbf{x}, j)$ and also $(\mathbf{x}, m)$ to $(\mathbf{x}, n)$ and there is neither a person k such that someone prefers $(\mathbf{x}, i)$ to $(\mathbf{x}, k)$ and $(\mathbf{x}, k)$ to $(\mathbf{x}, j)$, and nor a person p such that someone prefers $(\mathbf{x}, m)$ to $(\mathbf{x}, p)$ and $(\mathbf{x}, p)$ to $(\mathbf{x}, n)$, then $v_j(\mathbf{x}) - v_i(\mathbf{x}) = v_n(\mathbf{x}) - v_m(\mathbf{x})$

9. Also to note that the welfare function shown by (11) is non-symmetric – see Gevers (1979).

This axiom says that the weight should depend on the ordering of incomes, not on the intensity of preference. That means the intensity of preference is represented by the ordering of incomes. The difference between two weights will depend on the number of people between the two incomes, that means the weight depends on rank order. Sen justified this axiom using Borda numbers used in voting. However, Sen admits that it rules out all interpersonal comparability and cardinality about individual welfare (except which is revealed by the intermediate positions between any two incomes). This axiom is directly related to the characteristics of the Gini index. About the Gini, Sen (1973a: 32-33) writes:

> the rate of substitution between the person with the i-th highest income and the one with the j-th highest income is simply j/i. For example £3 to the second richest is given the same weight as £2 to the third richest man. So that actual weights would depend upon precisely how the population is distributed over income sizes. As A has an income of £2000 and B of £1900, and if A is the 1,000th richest man and B is the 1,100th richest man, then £1.00 to B is taken to be equivalent to £1.10 to A. But if some other people turn up inside the income gap, e.g., if an additional 100 people get incomes between £1,900 and £2,000, then the Gini coefficient would attach the same weight to £1.00 income to B as to £1.20 to A. The income levels of A and B have remained the same, but the relative weighting between them is now completely altered because some other people have shown up inside the income range defined by A's and B's income levels.

Further in the footnote he adds:

> There is an obvious analogy here with the violation of Arrow's 'independence of irrelevant alternatives' .... The similarity is not a pure coincidence. A rank-order-based system typically does make choices sensitive to 'irrelevant' alternatives, and this is as true of the 'rank-order method' of voting, which violates Arrow's condition, as of the Gini coefficient....

Axiom W4 (Independent Monotonicity): For all $\mathbf{x}$, all individuals regard $(\mathbf{x}, i)$ to be at least as good as $(\mathbf{x}, j)$ if and only if $x_i \geq x_j$.

That means each person decides his/her preference on the basis of income alone – higher income will be preferred to lower income. Using axioms W1 to W4 Sen proves the following theorem:

A social welfare function satisfying the four axioms must rank the set of distributions of a given total income in precisely the same way as the negative of the Gini coefficients of the respective distribution.

To prove this theorem, let us consider the maximal and the minimal weights to be s and r respectively. For any distribution $\mathbf{x}$, rank the persons according to the income level with x_1 the richest and, in general x_i the ith richest. By axiom W4, all individuals prefer $(\mathbf{x}, i)$ to $(\mathbf{x}, i+1)$ for all $i \leq n-1$. By axioms W1 and W3, for all $i, j \leq n-1$, say

$$v_{i+1} - v_i = v_{i+1} - v_i = t \tag{12}$$

Combining (12) and axiom W2, we have:

$$v_1 = r,$$

$$v_n = r + (n-1)t = s.$$

Thus, $t = (s-r)/(n-1)$, and for all i,

$$v_i = r + (i-1)\,t.$$

Thus the welfare function (10) can be written as:

$$w(\mathbf{x}) = \sum_{i=1}^{n} x_i v_i(\mathbf{x}) = rs + \sum_{i=1}^{n} x_i (i-1)\,t =$$

$$(r-t)\,s + t\sum_{i=1}^{n} i x_i = (r-t)\,n\mu + t\sum_{i=1}^{n} i x_i \tag{13}$$

Considering the definition of the Gini coefficient given by equation (8) and comparing this with the above welfare function, we see that for a given total income and a fixed population, $W(\mathbf{x})$ will rank the alternative income distributions in exactly the opposite of that given by the Gini coefficient.

Some manipulation and normalisation over equation (13) can generate a social welfare function[10]:

$$W(\mathbf{x}) = \mu(1-G) \tag{14}$$

Sen (1976a) shows that this index, calculated from income distribution, 'is a sub-relation of social preference relation defined in the distribution of commodities'. Sen was never happy to use National Income measure as a measure of economic well being for international comparison used by World Bank, United Nations or other organisations. The implication of such

10. To do this, assume that weight attached to the richest person's income is 1 (i.e. $v_1 = r = 1$) and the difference between consecutive income is 2 (i.e., $v_{i+1} - v_i = v_{j+1} - v_j = t = 2$) and for normalisation assume that if every individual has the same income $\bar{x}$, then the social welfare function must assume the value $\bar{x}$.

comparisons is in finding the difference of standard of living. The term standard of living depends greatly on its implicit welfare content. The calculation of standard of living that relies on total (or average) measure of real household income and/or personal consumption expenditure can be misleading unless something is known about the variation of income and wealth. If a country's real income is mostly concentrated in few hands, while the majority live in conditions of poverty, a measure of its National Income considered alone will be meaningless as far as standard of living is concerned. Sen (1973b), proposed the human development index which consists of several factors related to economic distribution along with the per capita GNP and this index is widely used at present for comparing standard of living over time and space.

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Sen & Poverty

Despite the close connection between evaluating poverty and assessing inequality, Sen in his Radcliff lecture (1973a) did not investigate poverty. However, it was Sen's article in *Econometrica* (Sen, 1976b) which starts the exploration of the concerns of poverty and inequality in a new way[11]. The poverty measure Sen developed in the above mentioned paper and the related distribution sensitive indicators have been used in many empirical exercises in evaluating poverty in several countries.

Absolute & Relative Poverty

Regarding poverty, the attributes absolute and relative are sufficiently ambiguous to have become the subject of a fierce but often pointless controversy. Absolute concept suggests scientificness and objectivity, whereas relative concept can imply arbitrariness and subjectivity. Concepts of poverty are invariably biased towards the latter. Absolute, however, can also refer to a standard which is not affected by mean income or more widely, by Marx's 'historical or moral element'[12], whereas relative standard is influenced by both. Which of these concepts is preferable, depends both on profound philosophical reflections and on the purpose for which they are employed: if one wants to emphasise that poverty persists even in societies with high mean income, the latter concept is clearly more convenient for proving this point. The meaning of poverty then approaches the concept of inequality with a high aversion against unequal distribution, or a Rawlsian social welfare function. If, however, one has the most modest objective of trying to measure whether development involves or worsens the lot of those who are poor according to some slightly arbitrary, but inter-temporally stable standard, the former concept has to be used. Sen (1980) emphasised that though deprivation can vary from society to society, to the decision-maker these variations are matters of objective study. "We could, of course, debate about the exact ways in which normative judgements should take note of such social variations, but the primary exercise of diagnosing deprivation cannot be sensitive to the way various types of hardships are viewed in the society in question" (Sen, 1992, 108).

This raises the question of right guidelines for establishing a stable standard. If the decision-maker is faced with severe budget constraint, it is useful to choose a low cut-off point (even if this may seem ethically objectionable at first sight). This is because the choice of a high cut-off point could increase the bias towards allocating scarce resources for poverty allocation to the less poor. Sen (1981c) has pointed out that such a definition would rule out normative judgements about the adequacy of budget for poverty alleviation and of the general development strategy pursued by the regime. Thus it is essential to distinguish between the poverty line used for general judgement and one used as a target for policies. This is what Sen-Townsend controversy boils down to (see Sen 1983a, 1983c, Townsend, 1985, Sen 1985b). Townsend seems to use the normative and policy definition interchangeably. However, Sen (1979b, 1981c) argued that identification of poverty precedes policy choice. Sen (1992) does not want to attach much importance on this debate though he did not change his position either:

> ....the identification of poverty is an acknowledgement of deprivation. It may lead to a policy recommendation also, but that is a derived feature, and the first exercise is one of deciding who are truly deprived as these things are judged in the society in question. The second view simply identifies poverty with a policy recommendation, viz. an assertion that something should be done by society to encounter these deficiencies. In the second view, poverty is primarily a matter of identifying the focus of public action, and its descriptive meaning is only derivative. In contrast, the first view makes the

11. Sen (1973c) has remained overlooked by the academia.

12. Which he did not use to define poverty, but in order to qualify his concept of labour value in the fourth chapter of his first volume of *Das Kapital*.

description primary and policy conclusion derivative (Sen, 1992, 107).

He continues:

> It is also important to make sure that the non-availability of public resources to help eliminate severe deprivations should not make us redefine poverty itself. For example if the state and the society lack the means to alleviate extreme economic hardship, that would be a conclusive reason against a policy recommendation to counter that deprivation through using the necessary – but non-available – funds. But that fact in itself should not make us decide that there isn't much poverty around (as we would be obliged to say, if we were to define poverty entirely in terms of the recommended choice of policy) (Sen, 1992, 108).

Sen (1981c) argued in favour of using malnutrition despite the difficulties invoked in its definition and its measurement as 'the irreducible core of absolute deprivation'. Some others placed importance on basic needs other than food.[13] Since coarse but nutritious food is often an inferior good, malnutrition can increase with rising incomes if the overall level of food intake is still low. This objection is, however, serious only if one defines poverty line in each region and at each point of time directly in terms of a minimum level of calorie consumption. The advantage of this method is that it takes account of inter-regional and inter-temporal variations in consumption pattern. Alternatively, the income class at which such a minimum level is fulfilled can be identified as an average across different regions at one point of time and can be adjusted for changes and differences of prices. This approach focuses on the potential to avoid absolute deprivation and neglects the influence of behaviours on welfare outcomes (Sen, 1981c).

Sen argued in favour of using malnutrition as 'the irreducible core of absolute deprivation'.

Income Poverty & Welfare Poverty

It is well known that low income does not necessarily imply poor health or low life expectancy. Income is not an end in itself, but only a means for achieving what Sen (1987) has called – "human functioning".[14] Sen, therefore, proposed the concept of "capabilities"[15] to use his only slightly wider but fancier term "entitlement"[16] and "functioning"[17].

Low income does not necessarily imply poor health or low life expectancy. Income is not an end in itself, but only a means for achieving human functioning.

"The basic failure that poverty implies is one of having minimally adequate capabilities, even though poverty is also *inter alia* a matter of inadequacy of person's economic means (the means to prevent the capability failure). Consider the example... of the person with a high metabolic rate, or a large body size, or a parasitic disease that wastes nutrients. He is less able to meet minimal nutritional norms with the same level of income, compared with another person without those disadvantages. If he is to be seen as poorer than the second person, despite the fact that both have the same income, the reason for this lies in his greater capability failure (the focus of our concern). The same set of facts can also be seen as indicating the greater adequacy of his income given his personal characteristics and circumstances. To have inadequate income is not a matter of having an income level below an externally fixed

13. For reference see Sen (1973b), Dreze and Sen (1989), UNDP Human Development Reports 1990 and 1991, Desai, Boltvinnik and Sen (1991).

14. See also Sen (1980, 1981c, 1983b).

15. See Sen (1985a). Atkinson (1995) to interpret the concept writes "Sen argues that, in the chain Commodities→Characteristics→Capabilities→Utility, it is 'the third category – that of capability to function – that comes closest to the notion of standard of living'..., and that, if the argument is accepted, it provides a basis for 'sorting out...the absolute- relative disputation in the conceptualisation of poverty. At the risk of over-simplification, I would like to say that poverty is an absolute notion in the space of capabilities but very often it will take a relative form in the space of commodities and characteristics" (p. 17).

16. The approach for the cause of famine and hunger or poverty that focuses attention of people having or not having enough command over food, as distinct from there being or not being enough food to be eaten. See Sen (1981c). This contribution was enthusiastically received by some, less by others: "our great grandmothers, who ... were altogether innocent of the notion of 'non-negative orthant or n-dimensional real space', knew about this common factors underlying famines [...]. Amartya Sen, I am afraid, has not said anything beyond what our great grand mothers were already aware of (Mitra, 1982, 488). For an excellent review on the entitlement approach to famine see Osmani (1995).

17. For a discussion and list of references see Foster and Sen (1997: Chapter A. 7).

poverty line, but to have an income below what is adequate for generating the specified levels of capabilities for the person in question.

In the income space, the relevant concept of poverty has to be *inadequacy* (for generating minimally acceptable capabilities), rather than *lowness* (independently of personal characteristics). A 'poverty line' that ignores individual characteristics altogether cannot do justice to our real concerns underlying poverty, viz. capability failure because of inadequate economic means. Often it will make sense to group individuals into particular categories (related to class, gender, occupational group, employment status, and so on). If we choose to express poverty in the income space, then the incomes needed would have to be linked to the causal requirements of minimal capabilities" (Sen, 1992, 111).

Inter-household & Intra-household Poverty

Income is shared within the family, and it therefore makes sense to measure it at household and not at individual level. The food consumption of a person depends on the power of the household to command the food and division of food within the household. Sen (1976c, 1977, 1981b, 1981c) examined the former concept with special reference to famines and acute starvation. He used 'entitlement approach' and examined how the households can acquire the commodity-bundles. However, entitlements of the households do not determine the amount of food a particular member of the household can eat. Sen (1983a), Sen and Sengupta (1983), Kynch and Sen (1983), Sen (1984) examined the intra-household disparities, that is with the division of food within the family. Here again, Sen criticised severely the utilitarian approach and utilised his 'capability failure' concept. He writes:

> If the focus is on the deprivation of *personal capabilities*, then inequalities within the family have an importance of its own, no matter what view we take of the sustainability of the notion of individual welfare in cultures in which the family plays a dominant role. There is no escape from the grave tragedy of the disproportionate undernourishment of children (or sharper undernourishment of the female children in distress situations, ..), or the unusual morbidity of women... The problem has to be distinguished from the deprivation of goods as such, since the 'capability approach' is concerned with what goods can do to human beings. Thus undernourishment and morbidity – not to mention mortality – provide a better focus than food-intake itself...
>
> If disparities within the family are not ruled out of court with one assumption or another, the implications for economic analysis and policy are monumental. This is not the occasion to go into a full-fledged analysis of the different implications, but some may be briefly referred to as examples.
>
> First, in terms of policy, the problem of malnutrition and hunger can no longer be seen only as a matter of entitlement on the family, depending on the family's earning power and market command, and requires analysis of the division of entitlements within the family. The issue of social values, including what 'divisive' questions are or are not posed.., becomes a central one, in this context.
>
> Second, the gap between decision of family heads and the well-being – introspective or not – of individual members of the family makes market data that much more difficult to interpret in terms of need satisfaction. The market demands would, at least, reflect the relative importance of different items as taken by the decision-maker ('revealed preference' cannot go beyond that, even if it can go so far as that). It calls into question not merely the traditional efficiency or optimality results related to market mechanism...., it also has far reaching implications for public policy and planning using market information.
>
> Third, the evaluation of standard of living is usually done on the basis of market data. While the problems arising from different sizes and compositions of families are often neglected, there have been a number of important contributions recently to correct the variations of size and composition through the use of 'equivalence scales'. But these scales operate on the notion of 'family welfare' that is reflected by the maximand of the family's market behaviour. ...the procedure is not easy to justify.
>
> Much of the economic analysis proceeds on the basis of linking decision-taking with individual well-being. Disparities within the family strike at the root of this relationship (Sen, 1984, 363-365).

Incidence & Severity of Poverty: Sen's P-measure

Having dealt with Sen's contribution to the 'identification' problem of poverty, let's consider his view on the 'aggregation' problem. The index that packs poverty in an aggregate term – which is most widely used is the 'head count ratio' (*HC*). It simply measures the share of those people within a population whose income or consumption level fall below a poverty line (z), which is held constant over time. This can be written as:

$$HC = \frac{q}{n} \qquad (15)$$

where n is the total number of people and q is the number of people below the poverty line. Sen (1976b) severely criticised *HC* because of its complete insensitiveness to the distribution of income among the poor. A pure transfer of income from the poorest poor to those who are better off will either keep head count ratio unchanged or make it go down. "The concentration on the income space is often hard to avoid given the comparatively greater availability of income statistics rather than other types of data. Within that informational format, the traditional use of the head-count ratio as the measure of poverty, any government faces a strong temptation to concentrate on the richest among the poor, since that is the way that the number of the poor—and the head-count ratio..—can be most easily reduced. Recasting the empirical measurement of poverty in a distribution sensitive way has the effect of making comparatively better use of income data (despite the overall limitations of that income-based informational base)" (Sen, 1992, 105-106). Another measure of the extent of poverty is the aggregate poverty gap (g) or the income gap ratio (I)—which takes account of how far below the poverty line are the incomes of poor households. They are defined respectively by:

$$g = \sum_{i=1}^{q} (z - x_i) \tag{16}$$

and

$$I = \frac{1}{q\,(x, z)} \sum_{i=1}^{q} \frac{(z - x_i)}{z} \tag{17}$$

Since both the measures take account of income shortfalls, they do provide information on the expenditure needed to eliminate poverty but as they give equal weight to all income shortfalls, they are not sensitive to transfers unless the transfer takes one of the households out of poverty. Sen (1976b) proposed two axioms a suitable poverty measure should satisfy:

Monotonicity Axiom: Other things remaining same, a reduction of income of any person below the poverty line must increase the poverty measure.

Transfer Axiom: Other things remaining same, a pure transfer of income from a person below the poverty line to anyone who is richer must increase the poverty measure.

Clearly *HC* does not satisfy either of them and *I* (or *g*) does not satisfy the transfer axiom. Sen (1973c, 1976b) axiomatically developed a poverty measure influenced by the rank order weighting characteristics of the Gini coefficient. His proposed measure can be given by a normalised weighted sum of income gap:

$$P = A\,(z, q, n) \sum_{i} g_i\, v_i\,(z, \mathbf{x}) \tag{18}$$

where $A(.,.,.)$ and $v_i(.,.)$ are the normalisation factor and the weight respectively (explanation of this weight is similar to that for the welfare function). To determine the value of the normalised factor and the exact weight, Sen proposed the following three axioms:

Axiom P1 (Rank Order Weights): The weight $v_i(.,.)$ on the poverty gap of person i equals the rank order of i in the interpersonal welfare ordering of the poor.

This weighting scheme derived from Borda has already been described in the context of the Gini coefficient and welfare index. Sen also provided a normative explanation following Runciman's relativist concept of deprivation: "The lower a person is in the welfare scale, the greater his sense of poverty, and his welfare rank among others may be taken to indicate the weight to be placed on his income gap" (Sen, 1976b, 377).

Axiom P2 (Monotonic Welfare): For any income configuration x, the relation > (i.e. greater than) defined on a set of individual welfare numbers $W_i\,(\mathbf{x})$ is a strict complete ordering and it is defined on the corresponding set of individual income x_i as a sub relation, i.e., if $x_i > x_j$, then $W_i\,(\mathbf{x}) > W_j\,(\mathbf{x})$, for two individuals i and j.

This axiom implies that always a rich person is better off and individual welfare ordering is a strict complete ordering. The latter thus avoids the problem of rank order procedure in the case of indifference.

Axiom P3 (Normalised Poverty Value): If all the poor have the same income, then $P = HC \times I$.

Though *HC* and *I* are not desirable poverty measure according to monotonicity and transfer axioms, in the special case when people below poverty line will have the same income, the proportion of people below the poverty line and their income shortfall together are sufficient to measure the extent of poverty.

Using axioms P1 to P3, Sen proves the following theorem:

For a large number of poor the poverty index can be represented as: $P = HC\,[I + (1 - I)\,G_P]$, where G_P is the Gini coefficient of income distribution of the poor.

To prove this theorem let us first use axiom P2. According to this axiom if individuals are numbered in a

decreasing order of their income as:

$$x_1 \leq x_2 \leq \ldots \leq x_n \tag{19}$$

then,

$$W_1(\mathbf{x}) < W_2(\mathbf{x}) < \cdots < W_3(\mathbf{x}). \tag{20}$$

Now, for any person below the poverty line (that is, $i \leq q$), there are exactly $(q+1-i)$ people among the poor with at least as high welfare level as *i. Therefore by axiom P1 the weight:*

$$v_i(z, \mathbf{x}) = q+1-i \tag{21}$$

Using (18) and (21) we have:

$$P = A(z, q, n) \sum_{i=1}^{q} g_i (q+1-i) \tag{22}$$

Let us consider the special case when all the poor have the income x^* and thus income gap will be $g^*=z-x^*$, we can have:

$$P = A(z, q, n)\, g^* \frac{q(q+1)}{2} \tag{23}$$

and by axiom P3

$$P = \left(\frac{q}{n}\right)\left(\frac{g^*}{z}\right) \tag{24}$$

By (23) and (24):

$$A(z, q, n)\, g^* \frac{q(q+1)}{2} = (q/n)\left(\frac{g^*}{n}\right)$$

$$\Rightarrow A(z, q, n) = \frac{2}{(q+1)nz} \tag{25}$$

Thus (22) can be written as:

$$P = \frac{2}{(q+1)nz} \sum_{i=1}^{q} (z-x_i)(q+1-i) \tag{26}$$

Consider now the equation (7) or (9) of the Gini coefficient which can be represented (if incomes are arranged in ascending order as assumed in (19), note that in equation (8) the form of the Gini coefficient is for the case when incomes are arranged in descending order) for the present purpose as follows:

$$G_P = 1 + \frac{1}{q} - \frac{2}{q^2 m} \sum_{i=1}^{q} x_i (q+1-i) \tag{27}$$

where m is the mean income of the poor. Simplification of (26) gives:

$$P = \frac{2}{(q+1)nz} z \frac{q(q+1)}{2} + \frac{2}{(q+1)nz} \sum_i x_i (q+1-i)$$

$$= \frac{1}{(q+1)nz} zq(q+1) + \frac{2}{(q+1)nz}\left[G_p - 1 - \frac{1}{q}\right]\frac{q^2 m}{2},$$

using (27)

$$= \frac{q}{n} + \frac{q^2 m}{(q+1)nz}\left(G_P - \frac{q+1}{q}\right)$$

$$= \frac{q}{n} + \frac{q}{n}\frac{m}{z}(G_P - 1), \text{ for large } q, \frac{q}{q+1} = 1$$

$$= \frac{q}{n}\left[1 + \left(1 - 1 + \frac{m}{z}\right)(G_P - 1)\right]$$

$$= \frac{q}{n}\left[1 + \left(1 - \frac{z-m}{z}\right)(G_P - 1)\right]$$

$$= \frac{q}{n}\left[1 + \left(1 - \frac{\sum_{i=1}^{q}(z - x_i)}{z}\right)(G_P - 1)\right]$$

$$= HC\,[1 + (1-I)(G_P - 1)], \text{ using (15) and (17)}$$

$$= HC\,[I + (1-I)\,G_P]$$

Sen's distribution sensitive poverty measure has been used to measure poverty in Bangladesh, India, Iran, Malaysia, United States, Brazil and several other countries. Inspired by this measure, several other measures and empirical studies have been carried out on similar lines in recent years (see Foster and Sen, 1997 for a long list of references).

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Feature

Agriculture – Industry Linkages: An Analysis

Vijay Paul Sharma & Arvind Kumar

This study examines the trends in growth and interdependency between agricultural and industrial sectors of Indian economy. A dual economic growth model was developed to investigate the relationship between the two sectors and factors affecting Indian economic growth. The results of economic growth model indicate that land is an important input to the growth of agriculture in India. Traditional inputs, such as labour, do not play an important role in the economic development of both the sectors. Capital investment contributed significantly to the growth of industrial sector, but not to the agricultural sector. It was found that agricultural growth in India is contributed by its industrial sector and the growth of industrial sector depends on agricultural growth, indicating strong linkages between the agricultural and industrial sectors in Indian economic development.

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The agriculture-industry relationship has featured prominently in economic theory since its early beginning in classical political economy. The interdependency between agricultural and industrial sectors of an economy is crucial to its overall development. Agricultural growth depends on the industrial demand for agricultural commodities and similarly, industrial growth depends on an increase in purchasing power of agricultural sector for industrial commodities and on supply of raw materials for processing.

Agricultural growth depends on the industrial demand for agricultural commodities and industrial growth depends on an increase in purchasing power of agricultural sector and on supply of raw materials.

The Indian economy has been undergoing many changes especially since 1991. These changes have affected almost all the sectors of the economy. The country's Gross Domestic Product (GDP) grew from Rs. 225,268 crore at 1980-81 prices in 1992-93 to Rs.292,818 crore in 1996-97, with annual compound growth rate of about 6.85 per cent. Indian economy can be divided into an agricultural sector based on rural communities and an industrial sector mainly concentrated in urban areas. The earlier strategy of industrialisation in India was dominated by import substitution, emphasis on heavy industries and a central role for public sector within a mixed economy. In agricultural sector, growth came initially from expansion of cropped area, and subsequently after mid-sixties from green revolution based on intensive use of high yielding varieties of seed, fertilizer and irrigation.

Over the years, India has made a transition from a

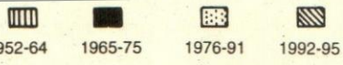

Fig. 1. Trends in growth rates of GDP by economic activities in India.

Table 1: Compound Annual Rates of Growth in (GDP) by Economic Activity in India, 1952-95[@]

(per cent)

Sectors	Periods				
	1952-64	1965-75	1976-91	1992-95	1952-95
Agriculture and allied	*2.45*	*2.63*	*2.76*	*3.41*	*2.42*
Agriculture	2.54	2.65	3.05	3.53	2.53
Allied	1.71	2.43	–0.16	1.92	1.28
Industry	*6.83*	*3.74*	*6.01*	*7.52*	*5.40*
Mining & quarrying	5.65	2.51	7.18	3.93	5.34
Manufacturing	6.75	3.96	6.16	7.22	5.38
Electricity, gas & water supply	11.56	8.08	8.08	8.20	9.03

the hypothesis of trend acceleration/deceleration in the GDP growth rate over the entire period since 1950-51 using the following functional form:

$$Ln\ Y = a + bt + ct^2$$

This equation tests the hypothesis of acceleration/deceleration in the trend growth rate on the basis of sign and statistical significance of the estimate of 'c'.

Table 2: Estimates of Quadratic Function in Time Variable Fitted to Triennial Averages of GDP in India, 1952-95

Sectors	Cons.	b	c	R^2
Agriculture and allied	*10.1332*	*0.0166* (12.79)	*0.0002* (5.81)	*0.99*
Agriculture	10.0257	0.0151 (10.20)	0.0002 (6.96)	0.99
Allied	7.8355	0.0325 (11.82)	–0.0004 (7.42)	0.91
Industry	*8.8714*	*0.0539*	*–0.00003*	*0.99*

predominantly agrarian economy with 55 per cent of GDP derived from agriculture and only 13 per cent from industry in 1950-52 to a more balanced economic structure with the share of agriculture reduced to 28 per cent and that of industry increased by 26 per cent in 1993-95. However, this share of agriculture is still higher than for most of the developing economies. Indian economy has experienced a shift of resources from the agricultural sector to the industrial sector. This is mainly because the industrial sector grows faster and has higher labour productivity than the agricultural sector. Hence, a study was attempted to examine the relationship between India's agricultural and industrial sectors and to determine the important factors contributing to the growth in these sectors.

Methodology

Gross Domestic Product (GDP) at factor cost data for main sectors (namely, agriculture, industry and services) was used to estimate the growth rates of aggregate and sectoral GDP. The data was obtained from National Accounts Statistics published by Central Statistical Organization (Government of India, 1997), EPW Research Foundation (1997). All the data on GDP (at aggregate, sector and sub-sector level) are at 1980-81 prices for each measure of GDP, the period of study which spans over 46 years from 1950-51 to 1995-96 has been split into five periods.

Period I : 1950-51 to 1964-65

Period II : 1965-66 to 1975-76

Period III : 1976-77 to 1991-92

Period IV : 1992-93 to 1995-96

Period V : 1950-51 to 1995-96

For the study of growth rates of GDP, the following trend equation has been considered:

$$Ln\ Y = a + bt$$

Where 'Y' represents GDP from different sectors and 't' is the time period.

In order to study the structural shifts, period averages of percentage contribution of different sectors to the aggregate GDP have been calculated to avoid the impact of an extreme value which might coincide with any of the reference year under study. In order to access the trends in capital formation in agriculture, industrial and service sectors and at aggregate level, we have divided the entire time span (1950-1995) into five decades, viz., decade I (1952-60), decade II (1961-70), decade III (1971-80), decade IV (1981-91) and decade V (1992-95) and the analysis was done for these five periods separately and at aggregate level (1952-95). Compound growth rates of gross capital formation (GCF) and gross fixed capital formation (GFCF) were calculated with the help of exponential function for different periods at disaggregated sectoral levels. The data series used for estimation of growth rate of GDP, GCF, and GFCF are the series of three-yearly moving averages which were worked out in order to minimise the effects of extreme values.

Economic Growth Model

The framework adopted is dual economy framework in which the economy is disaggregated into two broad sectors—agriculture and industry. The growth of industrial sector is generally looked upon as a part of wider process of development of economy, namely, transformation from predominantly traditional, agrarian set-up to modern industrial economy. The literature on dual economy models deals with the characterization of such economies and constraints to industrial growth therein.

Economists have developed models to explain the interdependency between agricultural and industrial sectors, the pioneering models being Ricardo (1817), Lewis (1954), Jorgenson (1961), Fei & Ranis (1964), Dixit (1973), Rakshit (1982), Gillis et al., (1983) and Rao (1992).

Ricardo (1817) examined the relationship between agricultural and industrial sectors and assumed that agricultural sector is subject to diminishing returns and that surplus labour can be shifted to industrial sector without causing a rise in wage rate (Gillis, et al., 1983). Lewis (1954) and Fei & Ranis (1964) had also earlier presented this relationship. Fei-Ranis's model assumed the coexistence of a large agricultural sector and a small but active and dynamic industrial sector in the economy. In these dual economic growth models, these sectors are assumed to depend upon each other. Therefore, we propose to use Fei & Ranis model in the present paper for analysing the behaviour and linkages of agricultural and industrial sectors of Indian economy during the period from 1961-62 to 1995-96. The following function is assumed:

$$AI = f\ (AL, AK, L, IY) \quad \text{(i)}$$

$$IY = f\ (IL, IK, AI) \quad \text{(ii)}$$

Where:

AI = Gross domestic product originating in agricultural sector (Rs. crores)

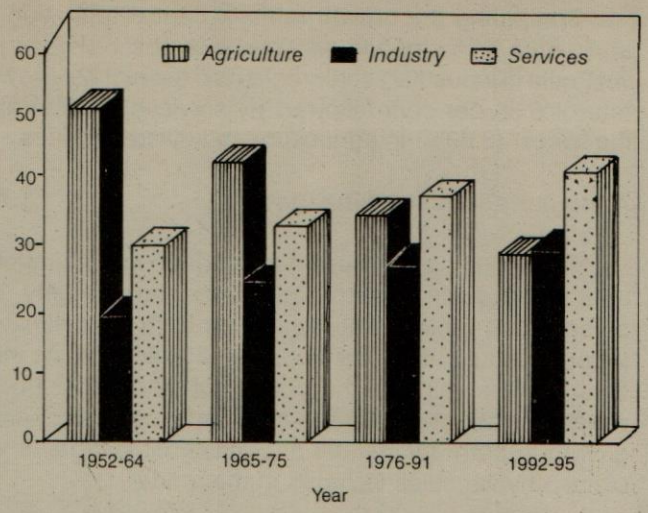

Fig. 2. Trends in sectoral composition of GDP in India, 1952-95.

Table 5: Trends in Gross Capital Formation (GCF) in India, 1950- 52 to 1993-95

(Rs. crores)

Sectors	1950-52	1960-62	1970-72	1980-82	1989-91	1993-95
Agriculture and allied	*1392*	*1826*	*3087*	*4821*	*5026*	*6248*
Agriculture	1344	1729	2954	4576	4559	5672
Allied	47	97	133	245	468	576
Industry	*1575*	*4549*	*6942*	*13351*	*22699*	*30956*
Mining & quarrying	71	197	280	1718	2739	3391
Manufacturing	1297	3189	4593	6985	12759	19029
Electricity, gas and water supply	165	861	1717	3708	6285	7444
Construction	42	302	352	941	916	1092
Services	*3347*	*7510*	*9675*	*15199*	*22863*	*28636*
Trade, hotels & restaurants	257	364	1198	2563	3445	2982
Transport, storage and communication	961	2842	2891	3963	6982	9559
Financing, insurance, real estate and business services	1254	1699	2012	3428	6219	8747
Community, social and personal services	510	1491	1952	2928	3596	4181
Public administration and defence	365	1115	1622	2317	2621	3168
Gross Capital Formation	5587	11760	17376	30242	46956	61356

Investment Performance

Attempt was made to examine the trends in capital formation at the national level, in agricultural and industrial sectors in particular with the help of secondary data for the years from 1950-51 to 1995-96 split into five periods. The trends in gross fixed capital formation (GFCF) and the gross capital formation (GCF) with 1980-81 as the base year are presented in tables 4 and 5. Tables 6 and 7 give the respective annual compound growth rates of capital formation in different sectors of the economy for the period 1952-95 and different decades.

Table 6: Trend Growth Rates of Gross Fixed Capital Formation (Per cent per annum) by Economic Activity in India, 1952-95

Sectors	Periods					
	1952-60	1961-70	1971-80	1981-91	1992-95	1952-95
Agriculture and allied	*1.59*	*6.45*	*5.82*	*0.30*	*5.15*	*3.69*
Agriculture	1.07	6.52	5.81	–0.19	5.04	3.59
Allied	11.82	5.26	6.05	7.00	6.20	5.05
Industry	*13.38*	*6.34*	*7.93*	*7.32*	*9.37*	*6.86*
Mining & quarrying	–0.07	4.35	17.3	8.07	15.86	11.08
Manufacturing	13.09	5.89	7.04	7.45	10.76	5.90
Electricity, gas and water supply	16.28	8.62	8.07	7.51	4.43	8.47
Construction	23.40	4.89	4.32	3.71	7.08	6.10
Services	*10.36*	*0.52*	*2.60*	*5.29*	*7.11*	*4.29*
Trade, hotels & restaurants	7.52	9.87	–0.31	7.04	3.66	7.40
Transport, storage and communication	15.81	–1.85	2.38	7.19	9.15	4.04
Financing, insurance, real estate and business services	3.22	1.93	5.01	6.57	8.73	4.12
Community, social and personal services	12.44	0.86	2.09	2.55	3.63	4.33
Public administration and defence	12.80	1.25	1.29	2.18	3.92	4.34
Gross Fixed Capital Formation	8.14	4.03	5.49	5.76	8.24	5.34

The gross fixed capital formation in the country increased from Rs. 5,035 crores at constant prices (1980-81 prices) in 1950-52 to Rs. 57,713 crores in 1993-95, the compound growth rate being 5.34 per cent during 1950-95 period. Correspondingly, the gross capital formation increased from Rs. 5,587 crores to Rs. 61,356 crores during the same period. The growth rate of gross fixed capital formation was highest (8.24%) during the post economic reforms period.

The gross fixed capital formation in agriculture and allied activities rose from Rs. 1,348 crores in 1950-52 to Rs. 6,129 crores in 1993-95, the increase being more than four times. Compound growth rates for GFCF in agricultural sector indicate that trends worsen during the 1989-91 period (table 6). Thus on trend basis one can infer that capital formation in the agricultural sector declined through the decade 1981-91, whereas in contrast, other sectors of the economy; i.e., industry and services, grew at the rate of more than 5 per cent. Look-

ing at the estimates of GCF and GFCF, it is clear that investment in agriculture has suffered a distinct loss in momentum during the eighties. in the post liberalization period, there was substantial improvement in GFCF in agricultural sector.

Table 7: Trends in Compound Growth Rates of Gross Capital Formation by Economic Activity in India, 1952-95

(Per cent per annum)

Sectors	Period					
	1952-60	1961-70	1971-80	1981-91	1992-95	1952-95
Agriculture and allied	*2.14*	*6.72*	*7.01*	*0.05*	*5.18*	*3.73*
Agriculture	1.67	6.69	7.05	–0.44	5.14	3.66
Allied	11.60	6.66	6.11	6.98	5.62	4.85
Industry	*13.06*	*4.82*	*6.49*	*6.88*	*8.65*	*6.73*
Mining & quarrying	0.17	4.30	16.72	6.73	13.25	11.10
Manufacturing	12.88	4.44	4.89	7.67	9.82	5.93
Electricity, gas and water supply	16.88	7.33	8.06	6.72	4.37	8.27
Construction	19.07	2.81	7.85	–0.15	7.37	5.38
Services	*12.17*	*–0.14*	*3.45*	*4.41*	*6.76*	*4.40*
Trade, hotels & restaurants	10.63	8.56	7.85	–0.73	2.85	6.91
Transport, storage and communication	16.48	–1.97	1.73	6.86	8.79	4.01
Financing, insurance, real estate and business services	3.28	1.92	5.02	6.56	8.72	4.13
Community, social and personal services	16.83	–1.32	2.20	3.09	3.71	4.31
Public administration and defence	18.70	–1.68	1.49	2.08	4.05	4.38
Gross Capital Formation	9.32	3.47	5.68	5.16	7.73	5.37

The gross fixed capital formation in the industrial sector increased from Rs. 1,274 crores in 1950-52 to Rs. 28,759 crores in 1993-95, the increase being more than 22 times. Among the components a notable feature is a sizeable and significant increase in the gross fixed capital formation in mining and quarrying. The compound growth rate of GFCF in mining and quarrying increased from –0.07 per cent in 1952-60 to 15.86 per cent in the 1992-95 period. The table also indicates that economic reforms led to a significant increase in GFCF in the industrial sector of the economy.

There is very large and significant increase in the growth of capital formation in the services sector. The GFCF in the services sector rose from Rs. 3,100 crores in 1950-52 to Rs. 27,289 crores in 1993-95, the compound growth rate being 4.29 per cent per annum during 1952-95. Among the components, trade, hotels and restaurants witnessed the highest (7.40%) growth rate in Gross Fixed Capital Formation, followed by public administration (4.34%) and the lowest (4.04%) in the transport, storage and communication during 1992-95 period.

Comparing the growth rates of capital formation in agriculture, industry and services, it is observed that investment in industrial sector registered the highest growth rate of 6.86 per cent followed by services (4.29%) and the lowest (3.69%) in agriculture and allied activities.

Agriculture-Industry Linkages

The results of the estimated equations of agricultural and industrial sectors of the Indian economy are presented in Table 8. The F-value for both the estimated production functions revealed their significance. As indicated by the value of the coefficient of multiple determination (R2), about 99 per cent variation in economic growth in both agricultural and industrial sectors is explained by variables included in the model.

In agricultural growth model, the regression coefficient (0.3048) of the industrial income variable is positive and statistically significant, indicating that one per cent growth in the industrial sector will increase agricultural income by 0.30 per cent. Similarly the regression coefficient (0.2695) of agricultural income was positive and statistically significant in industrial growth model.

The labour variable has a negative sign in both agricultural and industrial growth models but is statistically non-significant, indicating that labour has not been a significant factor in the growth of agricultural and industrial sectors in Indian economy. This may be due to surplus labour in agricultural sector.

The investment variable is negatively related to agricultural income growth and is statistically significant at one per cent level, indicating that agricultural investment does not play an important role in the growth of agricultural sector. This is mainly because of decline in investment in agricultural sector during the period under study. For industrial sector growth model, the investment variable is positively related to its income and is statistically significant at one per cent level. This indicates that capital investment in industrial sector of the Indian economy has made a significant contribution to income growth in this sector. The economic liberalization created favourable business conditions through open door policy and attracted more foreign investment and technology mostly in industrial sector. The regression coefficient of land variable is positive (2.5503) and statistically significant at one per cent level, indicating that increase in gross sown area has made a significant contribution to total agricultural growth in the economy. The dummy variables representing pre-economic reforms periods are negative in both agricultural and industrial sectors, indicating that India's economic reforms contributed to economic growth. The magnitude of the variables declined toward recent period,

Table 8: Estimated Coefficients of Indian Agricultural and Industrial Growth Models

Variables	Agriculture	Industry
Constant	–4.0280	–0.2115
Labour	–0.1352	–0.1579
	(0.1335)	(0.0953)
Investment	–0.1082	0.0953
	(0.0429)	(0.0398)
Land	2.5503	–
	(0.3112)	
Agricultural Income	–	0.2695
		(0.0743)
Industrial Income	0.3048	–
	(0.0826)	
Lagged agricultural income	0.0322	–
	(0.1125)	
Lagged industrial income	–	0.7966
		(0.0584)
Dummy for 1961-62 to	–0.0518	–0.0379
1975-76 period	(0.0373)	(0.0290)
Dummy for 1976-77 to	–0.0277	0.0064
1991-92 period	(0.0216)	(0.0199)
Adjusted R^2	0.987	0.997
F-value	616.67	2994.75
Durbin-Watson Statistic	2.0104	2.0596

Figures in parantheses represent standard errors of regression coefficients

indicating that India has achieved economic growth over the years from 1961 to 1995. The above results clearly indicate that there are strong linkages between agricultural and industrial sectors of the Indian economy but the agricultural sector's growth depends relatively more on the growth of industrial sector as compared to industrial growth's dependence on agricultural growth.

Conclusions

Examining the economic growth in Indian agricultural and industrial sectors from 1950-95, the results indicate that GDP as well as its major sectors have grown considerably over the period under consideration and there has been a distinct jump in India's growth since the early nineties. The observed growth rate of GDP during 1992-95 at over 5.7 per cent was considerably higher than those in the previous four periods. However, the industry grew at a faster rate as compared to agricultural sector for all the sub-periods. There has been a sharp decline in the contribution of agricultural sector to GDP, accounting for 28.74 per cent of the total GDP during 1992-95 as compared with an average of 51.43 per cent during 1950-64. As regards the industrial sector, the contribution to GDP increased substantially from 19.28 per cent to 29.91 per cent during the same period. The results of economic growth model indicate that there are strong linkages between the agricultural and industrial sectors of the Indian economy. The study reveals that land is an important factor in the growth of agricultural sector. Labour is not an important input to India's economic growth. Capital investment does not play an important role in the agricultural growth. For the industrial sector, the investment variable is significant and positively related to the income growth. To improve agricultural productivity in the country, a significant increase in capital investment in agricultural sector is needed. Limited investment in agricultural sector has caused poor rural infrastructure and insufficient agricultural research. Therefore, India should attract more technology and investment in agricultural sector through open door policy.

Limited investment in agricultural sector has caused poor rural infrastructure and insufficient agricultural research. India should attract more technology and investment in agricultural sector through open door policy.

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Feature

Primary Sector in Kerala: Development & Disparity

V. Nagarajan Naidu & K. Ramachandran Nair

This paper attempts to examine the inter regional disparity in the development of the primary sector in Kerala. The study delineates regions of homogenous development which might help policy makers to evolve a special strategy.

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Kerala with its high levels of human development and a paradoxic stagnation of the productive sectors has attracted the attention of the world[1]. In India itself it has stimulated a good deal of work offering several kinds of explanations (Pillai, 1990, Kannan, 1990, Oommen, 1991, George, 1993). In all these, questions relating to the spatial disparity in development have not been adequately analysed. Development and underdevelopment in Kerala do not exhibit any set pattern across regions. In fact interregional disparities have emerged over time not only in the matter of the state's economy as a whole but also in its various sectors. Hence a study was attempted to examine the interregional disparity in the development of the primary sector over the period 1970-71 to 1990-91 with focus on delineating homogenous regions, based on levels and disparity in development of primary sector at district level in Kerala.

Methodology

'Development' is a complex phenomena—a large number of factors, quantitative and qualitative, act and react on the process of development at different levels. Hence a composite index which takes into account varying levels of influence of large number of factors with provisions of scientific weightage given to each factor is required for analysis. Towards this end, the Principal Component method of Factor Analysis is used in the study. The Principal Components (Pi's) are a new set of artificial variables formed from a linear combination of standardised original variables (Zj's). The standard form of Principal Component (Pi) is as follows:

1. At international level, where India is ranked among the low Human Development Index (HDI) group, the index of Kerala compares well with that of the medium HDI group countries. In case of life expectancy and infant mortality rate, the achievement of Kerala is even comparable to that of the developed countries of the world.

$$Pi = \sum_{i=1}^{n} ali\ Zi$$

Where

Pi = Principal Components 1, 2, ... n

ali = Factor loadings of the variables 'i' in the first Principal Component. It is derived as average value of inter correlation between values.

Zi's = standardised value of variables X1, X2,.... Xn.

The Factor loadings are chosen so that the constructed principal components satisfy two conditions: the principal components are uncorrelated (orthogonal), and the first principal component P1 absorbs and accounts for the maximum possible proportion of the total variation in the set of all X's, the second principal component absorbs the maximum variation in the X's (after allowing for the variation accounted for by the first principal component) and so on. Though there are various standard criteria for deriving the number of principal components, in the present analysis those principal components are retained whose combined contribution on variation is greater than sixty per cent.

This technique is used for grouping regions in terms of variations in development in Agriculture and Animal Husbandry sub sectors of primary sector and to examine the typology of development in each region. Agriculture and animal husbandry sub sectors constitute 98 per cent of SDP of primary sector and 32 per cent of SDP of the economy and hence the indicators selected to represent the primary sector are mostly those belonging to these sub sectors. To identify the pattern of development a large number of indicators – thirty one, to be precise – have been selected, to represent multi dimensional aspects. The reference points of

Table 1: Profile of Primary Sector Development in Kerala

Indicators	1970-71	1980-81	1990-91
Primary Sector contribution to SDP	50.56	40.26	33.47
Contribution of agriculture activity to SDP	47.67	38.14	31.58
Work force participation in primary sector	55.97	56.20	47.24
Net area sown	56.10	56.10	57.82
Gross area sown	76.26	74.30	78.31
Percentage share of land for food grains to gross cropped area	31.59	29.18	20.54
Percentage share of paddy area to gross cropped area	20.34	27.79	19.47
Percentage share of land for non-foodgrain crops to gross cropped area	79.66	72.21	80.53
Percentage of land for Rubber to gross cropped area	24.52	22.58	29.23
Percentage of coconut to gross cropped area	10.29	13.35	17.95
Intensity of cropping (Ratio of gross cropped area to net cropped area)	1.35	1.32	1.38
Net area irrigated to gross cropped area	0.15	0.08	0.10
Gross area irrigated to gross cropped area	0.21	0.13	0.18
Percentage of area under HYV paddy to total paddy area	18.20	34.89	26.30
Fertiliser consumption (N+K+P) (in tons) to gross cropped area	19.32	33.81	69.80
Diesel and electric pumps to gross cropped area	11.94	34.29	71.07
Tractors used for agricultural purpose to gross cropped area	0.34	0.46	0.63
No. of Primary Agricultural Credit Co-operative Societies to gross cropped area	0.64	0.54	0.52
No. of Primary Marketing Co-operative societies to gross cropped area	0.034	0.034	0.045
Ratio of iron plough to wooden plough	0.09	0.20	0.28
Livestock density per 100 hect. of total cropped area	160.71	193.23	177.15
Number of poultry per 100 hect. of total cropped	416.02	513.77	651.50
Number of veterinary institutions (hospitals and dispensaries) per lakh of livestock	8.00	9.81	11.88

Note: Area in '000 hectares

Source: 1. Economic Review, 1970-71 to 1990-91, State Planning Board, Trivandrum.

2. Statistics for Planning 1979, 1977, 1982 and 1987, Directorate of Economics and Statistics, Government of Kerala (GOK), Trivandrum.

3. Livestock Census 1972, 1977, 1982, and 1987, Department of Animal Husbandry, GOK, Trivandrum.

comparison of inter district levels of development are 1970-71, 1980-81 and 1990-91.

Nature of Primary Sector Development

A notable feature of the agriculture sector in Kerala is the changing cropping pattern in favour of non-food crops. Table 1 provides a profile of primary sector (agriculture and animal husbandry) development in Kerala. It shows clearly the long term decline of the food grain producing sub sector, due to a shift in the cropping pattern in favour of cash crops like rubber. This shift is said to highlight the "logical outcome of rational behaviour of the cultivators in Kerala" (Pillai, 1994). The relatively higher price and profitability of cash crops and plantations, exemption of plantation crops from Land Reform Act, phenomenal increase in export price of many of the plantation crops and promotional activities by the Government coupled with labour intensive, seasonal cropping and comparatively high wage rate in paddy cultivation have encouraged farmers in Kerala to opt for cash crops where ever possible and to curtail the area under rice and other food grains to the minimum.

The relatively higher price and profitability of cash crops and plantations, exemption of plantation crops from Land Reform Act, increase in export price of plantation crops and promotional activities by the Government have encouraged farmers in Kerala to opt for cash crops.

A number of techno-institutional factors contribute to the changing pattern of development in agriculture sector. Among them, irrigation facilities, modern agricultural tools and implements used, pesticides and fertilisers, high yielding varieties (HYV) of seeds, Agriculture Primary Co-operatives Societies, and land reform activities play a significant role in Kerala. The trend in growth of these techno-institutional factors listed as in the table shows the strengths and weaknesses of development in the primary sector. With respect to irrigation there has been a slump during the first decade of 1970-71 to 1980-81. But during the second decade i.e., 1980-81 to 1990-91 it picked up sizably. The other technological indicators such as quantity of fertiliser used, modern agricultural tools and equipment used, and the ratio of the iron plough to wooden plough show an upward trend throughout the time. Out of the total irrigated area, more than 80 percent is under paddy and most irrigation projects are concentrated in the main paddy growing districts, viz., Palakkad, Thrissur and Ernakulam. This skewness in the distribution of irrigation facilities might have influenced the shift in the pattern of cropping from paddy to commercial crops such as rubber. But compared to other technological factors such as fertiliser and pesticides used, there is no conclusive evidence shown in respect of productivity of crops and irrigation facilities in Kerala. (George & Nair, 1982; Surendran & Krishnan, 1982). In animal husbandry development, Kerala has witnessed a positive trend throughout the period. Indicators such as livestock density, poultry density and density of veterinary institution to livestock reveal this fact. To find disparity and specific characteristics in development on a temporal basis, the following indicators have been selected for the study representing almost all dimensions of development of agriculture including intensity of farming, productivity, technological, infrastructure and institutional factors:

- Ratio of total cropped area to net area sown (RTCAN)
- Weighted average productivity of major crops (crops taken into account are paddy, black pepper, cashew nuts, coconut and rubber. Here weights given to various crops on their productivity is the gross area cultivated) (WAVPR)
- Per cent of HYV paddy area to total paddy area (HYVPDY)
- Ratio of iron plough to wooden plough (IRPL)
- No. of pump sets (diesel and electric) per 100 hectare (hect.) of total cropped area (PUMPTCA)
- No. of pump sets (diesel and electric) per 100 hect. of net area sown (PUMPNA)
- No. of power tillers per 100 hect. of total cropped area (TILTCA)
- No. of power tillers per 100 hect. of net area sown (TILNA)
- No. of tractors per 100 hect. of total cropped area (TRCTA)
- No. of tractors per 100 hect. of net area sown (TRCNA)
- Livestock Density per 100 hect. of total cropped area (LIVETCA)
- Livestock Density per 100 hect. of net area sown (LIVENA)
- No. of poultry per 100 hect. of total cropped area (POULTCA)

- No. of poultry per 100 hect. of net area sown (POULTNA)
- No. of veterinary institutions (hospitals and dispensary) per lakh of livestock (VETLIVE)
- No. of Primary Agricultural Credit Societies (PACs) per 100 hect. of total cropped area (PACTCA)
- No. of PACs per 100 hect. of net area sown (PACNA)
- Amount of loans advanced by PACs per 100 hect. of total cropped area (LNPACTCA)
- Amount of loans advanced by PACs per 100 hect. of net area sown (LNPACNA)
- Amount of agriculture produce and requisites purchased by Primary Credit Marketing Societies (PCMs) per 100 hect. of total cropped area (Rs. Lakh) (PCMPTCA)
- Amount of agriculture produce and requisites purchased by PCMs per 100 hect. of net area sown (Rs. Lakh) (PCMPNA)
- Amount of agriculture produce and requisites sold by PCMs per 100 hect. of total cropped area (Rs. Lakh) (PCMSTCA)
- Amount of agriculture produce and requisites sold by PCMs per 100 hect. of net area sown (Rs. Lakh) (PCMSNA)
- Ratio of net area sown to total area (NATA)
- Ratio of total cropped area to total area (TCATA)
- Quantity of fertilisers (N, P and K) consumption per 100 hect. of total cropped area (FRTTCA)
- Quantity of fertilisers (N, P and K) consumption per 100 hect. of net area sown (FRTNA)
- Net area irrigated to 100 hect. of total cropped area (NAIRTCA)
- Net area irrigated to 100 hect.of net area sown (NAIRNA)
- Gross area irrigated to 100 hect. of total cropped area (GAITCA)
- Gross area irrigated to 100 hect. of net area sown (GAINA)

Nature of Development & Disparity

The characteristics of primary sector development can be explained with the help of extracted Principal Components. The number of Principal Components extracted are two, two and three respectively for 1970-71, 1980-81 and 1990-91 which explains 65.7, 65.7, 67.7 per cent of variation respectively. The specific characteristics of each principal component can be identified with the help of factor loadings (Table 2).

Examination of factor 1 (F1) in 1970-71, 1980-81 and 1990-91 reveals the ascent towards irrigation development, modern equipment utilised like power tillers and tractors, pumpsets (diesel and electric), fertiliser consumption and animal husbandry. These indicators represent the impact of technological change on the development of agriculture sector in terms of technological and institutional factors. One of the important consequences of this is intensive land utilisation which is reflected in the value of factor loadings of new area sown to gross area sown and the gross area sown to the gross area of the district. This characteristic of development alone contributes 44.6 per cent, 44.5 per cent and 28.7 per cent of the total variation in primary sector development in 1970-71, 1980-81 and 1990-91 respectively.

The second Factor (F2) in 1970-71 is highly correlated to the productivity of crops and it may be the consequence of the extensive utilisation of power tillers, fertilisers, and irrigation showing intensive utilisation of land. Along with this, the high positive factor loadings of animal husbandry in terms of density of cattle stock per net area sown and gross area help to derive the view that the increase in productivity growth of major crops is in tandem with animal husbandry development. Generally, traditional cropping pattern such as food grains and animal husbandry development are positively correlated. Thus, the second factor highlights the development in agricultural sector in terms of productivity of major crops especially food crops with the help of intensive land utilisation.

Increase in productivity growth of major crops is in tandem with animal husbandry development.

In 1980-81, the second factor reveals development in animal husbandry activities analogous with the development of co-operative sector. The co-operative sector is one of the developmental factors in rural Kerala. The spatial spread of animal husbandry related activities requires the active support of primary agriculture credit societies. Thus, the second important factor which explains the variations in agricultural sector among various districts is the presence of animal husbandry activities with the institutional development of cooperative sector.

Table 2: Factor Loadings of Primary Sector

	1970-71		1980-81		1990-91		
Variables	F1	F2	F1	F2	F1	F2	F3
RTCAN	0.12	0.49	0.37	0.17	0.02	0.72	0.20
WAVPR	0.12	0.71	–0.22	0.19	–0.18	0.52	0.82
HYVPDY	0.80	0.07	–0.24	0.19	–0.40	–0.10	0.22
IRPL	0.37	0.15	–0.41	0.38	–0.37	0.25	0.73
PUMPTCA	0.08	–0.26	0.98	0.09	0.90	0.12	0.08
PUMPNA	0.12	–0.18	0.98	0.10	0.90	0.09	0.09
TILTCA	0.89	0.08	0.92	0.13	0.30	–0.04	–0.22
TILNA	0.72	0.56	0.93	0.12	0.30	0.04	–0.21
TRCTA	0.50	–0.03	0.45	–0.25	0.48	0.42	–0.38
TRCNA	0.52	0.33	0.46	–0.27	0.47	0.44	–0.37
LIVETCA	0.60	0.19	–0.05	0.86	0.01	–0.61	0.94
LIVENA	–0.01	0.95	0.20	0.64	0.00	0.16	0.91
POULTCA	0.86	0.24	0.35	0.71	0.11	0.19	0.84
POULNA	0.30	0.86	0.41	0.65	0.11	0.32	0.84
VETLIVE	0.01	0.25	0.56	–0.23	0.36	–0.11	–0.17
PACTCA	0.85	0.02	0.01	0.90	0.20	–0.58	0.31
PACNA	0.45	0.72	0.09	0.87	0.18	–0.34	0.29
LNPACTNA	0.19	–0.36	0.16	–0.02	0.27	–0.53	–0.10
LNPACNA	0.10	0.20	0.35	0.01	0.29	0.07	–0.05
PCMPATCA	–0.25	–0.34	–0.39	–0.38	–0.12	0.93	–0.18
PCMPNA	–0.28	–0.13	–0.37	–0.47	–0.15	0.91	–0.17
PCMSTCA	–0.07	–0.30	–0.21	–0.15	–0.03	0.97	–0.12
PCMSNA	–0.16	0.08	–0.12	–0.12	–0.07	0.98	–0.10
NATA	0.80	–0.24	0.02	0.31	–0.09	0.28	0.06
TCATA	0.67	0.71	0.15	0.38	–0.08	0.52	0.14
FERTCA	0.88	–0.01	–0.05	0.46	0.41	0.04	0.16
FERTNA	0.77	0.51	0.08	0.46	0.41	0.25	0.16
NAIRTCA	0.96	0.13	0.82	0.15	0.95	0.04	–0.07
NAIRNA	.079	0.52	0.82	0.15	0.93	0.14	–0.07
GAITCA	0.94	0.12	0.92	0.04	0.94	0.02	–0.05
GAITNA	0.93	0.17	0.91	0.03	0.93	0.12	–0.06

The important factor which explains the variations in agricultural sector among various districts is the presence of animal husbandry activities with the institutional development of cooperative sector.

In 1990-91 the ratio of total cropped area to total area, productivity of major crops and the amount of agriculture produce and requisites purchased by primary marketing societies to net area sown are positively correlated and the number of primary agriculture credit societies (PACs), amount of loans advanced by these PACs and development of animal husbandry are negatively correlated. This shows a development situation in which the agents of production do not depend on primary agriculture credit societies, which is unlikely in an economy having a production structure favoring traditional crops like paddy. Also, from the experience of Kerala, the profile indicates that the number of PACs is declining, while commercialisation of agriculture progresses. In Kerala, large scale cultivation is concentrated on commercial crops such as rubber, pepper etc., and, the growth of cultivation of these commercial crops very much depends on marketing facilities. While commercialisation of agriculture in Kerala has caused expansion of rubber, coffee and coconut production, the availability of fodder to sustain the cattle stock has been declining. It indicates, that commercialisation of agriculture in Kerala has a negative impact on the development of animal husbandry which is evidenced

from the negative factors loadings of the number of livestock per total cropped area and net cropped area. Thus the second factor explains the regional variation in terms of growth of commercial crops. (21.1 per cent, 21.2 per cent and 23.9 per cent respectively in 1970-71, 1980-81 and 1990-91).

An additional factor relating to 1990-91 comes third and reveals the characteristics of primary sector development in terms of changes in animal husbandry activities and productivity of major crops. This positive association between animal husbandry activities and productivity of major crops provides the inference that primary sector development is in terms of traditional or non-commercial crops. Generally, compared to commercial crops, the advancement in animal husbandry creates a favourable supporting environment of non-commercial crops such as paddy. This factor explains 15.1 per cent of total variations in agricultural development in 1990-91.

Commercialisation of agriculture in Kerala has a negative impact on the development of animal husbandry.

The foregoing analysis brings out three dominant factors of regional variation in primary sector development, such as the technological and institutional factors, animal husbandry and commercialisation of agriculture. Among these the technological and institutional factor creates the largest percentage of variation in all time points. In technological indicators, disparity is mainly due to variation in irrigation facilities, usage of modern agricultural implements such as pump sets and power tillers and fertiliser consumption. Development of traditional crops with animal husbandry, is the second dominant factor for variation in development in 1970-71 and 1980-81. In 1990-91, production of commercial crops was a factor accounting for more variation after the technological factors.

Trends in Regional Disparity in Development

The principal component analysis provides a development score of each of the factors for various regions. On the basis of the scores obtained by various districts, clustering has been done (Tables 3 & 4) by taking the values of mean and standard deviation of score values obtained. Accordingly, all districts are grouped into four categories, backward–B (values having less than mean value), medium (between mean value and mean value plus one standard deviation), developed–MD, developed–D (between mean value plus one standard deviation and mean value plus two standard deviation) and highly developed–HD (above mean plus two standard deviation).

Table 3: Factor scores and ranks in primary sector development

	1970-71			1980-81			1990-91			
District	F1	F2	Total Score	F1	F2	Total Score	F1	F2	F3	Total Score
Alleppey	2.51	0.13	2.64	–0.22	2.09	1.87	0.34	0.75	–0.41	0.98
Kannur	–1.05	–0.85	–1.90	–0.04	–0.80	–0.83	–0.49	0.11	–1.66	–2.04
Ernakulam	0.51	–0.08	–0.43	1.36	0.58	1.94	0.64	–0.49	0.22	0.38
Idukki				0.69	–0.02	–0.71	–0.39	–1.89	–0.22	–3.01
Kottayam	–0,04	–0.98	–1.02	–0.95	0.44	–0.51	0.83	–1.70	–0.22	–1.09
Kasarkode							–1.28	–0.04	0.14	–1.19
Kozhikode	–0.11	0.22	–0.07	–0.59	–1.17	–1.76	–0.62	0.68	0.24	0.30
Malappuram	–0.11	–0.71	–0.82	0.13	–0.12	0.01	0.18	0.54	0.39	1.11
Palakkad	–0.47	0.11	–0.36	0.33	–1.37	–1.05	0.74	1.13	–1.13	0.74
Pathanamthitta							–0.69	–1.14	0.78	–1.30
Kollam	0.57	–0.31	–0.89	–0.90	0.90	0.01	–0.69	0.83	0.91	1.05
Thrissur	–0.56	–0.09	–0.64	2.23	0.09	2.32	2.66	0.26	0.61	3.52
Trivandrum	–0.53	2.57	2.04	–0.67	0.62	–0.05	–0.55	0.45	2.13	2.03
Wayanad							–0.71	0.80	–1.27	–1.17
Variations explained	44.5%	21.1%	65.6%	44.5%	21.2%	65.7%	28.7%	23.9%	15.1%	67.7%

Table 4: Clustering of Districts in Primary Sector Development

	Category of Development		
District	1970-71	1980-81	1990-91
Alleppey	D	D	MD
Kannur	B	MD	B
Ernakulam	MD	D	MD
Idukki		MD	B
Kasarkode	B	MD	B
Kottayam			B
Kozhikode	B	B	MD
Malappuram	B	MD	MD
Palakkad	B	B	MD
Pathanamthitta			B
Kollam	B	MD	MD
Thrissur	B	HD	HD
Trivandrum	D	MD	HD
Wayanad			B

B–Backward, MD–Moderately developed D–Developed and HD–Highly developed

The clustering of districts reveals that majority of districts belong to the backward category in 1970-71. While in 1980-81, the number of districts in the backward group got reduced drastically with most belonging to moderate or developed category. The districts placed in the top category have shifted over time. Trivandrum and Alleppey occupied developed category in 1970-71. In 1980-81, Thrissur was placed in the highly developed category, while Alleppey and Ernakulam belonged to the developed category. Thrissur retained its top position in 1990-91 and Trivandrum was in the developed category. The variation in development can also be explained with the help of the coefficient of variation of Factor scores obtained by various districts throughout the time period. The values of coefficient of variation of Factor score are 19.3, 18.07 and 23.84 respectively for 1970-71, 1980-81 and 1990-91. Compared to 1970-71, disparity among the districts in spatial spread of primary sector development has declined in 1980-81. However, between 1980-81 and 1990-91, the disparity is extremely wide with inequality in the spatial spread of primary sector development ruling the roost.

The pattern of changes in the relative position of districts could be explained with the help of rank correlation coefficient derived from the ranks obtained over the period. The low rank correlation 0.24 between 1970-71 and 1980-81 and 0.42 between 1980-81 and 1990-91 shows two things. First, though there have been changes in the position of districts in primary sector development throughout the twenty one year period, the impact was more during the first decade of 1970-71 to 1980-81. Secondly, these changes are confined either among developed districts or between backward and moderately developed districts. This pattern is the reason behind the uninterrupted increase in the distance between the backward and highly ranked districts.

Changes are confined either among developed districts or between backward and moderately developed districts. This pattern is the reason behind the uninterrupted increase in the distance between the backward and highly ranked districts.

Conclusion

The dominant nature of the primary sector development remains almost the same throughout 1970-71 to 1990-91 with a slight shift to commercialisation of agriculture in the later periods. Disparity in development of this particular sector has not declined to any perceptible extent over this period. This analysis is a critical step in the present context of Peoples' Plan under Panchayat Raj system in Kerala undertaken with the objective of growth with reduction in disparity at regional levels. It may help planners to delineate regions of homogenous development to evolve specific strategy of development in tune with the specificity of regions.

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Feature

Impact of Non-Farm Sector on Agriculture: An Economic Analysis

K. Uma & C. Ramasamy

The study analyses the impact of gem cutting activity on the welfare of rural households. It proves the positive impact of non-farm economic activities on rural life-styles, presenting the fact that a policy framework which stimulates non-farm activity is critical for rural development.

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Excessive demographic pressure coupled with the growing inability of agriculture to accommodate the expanding labour force has created the need for absorbing surplus labour in the non-farm sector. This idea has been reflected in earlier literature on economic development, (Lewis, 1954; Ranis & Fei 1961). When industrial (capitalist) sector expands, it draws on the labour reservoir in agricultural (non-capitalist) sector. At present, benefits given to the agri sector in developing counties are not as broad based as they could be. If local reforms are instituted – providing capable small and medium sized farmers, agribusiness and rural non-farm business with essential skills, tools, infrastructure and facilitating private investment – rural people will be better equipped to improve their quality of life and will generate unprecedented contributions (IFPRI, 1998). In developing countries, where concentration of population is more in rural areas, rural non-farm sector rather than urban sector has to play a leading role in providing employment.

In developing countries where concentration of population is more in rural areas, rural non-farm sector has to play a leading role in providing employment.

Gem Industry

One such activity is gem cutting that is pursued in some parts of Tamil Nadu. Gem cutting activities were started 70 years ago in and around Thiruchiraplli and Pudukottai districts by Tamil Chettairs who returned from Burma. Brought with them was the technology for making 'Rangoon diamonds' locally called 'hard gems'. In traditional gem industry, dull pebbles are transformed into brilliant gems through facetting or cutting by wooden frames. In 1990 the in-

troduction of American diamonds faceted from synthetic crystal made of cubic zirconium changed the market trend. The increased demand for this crystal has encouraged entrepreneurs to invest in new machinery called 'Gem Park'. This new technology with motorization of pedal operated machine has reduced worker apprenticeship from eight to three years which has attracted the rural labour force in a large measure.

In Tamil Nadu, gem cutting as a cottage industry concentrated around Tiruchirapalli and Pudukottai rural areas has attracted a large flow of agricultural labour force which ultimately has caused tightening of agricultural labour market and consequent upward movement of agricultural wages. Gem cutting activity is easy to learn and within two to three years one can acquire adequate skills. Wages for gem cutting have almost doubled since mid-1990s. As a consequence, many farmers are resorting to gem cutting along with farming.

Studies have shown the positive impact of rural non-farm economic activities on household welfare. This study in line with the earlier ones attempts to discern in different dimensions the impact of gem cutting on household welfare. Specifically, it conducts a comparative analysis of household embarked on gem-cutting along with traditional dependence on agriculture, and households exclusively dependent on agriculture. Various parameters considered to measure the impact are: household income, income distribution, asset creation, consumption, indebtedness, farm investment, cropping pattern, institutional borrowing and rural labour market. The key hypotheses which will be tested in this study are:

- Households with gem cutting as one of the enterprises earn significantly higher income over households wholly dependent on agriculture.
- While gem cutting has widened the income inequality between households with and without gem cutting, equity has improved among gem cutting households.
- Added income due to gem cutting has improved food security among rural labour households.
- Gem cutting enhances farm investment and thus farm level infrastructure.
- Gem cutting has a tightening effect on rural labour market and causes upward movement of agricultural wages.

Analytical framework

Study site & sampling

Annavasal Block in Pudukottai district, Tamil Nadu, was purposively picked up for the study because gem cutting was widely undertaken as a non-farm activity in this sub-region. In order to capture the benefits accruing due to gem-cutting, both rural labour and farming households were sampled using statistical principles. The ultimate sampling units were 25 labour households with major share of income earned from gem-cutting and 25 labour households largely dependent on agriculture for their livelihood. Similar sample size of 25 each was considered for farming households with and without gem-cutting activity. These 100 hundred households were drawn from five villages randomly selected from the set of 20 villages in Annavasal Block where gem-cutting activity is predominant. The villages are Illupur, Malaikudipatty, Parambur, Vayalogam and Kothirapatty. The collected information related to the agricultural year 1995-96. General particulars were collected from secondary sources such as Panchayat Union Office, Offices of Agricultural Development Officer and Village Administrative Officer (VAO). Primary data were collected from selected respondents by personal interview method with the help of a pretested interview schedule.

Parameters of Impact Measurement

Changes in household income levels, income distribution, asset creation, consumption, and indebtedness were the parameters used for the comparative analysis of two types of labour households. For farming households 'with' and 'without' gem cutting activity, besides the above parameters, impact on farm size, land utilisation, cropping pattern, and farm investment were considered.

Lorenz Curve and Gini Ratio

For studying the distributional changes due to gem cutting, the graphical device, Lorenz curve became handy. The associated measure of Gini ratios were also computed. Choice of Lorenz curve over other measures of inequality is because it does not depend on any assumptions on distribution. The Gini ratio was computed directly from the Lorenz curve. Use of Gini ratio becomes inevitable particularly when two Lorenz curves cut each other and interpretation becomes difficult (Morgan, 1962).

Econometric Model

One of the hypotheses is that gem cutting has

tightened the labour market causing agricultural wages to rise in the gem cutting villages. In order to identify the determinants of rural labour supply and demand, a simple econometric mode of two equations (labour supply and demand) was estimated. In the study area, largely perfect market conditions existed and there were no institutional rigidities distorting market operations. There was free flow of labour across the neighbouring villages. Though wage rate is supposed to be market determined across the villages and there must exist a single rate, this did not happen as wages varied by agricultural operations, by crop and by gender. Some of the operations were executed by labourers on contract basis. Thus the wage rate was arrived at by dividing the total wage payments by farmers by respective human labour days. The supply and demand equations were linear equations and were estimated by OLS using LIMDEP Software.

Table 1: Source Wise Average Annual Income Per Household (Rs.)

Particulars	Labour households		Farm households	
	Agriculture	Gem-cutting	Non-gem cutting	Gem cutting
Crop	660 (3.71)	1280 (4.89)	67860 (73.8)	123810 (66.5)
Livestock	881 (4.95)	2054 (7.84)	13310 (14.5)	13046 (7.0)
Farm wages	14804 (83.16)	3438 (13.13)	–	–
Non-farm activity	1456 (8.18)	398 (1.52)	5133 (5.58)	–
Gem cutting activity	–	19019 (72.62)	–	39891 (21.4)
Income from hire charges	–	–	5667 (6.16)	9533 (5.13)
Total	17802 (100.00)	26191 (100.00)	91970 (100)	186280 (100)

Impact on Rural Households

The impact on rural households was studied by comparing the income, income distribution, asset creation, consumption and indebtedness of the two categories namely, the gem-cutting and agriculture dependent households. General features of the two categories of households do not show major variation between them. The proportion of earners in the family was however relatively higher with 3.16 persons in gem-cutting households as against 2.80 in agricultural rural households.

Income Distribution

Eversince agricultural and rural development programmes began to be contemplated and implemented, issues concerning growth and income distribution have been at the centre stage of development policies. Thus equity-oriented policy measures should emphasise on development of non-farm economic activities (Birthal & Singh, 1995). Gem-cutting has implications on income distribution. Hence the gross income distribution was analysed and presented through Lorenz curve (Fig. 1a and 1b). The Gini ratio was also estimated to study the concentration and distribution of income among the various segments of the agricultural and gem cutting labour and farm households. The concentration coefficient of income was measured by drawing a curve, taking the cumulative percentage of households on the horizontal axis and their corresponding share in the total income on the vertical axis. The distribution of per household gross income among different classes of households is presented in Table 2.

The Lorenz curves showed that inequality was less among gem cutting labour households than agricultural labour households. The Gini concentration ratios were worked out separately for the two classes of households

Table 2: Distribution of Labour Households Based on Gross Income Per Annum

Households	Labour households				Farm households			
	Agricultural labour		Gem cutting labour		Non-Gem cutting		Gem cutting	
	PI	CP	PI	CP	PI	CP	PI	CP
Bottom 20 per cent	9.61	9.61	12.43	12.43	8.52	8.52	11.44	11.44
Second 20 per cent	14.53	24.14	16.64	29.07	13.96	22.48	17.14	28.56
Third 20 per cent	19.26	43.40	18.39	47.46	20.10	42.58	18.79	47.35
Fourth 20 per cent	24.18	67.58	22.61	70.07	23.45	66.03	23.75	71.10
Top 20 per cent	32.42	100.00	29.93	100.00	33.97	100.00	28.90	100.00
Gini ratio	0.2403		0.1887		0.2586		0.1891	

PI - Percentage of income
CP - Cumulative percentage

and were 0.2403 for agricultural labour households and 0.1887 for gem cutting labour households, suggesting that there are more variations in the income among agricultural labour households. This may be due to fluctuations in availability of employment to this group which is more vulnerable. Rural development programmes must take care of the welfare of this poor group. Similar distribution of income is seen among farm households with less inequality among gem-cutting households. This means more stability in the income of households with non-farm activities. Farm to farm variation in resource endowments, farmers' efficiency, incidence of more risk in farm production, different mix of enterprises in a farm etc. may cause variation in the income realised by farm households.

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Consumption

The income and expenditure of sample households were divided by their respective adult consumption units to arrive at the per capita income and are shown in Table 3.

Table 3: Per Capita Income and Annual Consumption Expenditure of Sample Households

(Rupees)

Particulars	Labour households		Farm households	
	Agri-culture	Gem cutting	Non-gem cutting	Gem cutting
Per capita income	4321	6311	22323	44887
Per capita expenditure	4469	5949	10183	12721
Surplus or deficit	-148	+368	+12139	+32166
Total income	17802	26191	91970	186280
Consumption (Per household)				
Food	11619 (63.1)	15088 (61.2)	21667 (51.6)	25664 (48.6)
Non-food	6793 (36.9)	9578 (38.8)	20290 (48.4)	27152 (51.4)
Total	18412 (100)	24666 (100)	41957 (100)	52796 (100)

(Figures in parentheses indicate the percentage to total)

The difference is accounted by the fact that more children are engaged in work in gem-cutting category. This gets reflected in the lesser percentage of children from this category acquiring middle and secondary education. About 37 per cent of children in agricultural category had gone to middle and secondary schools as compared to 30 per cent in gem-cutting category. The better employment opportunities in gem-cutting households for children have encouraged these families to have more children. The average size of children is 1.84 in gem-cutting category as against 1.52 in the other category.

Income

The average household income per annum for four categories of sample households by source is presented in Table 1.

Gem cutting labour households had higher level of income (Rs. 26,191.08) than the agricultural labour households (Rs. 17,802.16). Also the major source of income in agriculturai labour households (8.16 per cent) was through farm wage earnings whereas among gem cutting labour households, 72.62 per cent of gross income was derived from gem cutting and only 13.13 per cent from farm wages, which indicated shift of agricultural labourers to gem cutting from farm activity. Further, it could be observed that gem cutting labour households were able to earn relatively better from crop activities and livestock activities than agricultural labour households, since the former had invested their surplus wages in these activities.

Gem cutting labour households were able to earn relatively better from crop activities and livestock activities than agricultural labour households, since the former had invested their surplus wages in these activities.

The overall average gross income of farm households in the gem cutting category (Rs. 1,86,280) was twice that of the farm households in the non-gem cutting category (Rs. 91,970), which was due to the ownership of more productive assets by the farmers with gem cutting activity. Studies elsewhere support this finding that non-farm activity strengthened investment in farm and the level of non-farm income did not affect the scale of farming and operational land base (Olfert, 1992). Among different sources of income, crop cultivation formed the major source in both the groups. The

second major share of income was from gem cutting activity Rs. 39,891 (21.4 per cent) in the gem cutting category and livestock activity Rs. 13,310 (14.5 per cent) in the non-gem cutting category.

Non-farm activity strengthened investment in farm and the level of non-farm income did not affect the scale of farming and operational land base.

Even when there was an increasing labour requirement on farm, the increase in income level of non-farm employment is higher than farm income (Olfert, 1992). The per capita expenditure for agricultural labour households exceeded the income by Rs. 148 whereas for gem cutting labour households, there was surplus income of Rs. 368 per adult consumption unit. Hence the agricultural labour households will be lured by the higher wages provided by gem cutting units to make up the deficit of their family budget. Of course, in farm households there was surplus family budget. But the surplus was more pronounced in gem cutting group at about Rs. 20,000 per capita.

Table 4: Break-up of Annual Consumption Expenditure Per Household and Adult Consumption Unit

Particulars	Labour households		Farm households	
	Agri-culture	Gem cutting labour	Non-gem cutting	Gem cutting
Food	11619	15088	21667	25664
Clothing and foot wear	2786	3694	5242	6819
Education	352	316	2116	3842
Fuel and lighting	149	305	806	1200
Medicines	628	305	2012	3600
Recreation	129	986	2486	2964
Social and religious functions	382	679	3110	3168
Beverage and narcotics	458	550	864	1200
Rent and house maintenance	160	635	842	943
Miscellaneous items	1749	1911	2812	3416
Total	18412	24666	41957	52796

The absolute amount spent on food items and its proportion in the total consumption expenditure was higher with Rs. 11,619 (63.11 per cent) and Rs. 15,088 (61.17 per cent) for agricultural groups than gem cutting households. This indicates better standard of living among both gem-cutting labour and farm households. As expenditure on food items formed major part of total consumption expenditure, it was studied in depth and the results are presented in Table 4. Not only on food, gem-cutting households spent more on clothing, foot wear, fuel and lighting, education and recreation as well reinforcing the fact that their quality of life is better. The percentage of income spent on food items decreased as income increased for gem cutting labour households which was in line with Engel's law. Both the gem cutting groups consumed more nutritive food such as milk, meat and egg as per Table 5.

Table 5: Expenditure on Food Items for Labour and Farm Household

(Rupees/households)

Particulars	Labour households		Farm households	
	Non gem cutting	Gem cutting	Non gem cutting	Gem cutting
Cereals	6146 (52.9)	7070 (46.9)	7618 (35.2)	7816 (30.5)
Pulses	225 (1.9)	485 (3.2)	816 (3.8)	1218 (4.8)
Vegetables	1412 (12.2)	1753 (11.6)	2812 (12.9)	3468 (13.5)
Spices and condiments	1380 (11.9)	1776 (11.8)	2622 (12.9)	3112 (12.1)
Milk and milk products	707 (6.1)	1361 (8.7)	3206 (14.8)	3916 (15.3)
Meat and egg	539 (4.6)	1161 (7.7)	2181 (10.1)	2918 (11.4)
Sugar	211 (1.8)	278 (1.8)	496 (2.3)	584 (2.3)
Edible oils	1000 (8.6)	1249 (8.3)	1916 (8.8)	2612 (10.2)
Total	11619 (100)	15088 (100)	21667 (100)	25644 (100)

(Figures in parentheses indicate the percentage to total)

Farm Size & Utilisation

The size of land holding, land utilisation pattern by farm households of two categories are shown in Table 6. The average land holding in the gem cutting category, was 5.47 ha of which 2.39 ha (43.7 per cent) was wetland, 1.40 ha (25.6 per cent) gardenland, 1.68 ha (30.7 per cent) dryland, whereas for the non-gem cutting category, the average land holding was 3.98 ha comprising 1.33 ha (33.4 per cent) 0.97 ha (24.4 per cent) and 1.68 ha (42.2 per cent) of wetland, gardenland and dryland, respectively. The farmers with gem cutting activity had higher proportion of wetland and gardenland than those without gem cutting. This might be due to

the fact that gem cutting farmers had invested a portion of their profit from gem cutting business, in purchasing the wetland and in improving the irrigation facility in drylands. Farmers without gem cutting activity had to depend on their farm earnings only, which might have been inadequate to improve either their drylands or purchase wetlands.

Table 6: Size of Land Holdings and Utilisation by Farm Household

(ha.)

Particulars	Gem cutting	Non-gem cutting
Size of land holding		
Wetland	2.39 (43.7)	1.33 (33.4)
Gardenland	1.40 (25.6)	0.97 (24.4)
Dryland	1.68 (30.7)	1.68 (42.2)
Total	5.47 (100)	3.98 (100)
Average land utilisation		
Uncultivable waste	0.29 (5.3)	0.50 (12.6)
Net Cultivated area	5.18 (94.7)	3.48 (87.4)
Gross cropped area	5.47 (100)	3.48 (100)
Cropping intensity	111.6	100.0

(Figures in parentheses indicate the percentage to total)

The pattern of average land utilization by farmers implied that 94.7 per cent of landholdings was under cultivation in gem cutting category while it was 87.4 per cent in non-gem cutting group. The cropping intensity for respective categories were 111.6 per cent and 100.0 per cent. This indicated that the land was better utilized in the gem cutting households due to their larger investment capability.

Asset Position

Asset Value of Labour Households

The asset value of labour households is presented in Table 7. The asset of the labour households comprised mainly of dwelling house, livestock and others which included ornaments, bank/post office balances and cash in hand. The value of assets per household was Rs. 14,141 and Rs. 27,919, respectively for agricultural and gem cutting labour households.

Even though the ratio of value of dwelling houses to the total asset was less for gem cutting labour households than that of agricultural labour households, the absolute value was larger for the former. Gem cutting labour households maintained more livestock than the agricultural labour households since they invested their higher wage earning in livestock to stabilise their future flow of income. The proportion of other assets of gem cutting labour households was twice that of agricultural labour households indicating that the former had higher and regular wage earnings compared to the latter.

Table 7: Asset Value of Labour Households

(Rupees/household)

Assets	Agricultural labour	Gem cutting labour
Dwelling house	9960 (70.43)	13440 (48.14)
Livestock	1631 (11.53)	4629 (16.58)
Others	2551 (18.04)	9850 (35.28)
Total	14141 (100.0)	27919 (100.0)

(Figures in parentheses indicate the percentage to total)

Asset Position of Farm Households

The asset position of farm households excluding the land asset is furnished in Table 8. Wells and irrigation structures constituted more than 50 per cent of total assets in both categories. Livestock rearing was less preferred which might be due to difficulty in managing livestock in summer months. Compared to tools and implements, farmers had invested more on machinery which further reinforced the non-availability of agricultural labour during peak crop growing season.

Total 8: Asset Position of Farm Households

(Rupees/household)

Assets	Gem cutting farm households	Non-gem cutting farm households
Buildings and other structures	61750 (17.1)	38860 (16.4)
Wells	170000 (47.2)	127000 (53.5)
Irrigation structures	26400 (7.3)	17360 (7.3)
Livestock	25223 (7.0)	16725 (7.1)
Machinery	64335 (17.9)	26670 (11.2)
Tools and implements	12560 (3.5)	10700 (4.5)
Total	360270 (100)	237315 (100)

(Figures in parentheses indicate the percentage to total)

Cropping Pattern

The nature of crops grown shows the degree of commercialisation of farms. The nature of cropping pattern followed by the two groups of farmers is presented in Table 9. Paddy, millets, groundnut, sugarcane and cotton were the major crops grown by the farmers. The proportion of the area under paddy in the gem cutting category was less than non-gem cutting category due to the non-availability of agricultural labourers during peak seasons like planting, weeding and harvesting. Hence the farmers had switched over to cultivation of cotton and sugarcane.

Table 9: Cropping Pattern Followed by Farmers

Crop	Gem cutting category	Non-gem cutting category
Paddy	24.50 (30.0)	20.85 (40.5)
Cholam	6.48 (7.9)	3.44 (6.7)
Ragi	4.15 (5.1)	5.87 (11.4)
Groundnut	3.24 (3.9)	13.16 (25.6)
Sugarcane	7.49 (9.2)	2.43 (4.7)
Cotton	13.76 (16.9)	3.85 (7.5)
Chillies	1.01 (1.2)	0.40 (0.7)
Tapioca	2.35 (2.9)	0.00 (0.0)
Perennial crops	18.67 (22.9)	1.51 (2.9)
Total	81.65 (100)	51.51 (100)

(Figures in parentheses indicate the percentage to total)

Further, the proportion of area under perennial crops in the farms of gem cutting category (22.9 per cent) was also more than non-category (2.9 per cent) clearly showing that farm households preferred the perennial crops as they required less labour and less attention. Investing on perennial crops requires more capital which only the gem-cutting group can afford.

Transformation in cropping pattern towards commercialisation is expected to have a positive effect on employment in rural transport, storage and communication (Unni, 1991). Thus, the contribution of non-farm income is significant in modernising and servicing agriculture. Also the anticipation of further labour scarcity in future might have prompted the farmers to slowly replace the annual crops with perennial crops.

Transformation in cropping pattern towards commercialisation is expected to have a positive effect on employment in rural transport, storage and communication.

Farm Investment

The details of investment made by farm households during 1994-95 and 1995-96 revealed that investment was on mechanization of farm activities, land and irrigation improvements which are critical to increase farm income (Table 10). Whereas in non-gem cutting category, the major share of investment was on wells and irrigation structure (43.2 per cent) followed by machinery and implements (31.9 per cent) and livestock with emphasis on employment generation.

Table 10: Investment Made by Farm Household

(Rupees)

Particulars	Gem cutting category	Non-gem cutting category
Land and its improvement	2435 (7.3)	912 (4.5)
Well and irrigation structure	11210 (33.5)	8725 (43.2)
Machinery and other implements	18470 (55.2)	6445 (31.9)
Livestock	1346 (4.0)	4100 (20.3)
Total	33461 (100)	20182 (100)

(Figures in parentheses indicate the percentage to total)

* – Indicate the income from gem cutting only)

Indebtedness

The indebtedness of labour households is given in Table 11. 76 per cent of gem cutting labour households were not indebted whereas only 20 per cent of agricultural labour households had no debts. The percentage of agricultural labour households indebted below Rs. 2,000 was 16 per cent, 32 per cent of households were indebted to the extent of Rs. 2001 and Rs. 5000 and another 32 per cent indebted to the extent of Rs. 2001 and Rs. 5000 and another 32 per cent indebted to the level of above Rs. 5000. On the other hand, the indebtedness among gem cutting labour households in each of above mentioned range was respectively 4,12 and 8 per cent only.

Table 11: Indebtedness of Labour Households

Debt range (Rupees)	Agricultural labour	Gem cutting labour
No debt	5 (20)	19 (76)
2000	4 (16)	1 (4)
2001-5000	8 (32)	3 (12)
Above 5000	8 (32)	2 (8)
Total	25 (100)	25 (100)

(Figures in parentheses indicate the percentage to total)

Farm Credit

The source-wise details of credit availed by farmers is given in Table 12. Among the different sources of credit, nationalised banks formed the major share in both the groups. In the non-gem cutting category, nationalised banks were supported by co-operative banks and private money lenders. No credit was obtained from private money lenders by the gem cutting group. Nationalised banks are concerned about the security of their loan advanced; hence they have lent more to the gem cutting group whereas co-operatives and private money lenders continue to be the important sources of credit for non-gem cutting group.

The farmers of gem cutting group had borrowed to invest in machinery followed by well and irrigation structure improvement, while non-gem cutting category used the credit on well and irrigation improvement, followed by mechanization of farm operations and livestock rearing.

Farm Wages

The agricultural labour wages for different operations varied depending upon the nature of work, seasonal availability of labour, opportunity for non-farm employment and working hours. For meaningful comparison, the wages paid in cash and kind based on hours of work and contract work were converted to rupees per eight hours of work a day (Table 13). In general, work labourers preferred contract work as they realised more wages than per day basis. The higher wages in the study region as compared to other neighbouring regions confirms the strong bargaining power of agricultural labourers and opportunities for non-farm employment in the study region.

Labour Market

The factors influencing the demand for and supply of labour to farm activity was studied using econometric equations.

Demand Function

A labour demand equation was estimated by identifying the relevant variables and results of estimated equation are furnished in Table 14. The R^2 was high enough showing the significance of the estimated equation. The signs of regression coefficients of farm size, family labour and cropping intensity were in conformity with a priori expectations. Agricultural wage rate and tractor ownership coefficients were expected to have negative influence on demand for labour, but the regression results showed positive signs. However they did not significantly influence the demand for labour.

Farm size had positive influence on demand for

Table 12: Sourcewise Details of Credit Availed by Farm Household

(Rupees/household)

Purpose	Gem cutting group				Non-gem cutting group			
	Co-op. Society	Com. Bank	Private Lenders	Total	Co-op. Society	Com. Bank	Private lenders	Total
Crop loan	575	–	–	575 (2.8)	2142	–	1265	3407 (9.1)
Well deepening	–	6875	–	6875 (33.1)	6933	9255	4875	21063 (55.9)
Purchase of machinery	–	13333	–	13333 (64.2)	–	7489	–	7489 (19.9)
Livestock	–	–	–	–	–	4260	1397	5657 (15.0)
Total	575 (2.8)	20208 (97.2)	–	20783 (100)	9075 (24.1)	21004 (55.8)	7537 (20.0)	37616 (100)

(Figures in parentheses indicate the percentage to total)

labour at one per cent probability level and the estimated regression coefficient (78.25) indicated that increase in farm size by one hectare increased demand for labour by 78.25 mandays per year. Likewise, cropping intensity significantly increased demand for agricultural labour at one per cent probability level and the regression coefficient (0.0943) indicated that one per cent increase in cropping intensity increased the demand for agricultural labour by 9.43 man days per farm per year.

Table 13: Mean Agricultural Labour Wages for Different Farm Operations and Machinery Use Charges

(Rupees/day)

Operation	Study region		Other regions*	
	Men	Women	Men	Women
Manual work like earthing up	68.00	–	60.00	–
Planting and weeding	–	44.00	–	30.40
Cotton picking/ groundnut sowing	–	36.00	–	28.00
Pulling out paddy seedlings	–	40.00	–	32.00
Paddy harvesting and thrashing	100.00	72.00	88.00	64.00
Sugarcane harvesting transporting and loading	120.00	–	96.00	–
Bullock Charges	120.00	–	104.00	–
Tractor hire charges/hr	150.00	–	150.00	–
Tractor hire charges with cagewheel/hr	250.00	–	250.00	–

*Neighbouring villages (Non-gem cutting)

Table 14: OLS Estimates of Labour Demand Function

Variable	b	SE (b)	't' ratio	Significance level
Farm size (ha)	78.25	0.1216	6.44	**
Wage rate (Rs./manday)	0.2005	0.1253	1.60	–
Family labour (manday)	–0.0037	0.0045	–0.82	–
Ownership of tractor (Dummy)	4.0601	2.0900	1.94	*
Cropping intensity (per cent)	0.0943	0.0185	5.10	**
Constant	12.269	5.001	2.45	*

R^2 = 0.86 R^2 = 0.83

F (5, 24) = 29.43** N = 25

** – P <0.01 (two tailed test)

* – P <0.05 (two tailed test)

Supply Function

The supply equation for agricultural labour as hypothesised was estimated and the results are presented in Table 15. The estimated equation showed that 81 per cent variation in agricultural labour supply was explained by the variables included in the functional analysis and regression as a whole was significant at one per cent probability level. The signs of regression coefficients of number of agricultural labourer per household and number of gem cutting labourer per household were in confirmation with a priori expectations. The number of agricultural labourers significantly increased the supply of labour at one per cent probability level and its increase by one unit increased the per family agricultural labour supply by 132.03 manday per annum.

Table 15: OLS Estimates for Labour Supply Function

Variable	b	SE (b)	't' ratio	Significance level
Workers (no./household)	132.03	18.63	7.09	**
Wage rate in agriculture (Rs./manday)	–2.1802	0.6325	–3.45	**
Gem cutting labour (no./household)	–26.581	16.33	–1.63	–
Livestock (Dummy)	–4.0601	2.090	–1.94	*
Constant	58.082	37.14	1.56	–

R^2 = 0.81 R^2 = 0.77 F (4, 20) = 21.26** N = 25

** –P < 0.01 (two tailed test) * –P < 0.05 (two tailed test)

The number of gem cutting labourers did not significantly influence the supply of labour. Increase in agricultural wage rate was expected to have positive influence on supply of labour but the estimated regression coefficient was –2.1802 and significant at one per cent probability level. The reason could be that agricultural labourers might move alternatively between agricultural and gem cutting activity. Moreover in the peak season of agricultural production activities, agricultural labour wages might not be attractive enough to divert the labourers from gem cutting activity to agricultural activity. Against the expectation of negative influence of ownership of livestock on agricultural labour supply, the estimated regressor was 61.265 and significant at five per cent probability level. The composition of livestock maintained may either decrease the supply of labour if more milch animals were maintained or increase if more draught animals were maintained. In the present case, 60 per cent of livestock owners maintain draught animals and hence it might increase the labour supply.

Policy Implications

Gem cutting labourers enjoyed a higher standard of living compared to non-gem cutting labourers with regard to farm households—average size of holdings, irrigated area, net cultivated area, cropping intensity and crop diversification were high in gem cutting category of households. The farmers supplemented their savings from gross income with credit borrowings and invested on irrigation improvement.

The per farm demand for labour significantly increased with farm size and cropping intensity. Increase in number of workers per household increased the supply of labour significantly by 132.03 mandays per annum. Increase in agricultural labour wage showed significant decrease in labour supply instead of increase, due to the fact that in peak agricultural season, the wage was not attractive as compared to gem cutting wage. Likewise, inspite of negative influence of rearing livestock on labour supply, the study showed positive influence due to more number of draught animals that were used along with labour to augment the household income.

Gem-cutting as a non-farm activity adds significantly to rural household welfare. Farm households with gem-cutting as an enterprise are at an advantageous position. So also the labour households when they get employment in gem cutting activity. Equity in income distribution improves among households with gem- cutting income as a major component because among farm households without gem-cutting, the resource endowments, economic efficiency and risk incidence vary considerably resulting in more variability in income. The higher income of gem-cutting category improves the consumption expenditure of those households leading to better quality of life.

Generally, farm households with gem-cutting component expanded their land holdings, used more of institutional credit and increased the rate of capital formation at farm level. Also their agriculture become more commercial. Agricultural wages were higher in gem-cutting villages and the wages were largely determined by interaction of demand and supply.

Gem-cutting as a non-farm activity adds significantly to rural household welfare.

The foregoing conclusions provide strong evidence that a policy framework which stimulates rural non-farm activity is critical for accelerating rural development. The network of rural development agencies must aim at identifying potential rural non-farm enterprises and promote them. Simultaneous development of market to sell the non-farm goods and services is a pre-condition for development of rural non-farm activities.

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Feature

Energy Use in Agriculture: Exploring Prospects for Renewables

Rakesh Kumar Agrawal, Mansoor Ali & Jag Pal Singh

Energy input in agriculture is a vital parameter for increasing agricultural productivity. Due to the threats associated with non-renewable sources of energy, renewable energy sources offer a huge potential for countries like India. However, inspite of their vast potential, their practical use presents a number of formidable obstacles, restricting their adoption on a mass scale. In this paper, the authors review the trends in agricultural energy consumption, the technology adoption process, the potential for renewables, and suggest the examination of the concept of operational efficiency. This may give insight to frame policies and reorient research, development and deployment efforts of renewable energy technology for wider acceptability and appropriate adoption, thus improving agricultural productivity.

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In a total land area of 328 Mha of India, an estimated 142.4 Mha is cultivated, out of which 33.3 per cent is irrigated and the remainder is rainfed. Although the share of agriculture in India's gross domestic product has been declining, about 70 per cent of the population still depend on agriculture. Productivity of rainfed areas is very low compared to irrigated areas, the contribution of rainfed areas to overall production being only about 44.4 per cent of total farm output. Dry land areas mainly use bullock power for cultivation whereas use of tractors is increasing in irrigated areas. Agricultural performance is affected by factors such as weather conditions, energy input in the form of seeds and fertilizers, labour etc., irrigation facilities, pricing policies, organized marketing and credit supplies. One of the biggest challenges the sector faces is to meet the growing demand for food grains. With further availability of agricultural land limited, this would require that the productivity of land and labour increase substantially, implying both higher energy inputs and a better management of food production and distribution systems.

Energy Consumption in Agriculture

Being basically an energy conversion process, agricultural production system involves the conversion of the most abundant solar energy into food energy/ biomass through photosynthesis. An effective conversion process would require a variety of energy inputs, viz., in the form of physical operations (tilling, sowing and others), chemical inputs (fertilizers, pesticides) and as biochemical inputs (seeds).

Being basically an energy conversion process, agricultural production system involves the conversion of solar energy into food energy/biomass.

Table 1: All India Energy Input ($\times 10^{15}$J) in Crop Production Process during 1951-95

Resource	Year					
	1951	1961	1971	1981	1991	1995
Human	26.4	30.4	32.0	31.4	29.5	31.3
Draught Animals	53.3	60.1	81.0	79.6	80.0	76.0
Equipment/Prime Movers Manufacturing						
Hand tools	4.7	5.4	5.9	5.9	5.8	5.8
Animal drawn Implements	10.7	11.1	12.0	12.0	12.3	12.7
Tractor drawn eqiupment	–	0.1	1.2	5.2	9.9	10.1
Electric motors, diesel engines, pumpsets and threshers	0.2	0.6	4.7	11.4	20.1	24.4
Tractors and power tillers	0.1	0.2	1.1	4.2	9.0	12.1
Mechanical/Electrical Energy						
Tractors	–	0.5	3.5	14.2	30.4	46.3
Power tillers	–	–	–	0.1	0.1	0.1
Diesel pumpsets	0.5	1.4	8.9	19.6	25.9	37.3
Electrical pumpsets	0.3	1.7	15.6	49.5	96.6	126.4
Fertilizer Energy (Chiefly N)	6.4	24.7	93.3	234.2	533.5	625.9
Seed	139.5	183.1	204.3	213.7	254.6	281.4
Agro-chemicals	–	0.2	2.9	7.9	10.9	12.0
Total Energy Use	242.1	319.5	466.4	688.9	1118.8	1301.8
Commercial Energy Use	8.1	13.2	31.1	52.3	67.1	69.8
Gross Cropped Area, Mha	131.9	152.8	167.4	177.1	172.9	184.5
Foodgrains Production, Mt	50.8	82.0	108.4	129.6	177.5	190.0
Energy Use per Hectare, MJ/ha	1835.5	2091.0	2786.1	3889.9	6470.8	7055.8
Energy Use per ton, MJ/t	4765.7	3896.3	4302.6	5315.6	6303.1	6851.6

Source: Singh (1997)

Traditional energy sources largely refer to the use of biomass fuels essentially for cooking and space heating types of applications. Their use is characterized by very low efficiency of conversion to useful energy. The new RES (renewable energy sources) are harnessed through technologies that have been developed more recently and are serious substitutes to conventional energy resources, especially fossil fuels. 40 per cent of India's total energy is still from traditional fuels. Studies have shown that farms with more advanced technology tend to use more energy per unit of cropped area and have higher yields (Singh & Chancellor, 1975). Use of alternate energy sources has to be emphasised for sustaining higher productivity of the land achieved during 1961-81 especially in Punjab and Haryana. (Bohra et al., 1984). Singh (1997) has compiled and analysed the available information on energy use in Indian agriculture for the period 1951-1995. The result is presented in Table 1 and Figs. 1 & 2.

Conventional labour and bullock drawn implements were predominant before 1951 and irrigation was also done mainly with indigenous devices like the Persian Wheel. Many agricultural operations like weeding, harvesting, etc. were done manually. Only about 10,000 tractors were available and most of them were used on government farms. Inorganic plant nutrients and pesticides were also not used much. Over the years the number of bullocks has more or less remained stagnant (79 M in 1951, 80 M in 1981 & 1991) and has even declined in 1995 (73 M). The number of tractors and agricultural machinery increased rapidly during the seventies. Import of tractors was stopped by 1981 and by 1995, tractor production increased to 190000 per year, with their total number in the country exceeding 1.7 M. The number of energized pumpsets grew slowly during 1951-61. Between 1961-71, there was about a seven-fold increase in their number along with the introduction of HYV of seeds and increased use of fertilizers and irrigation. With the expansion of rural electrification during 1971-81 and due to their convenience, low operational cost and high reliability, the number of electrical pumpsets increased at a much higher rate than diesel pumpsets. Use of inorganic plant nutrients increased about four times during the green revolution period. The use of farmyard manure has more or less

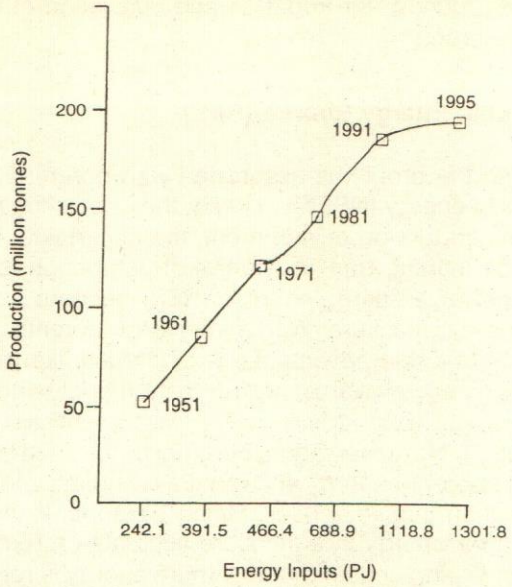

Fig. 1. Relationship between energy inputs and foodgrains production in Indian agriculture during 1951-95
Source: Singh (1997)

remained stagnant. Consumption of agro-chemicals was negligible in 1951. However, during 1961-71, there was more than 10-fold increase in their use. In 1995 their consumption was 542g of active ingredient per hectare of crop land.

From Table 1, it is seen that total energy input has gone up from 242PJ in 1951 to 1302PJ in 1995, which is about 5.4 times, a compound growth rate of 3.8 per cent per annum. However, total production for the same years as depicted in Fig. 1 has increased by about 3.7 times only, a compound growth rate of 2.9 per cent. Energy use per hectare has gone up by 3.8 times (3.0 per cent per annum) whereas foodgrain productivity has gone up by 2.6 times (21 per cent per annum). During this period, the contribution of human and animal energy has increased slowly from 1951 to 1971 mainly due to increase in gross cropped area. With small changes in gross cropped area since 1971, their use has remained stagnant or even declined, possibly due to increased mechanization. Fig. 2. shows the percentage contribution of each energy source over the period. The percentage of commercial energy in agriculture increased rapidly from 8 per cent in 1951 to 69.8 per cent in 1995, with a major shift in during 1971-81 when its share increased by about 22.3 per cent.

Electricity consumption

Apart from the above analysis, Narayanamoorthy (1999) has studied the changing scenario of electricity consumption in Indian agriculture. According to his

Source: Singh (1997)

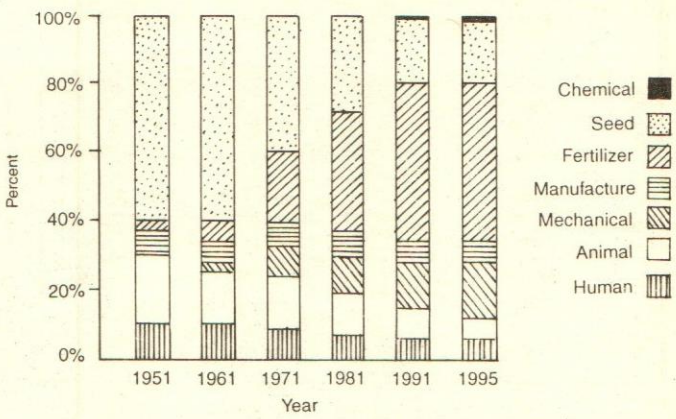

Fig. 2. Per cent contribution of different energy inputs in Indian agriculture during 1951-95.
Source: Singh (1997)

study, the growth rate of electricity consumption in agriculture is higher than the growth rate of the same in other major sectors, namely, industry and domestic. Also the rate of increase in electricity consumption is much higher than the rate of increase in area under groundwater and electrical pump-sets. Fig. 3 shows the consumption of electricity by sectors for India and Table 2 shows the growth rates of electricity use by sectors for India for the different periods.

Table 2: Growth Rate of Electricity Use by Sectors: All India

Sector	1960-61 to 1970-71	1970-71 to 1980-81	1980-81 to 1992-93	1960-61 to 1992-93
Industry	11.66	5.77	5.39	6.54
Agriculture	19.04	12.98	14.10	14.15
Domestic	9.52	9.72	13.06	10.56
Others	11.74	6.81	8.34	8.09

* Values are significant at one per cent level
Source: Narayanamoorthy (1999)

Consumption of electricity in agricultural sector has increased from a mere six per cent in 1960-61 to about 30 per cent in 1992-93. Though use of electricity in agricultural sector has increased substantially at the national level, It may not be the same across different states as the factors which influence the use of electricity widely vary across India. Therefore, one resorts to comparison between percentage change for different states to understand the state-wise growth of electricity. Table 3 shows substantial increase in growth of electricity use in agriculture for all major states for the period 1965-66 to 1992-93. Again, the rate of increase in agricultural sector is much higher than the rate of increase in the total consumption of electricity (combined use of all sectors) in all the states like Andhra Pradesh,

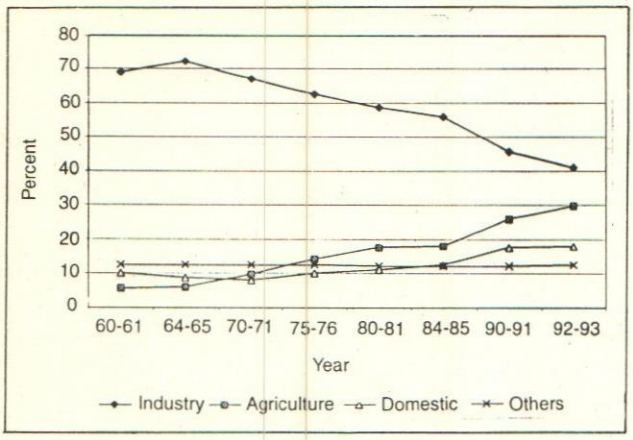

Fig. 3. Consumption of Electricity by Sectors: India
Source: Narayanamoorthy (1999)

Table 3: State-wise Growth Rates of Electricity Consumption: 1980-81 to 1992-93

State	Growth Rate		Change in Pumpsets ('000)		
	Agri-culture	Total	1980-81	1992-93	Ratio (4/3)
Andhra Pradesh	20.42	11.15	472	1409	2.98
Bihar	12.56	5.99	160	262	1.64
Gujarat	18.71	8.97	231	520	2.25
Haryana	11.92	9.37	218	399	1.83
Karnataka	28.53	8.07	311	886	2.84
Kerala	9.76	6.73	90	271	3.01
Madhya Pradesh	20.84	10.74	315	1008	3.19
Maharashtra	14.49	8.34	658	1777	2.70
Orissa	14.39	6.68	17	62	3.63
Punjab	11.84	9.65	291	649	2.23
Rajasthan	9.98	11.53	205	445	2.17
Tamil Nadu	6.64	7.69	912	1412	1.55
Uttar Pradesh	10.99	9.22	399	704	1.77
West Bengal	21.73	4.49	29	96	3.31
All India	14.13	8.77	4334	9952	2.29

Note: All the values are significant at one per cent level
Source: Narayanamoorthy (1999)

Bihar, Gujarat, Karnataka and Maharashtra. The increasing rate of electricity consumption is also much higher than the average arrived at the national level. Surprisingly, the increasing rate is below the national level in states like Uttar Pradesh, Tamil Nadu, Punjab and Haryana. This is because of the reason that these states had consumed a considerable portion of electricity even in 1965-66 as they had higher proportion of electrical pumpsets. In the case of other states, use of electricity increased only in recent years due to recent development of groundwater irrigation and cultivation of water intensive crops.

Renewable Energy Source (RES)

With the problems associated with non-renewable sources of energy (NRES) – chiefly, their depleting reserves, their impact on environment, the uncertainty in the global oil market, transmission and distribution losses, etc., renewable energy sources (RES) become vital for sectors like agriculture. With a very large potential, they offer considerable advantages to countries like India – they are locally available, environment friendly, modular in nature and may require only local transmission and distribution. Moreover, agriculture does not need a continuous supply of energy and requires systems and units smaller than industrial uses. Being seasonal in nature, demand for energy in agriculture fluctuates throughout the year. During certain months, more energy is required to complete crucial operations of sowing, transplantation, harvesting, threshing, etc., in time.

With the problems associated with non-renewable sources – chiefly, their depleting reserves, impact on environment, uncertainty in global oil market, transmission and distribution losses, etc., RES become vital.

A general overview of the potential, uses and problems of RES is given in Table 4. Selection of energy source is normally based on a number of factors including environmental, social, technical and economic factors. Environmental conditions may reduce the feasibility of certain RES; for example, the mean wind speed may be less than that required for proper operation. The social and psychological climate may be averse to systematic adoption due to conventional mind sets. Apart from costs, the available skills and infrastructure may not be adequate to cope with technical requirements of maintenance at the local level.

Yet the abundant solar and wind potentials can be harnessed successfully for different agricultural operations. Biogas and small hydropower are other potential alternatives. Photovoltaic systems of 300 W - 3KW are suitable for shallow and deep level pumps for micro-irrigation purposes. As an illustration, Matthew *et al.*, (1993) analyzed the potential of wind energy for irrigation through water lifting in Kerala. They identified Palakkadu, Alappuzha and Kozhikode as best suited for wind pump installation (mean monthly wind speeds greater

than 8kmph for 10-12 months). In some districts, the wind is seasonal. In general, the wind velocity is high during December to April. This matched the peak irrigation requirement periods of the state. They have also noted that although some wind pumps have been installed by research agencies, most are not in working condition due to siting failures and lack of maintenance.

Table 4: Potential, Uses and Problems of some RES in India

Sources/ System	Approx. Potential	Uses	Problems
Solar energy (MW/km^2)	20*	Water and space heating, desalination, drying, refrigeration, power generation, distillation, photavoltaic systems	High capital costs, intermittent supply, storage costly and inefficient, lack of awareness, defective designs, improper implementation
Wind energy (MW)	20000*	Water pumping, milling, grinding, threshing, power generation, small industry	Costs, location specific, design implementation, etc.
Biogas (MW)	17000*	Cooking, power generation,	Financial constraints, high
Biogas plants (in millions)	12*	heating, lighting, small industry (pottery, brick making, smithy)	capital investment, collection and organizational needs, lack of follow up by agencies, deficient database, collection logistics
Small hydro power (MW)	10000*	Power generation for cooking, heating, irrigation, lighting, etc., checks deforestation	Dam requirements, distribution
Ocean Thermal Energy (MW)	50000*	Power generation	High capital costs
Tidal power (MW)	9000@	Power generation	High capital costs
Wave Energy (MW)	6000+	Power generation, integrated aspects	High costs, site constraints

Sources: Tata Energy Research Institute, *Teddy (1997/98), p. 111; @ Bakshi (1997); +Raju & Ravindran (1997)

Technology Adoption Process

A general outlook of the factors that hinder technology adoption process takes into consideration Near-term technologies, Medium-term technologies, and Long-term technologies. These are lucidly dealt in Cassedy & Grossman (1990). A brief outline is as follows:

Near-term technologies: These refer to technologies that are in commercialization phase, are technically feasible and demonstrations operated successfully.

Cost barrier to adoption: The ability of a new energy technology depends first on cost effectiveness. Because it will substitute for a conventional source, it must be comparable or superior in terms of costs before it can have wide success in the market. Although the near-term alternatives approach cost competitiveness, they may fall just short. For example, an increase in the price of oil might suddenly make enhanced oil recovery technology economically viable. Alternatively the government might step in and offer incentives for certain technologies that will make an alternative cost effective. Also the consumer may face problems in assessing the relative costs of technologies. The cost of an alternative (or of conversation) may be an added capital cost, whereas savings may be in terms of factors costs, particularly fuel. It may be difficult, however to persuade an individual to spend a large amount now, to save small increments over time, especially when the savings are not entirely apparent because the future prices of factors are unclear.

The Social Process of Adoption: When tracked in time, the innovation process typically follows the S-shaped pattern. An S-curve for the innovation process would show the cumulative number of adoptions of a new technology versus time. In the beginning phase, the increase in adoptions would be exponential, whereas the rate at a given point in time would be proportional to the number of adoptions at that point. In each phase of this time pattern of innovation, individual adopters have certain characteristics. In the earliest phases, the adopters tend to be risk takers who are eager to be seen as trend setters. Early adopters are in general of a social class and possessing particular personal characteristics. After the early adopters, come the early followers. These people are innovative, but not willing to take the initial risk on an unknown technology. They may be influenced merely by the fact that their more innovative neighbours have already purchased solar systems, but they would not necessarily wait to see what that neighbour's experience would be. As the process continues, we encounter the late followers. Here, we are definitely out of the exponentially rising part of the S-curve of adoption. If we were to move into the future to even later adoption, we would begin to move into the saturation range of the curve.

Repairs, guarantees, and ratings are institutional barriers to adoption: In other words, because no organisations preexist in society to facilitate the use of the technology, they have to be established before widespread adoption is likely to take place. Not only must repair businesses and a credible system of perfor-

mance testing and rating be set (by government or industry), there must also be some institutional system (public or private) to provide consumer protection to identify and end dishonest business practices.

Repairs, guarantees, and ratings are institutional barriers to adoption. Not only must repair businesses and a credible system of performance testing and rating be set, there must also be some institutional system to provide consumer protection.

Medium Term Technologies: Medium-term technologies are those that are scientifically feasible but still a long time away from widespread adoption. None have been developed to a point where commercialization is possible. At present, working models can be used for limited applications and for the most part are simple prototypes. Production or application (or both) of these working models are not economically viable.

But medium-term technologies have the potential to substitute on a vast scale for the conventional fuels. Some, like synfuels and alternative fossil fuels, would provide direct substitutes for petroleum and natural gas. That is, the physical and chemical properties of the substitutes would be indistinguishable from the conventional fuels. There would be no need for new capital equipment in order to distribute and use these fuels, and they would be sold in the same markets as the fuels they replaced. Solar and wind technologies, on the other hand, offer what might be termed as indirect substitute. They would generate heat or electric power through the conversion of sunlight and, to a greater or lesser extent, supplant the markets for conventional fuels; in this case, however, new capital equipment will be required. Solar technologies in the medium term would provide vast amounts of heat and add significantly to electricity generation. They offer the possibility of tapping a superabundant, inexhaustible energy source.

Feasibility of mass production: For wide propagation, any technology must be capable of cost effective mass production.

Technological breakthroughs: There is uncertainty in the most straightforward technology development programs – if not for the ultimate success of the final designs, at least for the amount of time it will take for the program to succeed. When some sort of breakthrough is required, the uncertainties are magnified and the time frame made increasingly uncertain.

Photovoltaics: The direct conversion of sunlight into electricity represents a technology where break-throughs have been needed, and throughout the 1970s and into the 1980s they seemed near but never really occurred. Photovoltaic (PV) conversion is a working technology and has had certain limited current applications, for example, in powering space satellites. But its promise has always been greater; some have envisioned large array of solar conversion cells powering industry and providing major additions to electricity supplies especially in sun belt areas. This has not happened because capital costs have been too high. Engineering efforts have focussed both on improving efficiency to get more power from each solar cell, and on reducing the cost of producing cells. Improvements in either would lower the cost per watt of peak power output but major improvements are needed to bring costs to competitive levels. Photo-voltaic cell manufacturers have aimed for improvements in basic cell materials (semi-conductors) and in the techniques for handling them.

Environmental Unknowns: The uncertainties of eventual mass use of some medium term technologies include unforeseen or unclear risks to the environment and safety. Depending on the technology in question, environmental impacts may include air pollution, waste disposal, occupational hazard, and water pollution.

Long-term technologies

Proof of principle: Long-term technologies have the greatest uncertainty of all. Apart from the uncertainties of commercial potential and wide adoption, as in the medium-term time scales, there is also a more basic question to be answered: will the proposed technology work? The proof required goes beyond technical feasibility, which should be understood in the sense of engineering and design.

Support of Research: As is apparent, technology at the research phase of evolution needs financial support, but has highly uncertain prospects. There are no assurances as to when or if at all, the basic principles will be proven. Naturally few investors would risk large sums into such R&D efforts.

The long-term continuity of government funding is a political issue in representative democracies, where government expenditures are determined annually by legislation. Long-term commitments of funding are very difficult to legislate, because legislators are usually elected on a short-term basis and their perspectives are thus moulded. Also, there are problems of accountability on the part of large projects that are given long-term commitment of funds for purposes that cannot always be clearly understood by the legislators.

In essence, for the RES to be acceptable, a proper understanding of these issues becomes vital.

RES Acceptance: Critical Observations

In 1980, the Integrated Rural Energy Planning (IREP) emerged as an experiment to prepare a mix of energy systems for rural needs. This was able to promote the installation of wind mills, solar cooking and heating systems, biomass, improved chulhas: even improved bullock carts. The experience revealed that:

- Ruralites are keen to receive a new scientific technique if properly explained and demonstrated.
- Expert and financial aids are needed to ensure and sustain the adoption process.
- Wider public participation will make such projects more useful and desirable.

This leads to the assumption that people may also be willing to accept renewable energy technologies on a large scale, yet practical exploitation of these is still in experimental developmental stages. A complex interrelationship of various factors prevents the adoption of renewable energy technology on a vast scale.

Apart from the problems outlined in Table 4, other barriers include inadequate appreciation of location and culture specific constraints for different unit operations, the urban origins of institutional mechanisms, lack of clear understanding of the dynamics of technology adoption in our country, inadequate sensitization of the local mind on these issues as well as technological and economic factors of design, function, performance, durability and cost and returns. While the scientific and technological community has shown a sincere and keen interest in understanding the situation, the emphasis has been, in general, on minimization of costs and technical effectiveness. There have also been differences of opinion in the policy appropriate for RES.

Barriers include inadequate appreciation of location and culture specific constraints, a lack of clear understanding of the dynamics of technology adoption, inadequate sensitization of the local mind on technological and economic factors of design, function, performance, durability and cost and returns.

For example, Iniyan & Jagadeesan (1997) have identified price, technology and equipment efficiency as the critical factors to be dealt with, in order of priority, to utilize larger amounts of RES. They have suggested an awareness program, loan assistance and government subsidy to popularize their use. Pachauri (1998) has remarked that subsidies, if any, should be part of a long term strategy which should be gradually withdrawn so that market forces bring about design and performance improvements. Subsidies just related to number of units installed act as a disincentive in attempts at innovation or design improvements, as has been the case of solar water heaters in India. Irrational pricing of electricity for rural consumers needs to be corrected and institutional changes are required for its supply and distribution. Grubb (1993) has suggested that target levels of deployment will ensure that the market for the technology exists and can thus ensure investment in it. It can be combined with the offering of subsidies. The total cost can be limited by the size of the target. He also lays stress on increasing R&D expenditures to make a large impact on renewable energy deployment.

Operational Efficiency in Energy Allocations

In an attempt to understand the adoption behaviour of RES, the authors propose the study of operational efficiency in energy allocations for the various energy systems in different agricultural operations. While technical efficiencies concentrate on the technical aspects of an operation or project and economic efficiency studies the economic returns, operational efficiency will give the decision maker a picture of the overall effect of using the energy sources for different operations (such as tilling, sowing, harvesting, transporting, threshing, etc.).

A complex set of factors governs the adoption of each of the systems. A single index which illustrates the effect of such choice of energy sources can provide much needed insights towards decision making and reorienting research and development in the pre-propagation stage itself to bring the index to a certain level, before all out efforts are made towards propagation. As is obvious, this would save a lot of time, energy and resources initially and make the actual implementation efforts more effective.

The concept

Let us consider the totality of existence in space-time of which every other system and we are a part. If infinite freedom in all dimensions is available, then an infinite number of suitable choices may be feasible. Yet, the reality in living restricts the solutions in a number of ways–

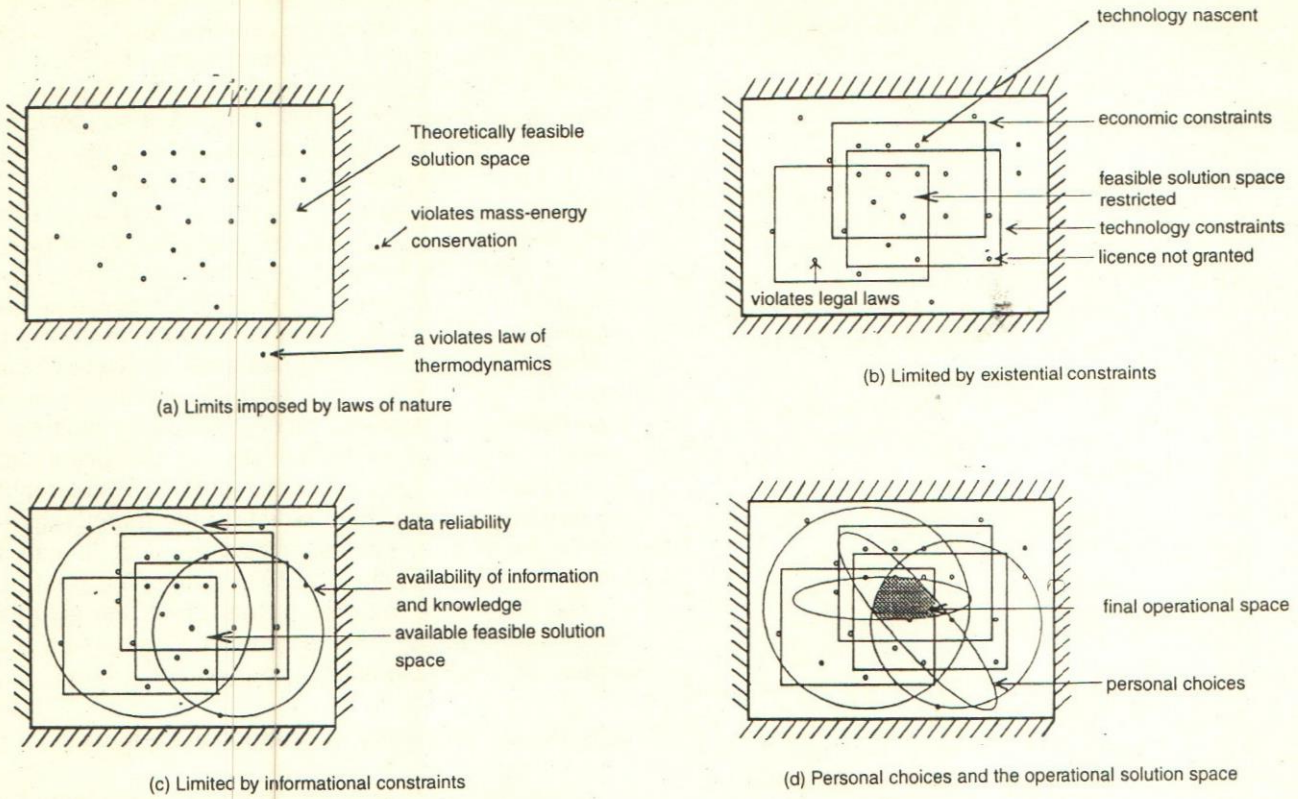

Fig. 4. Restrictions in operational solution space

- *Limits imposed by laws of nature:* This restricts the choices to naturally feasible solution space as shown in Fig. 4(a). Those solutions which violate the laws of nature like that of energy conservation, law of gravity, etc. lie outside.
- *Existential constraints:* Inspite of the laws permitting, lack of resources, unfavourable legal statutes, poor infrastructure, etc. may severely limit the operational activities (Fig. 4(b)).
- *Informational constraints:* Lack of proper knowledge, lack of data and information, unreliable statistics, etc. (Fig. 4c) act as further limitations.
- *Personal choices:* Finally, individual preferences, perceptions, tastes, biases, traditions and upbringing limit the decision making to the space limited by that shown in Fig. 4(d).

Considering the different disciplines in making decisions, an index which incorporates the desirable factors and thus gives an indication towards making the right choices for future growth and development of mankind is subjectively defined as the *operational efficiency.*

The multidisciplinary approach makes it imperative for the decision maker to draw liberally from all fields, including the specific field of action, behavioural and management sciences as well as quantitative disciplines. The integration of these sciences and disciplines occurs at various stages in the decision-making process. Quantitative techniques apply mainly to the comparison and evaluation of alternatives. But the psychological factors—tastes, comfort, influence of the subconscious mind etc. influence the behaviour of the decision maker from the setting of the objective to the attainment of the final outcome. These make the choice considerably more complex than is normally assumed. Moreover, a shift from the individual to the group decision making process confronts the decision maker with a new set of variables. Now he must also contend with the sociological factors. He has to accommodate the preferences, adjust the aspiration levels and modify his choices to ensure that the decision contains at least some conformity with the original objectives and the preferences of the members of the group.

Even if quantitative estimations are made in analysis to incorporate for the various functional and personal constraints, the human brain itself behaves subjectively or heuristically in the final scenario. As such, the authors draw upon the available approaches to attempt a first hand measure of operational efficiency which takes the

above restrictions and subjectivity into account at least to some degree.

Energy policy models have been employed to provide numerical answers to specific policy questions. This process has helped those who construct models to develop a broader understanding of policy issues. However, the avalanche of detailed quantitative results thus produced can blind the decision makers to the insights that is expected of them. As Hogan (1979) captures the sentiments: "it is not the individual results of the model that are so important; it is the improved user appreciation of the policy problem that is the greatest contribution of modeling." Considering this sentiment, the underlying principle behind the proposal is that if the operational efficiency is high, then the degree of satisfaction of the decision taken is high. In other words, it represents the degree of the operational satisfaction in employing the different resources or the energy systems. As a first step towards this basic principle, a fuzzy approach to evaluate the efficiency has been suggested in Agrawal (1999), wherein the cooking operation has been considered for illustration purposes. The approach can be expanded to include economic profits, turnover, etc. (The details are beyond the scope of this paper).

Conclusions

On this concept of operational efficiency, R&D efforts can be directed to meet the operational requirements on farms. Efforts can then be made to develop and deploy the RES in those areas where their use is most efficient. A proper strategy for long term implications can then involve an optimal mix of both RES and NRES to bring about a large and continued growth in productivity levels of agriculture for meeting the requirements of the ever increasing population. This will make it possible to introduce clean and abundant technologies like RES geared to the people and their needs as well as to their economic, technical and psychological choices.

A proper strategy for long term implications can involve an optimal mix of both RES and NRES to bring about continued growth in productivity levels of agriculture.

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Book Reviews

Agricultural Paradigm: A Synthesis *by Bhupat M. Desai* (Editor) 1997, Oxford & IBH, New Delhi.

The volume is the outcome of the National Seminar on "Agricultural Development Perspective for the Ninth Five Year Plan" organised by the Centre for Management in Agriculture at the Indian Institute of Management, Ahmedabad from June 13 to 15, 1996.

The entire volume covers articles from the following main themes: contributions of agricultural development to national goals; agriculture in future: demand-supply analysis; strategy and sources of agricultural growth; technological factors like evolution and transfer of seed and resource-centred agricultural knowledge and role of market purchased inputs; institutional factors such as decentralized planning, land reforms and poverty programmes; agricultural credit and agro-marketing and processing; economic factors viz, role of product prices, terms of trade and foreign trade and role of public and private investments, subsidies and taxes.

The authors through conceptual and empirical contribution have aimed at finding out how agriculture contributes to national goals in addition to meeting the demand for agricultural commodities. They have also attempted to explore how this role can be played more effectively through appropriate strategy and policy planning options, and how both of these could be implemented. In that context they have succeeded more than satisfactorily.

Mr. Hanumantha Rao, who delivered the inaugural speech points out that presently there is a need to devolve more functions to local institutions—like rural electrification or irrigation development or canal repair instead of expecting the government department to do it. Mr. M.V. Rao in his valedictory address points out that the ecological diversity, broad genetic resource available and huge and well-developed national agricultural research system and excellent human resource base should enable the country to perform well in agriculture and allied sectors in future. Also there is an enormous scope for doubling the yields of different commodities in the country if careful planning and coordinated approach of different agencies is brought in.

The section, "Contribution of Agricultural Development to National Goals" elaborates that agricultural development is a means to larger goals of employment-led economic growth, alleviation of poverty and self-reliance through its linkages and multiplier effects. The Ninth Five-Year Plan strategy, therefore, should be such that the linkages between agriculture and the rest of the economy are strengthened and the full potential of agriculture is utilised for accelerating the process of overall economic growth.

The papers focus on studying the growth in demand and supply of different important food commodities/commodity groups, and forecasting the emerging supply-demand balances for the Ninth Plan period. One objective is to get some assessment of the production growth requirements for the Ninth Five-Year Plan. The main findings are the demand for most agricultural commodities except to an extent wheat and fish is likely to outstrip the supply when its (i.e. supply) growth is governed by historical trends only (i.e. 1970-71 to 1993-94). There are papers, which point out that this may be the case even for the two exceptional commodities of wheat and fish, when the demand estimates for them are more realistic. Thus, in order to meet this, agricultural production growth must be targeted at a higher rate. A higher growth is feasible, considering that there exists significant untapped yield potential in many commodities.

It is observed that for policy formulation, agriculture needs to be viewed as a system comprising besides crop production—livestock, forest and fisheries. Extensive farming, intensive agriculture and technical change are the three options for agricultural growth strategy. While extensive agriculture is no longer feasible on account of exhaustion of land frontiers, intensive agriculture is non-sustainable. But technical change is agro-economically the most efficient and sustainable

option. This option has become possible due to break through in scientific knowledge for agriculture. What flows from the proceeding is that the Ninth Plan must see a paradigm shift in its agricultural strategy from intensive agriculture to knowledge-based scientific agriculture.

The next section addresses three major issues related to technological factors, namely, research and extrusion system, technological development for arid regions and investments in agricultural research. The studies reveal that there is a clear need for stepping up government investment in agriculture research and education. The book discusses the problems of five agricultural inputs viz. Seeds, pesticides, fertilisers, irrigation and tractors and gives very valuable recommendations for its effective use.

Deliberations regarding "Institutional Factors for Agricultural Development-I: Decentralized Planning Land Reforms and Poverty Programmes" revolve around their content and organisation. The authors view that on the former, all these three must be integrated sectorally and regionally in addition to prioritizing land consolidation, tenancy reforms, up-dating land records, and hard-core agriculture related investments, rather than welfare- oriented dole-outs. According to them, institutionalizing these would require an on-going district-level autonomous planning institution, with multi-disciplinary professionals. It would also require district-level implementing committee representing all the line departments and agencies in the government, in addition to the entire auxiliary services institutions and local people. This committee must be chaired by the development official rather than the District Collector or an elected head of Panchayats.

The Section on Institutional Factors, centres around building institutional infrastructure rather than interest rates as in the case of credit, or direct government role as in the case of agro-marketing and processing. The authors point out that this infrastructure should consist of better density of credit institutions and their multiple, diversified and integrated services. It should also be marketing infrastructure such as regulated markets, rural roads, ports, electricity, and cargos rather than government enterprises, undertaking agro-marketing and/or processing, which is quite eminently performed by the private sector. Only exceptions are FCI, APEDA, MPEDA, and Commodity boards and Corporations that have strategic roles. But all these and credit and non-credit cooperatives ought to be more decentralised, debureaucratised and autonomous with better accountability.

The next section centres around a shift in favour of non-price factors like technology and infrastructure, rather than more widespread and routine price supports. It is felt that neither the domestic price parity, nor the domestic to border price parity be considered an engine of agricultural growth. Nor should the foreign trade be so considered, until the major infrastructure products with "sustained" exports may be attempted.

The last section "Economic Factors-II: Role of Public and Private Investments, Subsidies and Taxes" discusses issues related to their relative shares, pattern and pricing policies. Agriculture's relative share (per cent) in public investment must be stepped up aggressively to make the Vision, Mission, and Strategy realise a required rate of growth of 4-6 per cent in its GDP. The pattern of this investment should centre around building public goods and economic overheads, which are unlikely to be delivered for the rural sector by the market.

Overall it is felt that the Ninth Plan should trigger a partnership between the government and agriculture, the single largest private sector, to lead an agro-related industrialisation and economic development. The seminar advocates a Management Model, of an autonomous and professional body for district-level planning and implementation that plays an interactive and catalytic role, provides one answer to effective implementation of agricultural planning. This seems both feasible and necessary, since the country has constitutionally recognised the role of local Panchayati Raj bodies. So what is needed now is a fair and sustained trial to see whether it can build on the past and improve upon it for faster growth with social justice.

The edited volume would no doubt serve its purpose to all those who are seriously engaged in dealing with any aspect of Indian agriculture. It offers a fairly comprehensive picture of the entire agricultural sector and is commendable work.

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Asian Economic Crisis: In Search of Higher Competitiveness in Global Market *by Asian Productivity Organisation,* Tokyo, 1998, pp. 138.

Many books and articles have been written and will still be written about the Asian economic crisis. Most of them have been a post-mortem analysis of the causes and nature of these crises: why the crisis occurred in these countries; what were the underlying reasons and could they be compared with the crisis that occurred in 1929-30. Numerous international organisations like IMF, World Bank, Asian Development Bank, etc. conducted

their own studies to analyze the role that these institutions played in ameliorating or exacerbating the situation. Asian crises have been viewed as either market failure or state failure. While the focus of the literature is more on the macro-economic 'indicators' some of them have analyzed the 'micro behaviour' of the firms and their ability to achieve higher rates of growth. The need for controlling capital flows, to improve regulatory framework, rethinking exchange rate regimes, and to create an International Lender of the Last Resort has been expressed by few of them.

The book by APO is a compilation of presentations made by leading experts from Asia, Europe and US in a meeting held in December 1998 in Tokyo on Asian Economic crisis: In search of Higher Competitiveness in Global Markets. It contains eight comprehensive presentations on different issues related to the crisis. Neiss in his presentation on the role of IMF in Asian Monetary Crisis gives lucid account of the origin of the crisis. He gives four reasons for it—unrealistic view of the long run growth prospects, excessive flow of short run foreign capital both in industries and real estate, fixed or rigid exchange rate regimes and external shocks of adverse movements of terms of trade and long recession of Japan. The author debates on three policy issues related to IMF programme—high interest rates and exchange rate instruments; tight fiscal policy and various structural reform measures and has broadly supported these policies as adopted by the crisis affected countries. Neiss analyzes the three phases of crisis—stabilization, recession and recovery. He concludes that while stabilization was made possible through contraction of imports, recession could be arrested through the twin strategies of rehabilitating the banking sector along with the restructuring of the corporate sectors and the expansionary fiscal and monetary policies. He analyzes the recovery process of the crisis-ridden countries, compares it with Mexico and expresses his optimism about their economic recovery.

Toyoo Gyohten of the Institute of International Monetary Affairs, Japan highlights that the main cause of Asian crisis was the changed international environment—very high volatile capital flows and progress in information technology which changed the entire landscape of the global financial markets. The author points out that the immediate need for East Asia is to clean up badly managed and damaged balance sheets of banks and business firms in their respective economies; restructure the corporate sector; infuse more funds in the economy and get more regional and international support. Four major areas have been identified to cope with future crisis—an international mechanism for emergency financing; better management of short run capital flows; a more stable international exchange rate regime and a substantial improvement and strengthening of the global financial institutions. An important role stressed for Japan, which has huge trade with the crisis countries, is to revive its economy back to normal, revitalizing its banking sector and maintaining stable exchange rate for yen.

Prof. Sadli in his presentation describes sudden loss of confidence by investors of short-term funds as the immediate cause of the crisis in East Asia in July 1997. His analysis of the crisis—causes and nature has focussed on the weaknesses in the political system and the banking sector of the economies. The role of IMF and World Bank has been analyzed and their importance highlighted with a hope that some mechanism would be designed to help face future crisis. The factors—domestic Vs external—that are important for recovery are discussed, the most important being the role of IMF and Japan in pulling these countries out of their crisis; the reflation of domestic economies through investment led growth, national drives for productivity enhancement and cost cutting, regaining competitiveness in the export market and regaining domestic markets lost by the drop in the purchasing power of the general public.

In EU-Asia Relations: Future Challenges, O.J. Jorgensen develops the implications of the word 'crisis' both as danger and as opportunity. European experience of the 1970s and 1980s is cited so as to learn some lessons from it, though the nature of the crisis is different. The foremost lessons are that the economies remain open, deregulate their economies with suitable regulatory bodies and do not overlook the social dimensions so that even the weakest social groups are integrated and receive some benefits from the process of globalization of the economy. The author also details the role played by EU to support the recovery of Asia and the huge potential it offers to Asia after the emergence of Economic and Monetary Union and Euro.

Gregory Clark in 'Man and Society in the 21st Century' argues for rewriting the theories of economic growth as lack of capital, technology and other resources are no longer constraints on the growth. But it is infrastructure that is most important. The cost of labour and cost of infrastructure now determine international competitiveness. Clark has linked the growth of the economies, especially Japan and the West, to the existence of 'feudalistic' and 'rationalistic' values and believes that if South East Asia can combine the merits of the two then they have bright future.

Causes of the Asian crisis are also described by Tawee Butsuntorn in his presentation "The Future Direc-

tion of Manufacturing Industries in Asia after Economic Crisis" who highlights large scale short term capital inflows, the structural problems in the financial and corporate sectors and inadequate macro-economic policies as the real reasons. The crisis hit the Japanese economy and even China, Latin America, Russia and the US financial system. It also affected the current account deficit of these countries, created few social problems such as unemployment, hunger and rising crime; affected technological advancement in Asian countries and changed the way the business is now done. In order to gain the competitiveness and sustainability in the world market, factors like Government strategies, manufacturing industries strategies, etc are to be taken care of. The author gives many suggestions for Asian manufacturers to come out of the post-economic crisis.

Salazar, M.S. Jr. in his presentation focusses on the macro-economic policies adopted in Philippines which enabled it to face the economic crisis, helped it in increasing competitiveness and ensured that Philippine industry and business will progress to attain and maintain global competitiveness. The path chosen to prepare for globalization involved liberalization of key industries like telecommunication, shipping, domestic and international aviation, etc; privatization of government owned and controlled companies; foreign exchange liberalization; liberalization of the banking sector and the Foreign Investment Act; and other market oriented systems that will integrate the Philippines economy to those of the others.

In the last presentation Motonobu Takemoto speaks about Toyota's commitment and challenges in South East Asia. He points out that the big four markets of Thailand, Indonesia, Malaysia and the Philippines were down by 65 per cent in 1998 as compared to 1997 but expects the market to recover in 1999 and 2000 and resume the level of 1996 in 3-5 years. Toyota plans to support the crisis economies by continuing production, providing support to exports, and employment. In the light of the global and regional trend in liberalization, Toyota has drawn short term and medium to long term plans to meet these challenges but Toyota, according to the author is committed to Asia.

The book also contains a panel discussion that took place in the meeting. The moderator and the panelists gave their comments and answered the many questions that were raised by the floor. The discussion is very informative, stimulating and interesting.

The book by APO throws light on country experiences of the impact of Asian economic crisis and draws many lessons to be learnt to avoid such crisis in future. The book is very valuable reading to students, researchers, planners and policy makers interested in the field.

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Stress and Coping—The Indian Experience *by D.M. Pestonjee*, Sage Publications, New Delhi; p. 98, Rs. 425 (Cloth) and Rs. 225 (Paper).

In the present era when speed only matters in individual life family life and organisational life, stress is the outcome. The well known author in the management field Shri D.M. Pestonjee has come out with the 2nd Edition of this book at a very opportune time. The author deals with various dimensions of stress in 8 chapters. The various approaches like stimulus oriented approach, response oriented approach and the psychodynamic approach are described along with ancient Indian concept of stress. The positive role of stress is also probed.

The co-relation between stress and diseases is analysed in the context of psychosomatic diseases, tensions, psychological diseases, gastric ulcer, bronchial asthma and anxiety neurosis. Impact of environment, socio factors, industrial toxicants is described. A list of drugs prescribed in Indian Indigenous Ayurvedic books for curing stress has also been given. Life Event Stress is analysed with the scales of Dubey, Singh *et al.,* Batlivala and Daftuar. Certain disorders like cancer, peptic ulcer, irritable bowel syndrome, diabetes, bronchial asthma are caused due to life stress the author opines.

While dealing with role stress which is caused due to various factors of life stress, the role stress variables like self role distance, inter role distance, role stagnation, role ambiguity, role overload, role erosion, role inadequacy and total role stress are well depicted. The author describes the deteriorating effect of stress on productivity. Stress in special groups like executives of public and private sectors, service oriented and production oriented organisations, among bank professionals, computer professionals, air traffic controllers, entrepreneurs and working women and that of teachers and students, police professionals and supervisors is also discussed.

Coping styles and strategies are discussed with details on the concept and measurement of the coping of individuals as well as groups.

The author talks about moderators of stress and

ways of counteracting stress. Some of the typical coping strategies adopted by Indian executives include critical analysis and recognition of problems, yoga, practicing good management, slow down and work in proportion to reward, discussions with the boss/union, improving self image, going on vacation, valuing outcome of others valuing own inputs, maintaining better family relationship, using scientific methods, acquiring alternative interest, avoiding confrontation, trusting in self, acquiring more quantification, using better communication and resigning. Lastly the author has suggested relaxation, acupuncture, exercises, yoga, meditation, and recreation as lasting remedies that will put stress under control or check. This is a good treatise on the subject and good reading for executives who are trying to cope with stress.

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Human Resource Management Series, "Executives—Do You Communicate" *by N. Ramaswami* IRPS (Retd.), 2nd Edition, 1998, T.R. Publications Pvt. Ltd., Chennai, pp. 268, Rs. 160.

Success of an organisation rests on the effective communication skills of not only the public relations department but of every employee, from the top-notch executive to the last subordinate. As it is called a 'skill', it can be acquired and the book helps one in doing just that! The four skills of learning a language vis a vis speaking, listening, reading and writing are dealt under different chapter heads which allow one to pursue a particular aspect of the subject with single-mindedness. Executives and Executives to—be, will be benefited most by reading this book.

A job can be accomplished only when it is communicated well and interpreted equally well by the receiver. Any disaster is always attributed to failure in communication. One can cross the ocean of misunderstanding through the bridge of communication. As the book deals with 'Executive Communication', to begin with, it lays down the objectives of executive communication which essentially deals with keeping the management informed of attitudes, trends and reactions amongst employees, and other public as an aid to decision making and control, and also for enhancing the corporate image.

Successful communication is said to have taken place when the intended reaction is achieved, i.e. when efficient delivery leads to effective reception. The informal 'grapevine' communication is generally considered efficient and effective. Executives can neither overlook the channel nor get away from it. It has been observed that communication through this mode is never completely inaccurate. The percentage is dependent on the source credibility. The status and prestige of the source affects the flow. "Grapevine helps in interpreting the management to the workers" says N. Ramaswami.

The book proves to be an excellent guide for all those who have to address a small meeting, a conference or a large audience. It gives guidelines on subject, audience, presentation, time and place for effective delivery. The book is a treat for people who want to learn 'Public Speaking'. Some Managers revel in public speaking and some dread it. One can find the do's and dont's for a face to face communication for example, while facing an audience be enthusiastic, keep good eye contact, show animation (but too much will destroy the effect), don't mumble and have clear diction. One must be cautious of the three P's while speaking—Pitch, Pace and Pause.

Moving further on to Reading, the author says that as an executive "read what you must; browse what you should and skip what you can", to keep pace with the piling mail in the 'in- tray'. Thus the skill of perusing plays an important role here.

The problem of communication is much greater in writing than in speaking. When we speak, we can watch our audience's expressions of comprehension and adjust our delivery accordingly. But when we write, we remain ignorant about the effect our words on paper have made and the message has to be made ascertainable from the written words alone. Executives can learn the art of writing memo's, notes, circulars etc., from this book. The book provides certain rules like: make use of the familiar word than the far-fetched, the transitive verb, use of active voice, short paragraphs written in good hand, use of punctuations and much more. A thick volume, pompous prose and unintelligible style do not make for good writing. Cliches, adjectives, and jargons should be used only with discretion.

Communication suffers a breakdown not only if the four skills are not religiously followed and practised but also due to the infrastructure of the corporate office. To help one reach his manager or subordinate, the hierarchy setup should be flattened creating a bridge between executives and workers. According to N. Ramaswami "resistance to change" serves as an obstacle to effective communication and amongst other things, new ideas need to find acceptance.

The book provides excellent material on the art of interviews and meetings. The qualities an interviewer and an interviewee must possess are discussed in

detail. The interviewer must be warm and friendly, knowledgeable and mature. A patient and sympathetic listener makes a best interviewer. Appraisal interviews and counselling interviews too find space in communication abilities. "After criticizing in good faith, do not apologize" says the author, when it is a disciplinary interview. Furthermore, the book prepares us to receive criticism with great poise and dignity.

Executive communication is an integral part of any organisation. Lack of communication skills can prove to be a detriment in a good career. Executives will find the book helpful in more ways than one. It is a valuable reference book for all.

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Improving Management of Aquaculture in Asia *by Asian Productivity Organisation*, APO, Tokyo, 1998, p. 266.

Aquaculture has a unique status in the socio-cultural and economic life of most of the Asian Nations. It plays a vital role in providing nutrition, foreign exchange earnings and generation of employment opportunities. To keep pace with increasing pressure on food commodities, aquaculture deserves high priority for development with active involvement of the government and the public at large.

This publication is an outcome of a Seminar organised by Asian Productivity Organisation on the subject during May 8-16, 1996. The objectives of the seminar were to appraise relevant developments in aquaculture industry, discuss specific measures for improving aquaculture farms in the context of sustainable development and exchange views and experiences on the subject among the participants. This publication has been divided into four parts. Part I of the publication contains a summarized findings of the seminar. Part II contains six resource papers presented by experts on variety of topics like current status and outlook of aquaculture industry, improved feed formulation and feeding techniques towards a sustainable aquaculture development, management of land, water and energy resources utilization for aquaculture, disease management in shrimp aquaculture, and aquaculture bio-technology in Republic of China. The resource papers provide a systematic overview of aquaculture industry in Asian countries.

Part III of the book contains the country papers presented by the delegates of eleven Asian countries Bangladesh, Republic of China, Hong Kong, India (two papers), Islamic Republic of Iran, Malaysia, Mongolia, Philippines, Sri Lanka, Thailand and Vietnam. The country papers in general contain information regarding current situation of aquaculture, various fish farming systems, production technologies, problems associated with aquaculture, development prospects, aquaculture policies and future strategies in the respective countries. It provides an excellent opportunity to the reader to acquaint himself with the current scenario of aquaculture in these Asian countries, which have many commonalities among them. Part IV of the book contains facts about the Seminar, its organisation and other details about the participants.

As a result of an unplanned and unregulated development process, several environmental problems had emerged during the past decade that focussed attention on the sustainability of aquaculture development. Only few of the major producing countries of Asia have suitable rules and regulations; existing legislation is not necessarily based on scientific principles and enforcement is problematic. Assistance in developing suitable national legislation is becoming more crucial than technical assistance aimed at technology transfer. In coastal aquaculture the limited nature and the ecological vulnerability of the coastal zones are the most important restrictions. Availability of fresh water, exploitation of available fresh water resources through aquaculture are other limiting factors.

The book has clearly highlighted that declining fresh water supply, rising conflicts with eco-system and other industries, limited fish meal supply, changes in market structures, increasing severity of the disease problems and inefficient healthy fry and seed supply are some of the major limitations which policy makers have to consider while developing strategies. Strategies towards sustainable development of aquaculture include several recommendations such as a clear aquaculture policy, technical cooperation between developing countries, developing aquaculture zones, planned development of peripheral industries and infrastructure, processing and marketing.

Most of the country papers have been presented fairly well which provide useful reference material to policy makers, researchers, and those managing aquaculture farms. It is hoped that this publication would provide a new insight to readers to improve upon their management performance in aquaculture.

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Oil in the Global Economy: Transformation of the International Oil Industry. *By Raul Delgado Wise* (Series Editor: Henry Veltmeyer), New World Order Series: APH Publishing Corporation, New Delhi, Price Rs.400.

Natural resource endowments with different concentration levels in different geographical regions, the nature and characteristics of their extraction or exploitation coupled with innovations and value additions, influence the global economic system to dominate trade, profit and rent seeking. It is needless to emphasise in this context that Oil is the most sensitive among the natural resources, having a strong bearing on the dynamics of global economic and trade system. The two oil shocks in the 70s had deleterious repercussions on the global economic systems in terms of market dynamics and hence, power equation. It not only changed the characteristics of the global capitalist mode of economic growth, but transformed the basic relations of production and economic enterprising in a political economy framework.

The book is an amalgamation of theoretical concepts on rent and profit seeking in oil industry over different stages of its evolution. The political economy of rent seeking and surplus profit has been vividly analysed and explained with real life situations. Application of real rent theories from Ricardia and Marxian perspectives has been flashed in the initial chapters investigating its relevance in oil industry. The major points of discussion over the evolution of events in the oil industry have been the sequence of differential rent seeking by different players in the industry and the growth process thereof, the manner in which major domestic and external oil corporations participated in this rent and profit seeking exercise, contradictions and competitions faced by monopoly capital and the nature and size of technological interventions witnessed in the oil sector and their impacts and implications on the world economic system in general and the oil rich economic region in particular.

Major highlight of the book has been on the principle of 'different rent' – a concept based on the differences that arise in the individual cost price of primary products as a direct result of different properties of their natural conditions of production. It is likely, therefore, that this book may find a commanding place in the neoliberal development producers and the competition with US multinationals in this regard. The political economy components of price regulations and other interventions by the US oil giants through agreements and contracts and the deterioration in the operational aspects in the industry have been brought out clearly. The price spiraling and oil market fluctuations in the international market, are well articulated within this background. Further the book provides an in depth analysis of the political economy and market components that contributed to the birth of OPEC and the transformation the oil industry and market witnessed subsequently.

It is for certain that interaction of rent, monopoly capital and technological interventions has almost changed the basic characteristics of oil industry in the last couple of decades. The book highlights the means and the manner in which monopoly capital attempted to ensure surplus profit within a disadvantageous production environment. With the declining oil rent, technological innovations and diversification activities were boosted to retain rent levels. The author draws instances from contemporary capitalist growth models to substantiate this move in the oil industry. The book further elaborates on the ways and means by which the US oil giants could maintain their competitive advantage in the global market.

The epilogue carries theoretical arguments to defend the Marxian rent theory. The author successfully concludes the legitimate task of substantiating a theoretical outlook which has perpetually been assaulted over ideological differences, even in the presence of realistic and live examples. In total, the book is a perfect mix of theory and its exact application capable of occupying a place among the reference list of academics as well as industry practitioners.

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Corporate Restructuring: Crompton Greaves and the Challenge of Globalization, John Humphrey, Raphael Kaplinsky & Prasad V. Saraph, Response Books (A division of Sage Publications), May, 1998, New Delhi, 273 p., Rs. 250 (Cloth).

The response of Crompton Greaves Limited (CGL) to the fast changing business environment of 1980's and the forces of liberalization of 1990's is the theme of the book under review. However, the book is not a mere case study of CGL, it has analysed the changing environment (both national and international), examined the contemporary management practices, the process of restructuring by CGL, and areas of success, including spots where further action is necessary. A critical examination of implications on labour (including labour policy of the country in the context of liberalization and globalization) and the response of unions to restructuring has also been made. Additionally, problems related to supplier relations and the process of transformation

of relations have also been examined. In short, the book presents an incisive study of almost all the aspects of corporate restructuring.

Chapter one of the book examines the challenges in the form of disappearance of certainties with the state slowly withdrawing from industrial activity and fostering growth. This chapter also examines systematically implications of deregulation, globalisation and increasing competitive pressures, on the industry. The compulsions to change the internal structure of business organizations in India specifically and low income countries in general are examined. In the context of this, operations of CGL – "steady growth during the years of import substitution, slowdown in the 1980's and then rapid growth in the latter part of the decade and during the 1990's" have been examined. The chapter also analyses the role of leadership in setting corporate vision, values ("providing higher standards of living and enhancing the quality of life"), and in formulating strategy for transformation. Chapter two is a more detailed case study of Crompton Greaves Limited.

Part two of the study deals with changes in manufacturing strategy to achieve the business strategy of the organization (discussed in Chapter one). Japanese manufacturing practices and management techniques such as JIT and TQM are described, and the restructuring of the three plants of CGL and the progress made by them are investigated.

Changes in the manufacturing strategy have implications on the work relations. Introduction of JIT and TQM needs more flexible working (multi-skilling, multitasking etc.), high involvement of workers and working in teams. These may in turn change (decline) the power of unions, which may bring about changes in the existing pattern of employer-employee relations. Chapter 6 of the book deals with these issues in CGL.

Introduction of JIT, TQM and TEI affects relations with suppliers too. This is the theme of part three of the book. The authors examine backward ties between the firm and its suppliers, strategic alliances between companies (where risks and uncertainties are high) and forward ties between CGL and customers. Development of suppliers and changes in the supplier relations and the constraints in the development of such relations with large firms are analysed. The views of the suppliers have also been collected and examined.

After having examined strategic change in relation to business, manufacturing, labour, and suppliers in the context of restructuring, the authors go beyond restructuring in part four of the book. Performance of CGL is analysed in depth. For this purpose, CGL's performance as a supplier of motors to an international manufacturer of washing machines, followed by comparisons with some of the European competitors have been made. Comparisons with other organizations in the industry who operate internationally is another aspect of examination.

Going beyond CGL experiment, the book in the final chapter looks at the requirements to be globally competitive. This chapter also examines the electrical equipment industry using Michael Porter's Five Forces Framework. In a fast changing environment, restructuring becomes a continuous process. The most recent example of CGL's another round of restructuring only goes to show this further.

The book is an invaluable addition to the growing literature on corporate restructuring, and is an essential reading for managers as well as students of business policy and strategic management.

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The Global Business Game: Strategic Perspective by Trilok Sindhwani, Macmillan India Limited, 1998, pp i-xii; pp 1-350, Rs. 295.

The process of globalization in India is picking up pace and therefore a strategic perspective of international business is a necessity not only for multinational corporations but also for domestic companies. This book by Prof. Trilok Sindhwani is rightly timed and provides an insight into the basic issues and complexities of global business.

The author examines the strategies and methods which global players have evolved and developed over time to obtain competitive advantages. The approach had been to make the readers aware of various important functional areas of international business and deal with each aspect of these areas in separate chapters. The book starts with a discussion on global business and Prof. Sindhwani defines international business and global players. He also identifies various kinds of international business. Thereafter he discusses the nature of international business and its environment. Prof. Sindhwani takes up components of environment and discusses the transmission mechanism leading to a particular outcome. In the next chapter, the role of mega players in the context of balance of payment situation of a country is discussed. For a developing country like India, the understanding of

such a role of mega players is necessary. Since trade and investment flows globalise the international business environment, in the fourth chapter, the author discusses various theories of trade and investments and brings out the evolving paradigms of international business. Thereafter he takes up the nature of conflicts that arise in international business and the role of various institutions in resolving these conflicts.

After discussing the international business environmental aspects and related issues in the first five chapters, Prof. Sindhwani goes on to discuss the process of globalisation of domestic business environment and talks about the emerging scenario of challenges and opportunities that international business offers. Next two chapters have been devoted to making the readers understand the increasing role of international finance. The operational aspect of International Business is then discussed followed by a strategic view to select business targets and an elaboration on international marketing and international business law.

After discussing international business process the chapter is devoted to International business diplomacy. This chapter is revealing and interesting and deals with such topics as negotiations. In chapter fourteen, the process of developing competitive advantage is discussed to finalize the strategy. The author discusses the structure of strategy and its evolution and control, deals with the analysis of behaviour of some important global players and the book ends with a futuristic perspective.

The book provides an insight into the psyche of global players and their market operations. It suggests the guidelines to innovate products and services so that competitive advantages can be obtained and sustained.

The book can be used as a text by students of International Business as it covers most of the fundamental areas of International Business. It is a good and timely attempt by Prof. Sindhwani to provide a strategic view.

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□

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