Incentives, Motivation and Accomplishment : Lessons of Experience

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Man and his Motives

In all human activity, be it industry or agriculture, trade or commerce, politics or Government, man is the source of action and also the target of action. By the same token, all production systems are closed loops starting with man, ending with man and returning to man. Little wonder then that so much attention is paid to his wants, urges and aversions that impel him to action in one direction or the other or to inaction.

The basic motivation of each man is the desire to enhance his perceived advantage. Here lies the nub. The perceived advantage of each man is highly individualistic, being dependent on heredity and the stimuli imbibed from birth onwards. No two persons—not even twins—have an identical background of heredity and environment.

Any incentive scheme which fails to take note of the complexity of man's motives and the diversity of their mix in the make-up of individuals is foredoomed to failure. Such an approach is reminiscent of the story of six blind men and the elephant—the first taking the elephant to be a tree, second a serpent, third a spear, fourth a fan, fifth a rope and the sixth a house. If the first man were called upon to "motivate" the elephant, he might approach the task with a watering can. Consequences are bound to be unpleasant for one and painful to the other.

Many well-intentioned schemes of incentives founder because they are structured on naive and fragmented perception of the mosaic of motivation. One cannot compress a man into one's favourite fragment even if he is one's own employee.

What is needed is a systems approach founded on the following premises :

(a) Although the proportions in which various motivators exist in the

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make-up of each individual are unique to that individual, it is possible to classify them into three groups, viz.,

* desire for fulfilment of economic needs,

* desire for security, and

* urge for self-fulfilment through non-economic motives such as, the power motive, prestige motive, achievement motive, competence motive, affiliation motive, money motive (over and above economic needs), service to mankind, exploration and experiment.

(b) Individual's motivation or commitment to institutional interest is influenced by *his* perception of the environment in which he works.

(c) Environment is largely a matter of how an enterprise is managed.

Upgradation of Power Motive

Adult franchise, which has bestowed equality of political power, has been a strong stimulant of power motive. A person, who is wooed by high and mighty from time to time and who experiences the surge of power to make or break governments is bound to become power-conscious. This power consciousness manifests itself in the urge to influence the environment to his advantage and not to be taken for granted. He balks at being treated as a mere factor of production. He wants to be consulted; he wants to be heard. It is vital to recognise this profound change in the motivation texture of people. Failing that, the style of management will be mismatched with the reality that exists. The end result is debasement of the organisation.

Wage Incentives : Motivators of Limited Value

Wage incentives are in the nature of economic motivators. All schemes of wage incentives are based on linkage between wages and output above a standard wage. Methods of linkage are numerous and so are, therefore, the types of incentive systems.

Two most common systems are :

(a) piece-work system, and

(b) time-allowance system.

Under the piece-work system, a man is paid according to the number of jobs completed or operations performed, each job or operation having a price tag.

In the time-allowance system the work content of each job is determined in terms of standard hours of work of "Allowed man-hours". Percentage bonus is calculated with the following formula :

$$\text{Bonus} = \frac{\text{Allowed man-hours} - \text{Actual hrs. of work}}{\text{Actual hours of work}} \times 100$$

Thus, if an operator works 8 hours and completes work of 12 Allowed man-hours he is regarded as having earned 50% bonus.

There is a popular impression that wage incentives offer a panacea for all problems of productivity. This is far from true for the simple reason that man is not an economic animal. Economic motive is but a part of his motivation texture. It is like salt in the diet of motivation. The consequences of total reliance on economic motivators are similar to those of feeding a person exclusively on salt. It is vital to realise this because there exists, in organisations having wage incentives, a tendency to neglect the importance of non-economic motivators.

The fact is that under wage incentive systems human relations tend to get exacerbated by a tug-of-war between the workers trying to outwit and pressurise the management to maximise earnings and the management reacting to restrain these manoeuvres. Artifices for boosting bonus are legion. Examples are :

(a) Excess time allowed;
(b) Under-booking of direct workers;
(c) Non-accountal of losing job cards;
(d) Booking of idle time;
(e) Stinting on quality; and
(f) 'Fixing' the Rate Fixers.

There are instances in which, under threats of work stoppage, allowed man-hours were fixed by reverse calculation from the datum of 50% bonus.

In the game of manoeuvres and counter-manoeuvres, the junior level supervisors, who have a direct stake in bonus, and trade unions, tend to align themselves with the workers. Cleavage between the workers, junior supervisors and trade unions on the one hand, and management on the other, becomes sharper. The authority of senior shopfloor supervisors is diluted by the intervention of Rate Fixers and Inspectors and this leads to erosion of their morale and effectiveness. The pressure of 'affiliation motive' tends to incline the senior supervisors towards their junior colleagues who are physicaily and emotionally close to them. The net result is that shopfloor supervisors, as a class, tend to get alienated from management and its objectives.

An interesting phenomenon observed during the Railway Strike of May 1974 was that workshops, having wage incentives were amongst the worst affected. Even the supervisors joined and, in many cases, instigated the strike. It tends to confirm the presence of an undercurrent of discord in the organisation and alienation of supervisors, as referred to earlier.

Thus, the degree of competence in human relations demanded of management under wage incentive conditions is greater than that required under non-incentive conditions. Befitting recognition of this reality, which is contrary to popular delusion, is vital.

Another interesting observation is that productivity in Railway Workshops was generally low, during the years immediately preceding the May 1974 strike, despite the existence of wage incentives. It improved significantly in the post-strike period and spurted after the declaration of Emergency without any change *in the pre-existing wage incentive scheme.* This phenomenon, by itself, invalidates the assumption that wage incentives, *per se*, constitute adequate motivation.

This does not imply that economic motivators have no value. But their potency varies from situation to situation and person to person. They are certainly not the magic tonic of productivity which is too often oversold. They are a plant that cannot flourish in a desert devoid of non-economic motivators.

Clues to Climate of Motivation

Observations about the conduct of workshop staff and supervisors during the strike and productivity during the pre-and post- strike period are clues to the climate of effective motivation.

Appeasement : The Fuel of Indiscipline

Prior to the strike, the environment was characterised by pervasive permissiveness. Wildcat strikes, *gheraos* and other acts of indiscipline were routine. Disrespect for the rule of law and disregard for legitimate authority were rampant. Pressure tactics were rewarded with concessions by pliable managements. Appeasement and 'peace at all costs' became the most prominent characteristics of managerial response. It is my experience that appeasement is like the taste of blood to a man-eater. The more it is fed, the more the appetite grows.

As mentioned earlier, the basic urge of each man is to enhance his perceived advantage. Should he be led to believe that acts of indiscipline will be rewarded, he will be impelled towards more acts of indiscipline. The converse is equally true, that is, if acts of indiscipline attract

penalties and diminish perceived advantage, he will be deterred from them.

Indiscipline : The Scourage of Organisation

In the go-as-you-like atmosphere the equilibrium of power and authority in the organisation crumbles. Units of power and authority in any organisation are limited to a finite quantity and balanced distribution of these units amongst the tiers of management, the workers and labour unions is essential for effective functioning. Disorientation of power distribution *vis-a-vis* assigned and merited responsibility will result in erosion of responsibility, accountability and discipline. Carried too far, it will result in disintegration of the organisation.

Discipline : The True Meaning

A certain minimum of discipline is essential, not only for the growth, but also the sheer survival of individuals, groups, organisations, society and nations. Suppose the number of units of discipline required is hundred. These are composed partly of internal discipline and partly of external discipline. It follows that a person who *inheres* ample units of internal discipline needs correspondingly fewer units of externally-imposed discipline. In other words, the more self-disciplined a person the greater is the freedom to which he is entitled and *vice-versa*. The *dictum* applies equally to groups, organisations and nations.

To put it in another way, the membership of civilised society and the benefits that flow from it demand a price. The price is civilised behaviour and the essence of civilised behaviour is self-discipline.

Return to Rationality

The Railway Strike of May 1974 was a watershed in the stance patterns of managements. The posture of appeasement was replaced by that of resolute resistance to unconstitutional agitations and ransom tactics. Resolute measures taken by the management to counter the illegal strike served as a caveat that (a) such activities would be penalised and not rewarded and (b) discipline and accountability would be instilled. This dictum percolated to not only the shopfloor personnel but also to other personnel who were concerned with the prevention and resolution of staff grievances. As a consequence, the staff grievances came down and grievance channels became unclogged. Enervating agitations and go-slows which were daily routine vanished, because, with the changed stance of management, they became counter-productive to the perceived advantage of workers. The cabals and caucuses that plotted the agitations lost their following for the same reason. The energies of the organisation that used to be sucked up the whirlpools of stirs became available for productive effort.

and superior technology and management consequent on the establishment of foreign firms had not much materialised. He, therefore, questioned the taxation policy relaxation in favour of foreign firms in those countries, and, rather, argued for a uniform tax on multinational manufacturing firms for benefit of their export development.

The three joint authors of another study[2] examined the role of Japanese investments in Thailand which accounted for 11 percent of total registered capital there in June 1974. These investments were confined mostly to textile industry followed by iron and metal, transport equipment and chemical industry. They observed that the Japanese textile enterprises in Thailand never disturbed the Thai market, whether domestic or external; and that these enterprises rather created new market for Thai products especially in expanding the new export market through market transfer of their own market in the world for Thai products. They further observed that the Japanese joint ventures working there in collaboration with the Japanese trading companies had provided a pivot of multinational operation of Japanese textile industry. Though motivated in the beginning by an advance of their business, the Japanese enterprises there preferred local production for local markets to export of textile products from Japan to Thailand due to increasing import restrictions. These rather accelerated the export of Thai products.

In a third study[3], Yoshi Tsurumi observes on the working of Japanese subsidiaries in Indonesia and on that of the Japanese offshore plants in South Korea. As in the case of Thailand, so in Indonesia, the Japanese subsidiaries, according to him, showed an orientation to the local market. The Japanese offshore plants in South Korea have total orientation to the export markets. These plants produce standard and sophisticated products that are no longer economical to manufacture in Japan but are sold to the worldwide customers under the Japanese brand names. Inspired by such a market environment and reinforced by industrial policies of the host governments, the Japanese have introduced more standardised automatic processes. During the years, 1962-72, about one-quarter of South Korea's exports were directly related to inflows of foreign technologies and funds. 21 out of 66 manufacturing subsidiaries abroad of 4 leading manufacturers of electric and electronic production bases supply their respective parent firms with products destined for export markets including those of Japan.

Rupert Pennant-Rea, author of Survey of Foreign Investment in Asia[4], viewed : "Foreign firms seem to have made a significant, but hardly

2. Kikoji Katano, Atsushi Murakami and Kiyashi Ikemoto, "Japan's Direct Investment to Asian Countries", Research Institute for Economics and Business Administration, Kobe University, 1978, pp. 152...
3. 'The Japanese Are Coming—A Multinational Interaction of Firms and Polities', published by Ballinger Publishing Company, Cambridge, Mass. 1976, pp. 333+xxiii.
4. *The Economist*, June 23, 1979.

startling, contribution to developing Asia's exports. The evidence is patchy". He, however, gives the following patches from an article by Deepak Nayyar in the Economic Journal published in March 1978 :

(a) American manufacturers in Asian IDCs (industrially developing countries) sold 75 percent of their output on the home market between 1966 and 1974. The remaining 25% was exported, and accounted for 6.1% of all developing Asia's manufactured exports.

(b) Outside manufacturing, their influence is greater; American companies were responsible for 27% of total exports from Asian IDCs in 1970.

(c) Japanese manufacturers in Asian IDCs sold 25% of their output back to Japan in 1973; this was 60% in the case of clothing and 30% for electrical machinery.

(d) Multinationals accounted for about 10% of Hongkong's manufactured exports in the early 1970s; 15%, Korea (1971); 5%, India (1970); 5-10%, Pakistan (early 1970s); all of which was peanuts, compared with Singapore's 70% in 1970.

All these studies reveal a varying pattern of contribution made by multinationals in export development in the developing countries.

India's Experience

It is proposed against such a background, to evaluate the experiences of Indian branches and subsidiaries of foreign companies in the transfer and development of technology and the export promotion of Indian products.

Pattern of Representations

As on 31st March, 1977, there were 482 branches and 161 Indian subsidiaries of multinational companies operating in the country. Their number has declined during the preceding three years. The number of Indian branches declined from 510 in March 1975 to 481 in March 1976 but was 482 in March 1977. Indian subsidiaries declined in number from 183 to 171 and 161, respectively. The countrywise distribution of Indian subsidiaries and branches is given in Table I.

As will be seen from Table I, the overwhelming number are the Indian branches and subsidiaries of British companies followed by the U.S. companies which are though far behind the former. A number of other developed countries also have their representation through Indian branches. Switzerland has got an equal representation in both the

Table I

Indian Branches and Subsidiaries of Foreign Companies as on 31st March 1977

Countries of parent companies	*Indian branches*	*Indian subsidiaries*
Developed countries		
(1) U.K.	301	125
(2) U.S.A.	83	27
(3) Australia	5	—
(4) Belgium	3	—
(5) Canada	7	3
(6) France	8	—
(7) Italy	5	3
(8) Japan	20	1
(9) Luxumberg	1	—
(10) New Zealand	1	—
(11) Netherlands	7	1
(12) Norway	1	—
(13) Sweden	4	8
(14) Switzerland	9	10
(15) West Germany	12	5
Socialist countries		
(16) Yugoslavia	12	—
Developing countries		
(17) Aden	1	—
(18) Bahama Islands	3	1
(19) Bangladesh	6	—
(20) Barmuda Islands	1	—
(21) Greece	1	—
(22) Hongkong	5	—
(23) Iran	1	—
(24) Kenya	1	—
(25) Kuwait	1	—
(26) Lebanon	2	—
(27) Liberia	1	—
(28) Malaysia	1	—
(29) Nepal	3	—
(30) Pakistan	6	—
(31) Panama	2	1
(32) Philippines	1	—
(33) Singapore	3	—
(34) Sri Lanka	1	—
(35) Tanzania	1	—
(36) Thailand	2	—
(37) Uganda	3	—
Total	510	183

forms. A fair number of developing countries too operate through their branches in India. As such, compared to any other developing country, India has a far larger number of representations of foreign companies in so wide a range of products and services. Their participation in manufactures ranges between such simple consumer goods as safety matches and the highly sophisticated capital intensive mining-machinery and equipment and infrastructure development. It is but natural in view of her great abundance and diversity of business resources and potentialities and a comparatively far earlier start in developing business and industry.

The political overtones of foreign companies' operations especially in developing countries and the consequent impact of theirs on the socio-economic fabric of the latter are well echoed in ESCOSOC's expert group's report "The Impact of Multinational Cooperations on Development and on International Relations" which reflected on the awesome power of these industrial titans from the West, subtly subverting the sovereignty of nation states, misusing their citizens and plundering their resources. Such a power might have been in full action in certain smaller countries, but its rumblings are sometimes felt even in a large country like India, as is evident from the Members of Parliment showing concern and anxiety on the operations of foreign companies in the country, calculated to be detrimental to indigenous industries.

Industrial Contribution

The foreign companies in India operated before Independence mostly in such production spheres as plantations and mining and in services like banking and insurance; though their role in production of consumer goods, namely, shoes, safety matches, soap, tooth paste, confectionery etc. was also appreciable. After Independence, they multiplied their representation in almost the entire diversified field of production, providing sophisticated machinery, technical know-how and contributing to the structural 'deepening' and diversification of the country's economy. The 'spread effects' and linkages promoted by industrial culture following the operations of foreign companies might not be possible to be precisely quantified, but it cannot be denied or minimised. A case study of Philips—the number like this can be multiplied—is cited below.

The growth of Philips India during the last 17 years has been phenomenal with the value of production multiplied 18-fold. The company has moved from production of simple electrical goods into the manufacture of sophisticated professional scientific instruments. It has got seven factories, two in Calcutta to manufacture radios and record players, lighting fittings and accessories, plastics and metalware and telecommunication equipment, two near Bombay to produce lamp and lamp components and welding electronics and three in Poona district

for turning out electronic components, plastics and metalware at Lonikalbhor, radio sets at Bhosri, and professional equipment also at Bhosri. Besides a dozen laboratories attached to them, it has a central research station and the technological support and guidance from the parent company.

There is a technological spill-over in that the company has brought under its wings over 600 ancillary units—mostly in the small scale sector—which supply a third of its purchases covering a wide variety of products ranging from coil winding and press moulding to complicated metal casting and precious tool making. They are fed with technical and managerial guidance and, where necessary, with financial assistance. These partners in progress of electronics industry also receive application assistance comprising circuit development and prototype evaluation.

Government Control

Unlike in South Korea, Thailand and Indonesia whose case studies have been referred to above, the foreign companies in India are subjected to the govenment laws and regulations, lately, under MRTP and FERA, in the overall interests of the country. Their practices, profits and remittances are reported to the Government to serve as a mechanism for ensuring their adherence to the overall objectives of the government policies. Measures have been taken to dilute their ownership and to restrict their dividend remittances. Guidelines have been prescribed for the royalties to be paid by Indian subsidiaries to their parent companies on technical know-how and patents provided by the latter.

They are allowed to change their equity pattern so as to be treated at par with the Indian companies under FERA. Very recently Philips has transferred itself into Peico Electronics and Electricals, Ltd.

Profits and Other Remittances

In answer to a Parliament question, the Government provided the following figures relating to the remittances made abroad on account of profits, dividends, royalties, technical know-how and interest payments by private sector during the period 1973-74 to 1975-76. (See Table II)

In consonance with the Government policy on a gradual dilution of foreign capital in Indian subsidiaries, the remittances on account of profits, dividends and royalties accounted for a decreasing proportion of total remittances, being 52.5 percent in 1975-76 as against 72.8 percent in 1973-74, Total remittances increased in 1975-76 by only 9.2 percent over 1973-74, though by 27.2 percent over 1974-75 due largely to a rise in remittances on account of technical know-how. Remittances were made to multinationals incorporated mostly in the U.K., the U.S.A.

Table II

Pattern of Remittances by Indian Branches and Subsidiaries

(Rs. million)

Items	*1973-74*	*1974-75*	*1975-76*
1. Profits	219.1	71.9	203.6
2. Dividends	375.1	184.6	248.4
3. Royalties	72.1	84.6	104.9
4. Technical know-how	141.8	125.6	256.6
5. Interest payment by private sector	162.7	367.0	246.5
Total	970.8	833.7	1060.0

(Minister of Law, Justice and Company Affairs, L.S. Uns. Q. 1283, dated 25th July 1978)

and West Germany. These were the highest on the account of profits and dividends for multinationals in U.K., in the form of royalties and interest payments for those in the USA, and by way of fees for transfer of technical know-how to those in West Germany. These facts reflect the differences in business pattern between multinationals in different countries and their Indian branches and subsidiaries.

Profits remitted by the Indian subsidiaries to their parent companies do not seem to be a significant segment of total corporate profits in India. 101 giant public limited companies in the private sector (vide *Economic Times* List) reported profit after tax at Rs. 194.22 million in 1976-77. The coresponding figure for all types of companies in the private sector must be at least double this figure. As such, profit remittances of the Indian subsidiaries are approximately not more than 5 percent of total profits earned in the private sector.

Profitability (before tax) ratio of the assets of multinationals in India (branches and subsidiaries) declined from 11.5 percent in 1970-71 to 8.2 percent in 1975-76, as can be seen from Table III.

Again, 29 Indian subsidiaries of the foreign companies with net profits (profits after tax) of Rs. 10 million each remitted 10.57 percent of their net profits as dividends to foreign companies in 1974-75; and 11.03 percent in 1975-76; while they retained 59.3 percent and 45.6 percent of their total profits, respectively, in the country. The lower retention ratio of profits in 1975-76 than in 1974-75 might be due to the increasing charges paid for specific

Table III

Profits and Assets of Indian Branches and Subsidiaries

(Rs. crores)

	Branches		*Subsidiaries*	
	1970-71	*1975-76*	*1970-71*	*1975-76*
Assets in India	14686 (522)	17622 (259)	10781 (217)	16139 (161)
Profits	522 (522)	579 (259)	1499 (317)	2195 (161)

(Figures in brackets indicate the number of reporting companies)

services but not due to much higher dividends remitted abroad. Out of 7 Indian branches of foreign companies with net profits of more than Rs. 10 million, two retained almost their entire net profits in the country. These facts might help allay the fears of the public about earning and draining out huge profits by multinationals in this country.

Production and Exports

Production monopoly by foreign companies, especially in the case of certain consumer products, is often made a point of criticism in the Parliament and outside. Its extent is illustrated by such common items as footwear(leather and rubber, soap and synthetics and matches) which are of great concern for consumer welfare in the country. (See Table IV)

Table IV

Production Share of Foreign-owned Companies

Items	*Total production 1977-78 (Organised Sector)*	*Production in foreign owned companies (1977)*	*% of (3) to (2)*
(1)	*(2)*	*(3)*	
Leather footwear (million pairs)	14.00	13.37	95.5
Rubber footwear (million pairs)	43.10	29.63	68.7
Soap ('000 tonnes)	290.0	178.7	61.6
Synthetic Detergents ('000 tonnes)	104.0	43.1	41 4
Matches (million boxes)	38.13	38.13	100.0

Foreign companies had a monopoly or near monopoly in the production of footwear (leather) and matches in the organised sector; but they appreciably shared the corresponding production of footwear (rubber),

soaps and detergents. Small-scale sector had production worth Rs. 2870 million in respect of footwear (leather and rubber), soap (laundry), detergents and matches in 1977.

Out of the top 25 manufacturing exporting units (DGTD), excluding those for leather and leather products, only three were the Indian branches of foreign companies in 1976-77. These were Philips India, G.K.W and IBM World Trade Corporation with the total export figure of Rs. 8114.9 million or hardly 6 per cent of total exports made by the top 25 exporters in that year. Their corresponding share was 13.7 per cent in 1973-74. Batas were the only multinational among the top 25 manufacturing exporters of leather and leather products in the same year With their sixth rank among the latter, their exports amounted to Rs. 28.4 million in 1976-77 as against Rs. 20.2 million in 1975-76; but these accounted for 3.6 per cent of their total gross sales in the previous year.

These facts broadly indicate that multinationals have got a far less significant share in direct exports from the country and, further that their relative share (excluding Batas) has been on decline during the recent years.

The Government provides for capacity expansion by multinationals in respect of different items (including the reserved ones even) with 100 per cent export obligation, under the expectation that multinationals should employ their world-wide contacts and superior expertise for expansion of exports from the country and leave the domestic market for small entrepreneurs in production fields with technical feasibility for the latter.

Conclusion

India's experience of multinationals is not exactly similar to the experience of some other countries in this region due to historical and policy reasons. It is characterised by caution and control under the compulsions of India's politico-economic policies and her concept of development in the context of her basic problems of over-population, unemployment, economic and social disparities. Other South Asian countries suffer from a number of such like problems and seek their solution in free and outward-looking policies of development, with the minimum possible restraint on the multinationals' operations there. Even among them, the *rasion d' etre* and *modus operandi* of multinationals are not always comparable. These differences are explained, apart from the varying socio-economic environments in the host countries, by differences in the objectives of the parent companies in their foreign investments and affiliations. The Japanese companies are stated to have been allured more by production for the domestic market of host countries like Thailand and Indonesia due to restrictions on imports from Japan. But the American companies in South Korea and Taiwan were there

for comparatively cheap production for export to their own and other countries. The Indian experience partakes mostly of the former experience, mostly because of the large domestic markets there. Multinationals' *inappreciable* exports of goods manufactured in India lend support to such an objective of the former.

Multinationals' net contribution to the host country's economy is to be assessed in the context of national priorities of the host country, ranging from immediate incomes through modern technology-based production to the development of indigenous resources, technology, production and employment pattern. Their operations have got an impact on indigenous competition even in the developed coutries which also show concern over foreign control of key sectors of their economies. As such, the host countries, especially the developing ones, find it necessary in their own interest to regulate the investment, production and remittance pattern of foreign companies working there.

Future Perspective

Operations of multinationals in developing countries depend on (i) foreign investment policies of the host countries and (ii) needs (pattern and quantum) of foreign investments in the developing countries in view of their own economic targets and resources. According to the *Economist*' Survey referred to above, the developed countries are likely to grow reluctant to foreign investments by their companies due partly to political reasons (constant shaking of Asia's kaleidoscope) and partly to the "stay-at-home" pressure on multinationals since 1974. "Runaway jobs" to the "Sweat shops" of the developing world are now a hot political issue, at least among the trade unionists. Such pressures also arise out of the inability of slow-growing industrialised countries, to absorb fast-growing manufactured exports from developing countries, maybe due partly to the effects and obligations of their own multinationals working in the latter.

Equally changing is the matrix of needs of developing countries : for instance, Hongkong is already saving as much as it invests and does not, therefore, need foreign investment as acutely as before; and India has all the technical skills (except in highly sophisticated production areas) which the average multinational can offer. But many countries have still large financial and technological gaps for foreign firms to bridge. Their attitudes towards and policies for multinationals will influence the decisions of foreign companies to invest in their countries : at the same time the foreign companies' willingness and abilities to promote indigenisination of capital and operations, within the broad economic parameters of developing countries will help the latter in facilitating the entry of multinationals in their economies. In conclusion, multinationals and developing countries are both to observe the rules of the game. □

GERT and Related Topics : Applications (II)

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This is the second and the concluding part of the series on GERT. The first one appeared in October-December 1979 issue of this journal, covering several basic concepts as in [26], [27] and [37]. The historical development as well as a generalised formulation of the 'exclusive-or' type of feed-back networks were taken up. The effect of learning on such networks was also studied with the help of a trivial example.

This paper deals mainly with a variety of applications using special computer programmes [25], [28], [29] and [36]. Complex queuing systems [30], [31] and production processes [23] are amenable to GERT formulation with suitable modifications. Problems relating to maintenance and reliability [4], [34], [38] and [24], consumer brand choice [7] and those involving R&D effort [5], [1], [6] have also been covered in this series.

Simulation

Any GERT network can be subjected to simulation so as to obtain different project characteristics. An early effort in this direction is due to McDonald ([19], 1966). He has developed a general purpose GERT Simulation programme which takes into account the realistic AND nodes in addition to 'exclusive-or' type of feed-back loops. He has also shown how to investigate the resultant distributions at the project level using various statistical tests. The normality assumptions underlying PERT networks have also been verified by McDonald with the help of this model.

Moder *et.al.* ([20], 1971) has applied a GERT Simulator to a repetitive hardware development type project. Expressions of management policies and system procedures would invariably involve decision nodes leading to alternative paths and feed-back loops necessitated by test or inspection failures that call for networking of previously completed activities. Committees which handle patents or the refereeing of articles for technical journals would come under this category. Similarly, handling of patients through a medical screening centre can be described as a feed-back network. Even in the field of jurisprudence, GERT is an excellent

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mode of expressing procedures to handle various classes of accused public offenders. Moder *et.al.* illustrate the concepts involved through the development of US Airforce munitions systems.

The first network simulation language capable of analysing models of a combined continuous-discrete nature is due to Saigal and Pritsker ([32], 1974) and this language is called SMOOTH. It is written in FORTRAN and is based on the GASP IV and GERT III Z. The language consists of a set of graphical symbols, users' input instructions and a computer programme. SMOOTH has been used to study biological systems, environmental pollution by trace metals and insecticides and problems in system dynamics.

Queues

The mathematical treatment of queuing theory has received considerable attention during the last three decades. However, the configuration of a stochastic feed-back network as well as the developments in computerised simulation techniques gave a fillip to a more realistic depiction of queuing situations.

One of the earlier contributions to the GERT modelling of maintenance operations involving finite queuing channels is by Shah ([34], 1971). He deals with M/G/1 and G/M/1 classifications. Branson and Shah ([3], 1972) show further results, in the same direction with specific illustrations.

Townsend ([35], 1973) on the otherhand, deals with GERT networks with items differentiation capabilities, using titles 'P-GERT' and 'Q-GERT'. His investigation includes methods of storing, assigning and using attribute values and the development of new branching concepts, distribution types, new symbols and codes.

In this process GERT queuing models went through an evolution. The initial graphical network simulation model was titled GERTS. The advanced versions of this were called GERTS II and III. This was followed by GERT III Q, which allows for queues to build up at certain nodes. Similarly GERT III R was designed for the study of activity networks that allow for resource identification and limitation on certain activities. GERT III R assumes that the resource constraints act upon every arc. However, in most queuing networks, the only arcs which might require resources are the output arcs of Q-nodes, which relate to service activities associated with the respective queue. Invariably, the other arcs of a queuing network simply represent paths for the items flowing through the system. Hence there is no real need to consider that every arc is resource-constrained. By a proper amalgamation of GERTS III Q and GERTS III R, Hogg ([10], 1971) developed, the GERT

III Q R model which admits only the output arcs from Q-nodes for the purposes of resource limitations. He has further extended this model in ([22], 1972) ([17], 1973) to consider several different job assignment rules and penalty cost functions.

In a multi-resource-constrained queuing systems, items may be detained in the queue not only because of a busy service facility but also because of non-availability of a resource such as labour. In such a situation, even if a service facility is idle, items are in queue. These modifications to the basic queuing concepts are also incorporated in the simulation model. Hogg. *et.al.* ([11, 12], 1975) give a good account of the development and notations of GERT QR models alongwith examples relating to a labour-limited job-shop queuing system (also see ([9], 1972), a retail sales outlet and the planning of a jet-engine overhaul facility. The working details of the last example can also be seen in another paper—Maggard *et. al.* ([18], 1974).

Application of queuing models to complex production systems has received the attention of Phillips and Pritsker ([23], 1975), who employ GERTS III Q simulation programme. They first take up a conveyer-service production system with two servers and a provision for different stages of inspection and reworking. They also show how a GERTS diagram leads to a process flow chart which helps in resolving process bottlenecks and raw material flow problems. Addition of more servers and use of priority rules can also be experimented within such simulation models.

Research and Development

One of the earliest papers which permit the generalisation of a PERT network to include probabilistic branching is by Eisner ([6], 1962). He observed that the planning and scheduling of a research programme would involve alternative course of action at different stages of research investigation. The probability of following each alternative is estimated. This would lead to a probabilistic ranking of the possible outcomes of a given research project. Using the classical information theory concepts, the entropy of the total process is then calculated. Thus the configurational and mathematical tool comes under the category of a decision box (db) network wherein standard PERT techniques for time estimation and scheduling are superimposed.

Extending the Eisner model given above, Chilcott *et.al.* ([5], 1965) show more applications of network planning under uncertainty in the field of research management. A more recent development by Moore and Taylor ([41], 1977) refer to a GERT simulation study of a multiple R&D project wherein several research teams work concurrently and sequentially. They use GERTS III Z simulation package which provides statistics on

project times and costs. These are valuable aids in contract negotiations as well as in the planning and scheduling of manpower, equipment and capital. The model has a provision for sensitivity analysis. Changes in the success-failure probabilities in the key stages of R&D process may result in time and cost reduction. Moore and Taylor's contribution is the first reported application of GERT to the analysis of multiple research and development projects. However, single R&D project applications may be seen in Samli and Bellas ([33], 1971) dealing with market research and Bellas and Samli ([1], 1973) which concerns planning of new products. Yet another earlier application of GERT dealing with consumer behaviour is by Eystone ([7], 1969). He describes a network approach to the process by which a consumer selects a particular brand and accordingly derives relevant system performance measures.

Reliability Analysis

The initial contributions of Pritsker and others referred to in this paper have been concerned with stochastic feed-back networks which have additive properties only. Further investigations by Whitehouse ([38], 1970) related to problems in reliability, but his attention was confined to seeking information other than the system reliability, e.g., expected life of repeatedly used part.

Byers and Skeith ([4], 1972) discuss the application of stochastic networks in determining the reliability of systems which consist of an arbitrary mixture of series and parallel subsystems, based upon the conventional 'reliability block diagram'. They first derive the equations that are used to obtain the mean and variance of subsystem reliability for certain failure time density functions. Using Fortran IV, they build up from the subsystem level to obtain the mean and variance of the system reliability. The doctoral dissertation of Whitehouse ([40], 1975) shows further extension and new developments relating to such stochastic networks. Yet another contribution to system realiability using GERT approach is by Poiage ([24], 1973) who also provides a review of a few fundamentals in the complex systems reliability theory.

Other Applications

Hornbaker ([13], 1967) applies GERT to the bond refunding decision problem originally defined by Bierman ([2], 1966) as a Markov Process where the state of the process is described by an interest rate in each time period. Assuming that the firm breaks even by refunding at the current bond interest rates, Bierman introduces a pay-off or a reward matrix whose elements represent savings from refunding each interest rate below the break-even rate of interest for each time period. By converting the qualitative description of the bond refunding process to a model in a network from, Hornbaker applies GERT, demonstrating the

equivalence of results for the same data used in Bierman's analysis. Eventhough, for this problem, Bierman's simple approach is a better one, GERT holds promise in the solution of more complex problems.

The pioneering works of Howard ([14], 1960), ([15], 1964) relating Dynamic Programming with Markov Process and his subsequent two volumes on Dynamic Probabilistic Systems ([16], 1971), a decade later, deserve special attention. He makes full use of the network format and signal flow graph techniques while modelling several social science phenomena which exhibit either Markovian or Semi-Markovian property.

Finally, an interesting application of GERT by Grant ([8], 1974) concerns the manner in which a burglar would decide when attempting to reach a target in a building. He makes use of Q-GERT model to evaluate the success and failure probabilities associated with an attempted burglary. His model includes probabilities associated with the thwarting of the burglar, path/time dependent decision processes as well as the probabilities associated with security measures.

In conclusion, GERT has proved to be a very promising tool in the analysis of complex stochastic systems which are normally amenable to flow graph representation. Unfortunately, the development of analytical solutions of such networks have been confined to 'Exclusive-or' type of nodes. However, as indicated in this paper, several computer simulation models ([39], 1973) and ([21], 1976) are available to tackle networks involving AND and 'Inclusive-or' nodes as well. □

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Anatomy of Change

Anil Nagar*

Organisation change is aimed, primarily at improving the performance of an organisation by bringing about changes in its constituent parts which result in better functioning of the unified whole. In totality, its not only deals with change aimed at the operating systems at various levels and in various departments of the organisation, but also with structura changes necessitated in order to achieve the desired goals. Change may be brought about in a section of a department, in the whole of the department, in more than one department, or in the total organisation. However, since the focus is on performance, such rigid boundaries for the change process are neither possible nor desirable. To the extent the interdependency of areas and systems exists, they have to be brought into the ambit of the change programme. For example, a system change in one section may necessitate a corresponding change in another section. Combined, both these changes may warrant a redesigning of the departmental structure. This may be termed as the bottom-up approach wherein a change initiated at the bottom level of an organisation gives rise to corresponding changes higher up. The top-bottom approach views the total organisation from the top and works itself down to the level of systems and procedures in respective sections or departments. The distinction between these two approaches, however, is only conceptual while practically they themselves are intertwined. No clear line of demarcation exists between the two. There is a constant shift from one to the other.

Need for Change

Why should organisations be geared for change ? Performance improvement has been identified as one of the reasons for change; but improved performance is itself a function of much broader and wide-encompassing factors. Consumer demand for more and better products, the changing economic environment and management's concern for efficiency, profits, and growth combine with a sharply rising curve of scientific discovery and technological innovations that subject organisations to sustained pressures for change. Yesterday's successes mean very little in a world of rapidly changing markets, consumers, products, values, life-styles, and

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so forth. In order to survive, modern organisations must devise means of continuous self-renewal. They must be able to recognise when it is necessary to change, and above all, they must possess the competence to bring about change when it is required. In the words of Alfred P. Sloan, "The circumstances of an ever-changing market and an ever-changing product are capable of breaking any business organisation if that organisation is unprepared for change—indeed in my opinion, if it has not provided procedures for anticipating change". This not only emphasises on change but also on the importance of managing change.

Human organisations are as susceptible, as other social institutions are to changing times, and their rise and fall, success and failure, all testify to their vulnerability. As John W. Gardner (1965) suggests, "What may be most in need of innovation is the corporation itself. Perhaps what every corporation (and every other organisation) needs is a department of continuous renewal that could view the whole organisation as a system in need of continuing innovation".

What Does Change Involve ?

Change, by itself, means departure from tradition and setting aside of programmed ways of working together. It implies change in ways which are themselves just beginning to stabilise after an earlier change. Change may mean excitement, challenge, opportunities for advancement, or it may mean frustration, insecurity, or loss of social status. There is a certain ambiguity and uncertainty which is an inevitable consequence of change. This is more pronounced in the 'people' approach to organisational change whose focus is clearly that of applied behavioural science.

Change, could be technical or a social change. Technical change emphasises on such things as the administrative structure, technology, or the work-flow process. All functional systems such as production system, material system, financial system, etc., come under this category, and the technical change process concentrates on improvement in the respective systems through better work-flow, less paper work, better information system, balanced administrative structure etc. It essentially concentrates on individual departments of an organisation. However, although each department, sub-unit, and member of any large scale, modern organisation has its own special objectives, activities, and tasks to perform, these sub-parts are tied to, and dependent upon each other, so that a change in one sub-part usually has repercussions in other sub-parts. Thus a new production system may need to interact with the materials department for better raw material deliveries by providing material forecasts. Similarly, it may also have to coordinate with the maintenance people to coincide maintenance schedules with machine release.

In planning for such a technical change, it is, therefore, important to examine carefully the probable impact of change on not only the sub-part directly affected, but all other parts of the organisation which interact with this sub-part. Such an examination could probably start in the area in which the change will have its major impact and trace the connections of that area to other areas.

The social change approach views all organisations as on-going social processes, and emphasises the importance of the many interpersonal, group, organisational, and even cultural factors. This approach gives importance to the fact that 'people are called upon to do things differently'. In this sense, behavioural change is involved in all organisational change efforts. According to this, organisational problems are rarely, if ever, problems of isolated factors. Most typically, the difficulties flow from the interactive behaviour of one individual with another, from the relationships among individuals within a group of persons, and from the relationships between and among groups of individuals within the organisation. Consequently, it is believed, for a change effort to be successful it is necessary to draw as many of the concerned persons into the process as possible.

In handling change this approach considers it essential to deal with problems of resistance to change—why some individuals will embrace a change, some will simply tolerate it, other will resist it, and a few will openly oppose a new pattern. Change means a disruption in the customary interpersonal relationships between people. Ordinary patterns of expectations, understandings, and events are broken, and all people have to try to establish new patterns of behaviour.

It is not that such an approach regards the technical change approach as unimportant, or sees it as unrelated to the problem. It could very well be that the initial thrust of any change effort could be concerned with the administrative structure, technology, or work-flow, but in the final analysis, (as claimed by the social change approach) all organisational change efforts, regardless of initial focus, must take into account the necessity for behaviour change. This seems to stand to reason. A person who has worked in one job for a long time usually has come to see his job performance as consistent with the kind of person he sees himself to be. A major change in the way he is required to perform his job is likely to come in conflict with his concept of himself. A new adjustment, requiring some modification of his self-image, will have to occur before he will be effective and satisfied. Thus, a new work technology introduced in a production organisation without consideration of the fact that the change in system now requires people to work in collaborative team settings, causes management to be surprised to find that productivity decreases sharply after the introduction of the change. In such a case management must recognise that effective team performance does not occur sponta-

neously but must be systematically planned and developed. Similarly, technological change in a system of producing seamless pipe affects the incentive system, the social structure of work groups, and individual job satisfaction. Changing the technical system of customer billing affects the working relationship between two divisions.

The role of the change agent in the change process can be better appreciated, if it helps to further conceptualise change in the manner of its occurrence. Change may occur as a consequence of a well planned, carefully thought out course of action, or it may be the result of a spontaneous decision and action. In the case of the latter it may be termed as unplanned change. However, this category of unplanned change should not be confused with an ill-planned change process which, given the need for change, goes about it in an unsystematic and ill-devised manner. To that extent it is ill-planned.

Of the types of change approaches discussed above, i.e., technical and social, the social change approach is almost always a planned exercise. In case of major changes even technical change has to be planned. To a far lesser degree of change, both approaches could be unplanned, i. e., spontaneous. Such unplanned, spontaneous changes in organisational functioning take place in the many face-to-face encounters that routinely occur in everyday life of the organisation. In many instances this change is the result of direct instruction by one organisational member to another. Thus, an instruction by a manager to change the format of a weekly report, or an instruction by a supervisor to lubricate two more points on a machine every week, or instructions by a senior manager to put up bills to him for approval every week rather than once in fifteen days are all examples of unplanned change. Of course, it implies that the change does occur after such instructions. Examples of a little more degree of unplanned technical change are shifting the seating arrangement within a section of a department, introduction of an additional progress report from the sales force by the sales manager, and increasing the frequency of a committee meeting by the general manager.

Unplanned social changes (to the extent they can be categorised as spontaneous) are not very common in the day-to-day functioning of an organisation but they do occur from time to time. For example, for a task requiring a team approach, the skilled and experienced manager will not only consider the technical skills of the team members but also their interpersonal relationships, i.e., which men can get along with each other, who will be helpful to whom, etc. Demonstrating an operation to a doubting and unconvinced workman by an engineer in order to win his confidence, is another example of a spontaneous social change. Lending support and encouragement to a worker or a staff member is yet another instance.

Unplanned changes are characterised by three easily-identifiable factors :

(a) The change process itself is given little thought. This is to say, no concious effort is directed towards the methodology of change. One can argue that giving a direction to a subordinate is the methodology adopted, but this is done quite unconscious of the fact that a change process is being set in motion. A detailed, elaborate plan to bring about change is not formulated and to that extent unplanned change is spontaneous.

(b) The duration for the change to be effective is quite short. It only involves easy compliance to an instruction. 'Easy' compliance is essential since it should not involve policy issues or inherent conflict situations, in which case it is no longer unplanned but ill-planned change. For tackling such situations the change has to be necessarily planned.

(c) No third party intervention is required for the change. Since such changes are a day-to-day feature of any organisation, they are essentially handled by the people within, who are affected by the change and no outside involvement whatsoever is needed.

Although unplanned changes as such are almost always minor in nature, that is, they do not involve major reshuffling to existing systems and procedures, their consequences could be relatively more. Here again, it would be difficult to measure the impact of such changes in absolute terms but indications could be by way of quicker disposal of work, perceptible improvement in decision making and a general improvement in efficiency of the section or sub-section involved. Such naturally occurring, unplanned changes usually do not cut across departments of an organisation and their impact is more local in nature. Planned and deliberate change, on the other hand, is generally wider in coverage and can assume major proportions. Planned change necessitates concentrated resources to implement and most organisations that feel the need for change and decide to try to improve their effectiveness, make use of an objective third party—the organisational consultant. □

An Introspection into the Accounting Professions: How Good Are We ?

P. Chattopadhyay*

The present discussion is concerned with introspection and self-assessment. It is by nature a delicate area, because the professions of accounting and cost and management accounting consist of numerous members and students coming from a variety of mother-disciplines and within each of them, widely different standards of academic attainments. Not unexpectedly, we are not a homogenous group but our heterogeneity is superscribed by the tenuous, if not utterly superfluous, oneness conferred by membership of the profession. We say oneness, to distinguish it from orchestration effect, which the professions hardly impart.

This is both a strength and a weakness at the same time. It is a strength in so far as the involvement of different intellectual disciplines and areas of expertise contributes to the building up of a strong base for taking off and the acquiring of a larger spread. The cream of the profession and the core of knowledge, that is fundamental to any profession, are expected to percolate to various strata of society, various walks of life and various occupations—culminating into a propagative effect, in contra-distinction with needle top focus. It is a weakness inasmuch as the relative strengths of the pushes and pulls of the membership at large that determine which way the professions would lean—whether to make the mechanical or the conceptual aspects stronger, which way the future would be shaped and how the working tools would be designed and applied. These are all complicated issues, generally left unsung.

Over time, the professions of accountancy and cost and management accountancy have had to face situations threatening to obliterate their very existence and dilute the good work they had already done and are poised to do in future. Looking back to the processes of development that they have followed and to the watersheds they have left is *sine qua non* of setting our houses in order, for taking stock of our strengths, and weaknesses and for building on our strengths, while dealing

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effectively with these lags. An analogy drawn from English literature is perhaps more appropriate here.

T. S. Eliot surely did not anticipate the high potency of his observations or their pervading relevance to different fields when he wrote :

"From time to time, every hundred years or so, it is desirable that some critic shall appear to review the past of our literature, and set the poets and the poems in a new order. This task is not one of revolution but of readjustment. What we observe is partly the same scene, but in a different and more distant perspective; there are new and strange objects in the fore-ground, to be drawn accurately in proportion to the more familiar ones which now approach the horizon, where all but the most eminent become invisible to the naked eye." (T. S. Eliot, *The Use of Poetry and the Use of Criticism).*

In support of drawing this analogy, we are reminded of W. H. Auden who characterised human beings as analogy-drawing animals. However, since analogies can be overdrawn and mistaken as identities, we leave it at that. Moreover, the inquisitive instincts, the typically literary habit of not accepting anything unquestioningly and the opening of multiple doors of perception deserve close attention from professionals like us, perhaps also sizing up our faculty of appreciation. Taking recourse to Auden again, in his inaugural lecture as Professor of Poetry at the University of Oxford in 1956, he referred to a joke that had appeared many years ago in the *Punch :* "The cartoon showed two middle-aged English examiners taking a country stroll in spring. And the caption ran :

First E. E. O cuckoo shall I call thee bird
Or but a wandering voice ?

Second E.E. State the alternative preferred
With reasons for your choice".

Two points are relevant here. The questioning spirit was underlined by Auden as a modern trend in English literature, a spirit that has pervaded the entire field in recent times, covering prose, poetry and drama. The questions asked and sought to be answered have been from different standpoints, bringing in elements of sociology, psychology, philosophy, history, politics and economics. The spirit has been a consciously inculcated and cultivated virtue, lest we get 'atrophied by lengthy exposure to dead stereotypes', an expression used by David Daiches.

Secondly, and more significantly, formulation of alternatives and selection therefrom have been activities acquiring the brand name, 'decision-making', of late much discussed in management literature the

world over, nicknamed 'praxeology' in some quarters. Assignment of reason for the choice exercised is not always done; where done, it is not complete many a time, nor is it communicated to the levels below.

Selection from the alternatives is a managerial preserve. Accountants are concerned with supply of information and they hardly question what happens afterwards. We do not question at this stage their ability to fully evaluate the alternatives, for boosting the managers' 'degree of confidence' in choosing from alternatives. However, let us take first things first.

A sense of perspective was as much necessary for literary efforts as it was for professions, particularly accounting professions, where one faced the curious condition of having to run faster and faster to remain at the same place. Progress in the professions, particularly accounting professions, has had contextualities much harder in the sense that not only one had to run faster, but this running had to be in bigger and bigger strides to gain space, which meant progress.

With due humility, we make the submissions in the following paragraphs, which indeed may sound preposterous, or even impolite and impertinent. Before our respected seniors in the profession and in the academic circles, we humbly make the plea that creativity perhaps starts with asking inconvenient questions for setting the house in order, for finding direction to our efforts and for tying up those loose ends that tend to remain unnoticed, unspoken and unheard. We crave their indulgence and accommodation. Apologetically, therefore, as members of the profession of cost and management accounting, we ask ourselves the question, *albeit* at this late hour of the day, how good are we ? This question has several sub-questions, some of which are :

(i) How do we measure our quality ?

(ii) Do we have yardsticks ?

(iii) How are others doing and against what yardsticks ?

(iv) Cognizably, how have we done in different areas within our purview, as assessed by us and by others ?

(v) How are we planning for the future ?

The main question and the sub-questions lead us to the definition of what a profession means. The Carr-Saunders Committee in the UK put a succinct definition indicating that a profession is a calling or vocation having a core of knowledge, on the basis of which its members render specialised service to their clientele, or to *society at large.* Before we come to the other questions, it is necessary to emphasise that a profession need not necessarily have a clientele, that is, somebody would

practise as either a consultant or as an independent practitioner. The span of professionalism is expanded by dropping the word 'clientele' and adding the word 'community' instead. Since the establishment of the Institute of Cost and Works Accountants, London, for a long time qualified cost accountants rendered their expert service only as employees.

We emphasise in this respect the broader sense implied by profession. Considering that there is nothing illogical in this and one does not have to have either a legal umbrella, or a clientele, or even an institute to qualify for the title of a professional, we stress that the cream here is the existence of a core of knowledge, a code of conduct and operation akin to what we call expert service and which is best dispensed with when it is institutionalised rather than varying from person to person. The logic of having an institute lies here, though variously nicknamed, like association, society, group, etc.

Reverting to the questions, they have all gained a great deal of significance as we have marked time since the beginning and they have all gathered a fresh momentum in the face of a challenge of other intellectual disciplines threatening its expertise and perhaps position in different ways. Here, it is important for us to take note of the goals of our profession as we perceive and as others perceive. The standpoints of both givers and takers of service are almost equally important here. It is indeed time for us to pause for a while to assess what is going on around us and within the precincts of our own functioning, before we go for a measuring gauge outside.

We, as professional cost and management accountants, as subordinates and as bosses, as peers of members of other professions, as duty-bound members of our profession, on the one hand, and of the society at large, on the other, as teachers and as students, as also as either developers or users of tools and techniques known in our profession or in other disciplines for discharging our functions, have multiple roles to perform and goals to attain. In retrospect, we have to assess our performance for knowing and judging if anything has either gone wrong, shall we say centrifugal, in conditions typified by Alice's Wonderland or we have not proceeded on lines most desirable, both, from the point of view of developing our profession and also of rendering specialised service to the community.

Coming to think of it, it is a striking truth that stares us in the face that so far not a single technique or method of analysis that we use as professional cost and managerment accountants has been developed by us. Our much vaunted forte, standard costing and budgetary control have both been given to us by engineers. Over time, many techniques have been developed, sharpened and applied in new fields by other

intellectual disciplines and when their proven merits have stared us in the face we have been animated to use them and start making all kinds of tall claims.

Latest among these slogans are perhaps the expertise that we claim in fields like measuring cost-effectiveness and cost-benefits and in calling techniques our own like NPV and DCF. Engineers, economists and other behavioural scientists have taken precedence over us in throwing up techniques and methods, jargons and glossaries, limitations and assumptions and models and formal statements or normative approaches that ultimately we found useful. The fun of it is that we do not have, by virtue of our being members of this profession, good enough ground to start evolving new techniques or even to question the old techniques and their merits or logic or even their uses in new areas.

The result of having, for long, played a second fiddle is that we have been beaten hollow on our own ground by members of other disciplines by virtue of their not only superior application but also better grounding in both concepts and their application in different fields with which we are concerned directly or indirectly. On our side, we have all the time had an illiterate, uninitiated audience conjured up to make our presentations as unanalytical and readable as possible, shunning the harder path of analytical rigour, leave aside formal, sophisticated factor relationships and models. This sounds almost like a wail, or shall we say, the 'Squeak of Aunt Sally', as Professor D. H. Robertson once branded the Radcliffe Committee Report in an article published in *The Banker*, London.

Before we come to the techniques proper, let us consider our brand name, 'Management Accounting'. Owing its origin to the BPC-AACP Report on Management Accounting 1951, the new name has essentially signified standard costing and budgetary control rather than any drastic departure from the much-trodden paths. This is what Professor F. Sewell Bray and other senior members of the accounting profession in the UK mentioned. Apparently, they were in a minority. However, the normal motivation to go into pastures new were not seen and the old practices continued unabated, *albeit* in a new name.

As members of the cost and management accounting profession, let us admit that by training, background and approaches, we have remained essentially backward looking. The universal medium that reporting to management was supposed to be *via* accounting remained oriented essentially to what happened in the past, how well organised the information was and how actions could be generated on the basis of such information. For purposes of top echelons of management, this information, howsoever well organised or frequent it might have been, ceased to have any use other than in regard to relatively minor matters.

Decision making, in the parlance of Professor Peter Drucker, is tantamount to 'making the future today'! The degree of futurity, of course, differs, either from time to time or from alternative to alternative but the essential character of decision-making process remains the same, that is, to look into the future. Such futuristic orientation in the information set up has, however, remained most conspicuous by its absence. For all important purposes, management has continued to remain groping in the dark and essentially trusting its intuition or stray signs and symptoms here, there and everywhere. Much of the organised information that the accountant or the cost and management accountant furnishes remains irrelevant for the purpose management, has, in view in the context of decisions having long term impacts either by virtue of their magnitude or by implications.

Such futuristic exercises are essentially in the realm of speculation, may be based on assignment of probability, may be even otherwise. But that such information the accountant or the cost and management accouutant does not furnish is a point of fact which should not attract much disagreement among us. This, however, remains a potent area and management has to be hoped by way of augmenting the degree of confidence that they have before exercising the choice from altenatives which decision-making implies. This also means that the management accountant's preoccupation should not be what it is now and that he must make past experience only his dash board to jump into areas where signs and symptoms and, to say the least, bits and pieces of external information, are much more important than these bunches of organised data that we supply in the hope that management will find these useful.

As a matter of fact, our backward looking characteristics have already alienated us from the top management team and at best we have been able to help only in the process of deterministic decision-making processes rather than decisions involving risks and uncertainties. It is, therefore, appropriate that if we retain both the designations of cost accountant and management accountant we have to assign the management accountant with a position in the hierarchy which will be much nearer the top management team than what we have allowed him to cover so far.

It must have been noticed widely that accountants, or, for that matter, cost and management accountants, end up with only supplying information to management. What happens with the information so supplied is nobody's bother. Secondly, there are other discipline areas in the organisation which also supply information to management. It becomes a problem of sifting and sorting information most relevant for particular purposes and also link up different facets of the impacts created by a particular discipline. Thus, one can think of the technological impact, the human impact, the inputs impact, the pricing impact, the cost impact the and efficiency impact of every decision of some importance.

When heaps of information arrive on the manager's table, instead of being helped, managers most of the time do not know what to do with heaps of details of questionable relevance. And when important decisions are to be taken, much of the information will have to come from outside rather than inside, and almost never in an organised form. Thus, the management accountant will have to be at the receiving end of the information and should be in a position to link up different types of information to make a composite whole so that managers at the top-most level are helped in their attempts to 'make the future today'.

Such information, of real consequence to management, may require application of several techniques—both quantitative and non-quantitative, partly measurable and partly immeasurable—often having breaks which would require bridging up or giving a faint picture on the basis of dots and dashes rather than a complete pictorial outline. The aim is to boost the manager's degree of confidence in facing the uncertain future.

Perhaps, we are harsh on ourselves and trying to be unduly incisive when our protective umbrella, as extended by both law and practice, is pretty strong and our future almost assured at least as far as we can see. That this assurance is very largely illusory and that we are at the point of losing our identity are, however, different matters though a caution is to be sounded right here that there is no amber between the green and the red and the process of switching off and on from green to red may not be preceded by any warning at all. If we cannot justify our discrete existence by our actions and by our intellect, as seen in the body of knowledge that we have developed, we will have little excuse to demand this privilege from society, by way of protection, recognition and respect.

II

Under these general considerations, we take up seriatim the questions that we asked ourselves earlier. In trying to measure our quality, one may think of different types of yardsticks that may perhaps be appropriate. Some are quantitative and some non-quantitative.

(i) Among the yardsticks we may list the following only by way of illustration :

(a) Personality profiles inclusive of bio-data, potential and known abilities within and outside the organisations that we serve. Personality profiles are analogous to the organisational profiles suggested by Professor Rensis Likert, embracing not only the goal and role perception of the individual himself but also what others think of him.

(b) The potential and known demand for members of our profession in

industry, business, government and universities and for senior, middle and junior level management cadres.

(c) The statistical measure of quality, may be only rough and ready in terms of frequency distribution of the number of qualified members under different categories like holding single or multiple post-graduate degrees in one intellectual discipline or multiple intellectual disciplines; number in senior management positions, middle levels and junior management positions; job advertised and qualifications required in consonance with salaries offered in various journals and newsapers; and number of consultants in practice and the opinion of the clientele about the quality of services rendered.

(ii) Examining whether we have yardsticks for measuring ourselves and our functions, we find that our success or failure in day-to-day operations has been closely linked up, almost inseparably, with the success or failure of the organisation that we have sought to serve. Many a time, we have forgotten that in terms of requirement of really efficient cost and management accountants, it would be but sleepers rather than thrusters that would require such services most and that while the going is good, a good cost and management accountant hardly finds an opportunity to show his acumen and alacrity, partly because the situation does not permit and partly because he does not feel keen to measure up. While the going is bad and he faces rough weather, his success or failure should be considered independent of the success or failure of the organisation in so far as whether the managers he was supposed to advise have, in fact, taken his advice or not. On the contrary, the quality of efforts that the cost and management accountant puts in, may yield results or may not depending on various external and internal factors on which he does not have much of a control. But it is necessary to appreciate that his abilities are best tested at moments of stresses and strain that an organisation faces rather than in good times when profit is believed to be an automatic result of the operations. Such yardsticks, however, are yet to be developed by us or even thought about seriously.

(iii) Getting to know how others are doing and how they measure their performance is a different task, except for the fact that overt assessments have been more frequent and less far between in the other professions and/or discipline areas than our own. Here, we underscore that ours is not merely a profession, cost and management accountancy has already become a discrete intellectual discipline by virtue of its cognizable core of knowledge, apart from satisfying (shall we say, satisficing, *a la* Herbert Simon) the criteria according to which both professions and academic, intellectual disciplines are so called. For instance, in Economics, which is one of the behavioural sciences, Mrs.

Joan Robinson pinpointed the weakness in studying the economic behaviour of men in different conditions and the inadequacy of economic literature on the subject. Before long, this weakness, has been filled up very substantially by behavioural scientists, particularly those belonging to psychology and sociology, so much so that even utility has been sought to be measured in fairly quantitative terms and models, accommodating different degrees of analytical sophistication, built up both at the level of individuals or small groups and even at that of broader segments of society or a nation as a whole. George Katona, for instance, has done substantial work in this field, taking the US as his basis.

In Operations Research, on the other hand, where the position is more less like cost and management accountancy, not only that the brand name 'Operations Research' is much more recent than the techniques that come under it, conscious attempts at not only new application of the known techniques but also at developing new techniques have been already made and are on a growth path which is easily noticeable. The volume of original literature that has grown in this area has far outpaced that in our discipline. By original literature, we mean either extension of the present knowledge, new application of the existing tools and techniques or development of new tools and techniques. There is, of course, a more-than-noticeable trend in our seeing accounting as no more than a source of information, signifying various types of measurement problems of various kinds and the accounting formats are sought to be made raw materials for operation resarchers in their attempts to make such formats essentially dash boards for going into the realm of speculation, with assignments of probability of events either occurring or not occurring.

This means that willynilly, accounts, accounting and accountant's interpretation of data sought to be presented through accounts are being consciously relegated to the limbo of oblivion. Our emphasis that accounts provide a universal medium and our failure to discern the basic philosophy behind accounting and the core of interpretation that accounting figures represent has brought us to a state we are asked to turn the handle like mechanics, the dictates being reserved by scientists, engineers and technologists, or shall we say philosophers, in a manner of speaking. The distinction here can perhaps be drawn between the approaches of HAL Fisher and Arnold Toynbee, in that while the former denied himself the pleasures of discerning a pattern in the courses of events embraced by history, the other made such discerning the sheet-anchor of his focus on these events, seeking to find the causal relationship of factors that made history.

Here one more point appears relevant. As members of the profession of cost and management accountancy, we seem to overtly eschew theory,

concepts or whatever is not immediately relevant to practice and, on the other hand, over-emphasise practice so much that we do not look behind most of the time as to what is the driving force behind our practice, what regulates it and what seeks to benefit by our practice. Perhaps our mention earlier of *mechanics* is more apt than it sounds. In engineering and technology, in the behavioural sciences, in philosophy and history and in fact in all other disciplines than accounting and cost and management accounting rapid advances have been recorded not only in regard to finding and applying new techniques and tools of analysis but also concepts and philosophies. That theory or concept of cost accountancy, if there be any, cannot be anything but crystallisation of experience, has been conveniently forgotten by most of us and we see before us that what is theory in one organisation is indeed more than practice in another. We are mentioning all this to arouse the feeling among ourselves that we are no less than anybody else in this regard and that we want leadership from members of our profession the world over to tell us what should be our way ahead, how we should proceed and what should be the goals and how we should strive to achieve them. Our experience in different walks to life as cost and management accountants has remained localised. We have hardly ever sought to link these experiences to the main trunk of our knowledge, enriching it by new lights or challenging part of its contents so that the contour lines on the canvas of our knowledge are reshaped, reoriented and brought into bolder relief. Here it must also be mentioned that our profession the world over is not entirely barren that way. There are well reputed experts in both accounting and cost and management accounting fields who are in a position to give such a lead.

Perhaps both financial accounting and cost and management accounting can at this hour of the day, be categorised under different schools of thought, *albeit*, the fact that serveral exponents in the area have, in fact, belonged to different schools. We can mention here the quantitative school, the behavioural school, the macro-accounting school, the conceptual school, the empirical school and the micro-accounting school. The exponents in each of these areas can be identified both on a national and international scale. In each of these areas, contributions from different countries and within each country from different experts have grown substantially during the last two decades.

And, coming to think of it, each of these schools represents rigorous analytical contents, both quantitative and otherwise, and it so happens that both accountancy and cost and management accountancy can now be thought of as complete intellectual disciplines capable of being run as discrete academic courses. Incidentally, there are quite a few universities in different countries which have post-graduate courses in accountincy, though in several, accountancy continues to figure under the more generic heading 'industrial economics' or 'financial management'. Individual accountants and cost and management accountants

have by their personal example and devotion been able to exclusively project the image of these professions as a socially-useful, economically-viable and administratively-feasible series of activities, only a part of which can be said to have been initiated by law, and the protection afforded thereby.

The active interest of the exponents coming under various schools of thought have not only brought recognition from industry, commerce and government but also extended statutory status. For instance, the Companies Act in India has incorporated provisions for both maintenance of cost records in the concerned companies and conduct of cost audit. From a relatively-modest beginning, indifferent possiblities and uncertain prospects, the cost and management accountancy profession in India, as indeed also elsewhere, have now by themselves eked out a bright future in different ways. The latest, perhaps, among the laurels is the institution of an all-India Cost Accounting Service for manning different positions of importance in public sector enterprises and in government departments. As in the case of cost audit, this is also a case of lead taken by India that can be profitably followed in other countries, like the UK. the USA and Australia, apart from our neighbours like Bangladesh, Pakistan and Sri Lanka.

There has been another curious factor. On a fairly cognizable scale there has occurred intra-personal, inter-disciplinary integration mainly in view of the lack of rapport between intellectual disciplines and inadequate, often contrasting, interpersonal contact and communication. Among the Indian cost and management accountants there are persons who are qualified engineers, operations research specialists, economists, specialists in management, linguistics and behavioural scientists. Not only that the cost and management accountancy profession in India has a large number of qualified engineers as cost and management accountants, there is an overt attempt on their part to get into the main stream of managerial thought and action by acquiring different streams of specialisation for strengthening their position in the management team. Several of them are also researchers of no mean calibre.

Such multi-disciplinary experts have proved more successful both in the academic fields and in industry and business. In a way, such persons seek to disseminate, after deciphering and unfolding, the composite features of problems in business and industry where, as will be appeciated, no problem belongs exclusively to any individual discipline area. In fact, each problem has several facets calling for approaches by different areas of expertise at the same time for an acceptable solution. This is a typical requirement of the accounting profession but unfortunately has not been highlighted most of the time.

This is no serendipity either, for this is a deliberate attempt to get to know

things for oneself for which any amount of interpersonal communication, either by way of discussions or of submission of reports, is hardly any substitute. Such trends are noticed not only in India but also in the USA, the UK and Australia where by virtue of holding degrees or diplomas of multiple institutions belonging to different intellectual disciplines, individual experts seem to have transcended the barriers posed by a lack of high-level inter-disciplinary rapport and communication.

By virtue of interest in other areas than one's own specialisation, individuals have also distinguished themselves not only in the industrially-advanced countries of the USA and the UK but also in India. Here one may mention that in the United States, the example set by engineers has remained burning all through. Frederick Winslow Taylor who set the pace for scientific management has had many followers indeed who in different areas, concerned with both general and functional management, have contributed significantly. The name of Spencer A. Tucker is appropriate in this context. A qualified engineer, Tucker has written books entitled *Successful Managerial Control by Ratio-Analysis* (McGraw-Hill, 1961), *Cost-Estimating and Pricing with Machine-Hour Rates* (Prentice-Hall, 1962) and *The Breakeven System : A Tool for Profit Planning* (Prentice-Hall, 1963). Incidentally, S.A. Tucker was the first American engineer who was awarded the Lybrand Gold Medal by the National Association of Accountants in the USA in 1962 for his outstanding contribution to management literature. The highest award of the accounting profession in the United states was thus, for the first time, received by an engineer.

In the UK on the other hand, T.G. Rose, apart from evolving his own system of higher management control in the actual work situations of an industrial enterprise, has written extensively on topics such as *Top Management Audit* and *Internal Finance for Industrial Undertakings*, exploring areas which were striking indeed, at least in his time. This is not surprising though, as we have noticed eleswhere. Many of the accounting techniques today were evolved and successfully tried by engineers before handing them over to the accountants.

The craze for degrees, both academic and professional, is not so obvious in the USA or in the UK as it is in India. It is not, however, to deny that both in the USA and in the UK there are several experts who have degrees or diplomas from multiple intellectual disciplines. In India, however, such individuals have not consciously attempted to synthesise their knowledge, education and experience. They have generally allowed their expertise to remain in discrete compartments, while their career prospects have, undoubtedly, brightened as a consequence of having multi-disciplinary degrees.

Perhaps some form of external organisation is necessary to get the best out of these individuals, deliberately attempting to synthesise different areas of knowledge and experience for the purpose of finding new techniques, new areas of application of the known techniques and weeding out those techniques and concepts that have outlived their utility or are not quite appropriate in certain conditions. The Institutes of Chartered Accountants of India and Cost and Works Accountants of India as also Company Secretaries of India may consider sponsoring such exercises with benefit.

(iv) This question, as to how we have done, as perceived by ourselves and others, can be viewed in terms of different criteria, may be partly quantitative and partly otherwise, to illustrate the criteria :

(a) The size of membership and its rate of growth over the years;

(b) Number of members classified according to educational background, positions held, age groups, etc;

(c) Students on the roll and the type of coaching or training offered to them; number of passes every year, number of dropouts and number continuing;

(d) Growth in studentship over the years is an index of the image of the profession projected before the community;

(e) Type of continuing educational programmes organised by these institutes, distinct from the pre-qualification training or coaching;

(f) The type of such courses, duration of these courses, number of participants in each programme and feedback information, if any;

(g) Distinguished books and papers authored by our members which have been acclaimed both within the profession and outside as significant contribution to knowledge, to understanding new techniques, to application in new fields or to exploring new areas. The number of such books and papers as well as the recognition they received is an index of these scholarly activities pursued by members of the profession.

Superscribing all this is the recognition extended to the accountancy professions by law, on the one hand, and by industry, commerce and the government, on the other. Judged on this count, the professions of accounting, cost and management accounting and company secretaryship do not appear to have done badly in so far as already the Institutes of Chartered Accountants of India and Cost and Works Accountants of India are established by Acts of Parliament and another enactment is a

foot for according statutory status to the Institute of Company Secretaries of India. The employment position has also remained encouraging, to say the least. The rush for admissions to these courses has also continued unabated. The chasm, therefore is to be traced in the academic performance of these professions rather than professional performance. These Institutes have their doors open to under-graduates, graduates and post-graduates in different intellectual displines including engineering and technology. The mix of backgrounds and standards of education attained has the inevitable pull to stabilise the academic standards at a lower level. At least part of this inadequacy can be covered by streamlining the courses for different examinations and the standards of training imparted in different subjects so that some homogeneity in intellectual attainment, shall we say analytical ability, would be ensured.

(v) On the question of planning for the future, these professions have not yet offered much by way of signposts. However, considering that a large number of qualified members and students constitute the professional community under the banner of the three Institutes in India, these professions should offer culminating platforms for satisficing the goals of their members in different ways. Here, bifurcation of the professional and intellectual streams would perhaps be called for. These Institutes should be recognised by the Government as institutes of national importance. Since they are under the administrative control of the Department of Company affairs, having been established by Acts of Parliament, such recognition is a logical sequence to the well recognised status that they have already acquired.

The scope for academic formalisation of ideas or conceptualisation on the basis of experience in different walks of life as also in handling different types of problems, it is but logical that these Institutes be accorded the status of universities, empowered to confer D. Lit. and Ph. D. on the basis of accepted standards of attainment of individual members on submission of theses. Once these are recognised as institutes of national importance, these institutes may also confer post-graduate degrees to its qualified members who may be required to pass through examinations designed for the purpose and seeking to establish high standards of accountancy education. Award of D. Lit. and Ph. D. degrees on the basis of works of merit as adjudged by well reputed academic and/or professional experts in this country and abroad should be in conformity with the traditions followed in the cases of other institutions recognised as of national importance.

Some universities in this country have already recognised Associateship or Fellowship of these institutes as equivalent to post-graduate degrees for purposes of doctoral research. The response from members for having high academic attainments on the basis of rigorous tests of their capacities is already an index of the need for such recognition being

extended by government. In the absence of crystallisation of experience, it seems to remain localised with nobody taking serious note of the worth thereof, for application in other areas or solution of similar problems.

On the other hand, even in the course of work as a professional, such empirical knowledge would have recharged and reactivated their approaches to solving different types of intricate problems on the basis of what others had done in similar circumstances and with what results. Knowledge being the key of modern business, seen in terms of knowledge of technology, knowledge of the processes of production, knowledge of the technicalities of products, knowledge of the markets and market segments, and, above all, knowledge of resources and their utilisation, it has become imperative that professional knowledge accumulated in the accounting profession was formalised and made use of on a wider scale. Individual members of these professions having necessary education, training and aptitude should be given all opportunities to give vent to their expertise. At the moment, it is impeded by numerous roadblocks.

In the aforesaid context, we shall also have to think of the question of feasibility. Since all the accounting professions in the country, including Company Secretaryship, have their doors open for candidates coming from different disciplines, their proficiency as members of these professions does not get easily recognised in their mother disciplines. They tend to live in a vacuum which the Institutes of Chartered Accountants of India, Cost and Works Accountants of India and Company Secretaries of India have not yet been able to fill, particularly as *alma mater*. It is but natural, therefore, that irrespective of their mother disciplines, members of these professions should be given opportunity to do doctoral work under the umbrella of these Institutes themselves :

This will have three essential types of advantages :

(a) The accountancy profession will benefit from the knowledge and experience of different other disciplines contributed by such members.

(b) The other disciplines themselves will stand substantially benefited in view of the new knowledge in areas of accounting and finance, maybe even economic laws, with which they may not have been concerned *prima facie.*

(c) The research work that such members may take up will naturally have a bearing on the mother disciplines to which they belong and the respective professional areas.

Though it is not expected that there will occur a kind of chemical

synthesis, the possible positive synergistic effects are likely to be enormous, as experience in the past has already shown. Particularly in relation to academic doctorates done in the universities, the areas of specialisation particularly those belonging to individual disciplines are under constant focus. Nowhere would the rules permit one's transgressing into other areas. The professions would make this possible for several reasons.

All the accounting professions have in their courses a composite of subject areas inclusive of quantitative sciences, engineering and technology, behavioural sciences, marketing, personnel, law, accountancy, cost accountancy, management and other relevant areas, including perhaps literature, history and philosophy. There being no bar to the entry in the profession for candidates specialising in these areas, it is but natural that they should also be treated equally in realising their highest academic goals along with professional expertise.

In his letter to the Editor, *Management Accounting*, ICMA, London, January 1979 (p. 12), R. M. S. Wilson voiced a genuine concern for the lack of interest in research in the accounting professions. To quote Wilson:

"The research orientation of the profession in general is such as to give cause for concern. Accounting is related to empirical phenomena that have patterns of behaviour which cannot adequately be reflected in arbitrary accounting regulations. However,the complacency—and hostility—of so many practising accountants in rejecting attempts by academicians to address the complexity of the practitioner's reality is most discouraging. Could one imagine a medical practitioner disdaining a research orientation within his profession in seeking to extend medical science ? Similarly the progress of engineering has been made possible by a clear appreciation on the part of engineering practitioners of having research behind their actions. But too many accounting practitioners fail to see the vital need to understand the socio-economic processes underlying accounting problems."

The openness of approach would also imply several problems concerned with maintenance of high standards, acceptability of such works as contributions to the understanding of the subject areas dealt with and as possible teaching materials both for the professions and for universities. For ensuring standards, most universities have boards of research studies in individual academic disciplines, shall we say, departments. The research work is required to be done in the universities under the guidance of recognised teachers and researchers of standing. Examiners are appointed by the universities, covering both indigenous and foreign experts in these areas. The reports from examiners are closely scrutinised and in many universities the award of the degrees has to be based on unanimity of recommendations, while in several universities it is by

majority of recommendations received from examiners within the country and abroad, usually three in all.

For D. Litt. degrees, most Indian universities follow the practice of having all foreign examiners except in areas where this is not possible. D. Lit. theses can be submitted either as printed books or as typescripts and would not require any guide for the purposes of the research work. In the case of Ph. D., however, the number of foreigners may be one or two, the guide may be one of the examiners or may not be, as in the case of several Indian universities.

The publication of the thesis is possible only when examiners have recommended such publication. On many occassions, theses have not been published because they contained data which would be treated as 'classified' and not meant for common consumption. In the professions, such research works will have a meaning much more potent than in the universities. In several universities, candidates have to go through a pre-doctoral course of education called M. Phil course on the successful completion of which only they are allowed admission for doctoral research. In the professions, rigorous standards may be well maintained through constitution of boards of research studies consisting of eminent members of the profession and academic experts drawn from universities.

In view of the very nature of activities pursued by these professions and the need for conscious accumulation of knowledge, formalisation of such knowledge and conceptualisation of experience, it is essential that the academic aspects of these professions should be highlighted a great deal more than at present. It is a logical culmination of professional activities that members otherwise qualified and experienced in the respective professions be allowed to pursue rigorous, analytical research work as a culmination of their academic cum-professional career. This is likely to benefit the individual areas of academic disciplines by virtue of these members having access to problems faced in industry, commerce and government at different levels where not only application of different concepts is essential but also the problems themselves offer excellent grounds for education, training and assimilation. □

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ordinance factories (as noticed from the table of Distribution of India's Industrial Work Force, 1892-1919)[1].

During the pre-war period, number of looms increased in a greater proportion than the number of spindles and both of them increased in a greater proportion than the number of mills and persons employed. The growth of coal mining was dependent on the extension of railways and high railway freights in India. The extraction of two minerals, petroleum and manganese, started during 1895-1914. During the latter half of this period, India held the position of the largest manganese producer in the world, which was entirely exported in the absence of a local steel industry. Plantations, as a whole, had a small share in Indian industry and a major portion was meant for exports.[2]

Inter-War Period

Production of mill cloth was only half of that of handlooms in 1901, but by 1914, mills' production was at par with handlooms and was raised by 50% over and above the handlooms during the War period, 1914-1919. So much so, mill production of cloth was twice that of handlooms by 1930, and two and a half times by 1939. The duty on imported fine yarn, imposed to protect Indian mills, impaired the competitive capacity of handlooms in, both the internal and external markets.

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1. See Jagdish N. Bhagwati and Padma Desai, *India, Planning for Industrialisation and Trade Policies Since 1951*, p. 31.
2. See D. R. Gadgil, *The Industrial Evolution of India in Recent Times, 1860-1937.* Oxford University Press, 1971, p. 109-118.

Protect and help the weak

Attacks on Harijans and other weaker sections bring discredit to our society. They thwart our march forward.

An innovation of this period (1920-1940) was the introduction of power-looms. *Swadeshi* movement was partly responsible for the sharp fall in imports of foreign cloth, which resulted in substitution by indigenous production of finer counts.

The high level of war profits led to new jute mills being floated to meet increased war-time needs of sand bags, grain bags, gunny cloth, etc.

Rapid increase in production of coal during the war and post-war period, was essentially on a small-scale, in spite of a marked fall over the two decades in the number of small mines and in the proportion of total coal output raised by them.

The Indian petroleum industry showed no signs of expansion. Production of manganese ore in India remained 800,000-1,000,000 tons in the twenties, but declined to 200,000 tons in 1932-1933 and regained the lost ground by 1936 and after. Similar to Manganese, Mica also continued to be mined almost entirely for exports during the inter-war period. While the entire production of raw rubber in India was exported before 1930, it was not until 1939 when one-third of it was retained for manufacture within the country.

The policy of discriminating protection in the case of sugar proved successful in increasing the internal production of sugar from 350,000 tons in 1930-31 to 1.25 million tons in 1936-37, due to increase in modern factories from 29 to 140 units during the period. This resulted in fall of imports of sugar from 0.81 million tons to 22,000 tons. Production of sugar also doubled during 1930-37.[3]

Seven new cement works were started during 1922-25. As a result, the pre-war average imports of cement was 130,000 tons, but decreased to 75,000 tons at the end of twenties and 11,000 tons in 1939-40. Similarly, paper mills and their production also increased during inter-war period, chiefly in the protected[4] varieties covering four-fifths of the total production in paper industry.

Iron and steel industry had a single unit (Tata Iron and Steel Company) under tariff protection which was responsible for creating a rerolling industry in India. The steel was first made in 1912-13 which grew slowly during inter-war period.

The displacement of older industrial activity depends, partly on the turn taken by scientific progress. While iron smelting, saltpetre collection and indigenous dyes went out, the lac and mica industries continued to function. While the number of handloom weavers or carpenters

3. D. R. Gadgli, *Ibid.*, pp. 277-329.
4. N.S.R. Sastry, Statistical Study of India's Industrial Development (1947) p. 114.

remained steady or increased slightly, the number of potters or oilmen tended to decline over time. As in textiles, there was in artisan industry some adaptation of product and some improvements in technique. A number of small scale activities, such as making of trunks, safes and cupboards, furniture, locks and cutlery, electroplating works, motor body building and repairs brought forth important towns.

Second World War and Partition of India

The Second World War provided a greater stimulus to the Indian industries. More plants were added in many newer industries : ferro-alloys such as ferro-silicon and ferro-manganese; non-ferrous metals and metal fabricating industries; mechanical engineering industries such as diesel engines, pumps, sewing machines, machine tools and cutting tools.

During 1937-1950, the growth of iron and steel industry lagged behind that of cement and paper industries. A major problem in expanding steel capacity was the requirement of heavy investment for it and this resulted in shortage of steel during the War and post-War period.

Cotton textiles ranked first among 29 factory industries covered by the census in terms of total capital, number of workers and payments to workers, gross value of output and value added of industries during 1949-53. For each of these categories, the contribution of cotton textile industry represented one-third or more of the total for all industries covered by the census. In terms of both value added and value of production and employment in 1946 (when the first census of manufacturing industries—CMI—was undertaken) the important industries were cotton textiles (46.01% of value added) jute textiles (17.49% of value added) sugar, vegetable oils, iron and steel and general engineering. Rice milling was significant only in value of production and cement in terms of employment.[5]

Until 1943, there were no price or distribution controls on civilian cloth which resulted in high civilian demand and military demand for textile goods. While the number of spindles increased by only 2 to 3% during the war, output rose by 20% from an annual pre-War average of 4,000 million yards.[6]

Increased investment in cotton textiles reflected two tendencies; the first was the expansion of textile industries outside of the old areas, i.e., a movement to the south. The percentage increase in gross fixed capital in the industry from 1937 to 1952, deflated for the upward

5. Jagdish N. Bhagwati and Padma Desai, *op.cit.* pp. 38-43.
6. George Rosen, *Industrial Change in India, Industrial Growth, Capital Requirements and Technological Change, 1937-1955.* The Free Press, Glence, Illinois, 1961, p. 38-43.

price movement, was 25% in Bombay, 35% in Ahmedabad and 75% in the Rest of India. The second tendency was investment in newer, more efficient and frequently more automatic machinery in the various processes other than weaving in order to improve quality, reduce costs and simultaneously expand firms having facilities such as dyeing and printing machinery to permit a higher value of unit output.

By 1938-39, the sugar industry ranked third among all organised industries in respect of total capital and fourth in respect of fixed capital. The war stimulated demand for sugar and at the same time imports were sharply reduced. This situation led to rising prices and profits, which in turn induced the government to introduce price and distribution controls on factory sugar, gur and khandsari (cotton sugar). The effect of these controls was apparently a reduction in the production of factory sugar; and output fell from a 1.2 million tons peak in 1943-46 to 900,000 tons in 1946-47 caused by political unrest during the period.

The period 1939-45 also saw the start of new industries as well as some growth of existing metal working and engineering industries. The demand pressures upon industry led to rapidly rising prices of manufactured goods and with lagging wages, profits reached record levels. However, since imported capital equipment was largely unavailable, plant capacities increased only slightly. Industry could expand little beyond the limits of its existing capacity.

The reasons for lack of expansion of industrial activity and decline in output lay in the uncertain political situation. The firms were faced with the problem of readjustment in operations caused by the separation of the sub-continent. This period of decline ended with the export boom created by the Korean War. By 1951, industry was relatively stabilised at levels of capacity and output which were above pre-war levels, but below war time peaks in absolute terms. Per capita income rose from Rs. 52.2 in 1900 to Rs. 62.2 in 1947[7]. The rate of economic growth that was achieved in India since 1950-51 was 2 to 3 times higher than the rate recorded earlier under British administration.[8]

First Three Five-Year Plans and Investment Allocations

Planning for industrial development started since 1950-51. with the inception of First Five-Year Plan. It provided for a total investment of Rs. 3270 million, in organised industry for expansion schemes and new projects. Planned expenditure for agricultural development including irrigation, power and transportation was 60% of the total compared to 6% allotted to large and medium scale manufacturing industry.

7. S. Siva Subramanian, *National Income of India, 1900-1 to 1946-47*; unpublished Ph.D. Thesis submitted to Delhi University, 1965 pp. 340-52
8. K.N. Raj, *Indian Economic Growth, Performance and Prospects*, Allied Publishers, 1963, p. 2.

The Second Five-Year Plan (1955-56 to 1960-61) had investment of Rs. 14700 million in organised industry and investment in favour of public sector heavy industry.

The proportion allocated to industry and mining raised from 9.3% of total investment in the First Plan to 22.7% in the Second Plan and 24.4% in the Third Plan (1960-61 to 1965-66). While the total investment nearly tripled, investment in industry increased eight times. With the rise in the level of industrial investment, an increasing proportion of it was devoted to the diversification of the industrial base and the setting up of heavy industries. The outlays on heavy industries in Second and Third Plans were 73 to 74% of total outlays on all industries.

Industrywise distribution of investment over three plans presented in Table 1 depicts the shift in investment strategy since Second Five-Year Plan in favour of steel, aluminium, engineering, chemicals, fertilisers, and petroleum products.

Table 1

(in Rs million)

Industry	*First Plan*	*Second Plan*	*Third Plan*
Metallurgical Industries	610	7700	7190
Engineering industries	460	1750	5810
Chemical Industries	270	1400	5000
Cement, refractories, glass etc.	180	600	960
Petroleum refining	450	300	740
Paper and paper board	120	400	1050
Sugar	50	560	1000
Rayon & staple fibre	80	340	750
Cotton, jute, woolen, silk yarn & cloth	200	500	350
Others	510	1150	1700
Total	2930	14700	24550

Source : Programmes of Industrial Development - 1956-61 and 1961-66.

Growth of Public Sector

Higher volume of government spending during the First Plan compared to pre-plan period increased the per capita availability of cotton textiles for civilian use from less than 10 yards in 1950 to almost 16 yards in 1955

which was almost equal to the pre-second World War figures. Over the same period, per capita consumption of factory sugar rose from 7 to 10 pounds. In the iron and steel industry the demand for finished steel rose from 1.1 million tons (actually consumed) in 1951 to 1.9 million tons in 1955. In the cement industry, government demand rose from 40% of the domestic consumption of 3.5 million tons in 1951-52 to 80% of domestic consumption, estimated at 6.0 million tons in 1956.[9]

The 1956 Industrial Policy Resolution combined with the heavy industry strategy of the Second Plan brought out the large scale growth of public sector industries. The growth of the government companies is presented in Table 2 :

Table 2

(in Rs. million)

As on March 31	*Number*	*Share Capital*
1956	610	660
1961	1420	5470
1966	2140	12410

Of the share capital as on 31st March 1966, Hindustan Steel Ltd., alone accounted for a share capital of Rs. 520 million.[10]

While the activities of the public sector were not as diversified as those of the private sector, the public sector had a substantial share in some industries. For example, public sector enterprises control more than 50% of the total capacity in industries like iron and steel, machine tools, petroleum refining, telephone manufacture, valves, locomotives, heavy electrical equipment, nitrogenous fertilisers and other basic industries. Many of these industrial activities are so highly capital-intensive that the indigenous private sector would not have been able to find financial resources to set up.

Results Achieved During Three Plans

In response to the shift in investment strategy and growth of public sector in heavy engineering industries and basic metals, the growth of

9. Rosen, George, *op. cit.* p.7.
10. P.B. Medhora. *Industrial Growth Since 1950—An Assessment,* University of Bombay, 1968. p.21.

those products by the Third Plan is given in Table 3:

Table : 3 Production of Selected Industries (Basic or Key)

Product	*Unit*	*1950-51*	*1965-66*	*Percentage Increase*
Machine tools	Rs. million	0.3	2.30	7667
Petroleum products	M. tons	0.2	9.86	4930
Locomotives	Numbers	7	325	4643
Electric transformers	'000 KVA	178	3300	1754
Aluminium	'000 tons.	4	65	1525
Diesel engines	'000 Nos.	5.5	85.0	1445
Sulphuric acid	'000 tons	101	664	557
Finished steel	M tons	1.04	4.06	342
Automobiles	'000 Nos.	16.5	68.5	315
Cement	M tons.	2.73	10.8	296
Tractors	'000 Nos.	—	5.6	—

Lag in fulfilment of First Plan targets extends to 1960 or later in the case of products like diesel engines, dry batteries, hurricane lanterns, looms for textiles, newsprint, nitrogenous fertilisers, paints, varnishes, enamels, radio receivers, ship-building, etc.

The second Five Year Plan targets were fulfilled in 1962 in the case of aluminium, rubber, plastic insulated cables, paper and paper board; in 1963 in the case of finished steel, sulphuric acid, caustic soda and rayon filament; and in 1964 in the case of phosphatic fertilisers.

An expected rise of 70% industrial production during the Third Plan period could not be fulfilled due to lags in production. The actual rise in the index was only 30% (1956 base).

The industrial production (with 1956 base) showed a compound rate of growth of $4\frac{1}{4}\%$ per annum during the First Plan and $7\frac{1}{2}\%$ per annnm since the beginning of the Second Plan.[11] Againat the rise in the general index of industrial production from 73.5 in 1951 to 186.9 in 1965., the index for textiles rose from 78.5 in 1951 to 129 9 in 1965; the index for chemicals and chemical products rose from 72.9 to 235.3; that for basic metals from 83.5 to 298.8; that for metal from 54.4 to 239.8; that for electrical machinery from 43.6 to 313.2; and for other machinery from 45.2 to 489.7.

11. K. N. Raj, *op. cit.*, p. 15.

Import Substitution, Structural Changes and Growth During 1950–1969

Since the Second Plan, India's endeavour had been to direct investment in industry for gains in substituting imports and building up the domestic industrial capacity of heavy and basic industries. Hence the distribution of investment as between different branches of industry was heavily weighted in favour of metals, machinery and intermediate goods, which together account for 77% of industrial investment. Another addition of 8% of the investment was provided for fertilisers and pesticides in the Fourth Plan.

Till the foreign exchange crisis of 1957, a generally liberal import policy was followed and indigeneous goods had to face competition, both in quality and price from imported goods. The import cuts made as a result of foreign exchange crisis of 1957 opened up prospects of profitable investment as a result of cutting off of foreign competition. The result was the remarkable upsurge in industrial production, as many production units started after 1957 and entered into production from 1960 onwards.

Another special feature was the reduction in imports of a number of goods such as railway wagons and coaches, automobiles, motor cycles, bicycles, sewing machines, petroleum products, chemicals and chemical products, textile yarn and thread, in spite of a large increase in domestic consumption.

As a result of planned direction and efforts at import substitution after the foreign exchange crisis of 1957, the growth in non-traditional commodities was faster. The foreign exchange cost of the growth of indigenous units on capital account had been provided through deferred payment arrangements after 1957. The import dependence became more absolute for uncertain foreign exchange situation from 1962 onwards as a result of the postponement of Aid India Consortium Meeting in May 1962.

The two years of foreign exchange crisis in 1957 and 1962 distinguished the changes in industrial structure and growth during 1950-65 in terms of three phases.[12]

During the first phase (1950-58) about Rs. 1500 million per annum were invested in industry and industrial production grew at an average of less than 5% per annum. During the second phase (1958-1962), about Rs.3900 million per annum were invested and industry grew at an average

12. The distinction of these three phases was made in P. B. Medhora, *op. cit.*, pp. 2-10.

of 11.4% per annum. During third phase (1962-1965), industrial investment grew at an average of Rs. 4900 million per annum, but price level rose sharply during this period, thereby reducing real investment compared to that in phase two. Capital sanctions declined from Rs. 4550 million in 1963 to Rs. 2280 million in 1965.

The relative shares, in terms of gross value added, gross output at factor cost and gross output at market prices of consumer goods industries, steadily declined over the period 1951-1963, whereas those of investment in capital goods industries sharply rose, with the category of raw materials and intermediates maintaining shares around 35% to 40%.

The breakdown of the period 1951-1963 in two sub-periods, 1951-1957 and 1957-1963, introduces a sharp rise in the latter half of the period in the average rate of growth of raw materials and intermediates.

Except for a relatively small list of industries, the role of tariff protection declined in india since the foreign exchange crisis of 1957 and quantitative restrictions became the chief instrument of *de facto* protection. A full-fledged explanation of the process of import substitution would lean heavily on this system of *de facto* protection and the incentives it generated plus the active role played by the Government in implementing its industrial investment strategies through planning period.

The imports of consumer goods were considerd 'non-essential' and strictly held down;

The principle of ' non-essentiality' was not extended to the domestic growth of import competing industries;

The imports of raw materials were given the highest priority, giving import entitlements of raw materials to exporters; and

Import substitution, generally implying the satisfaction of a greater proportion of a country's total demand for goods through its own domestic production, starts predominantly with the manufacture of finished consumer goods that are previously imported and moves on more or less rapidly and successfully to the higher stages of manufacture, that is, to intermediate goods and machinery through backward linkage effects. [13]

This hypothesis was empirically tested by Padma Desai covering 169 items (62% of gross value of output at factor cost for organised sector in 1963) for the period 1950-1964.

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13. Hirschman, OA, "The Political Economy of Import Substituting Industrialisation in Latin America". *The Quarterly Journal of Economics*, Feb. 1968, p.6.

Table : 4 Progress of Imports Substitution : 1950-51—1962-70

Commodity	Unit of account		1950-51	1955-56	1960-61	1965-66	1967-68	1968-69	1969-70
A. Consumer Goods									
1. Foodgrains	Mill. tonnes.	(a)	60.6	71.9	84.5	86.9	95.7	101.9	101.3
		(b)	(5.9)	(1.7)	(4.7)	(9.7)	(8.2)	(5.6)	(4.4)
2. Bicycles	'000 nos.	(a)	264	661	1071	1582	1684	1954	1914
		(b)	(62.5)	(22.4)	(neg.)	(neg.)	(neg.)	(neg.)	(neg.)
3. Sewing machine	-do-	(a)	56	125	304	433	372	428	328
		(b)	(41.1)	(11.2)	(0.3)	(0.7)	(0.5)	(0.1)	(0.3)
B. Raw Materials and Intermediates									
1. Raw Cotton	Million bales of 180 Kgs.	(a)	3.99	4.96	5·84	6.43	6.73	6.99	6.89
		(b)	(2.78)	(1.23)	(1.64)	(1.09)	(1.00)	(1.02)	(1.19)
2. Raw Jute	-do-	(a)	6.07	5.18	5.48	6.40	5.58	5.16	4.57
		(b)	(3.51)	(2.16)	(.96)	(1.75)	(1.20)	(.40)	(.65)
3. Iron and steel	'000 tonnes	(a)	1391	2162	3715	5416	4519	4775	5202
		(b)	(25.2)	(39.9)	(35.7)	(16.7)	(11.5)	(9.3)	(8.0)
4. Aluminum	-do-	(a)	14.7	23.5	43.7	82.4	139.2	135.1	137.6
		(b)	(72.8)	(68.5)	(68.1)	(24,6)	(27.9)	(7.2)	(1.8)
5. Soda Ash	-do-	(a)	75	154	251.6	366.7	375.0	399.0	427.2
		(b)	(40.0)	(46.7)	(39.6)	(9.7)	(1.1)	(Neg.)	(Neg.)
6. Caustic soda	-do-	(a)	34.4	96.0	139.8	292.2	286.1	313.8	360.3
		(b)	(64.7)	(62.5)	(27.7)	(25.4)	(2.8)	(0.2)	(Neg,)
7. Newsprint	-do-	(a)	76	84	96	115	113	146	193
		(b)	(100)	(95.2)	(76.0)	(73.9)	(72.6)	(78.7)	(80.4
8. Paper and paper-boards	'000 tons.	(a)	151	260	378	584	677	674	737
		(b)	(23.2)	(26.9)	(7.4)	(4.5)	(2.5)	(2.1)	(1.8)
9. Ammonium sulphate	-do-	(a)	423	607	755	1273	1459	1841	1399
		(b)	(88.9)	(34.1)	(47.3)	(67.0)	(72.1)	(68.2)	(56.5)
10. Man-made fibre and yarn	-do-	(a)	N.A.	31.9	84.2	125.5	149.3	173.6	169.3
		(b)	(N.A.)	(20.7)	(25.4)	(6.0)	(2.9)	(2.9)	(2.5)

C. Capital or Investment Goods									
1. Sugar mill machinery	Rs. million	(a)	10.0	41.9	54.5	77.6	86.2	119.6	129.9
		(b)	(10.0)	(9.52)	(1.93)	(.08)	(.14)	(.38)	(.13)
2. Textile machinery		(a)	N.A.	1233	3351	5002	4365	3028	3029
		(b)	N.A.	(67.6)	(69.1)	(56.8)	(63.8)	(52.1)	(31.3)
3. Machine tools (Metal working)	-do-	(a)	295	528	1990	6093	5915	4750	3880
		(b)	(89.8)	(84.8)	(64.8)	(61.8)	(64.7)	(62.1)	(42.8)

(a) Total estimate supplies; (b) Percentage of imports to total estimated supplies.

Notes : (1) In the case of foodgrains, raw cotton and raw jute the figures are three-year moving average of a year before, the year concerned and a year after; except for 1969-70 where the average refers to two years 1968-69 and 1969-70.

(2) Textile machinery excludes jute textile machinery.

(3) For sugar mill machinery textile machinery and machine tools (metal working) the import portion of estimated supplies in 1967-68, 1968-69 and 1969-70 is in post devaluation rupees.

(4) For man-made fibre and yarn production relates to calender years and imports to fiscal years.

(5) Imports of ammonium sulphate relate to those imported for central fertilizer pool.

Source : Annual Number of *Eastern Economist*, 1972.

Martins Press, pp. 174-5.

Industrial relations also affected the industrial growth. Between 1957 and 1965, the total number of mandays lost on account of work stoppages resulting from industrial disputes varied between 3 million and 6.5 million. In 1966, the mandays lost doubled to 13.85 million. In the two subsequent years, mandays lost increased to 17.15 million and 17.24 million respectively. In 1968, the value of production lost directly as a result of work stoppages in 1488 disputes was Rs. 53.93 crores, while the loss caused by the remaining 1289 disputes in that year was not reported.[17] The loss in production caused by industrial unrest resulted in shortage of materials and stores to other industries. Among them, steel shortage was one of the most important bottlenecks to many engineering industries.

Measures for Recovery

The process of recovery was initiated by the striking improvement in agricultural production in 1967-68 and was facilitated by a variety of measures liberalising credit from banks as well as financial institutions. Bank rate was reduced from 6% to 5% to ease industrial investment. Industries were allowed to diversify their output up to 25% of their licensed capacity without securing licence even if it involved import of capital equipment or raw materials and production in excess of the licensed capacity up to 25% was permitted without seeking a fresh licence. Further, tax incentives were provided in the central budget for 1968-69 to promote private investment and exports.

But the bunching of licensing and inadequate implementation led to imbalances in some sectors and undue burden of maintenance imports.[18]

The resources for planned development in public sector were seriously depleted, due to plan holiday, while there was no marked acceleration in fixed assets formation even in the private sector. There was a significant decline in the rate of investment in terms of national income. Price index for industrial raw materials rose by 20.9% compared to 15.9% rise in wholesale price index during 1965-67. This was the highest price increase (partly attributed to devaluation) since the inception of planning. Thus real investment went down as the average index of wholesale prices of machinery in 1966-67 was 10% higher compared to the index in 1965-66.

Fourth Plan Appraisal

Fourth Five-Year Plan (1969-1973) envisaged an investment of approximately Rs. 52,980 million in organised industries and mining. Rs. 30,480 million in the public sector and Rs. 22,500 million in the private sector.

17. A Middle-of-the-Year Look at the Economy, 1970, *MARGIN* Vol. 3, No.1, Oct. 1970, pp. 10-13.
18. Planning Commission, Government of India, *Fourth Five-Year Plan*, 1969-74, pp. 297-302.

Fourth plan witnessed a sharp increase in domestic demand for sugar.

Among capital goods industries, one of the most affected was railway wagons by factors like decline in demand, uncertainty in exports, shortages in raw materials and other production troubles. Capital goods and some intermediate products industries faced the shortage of steel. Varying degrees of scarcity among different categories of steel further impaired the efficiency of distribution. The additional imports of cotton and steel only served to fill the gap caused by failures of local supplies.

Power and energy fell short of the targets in both the years during 1969-71 by 30% during which the share of plan outlay utilised was 50% for iron and steel; 30% for non-ferrous metals; 40% for iron ore; 40% for fertilizers; 60% for petroleum refineries and 48% for petro-chemicals. Industrial production had been 65-70% of the installed capacity. The unutilised capacity was mostly due to industrial disputes. While the number of mandays lost owing to work stoppage reduced from 17 million each in 1967 and 1968 to less than 5 million in the first half of 1969, the number shot up to 19 million in 1969 and later.

Small-Scale Sector and Industrial Policy

Industrial licensing policy of February 1970 was oriented towards providing greater opportunity to new entrants in the industrial field and to small entrepreneurs. New undertakings as well as expansion of existing units requiring an investment of Rs. 10 million or less, were exempted from the licensing requirements, subject to certain conditions relating to the requirements of foreign exchange. In another category of industries requiring investment ranging from Rs. 10 million to Rs. 50 million, licences were issued liberally to parties other than the larger industrial houses and foreign concerns.

The main objectives of small industries programme were to improve the productivity of worker, to enlarge the availability of institutional finance and to pay special attention to the growth of small industries in small towns and rural areas. In the context of employment, decentralisation and promotion of new entrepreneurs, the growth of a modern and technologically competent small scale sector was promoted. Certain industries in which economies of scale are not particularly important were reserved for exclusive development in the small scale sector. Co-ordinated development of large and small scale sectors was encouraged through the promotion of ancillaries as feeder industries to large units and of processing industries utilising the products of large industries.

Industrial estates were also meant to shift small scale units from congested areas to premises with possibilities of increased productivity and to encourage the growth of ancillary industries in the townships

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persistent declining trend in the overall growth of industrial output. Supply bottlenecks were in respect of raw material supplies of raw cotton, oilseeds, steel and non-ferrous metals. These shortages contributed to lower production in other industries also. Rail transport bottleneck affected supplies of coal and cement. Power shortages also affected the output of some industries, which resulted in under-utilisation of capacities.

The industry grew at 9.7% per annum with 1965 base compared to 8.9% per annum with 1960 base index. The intermediate goods grew at 13.6% per annum with 1965 base compared to 9.4% per annum with 1960 base index for the same period of 1961-1965. A fall in weightage of agro-based industries of the order of 8.83% from 1960 to 1965 brought out a decrease in growth rate of a marginal order of 0.4% per annum during 1961-1965 because of introduction of growth items such as synthetic

surrounding major industrial undertakings, both in private and public sectors.

Structural Changes and Growth in Industries, 1968-1978

Industrial development is analysed here in terms of diversification and structural changes and the resultant differential growth rates in Indian industry during the decade covering Fourth and Fifth Five-Year Plan period, 1968-1978.[19] Diversification is in respect of number of items newly manufactured over the plan periods and covered in the index numbers of industrial production. Structural changes are in terms of

Table 6 : Structural Changes and Industrial Growth Rates

ITEMS	Weights			Growth rates during 1970-1974	
	1960	1965	1970	1960 base	1970 base
1. Mining & Quarrying	9.72	10.21	9.69	4.1	3.2
Petroleum	—		1.62	3.8	3.1
Coal	—			—	
2. Manufacturing	71.81		73.34	1.9	3.2
—Basic metal industries	7.37	10.11	8.84	1.1	2.9
Ferrous	6.23		7.04	1.5	3.9
Non-ferrous	1.15		1.80	6.4	6.6
—Manufacture of transport equipment	7.77	8.22	7.39	1 8	2.3
Railway wagons	3.50		2.99	—4.0	—4.8
Motor vehicles	2.51		3.88	2.6	4.1
Shipping	—		0.52	—	24.0
—Tobacco manufacturing	2.22	2.21	2.21	2.1	1.2
—Cement manufacturing	1.17	1.17	1.17	0.8	0.7
—Paper & paper products	1.61	1.61	2.24	5.0	4.3
—Chemicals & chemical products	7.26	8.19	10.90	7.0	8.6
Fertilizers	0.46		1.39	12.1	14.2
Inorganic compounds	—		1.06	4.2	3.4
—Rubber products	2.22	2.21	2.21	5.7	4.7
—Drugs & pharmaceuticals	2.20	3.06	3.06	2.7	8.3
3. Food manufacturing except beverage	12.09	7.90	7.74	—1.2	—0.5
Sugar	3.58		2.80	4.1	—0.3
Tea	5.12		2.57	3.6	2.7
4. Textiles	27.06	20.58	17.43	0.2	—0.2
Cotton	21.18		11.63	0.2	—0.2
Jute	3.97		2.71	0.5	1.2
5. Electicity generation	5.37	6.87	9.23	5.0	6.0

Source : Monthly Statistics of Production of Selected Industries (MSP), Central Statistical Organisation, Govt. of India, New Delhi.

fabrics, embroidery, knitting products, tarpauline, dyeing and bleaching products, artificial leather, oil cloth, etc.

As a result of differential industrial structure of small scale sector *versus* large scale sector, the growth rate in small scale sector was 4.3% per annum as against 9.7% in large scale sector during 1961-1965.

The output of small scale units in tobacco manufactures, petroleum and petroleum products, chemicals and chemical products industries registered a higher growth rate during 1961-1965 than the output of those industries in large scale sector.

To study the impact of structural changes in Indian industries, the official index numbers of industrial production with two base years of 1960 and 1970 are considered for comparison of growth rates during 1970-1974 and presented in Table 6. Taking the latest base year 1970 index, the industries were ranked according to their growth rates in two plan periods of 1968-73 and 1973-78 and presented for comparison in Table 7. The results are summarised in Table 8.

Electricity generation, food industries and textiles contributed to resurgence, increasing the capacity utilisation. But coal mining and steel have been affected by floods, power shortage, industrial unrest and

Table 7 : Industrial Manufacturing : Compound Annual Growth Rates

(Base : 1970=100)

Sl. No.	*Period 1968-73*	*% Growth Rate*	*Sl. No.*	*Period 1973-78 commodities*	*% Growth Rate*
1.	Fertilisers	12.1	1.	Shipping	21
2.	Chemicals & Chemical product	8.6	2.	Fertilisers	18
3.	Electricity	7.5	3.	Non-Ferrous	13
4.	Shipping	7.1	4.	Electricity	9.6
5.	Rubber products	7.1	5.	Motor vehicles	8.4
6.	Inorganic compd.	5.8	6.	Inorganic compd.	7.3
7.	Petroleum	5.1	7.	Chemicals & chemical product	6.9
8.	Cement	4.7	8.	Coal	6.8
9.	Motor vehicles	4.1	9.	Drugs & pharmaceuticals	5.6
10.	Tea	3.7	10.	Petroleum	4.6
11.	Non-ferrous	2.9	11.	Paper & paper products	4.0
12.	Paper & paper products	2.2	12.	Cotton	3.8
13.	Drugs & pharmaceuticals	1.5	13.	Tea	3.0
14.	Sugar	1.5	14.	Rubber products	2.5
15.	Coal	1·4	15.	Tobacco	2.3
16.	Ferrous	1.1	16.	Cement	2.3
17.	Jute	0.7	17.	Ferrous	2.2
18.	Tobacco	0.7	18.	Sugar	1.2
19.	Cotton	0.2	19.	Jute	2.2
20.	Railway wagons	—5.6	20.	Railway wagons	0.6

Source : Monthly Statistics of Production of Selected Industries (MSP), Central Statistical Organisation, Govt. of India, New Delhi.

MANAGERIAL ENVIRONMENT

It is widely appreciated on all fronts that increased productivity is the need of the hour in strengthening the economic growth and development and providing higher standards of living for the masses. This implies effective utilisation of available resources in production and distribution of goods and services required by the community at prices it can afford. The relationship between managerial processes and productivity improvement are very close and thus management in the true sense holds the key for economic development and prosperity. This has been recognised in the developed economies. An American Journal, talking about generation gap, says....."In effect, the youth has put a challenge before business and industry. They are saying that profit and production do not come first. What comes first is the well-being of the society". This

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demand constraints. Recovery started in 1978 with improvement in production of cotton spinning, man-made fibres, petroleum refinery products, bolts, nuts and dry cells.

Table 8 : Commoditywise Trends in Growth of Industries

Growth rates	*Commodities*
Increasing rapidly	Shipping, non-ferrous metals, coal, motor vehicles
Increasing slowly	Electricity, inorganic compounds, paper and paper products
Stagnant	Sugar
Decreasing rapidly	Rubber products
Decreasing slowly	Cement, tea and petroleum

brings out the role that managers have to play in individual organisations as a contribution to the economic development of the country.

In our country, the economic development is to be achieved through a planning process. The planned economy implies strong inter-relationship and dependencies of economic activities in various sectors. The delays, high production costs, poor quality and other inefficiencies in one affects others significantly. In this situation, the dynamic role of the managers in each unit assumes great significance.

The managerial environment in India and in all developing economies has its own peculiarities and problems. Though most of the technology for development, particularly for industrial development, has come from outside the country, it has not been possible to make use of their managerial effectiveness. Indian managers have to face problems of shortages, prolonged deliveries, poor quality and similar problems as opposed to the efficient conditions (easy availability of right quality of materials at right prices and on time and technology) under which western managers work. This calls for a new approach which should include consolidation of technology and modification of managerial principles and methods to suit Indian conditions, taking the scientific basis of the managerial techniques evolved in the West and/or developing our own.

Another feature of the Indian scene, and, in fact, of all developing countries, is the extensive involvement of government and government agencies in economic and social development efforts. This call for managers who can understand the implication in terms of political, economic, social and cultural environment and manage the change desired towards achieving economic development. This has a far-reaching impact on the total economic system as inter-relationships among government, public sector, privatesector and governmental and other agencies assume great significance.

MANAGERIAL EFFECTIVENESS

Managerial effectiveness has deep implications in terms of its understanding and measurement. Though the meaning applies to individual managers, it has to be viewed cumulatively as well, since *Managerial Effectiveness* may be meaningless without organisational effectiveness; again *Organisational Effectiveness* has to be viewed in relation to the total economy, as any organisation is an entity in the total economic system. Managers perform at different levels in an organisation, and effectiveness and efficiency have to be related to the levels. Further, effectiveness itself is difficult to define and measure and certainly varies in content and spirit as viewed and applied in developing countries compared to the developed ones. Probably, these implications could be better understood from the point of view of productivity through which management may be visualised and interpreted.

The concept of productivity, both at micro and macro levels, helps in understanding effectiveness and efficiency by providing a basis for setting objectives measurement and control. The significance of technology, and management in productivity improvements, and role of individual managers, in managing get clarified, leading to effectiveness in the broadest sense. Productivity, in a simple language, means effective utilisation of resources; it is not an end by itself, but a means for improving the standards of living of the people by production of goods and services at prices people can afford and continue to do so. In this sense, management gets a dimension encompassing activities in the total economic system, and management effectiveness is its content in terms of meeting the ultimate objectives of achieving higher standards of living. These are the implications of managerial effectiveness in the fullest sense of the term. The productivity relationship at micro and macro levels in an economic system may be appreciated from Fig. 1.

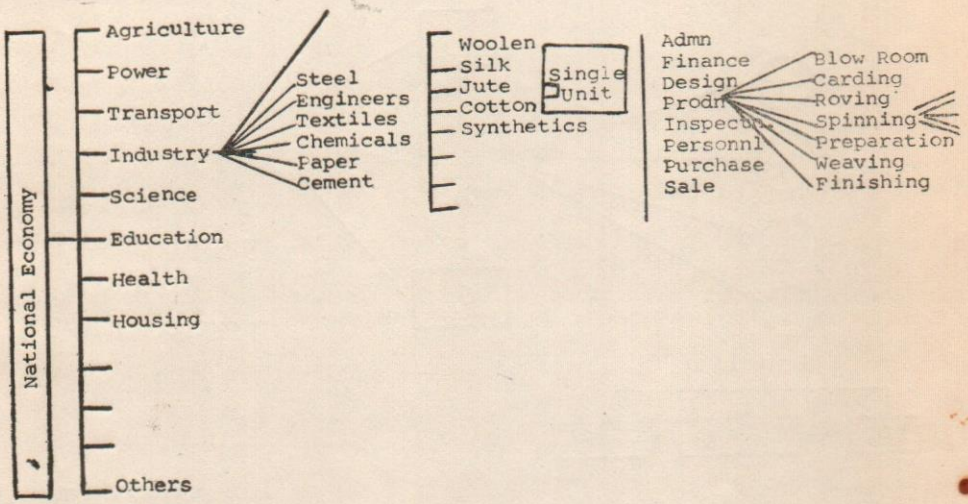

Fig. 1 : Visualisation of cumulation of economic activities emphasising micro approach to achieve results at macro level

The figure demonstrates that the starting point for improvements are individual activities, and cumulated as explained in the figure leads to national productivity and prosperity. It is in this sense that managerial effectiveness is to be understood.

In any organisation, three levels of management could be recognised—lower, middle and top management. When one speaks of *Managerial Effectiveness*, though this applies to individual managers, it assumes the cumulative effect of the individual contributions leading to organisational

effectiveness, as otherwise, individual managerial effectiveness has no significance. Further, the effectiveness of one group of managers depends on the higher level group of managers; middle management cannot be expected to be effective unless the top management effectiveness is present; similarly lower level management effectiveness depends on the middle management effectiveness. In the total economic system, the effectiveness of any organisation depends on the effectiveness of many other organisations, as no one organisation can independently exist. The effectiveness of all organisations leads to an impact at the national level, reflected in the availability of goods and services that the population requires at prices it can afford to pay (quality of life aspects).

This is the ultimate implication of managerial effectiveness.

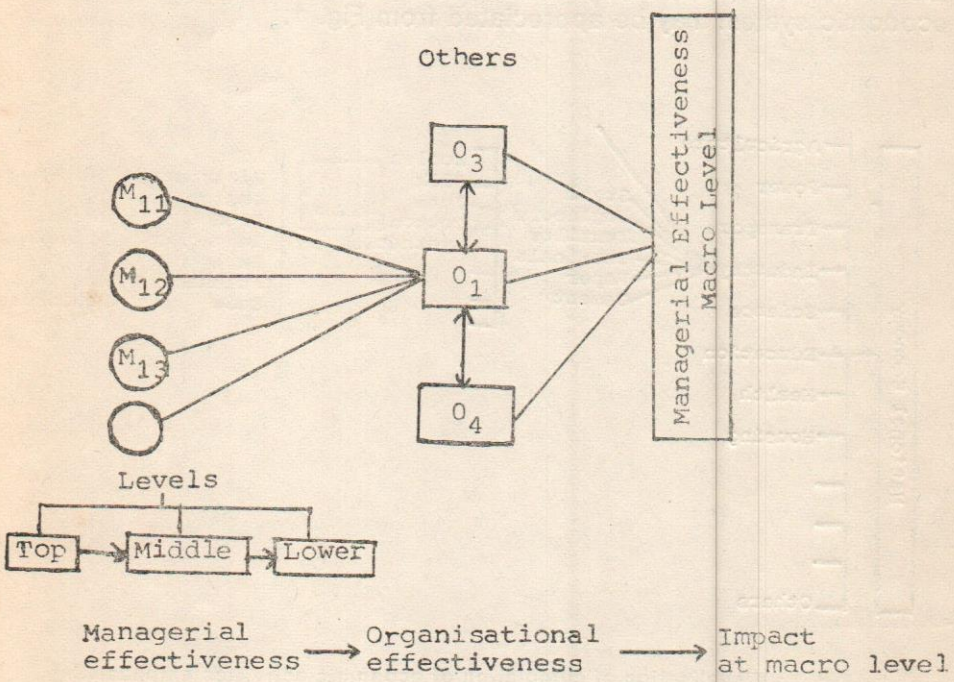

Fig. 2

While managerial effectiveness could be seen as an essential ingredient in economic development, there are also inherent difficulties confronting managers in developing economies; these relate to lack of economic infrastructure, technical insufficiency, raw material shortage, national policy regulations and the like. Individual managers cannot be expected to tackle these problems. Evidently, scope exists to apply management effectiveness ideas in these areas.

With the above points in the background, we may now discuss effective-

ness and efficiency. Effectiveness is a terminology that is result-oriented and hence can be measured in terms of achievement requirements for a job. Various approaches are available for measuring performance but the MBO approach has the potentialities of measuring effectiveness, as it requires to set targets of performance for each management job; while doing so efficiency criteria is also taken into account.

MANAGEMENT DEVELOPMENT

Management development may take place in organisations, to some extent, even when there is no organised effort in the organisation: through experience on the job, interaction in the organisation with others, attending seminars and training programmes and similar other activities. The discussion in this paper visualises management development as an organised effort towards human resources development, as a part of organisational development programmes; the results expected are the continuous improvement in managerial effectiveness of individual managers achieving the organisational effectiveness through synergism. In order to achieve this, a wide variety of activities may have to be developed in each organisation to suit its own climate both in the functional and managerial areas—probably, at this level mostly in managerial areas. It is the author's view that such programmes will have greater impact only after the managers in the hierarchy are exposed to the basic model described in this paper.

In the earlier section, while developing the concept of total supervision, a *model* for management development was built, specially aimed at lower levels of supervision namely, supervisors, built on the solid foundation of understanding the technical content of the job by them. The components of the model were, apart from the technical understanding of the job, managing the job and managing the people. Managing the job implies organising the work effectively, in terms of planning, scheduling and controlling and causing continous improvements in terms of quality, quantity, cost, delivery, safety and other similar factors and interacting with staff groups, contributing towards positive supervision. Managing people implies taking into consideration the environment in which the work is carried out through the understanding of people as individuals and in groups; ability to instruct, guide, communicate, control motivate, discipline and provide leadership. The essence and meaning of this model could be extended to other levels of management as well.

In addition to the model, further role clarification of managers would be desirable, particularly taking into consideration the points discussed earlier relating to managerial environment and effectiveness. As the manager moves up in the hierarchy, new roles have to be assumed as well as new challenges have to be met. It is, no doubt, true, as the manager matures and moves up, he gains experience and confidence,

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Preamble :

The post-independence period is characterised by economic growth and development to provide decent standards of living to the masses through strengthening the foundations of economic and social life. This calls for social and economic transformation speedily through democratic processes. Under this set up, it becomes increasingly clear that science, technology and social attitudes are the important forces that change the present economic scene to the desired one. In this process of transformation, management has been recognised as a single crucial factor which hasten the economic progress and social transformation, as envisaged in the plans. The achievement of the objectives spelled out in the various plans calls for initiative, imagination, enthusiasm and, above all, dynamism and leadership in all spheres of economic activities. Obviously, this task cannot be organised by resorting to old practices and procedures. It calls for effective mobilisation and utilisation of modern management principles and discipline, to policy making, planning and decision making, problem solving and, above all, to the creation of an atmosphere wherein individuals could work harmoniously and contribute to the achievement of the goals.

This senior management programme aims at orienting the Senior Management Personnel of the organisation to the potentialities of management approaches and techniques in improving performance of the organisation through understanding the economic environment, management implications and ability to create a climate where others could work and contribute to improved performance.

but this skill may be in the kind of things he is already doing, in which case he may not be able to take on new jobs or challenges. Further, as he moves up, the number of people working under him would also increase, and his leadership qualities in terms of managing the job, and managing the people would set the pace for achieving results. Problem-solving orientation and understanding the significance of managerial effectiveness as discussed earlier would assume great significance; this would lead to the creation of a climate where people can contribute. This is a matter of great importance and significance.

THE MODEL

The model consists of three training interventions : Middle Management Programme; Senior Management Programme; and Senior Management Seminars. While the first two are aimed at role clarification and to suggest approaches to improve performance based on the discussion of the model, the third programme aims at improving competence through knowledge, colleague interaction and a deeper understanding of the total organisation for improving managerial effectiveness through synergism. This is called basic as this provides the minimum and fundamental managerial inputs on which the management development programme may be built. The clarity, the management knowledge inputs, interaction with colleagues, coupled with the experience on the job provide a strong base for creating a climate

TOPICS :

Socio-Economic Development Productivity
Administration and Management
Management by Objectives
Organisation Theory
Decision Making
Impact of Behavioural Sciences
Impact of Quantitative Techniques
Materials Management
Project Management

DURATION :

12 working days, 6 hours each

(iii) Senior Management Seminars

Preamble :

In achieving the goals of an organisation, the implications and importance of effective management of a given technology is assuming greater significance in recent years. The art of management is dynamic and the techniques to be adopted vary from situation to situation and also from time to time. The work situations change, work-methods improve, people's aspirations increase and magnitude of the effort gains new dimensions as the organisation grows. Hence, senior managers must frequently update their knowledge.

Further, it is now widely recognised on all fronts that increased productivity is the need of the hour in strengthening the economic growth and development and providing higher standards of living for the masses. This implies effective utilisation of available resources in production and distribution of goods and services (both in the basic and other industries and other sectors) required by the community at prices that it can afford. The relationship between managerial processes and productivity improvement is very close and thus management in the true sense holds the key for economic development and prosperity. This brings out the role of senior executives in evolving suitable systems and procedures in individual departments and co-ordinating the same with other departments, consistent with the objectives of the organisation.

A close observation of the management scene reveals that there is an urgent need for providing an abiding understanding of this fast developing and rich field management ideas, principles and techniques to the senior executives.

The routine training programmes and seminars would not fulfil this need for various reasons. In order to cope with this problem, a special programme is suggested which would mostly benefit the executives at the top.

Methodology :

The programme is designed as a short but effective exposure to a series of topics to all senior level executives in an organisation. Each topic will be presented by a component expert, who has a thorough understanding of it both from the theoretical and practical considerations. The programme will be presented for a period of two full days, (or three days, taking about three hours each day).

"Discussion Leading" will be the main approach so that, after the presentation of the progrmme, the senior executives are able to assess and review their managerial contributions in relation to what further could be achieved in this regard. This process naturally stimulates thinking; why certain features were not introduced, what could be done now to introduce the same and, if certain factors come in the way at the present juncture, what precisely needs to be done in a pragmatic manner to facilitate the incorporation of the desirable features.

All executives present at the programme will gain a deep insight into and a clear understanding of the problems involved in the running of a complex organisation like the railways, whether or not they might be directly dealing with the resolution of problems thrown up. This process paves the way for cooperation and coordination born out of an understanding of the functioning or the other executives' functions *vis-a-vis* their own.

Besides developing this atmosphere of managerial understanding, the resulting empathy would lead also to the setting up of an Information System with a fully coordinated and integrated approach through the involvement of the executives.

TOPICS :

The course-content for such Senior Management Seminars can always be tailor-made to suit requirments, but the following topics are of particular relevance :

Corporate Planning
Management by Objectives
Performance Appraisal
Manpower Planning and Development
Production Management
Maintenance Management

Quality Reliability Management
Materials Management
Financial Management
Project Management
Personnel Management
Behavioural Science in Management

CONCLUSION

A view point has been expressed in this paper that a successful management development programme in an organisation has to be built around the existing managerial environment and an understanding of managerial effectiveness with all its implications, both at micro and macro levels. It is suggested that such an understanding could be provided by first exposing the managers in an organisation, en masse, to what has been termed as a basic model in this paper; other activities with regard to management development, if knit around this, will have a greater impact in terms of managerial effectiveness leading to organisational effectiveness. The three—training, intervention, discussions—are together called a Basic Model, as it is necessary that all the managers within an organisation should at the appropriate time in their career be exposed to the contents of the programme. Two levels have been distinguished, middle management and senior management for this purpose, junior management being understood as the lower level management personnel for whom a special programme has been developed in an earlier paper[3], keeping in view the special problems at this level of management.

The main result that is expected to result as an understanding and implementation of this approach is the 'development' of individual managers who perceive not only ther individual role but also contribution to the organisation's objectives through an integrated and unified approach. This would result in manager's identifying the actions to be taken individually and through the involvement of appropriate staff functions in the organisation.

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Administrative Performance and Accountability†

T. N. Chaturvedi*

The crucial test of efficiency and effectiveness of administration lies in the accomplishment of the objectives stipulated in policy decisions. Very often we are told that the policy is good but its implementation is poor or bad. In a way this is a contradiction in terms. A policy which fails to take into account the possible constraints of performance cannot be deemed a good policy. Policy is rooted in the experience of the past. It is motivated by the compulsions of the present. Also, policy is anticipatory in nature and is oriented to the perspectives of the unfolding future. If a policy is thus three-dimensional, obviously it must take note of the environmental barriers and uncertainties and human inadequacies if it is not to flounder in the process of implementation. A policy which is based on 'ifs' and 'buts' will be a statement of intentions or aspirations, but cannot certainly be a policy in the real sense of the term. Policy, if it does not lead to performance, is nothing short of administrative abortion. Policy must effectuate into successful programmes and consistently seek, strive for and retrieve the desired goals.

Policy and performance constitute a continuum. It is, however, a wrong, assumption that a policy once outlined will automatically fructify into performance. People castigate administration for its lack of result-orientation. It is said that administration lacks achievement-mindedness. It is criticised as procedure-ridden, ritualistic or narcissistic, or self-centred in its approach and orientation. It is not the harmony and balance of the administrative system, whether internal or external, that will satisfy the people. Their expectations are on performance of the system. If it fails in results, if it is slack or lackadaisical in its performance, the natural reaction of the people is that both the system and the people who man and manage the system are at fault. And this kind of a situation of non-performance or inadequate performance, if it persists for long, is bound to create a feeling that the administrative system and the administrators are not only inefficient and lacking in a sense of responsibility but are also irresponsive as they do not respond to the reactions, wishes or moods of the people. Thus, administrative failure becomes the starting points of the alienation of the people from administration. The disenchant-

†This paper is an abridged version of the lecture delivered by the author In the Deptt. of Public Administration, Lucknow University on 7th April, 1980.

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ment with the political system itself may be the next step. Thus we can perceive a meaningful inter-connectedness with policy, performance, people, and the political system in the broad administrative framework of accountability.

Administration : Tool of Policy Implementation

In a democratic set-up administration is a vehicle or tool of implementing public policy. But administration is not mechanistically instrumental in character, but has also a fundamental value since it is good administrative performance that lends credibility and respect to public policy. Somehow, the mechanistic view of administration that has been much visible in this country explains the omnibus criticism and denigration of administration. But no critical, constructive and thoughtful consideration to the pre-requisites, constituents, environmental and critical factors which determine and condition administrative performance comes out as frequently. Administrative feasibility and support are as vital as the technical viability, economic validity and even the political acceptability of a policy, programme or project. Hence, the missing administrative dimension acquires significance with reference to the end-result and a critical input as well in assessing performance. Thus administrative performance seems to acquire a motivation and an identity of its own. Whatever may be the compulsions and constraints of coordination of administration, the people are interested in an 'integrated performance' and not in departmental wranglings and alibi for non-performance. Administrative performance represents the moving equilibrium of the human resources development as the individuals involved are able to achieve their potential, contribute what they possibly can to social good and find a sense of fulfilment in the tasks accomplished.

"Good governments are governments under which nothing happens".[1] All it means is that when the scope and scale of the operation of the government is limited, the concern about its performance is also limited. But in a situation where government has an ever-increasing expanding role, the pervasiveness and impact of administration are both getting more extensive and intensive as much as the accomplishing side of the government. This increasing role of the government need not be solely attributed to ideological and political considerations. There is a complex of factors of the dynamic environment which necessitate the enhancement of governmental responsibilities. Apart from ideas and opinion, ideologies and climate of the age, factors such as the growing expectations of the people in a democratic society, the increasing social awareness, the growth of population and the attendant horizontal and vertical growth of all kinds of organisations, political unionisation, greater articulation of the different sections of the public, the permissive modes and mores—juridical, philosophical and social—induction of science and technology, with its consequential effect, as well as the

1 Albert Camus : *Caligula and Three Plays.*

international nexus of world-wide media and communication in which we live, along with the compulsions of defence and development—all these combine to dictate the role of the government and the administration. Such dynamics of the environment needs adequate administrative performance to cope up with the challenges thrown by it. An administration, reluctant or inward-looking, cannot meet the demands of such an aggressive environment. This further highlights the importance of performance by the administration, for sheer societal survival and progress.[2]

Administrative Performance : Most Productive Use of Resources

The question of administrative performance is also important in view of the limited resources and the competing and conflicting objectives that we have. Administrative performance signifies the rationality of effort to reconcile the scarce resources and the pressing demands in a way that the limited resources—financial, material or human—are maximised under the circumstances. In a way all administration and development are engaged in this exercise of seeking harmony and optimisation in an environment of pulls and pressures. This has another aspect in as much as this effort at maximisation converts itself into the problem of choice in the allocation of resources where some gain by the allocative process and some are left out. This again gives rise to tensions and this is what creates the 'politics of scarcity' and 'the scarcity of politics'. In such a situation it is the well-designed and the well-timed policies and programmes that matter, but policies that unravel themselves in actual performance which will satisfy the people.

When we have an 'activist' government, the activist administration is the logical consequence. An activist administration becomes increasingly economic in character whether it is the question of mobilisation of resources or their utilisation. In the wake of the social policy of an activist state, resources have to be raised from a wide base. The way the revenues are raised, the groups from which they are collected and the purposes for which and the classes for whom they are spent determine the social direction in which the society moves. In a way, here, development and social change get linked up. It is only natural that the utilisation of budgetary resources, so as to result in adequate performance, becomes a matter of interest for those who pay and is a subject close to the heart of those who stand to benefit as a matter of social equity through redistributive values. It is obvious that the political authority can also in no way be indifferent to administrative performance.

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2 T. N. Chaturvedi : *Public Service and Modern Challenges*, Deptt. of Personnel, New Delhi, 1970.

Development Administration

The attribute of performance is not the characteristic only of what is commonly known as development administration. In a manner of speaking, development administration is not something sectoral in comeplexion. There is no dichotomy between the conventional law and order or revenue administration on one side and development administration on the other. When a development activity, even if novel, continues and conforms to the expectations of the people, it settles down as the conventional type. Similarly no development is possible of initiation or completion if law and order do not exist and the people in general have a feeling of security. If we look at the so-called revenue administration, we have to recognise that unless there is an adequate revenue base, and unless recources are mobilised competently and well, the desire to build a welfare state will continue to rest on shifting sands. The nature and character of the revenues will change with the growth of the economy, but it is only their mobilisation that will sustain the welfare aspirations of the people and the development of society. It is, therefore, imperative that development-mindedness should be an attitude of mind, a psychological dimension that must express itself into administrative performance whatever the segment of public service be, and must characterise and permeate the entire spectrum of administration.

Administrative performance is closely connected with the area of operations of the government. In some of these spheres it is possible to quantify performance. In certain others, a qualitative judgment may have to be applied and indicators from that angle may have to be developed. That is why in certain social context, for project and programme identification and appraisal, we speak of 'social cost and benefit' analysis. It will be wrong to think that quantification and numeracy will be of universalistic application. According to a writer :

> Government performance and its purposes can be divided into four broad functions : (a) *protective functions*, those which provide public security (both internal peace and external defence); (b) *service functions* include the provision of education, means of communications and transportation and public works; (c) *promotive functions* relate to self-realisation and fulfilment facilitating the enjoyment of fundamental freedoms, entertainment and cultural programmes; and (d) *trusteeship functions* include the preservation of national resources (both physical and human), development and promotion of such resouces so that they leave a good legacy for the future generations. Through these and related functions, government strives to facilitate the existence of a community environment in which individuals may pursue the ideals of the good life.[3]

3 *Ethics and Public Policy* : *Reflections* (mimeographed) by O. P. Dwivedi, University of Guelph, Canada, 1979.

To the above four categories may be added the *mediatory functions,* which may include functions relating to mediation of conflict between groups and interests, say labour and capital, and so on. The *promotive functions* may include a direct economic role, *e.g.*, promoting and running of public sector undertakings. Similarly, the *trusteeship functions* may also cover the more pointed custodian role of attending to and safeguarding the poorer, the weaker and the more vulnerable sections of society. All these functions in operational terms are discharged by one part or the other of administration and are reflected in administrative performance.

Basic Elements of Administrative Performance

According to dictionary meaning, performance is to be understood in terms of accomplishment, attainment, achievement, execution or implementation of goals and tasks. Thus goals and tasks become the two basic ingredients of administrative performance. The third ingredient is the process and the means. These must broadly be viewed as the capability of the administration if a policy or plan is to be translated into reality. While the goals indicate broad objectives, they have to be broken or spelt out into targets and specific tasks in phased and sequential or concurrent steps. The fourth element is the mechanism for evaluation and monitoring as to how far the process of accomplishment is proceeding in a way that the administrative performance, as envisioned, is actualising itself in an efficient, speedy and economical manner. Thus, efficiency, speed (or time orientation) and economy become a yardstick of judging administrative performance. As the administrative performance is in the social context, and is a social phenomenon, these words have their relevance not in any mechanistic approach but in the broad perspective of the compulsions and aspirations of society. Social empathy must underline any effort at performance in administration.

If one makes a cursory view of the process of planning for development, one will see that the implementational aspects have not received the attention which the formulation aspect has received. As W.H. Lewis observes :

> "one can plan by direction alone, or by inducement alone, but one cannot plan by exhortation alone, when the major result of one's actions is to make the inducements work in the opposite direction. This is not planning, but merely pretending to plan. Planning is a serious business. What makes planning, is not the targets, which merely express what we would like to see happen, but the action that is taken to achieve these targets.*

*W. H. Lewis, The Principles of Economic Planning, London, University Books, 1963.

The capacity for implementation which leads to administrative performance is called the efficiency of the system. Efficiency can be looked at from many angles. It has been deemed to be "synonymous with effectiveness in achieving results, i.e., without respect to costs incurred".* In course of time "the literature of industrial and public management made men familiar with the idea that achievement of results with unnecessary expenditure of effort, time, or money was obviously inefficiency".* Thus, according to Redford, there are two main concepts of efficiency. "One is that of adequacy, according to which performance is measured against potentiality."* Secondly, it may be measured by an input-output ratio. Actually, both are reduced to resources-results relationship. He goes on to say :

> "From the management approach, efficiency may be viewed also as a measure of capacity to achieve results. An organisation or individual may be said to be efficient if it is in readiness to perfrom its task without too large an expenditure of effort. Efficiency may, therefore, be defined as a text of results performed or of readiness of an organisation/unit or an individual to meet demands upon it. The first is realised efficiency; the second is efficiency potential."

Though the search of efficiency may begin with cost reduction, it cannot be the sole criterion. Economy, while a necessary ingredient, must supplement the efficiency ideal as much as the optimisation or maximisation of resources. In a way it becomes for future a standard of judgment for the decision-maker trying to decide on a course of action. It will determine naturally the choice of alternatives from the standpoint of the possibility of optimum results with given resources.

Interpreted in broad terms and taking account of the social context, the concepts of efficiency and economy in all their implications should provide the test as well as the ideal of administrative performance. But as it happens, administrative performance is usually taken as the logical consequence of a particular policy formulation or projection. In any case administrative performance, while satisfying, in the ultimate analysis, the implementation process, seems 'deceptively simple' and is "assumed to be a series of mundane decisions and interactions unworthy of scholars".** Again the analytical technique of PPBS as providing an improved basis of policy-making creates the illusion or the wishful thinking of an improved administrative performance by itself. Besides, as the process of implementation consists of a variety of actions and actors, not always easy to identify or isolate, unlike a judicial pronouncement or a legislative fiat, any detailed study of the implementational effort of administrative performance hardly appears to be very attractive.*

*Emmet S. Redford : Ideal and Practice in Public Administration, University of Alabama Press 1950.

**Donald S. Van Meter & Carl E. Vanthan : The Policy Implementation Process, Administration and Society, Feb., 1975, Vol. VI, No. 4.

Administrative Performance : Need for Total Approach

When the role of administration is activist in character and new agencies, authorities and undertakings are being launched for various programmes and projects, the fundamental issues involved and the preconditions of administrative performance merit deep consideration if the governmental operations are to steer clear of needless criticism. The issues of centralisation and decentralisation are very important for administrative performance. In practical terms these are questions of organisational details which will have to be worked out with specific reference to programmes and projects. Any sloganised policy statement will not achieve the result. While discussing the problems of administrative performance, it is worthwhile to note that in time of crises and emergencies like the floods, famine and other natural disasters the administration is able to rise to the occasion but the performance of the same administration is not adequate to meet the diffiiculties and demands of the community in daily life. Why is it not possible to identify and institutionalise the sense of purpose and urgency of the crisis administration* in the ethos of the handling of day-to-day problems of the citizen which make or mar the image of the administration ? Administrative performance is innovative and adaptive as it is not pedestrian either in its conception or in its execution. Implementation for administrative performance involves not only routinised tasks but decision-making and problem-solving in terms of purposes, processes, people, levels and institutions.

Administrative performance, as it directly or indirectly is concerned with human affairs, must reflect the consequential complexity. No single variable can be the determining factor. Hence no single approach will suffice. While homage is paid to systems analysis, the strategy or approach in administration is much more circumscribed. The range and intensity of all the factors of administration are not equally evaluated. Sometimes administrative performance will look like the function of purely technical or economic factors at the most. On other occasions, institutional, cultural, social or political factors will seem to predominate. Even a mechanical approach, of reform in administration—structural, organisational or personnel—, will seem to guarantee administrative performance. Very often, managerial techniques, divorced from the socio-economic milieu, or consultancy and expertise from outside will be advanced as a panacea. On all these occasions, it is not the totality of insight or the integral vision, but a fragmentary, approach, based on the exaggerated stress on this or that discipline, that is ostensibly being considered as holding the key to administrative performance. But as the history of planning and development of many developing countries will exemplify, this kind of restrictive and one-

*T. N. Chaturvedi : 'Crisis Administration', IJPA, New Delhi, 1975, Vol. XXI.

sided approach is apt to ignore two vital and distinct but closely interlinked constituents or stages in planning for assessing administrative performance. One is administrative feasibility and the other is administrative support. Administrative feasibility refers to the analysis of the possibility of achieving the policy objectives or to the implementability of the projects during the formulation stage of planning, taking into account all the relevent constraints. Administrative support, on the other hand, will "look at the relevant administrative system or subsystems in terms of their capability gaps vis-a-vis the implementation requirements of the particular policies, strategies or projects which are being considered for inclusion in a national development plan".* In a way, the former is concerned with decisions as to the choice of policies, strategies and projects, and the latter with ensuring the implementation of those policies, strategies and projects which are selected. Thus the two are not necessarily sequential; they would provide mutual feedback and identification as well as scope for application of timely correctives. Both are components of the operational cycle of administrative performance which implies coordination of thought and action.

Administrative performance must be focussed on improvement of the capability of the administrative system. Inter-disciplinary perspective, decentralised approach, creation of adequate data base, informal decision-making, scientific staffing pattern, appropriate monitoring mechanism and well-planned resource input will all go a long way in promoting the desired administrative performance. The question of public cooperation, involvement and participation as an aid for effective administrative performance is another significant matter for consideration. Probably a more positive approach will follow if we enumerate the factors, as brought out in the many studies and evaluation reports, which account for the poor or inadequate performance of projects, programmes and schemes. They can be summed up as follows :

(i) want of prior preparation by way of identification, appraisal and the requisite implementational steps; (ii) unsound resource planning and budgeting as well as poor accounts and financial management; (iii) lack of coordination among various agencies and organs; (iv) paucity of trained and competent technical and administrative/managerial staff; (v) lack of appropriate locus and focus on the planning functions; (vi) inadequate opportunity for participation of field workers in the planning function; (vii) centralisation of administrative and financial authority as well as decision-making capacity; (viii) inadequacy of statistical and information base; (ix) poor institutionalised arrangement for reporting monitoring and feedback; (x) want of training arrangements and manpower planning; (xi) unscientific personnel policy and management; (xii) lack

*Shelton Wanasinghe, Administrative Support Planning for Development Projects, APDAC, Kaula Lumpur, 1978.

of morale, motivation and commitment among the staff; (xiii) lack of political perceptions about the nature and limits of control and accountability; (xiv) want of supportive research as regards problems and possibilities. The failure to pay proper attention to any or to some of the aforesaid key elements naturally leads to poor performance, causing public inconvenience, discontent and distrust in administration.*

Complementary Roles of Administration and Political Leadership

Administrative performance is an ideal, an effort and an achievement. In positive terms, it will have to take into account variables like the organisational and institutional arrangements of the administrative programme, including legislative or political support; the internal structure in terms of allocation of authority, resource mobilisation, decision-making and coordination; the managerial personnel and their motivation for achievement; staff manpower and training; the level and suitability of management techniques available; the environmental interactions and institutional linkages; the effective monitory information system, legal provisions, and administrative regulations as constraints or support for better, speedier or more effective performance. It is apparent that both the administrative and political leadership have a vital and specific role to play in facilitating and improving administrative performance. Within the organisation itself, there must be a climate of trust, fairness, purpose, participativeness, creativity, equity, welfare and growth if it aims at and works for adequate administrative performance in consonance with the declared policy and objectives.**

The psychological assurance of support to implementation in the field is the starting point of any sound performance and the field staff must also know as to what they are required to do. The lines of communication must be clear and trustworthy since the ability and willingness of the implementors will greatly depend upon their comprehesion of the policies and programmes. It is here that the role of public opinion, and the strategy and approach to public participation in respect of programmes, and the strength of organised pressure groups in the totality of the socio-economic and political system assume paramount importance. For promotion of certain programmes in certain situations, it is not so much the technical skill but political skill, support and vision that is needed to protect and promote them. The capacity to develop a consensus with a view to achieve the desired performance in an environ-

*Reference may be made to :
U. N., New York, *Administration of Development Programmes and Projects : Some Major Issues*, 1971.
Albert Waterstone, *Development Planning : Lessons From Experience*, John Hopkins University Press, 1965.

**T. N. Chaturvedi, Role of Administrators in Democracy, in N. C. Joshi (ed.) *Democracy and Human Values*, New Delhi, 1979.

ment of conflicting interest groups becomes almost political in nature. The politics of implementation is expected to resolve conflicts among those affected or even be crucial in the measurement of performance.

Administrative performance in a democratic society, it must be recognised, cannot rise above the level that the political system permits it. In the first place the clarity, continuity, consistency and stability of the policy itself will greatly depend upon political leadership. Secondly, the firmness of political will and the sense of direction provided by it will determine the effort towards accomplishment of the tasks laid down by the political executive. Thirdly, it may be borne in mind that continued cavil is not a substitue for genuine administrative improvement. It is the function of the political leadership to see that, through systematic training and development of an appropriate personnel policy, the administrative machinery is motivated to cultivate functional adequacy as well as a wider social perception. The political leadership, while rightly exercising its right and obligation to see that the administration performs its responsibilities, should not function with any bias which may adversely affect the morale and motivation of the public service. Neither the free and frank expression of public opinion should be misconstrued as administrative obstructionism, nor should the fleeting compulsions of policies be equated with public good and larger public interest. As a perceptive commentrator says :

> "Systems analysis cannot achieve wonders; it cannot transmute the dress of politics into the fine gold of platmic decision-making, which exists in the world of ideas rather than the world of reality. Political decisions in a democratic society can hardly be more 'rational' than the public, the ultimate sovereign, is willing to tolerate."*

So public vigilance acts as an effective guardian of political rectitude, and the norms, traditions and ethics of the political process as well as of the leadership, condition and ensure the administrative properties as well as the administrative performance and accountability.

Administrative Accountability

Accountability is the kingpin of democratic administration. But it is not only regulatory and punitive in its purpose and contents. It has a positive orientation and promotional goal, viz., to ensure adequate administrative performance under democratic supervision and guidance. All along in this paper mention has been made of the reasons for, and the elements of, administrative accountability. Authority is apt to be indifferent to public viewpoint, self-seeking and even oppressive, if both the internal norms of discipline and the external institutional arrangements

*James R. Schlesinger, Systems Analysis and the Political Process in Louis C. Gawthorp, The Administrative Process and Democratic Theory, Houghton Miffin, Boston, 1970.

do not imaginatively and consistently (with the requirements of morale and motivation of administration) lay down the parameters and the rationale of accountability. In our country, administration must function within the broad framework of the written constitution, the judicial system, the rule of law and the federal and parliamentary government. And all of them have wide-ranging and profound implications both for administrative performance and administrative accountability.

Accountability or responsibility can be interpreted in a narrow sense as answerability to the superior authority for implementation and for achievement. The basic purpose is that the administrative operations are carried out with economy, efficiency and effectiveness. In the context of the rule of law the procedural proprieties also become a necessary adjunct to the concept of accountability as operationalised. That is why there is always the need to consciously think on the matter and see that, in the name of accountability, performance does not become the prisoner of non-decision and of the rigidities of procedures and regulations. All this requires a more integrated view of the totality of the situation if the deveiopmental tasks have to proceed smoothly and speedily to fulfil the expectations of the people. In a democratic system the pulls and pressures are inevitable and instead of bemoaning them, for the sake of administrative performance, they must be rationalised and contained through a proper approach and understanding of their constraint and their potential.

Accountability in administration is not an isolate. It is linked with authority and problems of deligation and communication. Thus administrative accountability represents a structure of authority and institutional as well as interpersonal relationship. One of the prime issues of accountability is its locus and the focus, without any mix-up or confusion. This becomes essential as the individual and organisational accountability must converge. To whom and how the administration is accountable in any organisation is not just a matter of routine. That is why another requisite is that the authority must be commensurate with accountability and vice-versa. It is also a matter for consideration as to why functionaries in administration are reluctant to delegate authority on one hand and hesitant to assume responsibility on the other. What are the administrative and environmental reasons for this kind of affairs? It is an odd situation that the public sometimes feels that responsibility is much too diffused in administration and the citizen feels helpless while the governmental functionaries harbour the feeling that any minor lapse is exaggerated out of proportion and, therefore, decisions are delayed and performance is affected. The question of the means and ways of enforcement of responsibility acquires immense significance.

Accountability is not always easy to define. It is, however, true that if a framework of accountability is kept in view, the people in administration will feel more self-confident and the people at large will have

the assurance that public servants are managing governmental operations soundly and they can be called to account for performance and results.

> "Accountability, like electricity, is difficult to define, but possesses qualities that make its presence in a system immediately detectable. To touch a live wire in a circuit is enough to establish the presence of electricity without further need of definition. The shock of recognition that attends the presence of accountability in a system of government may not be quite as direct, but it is nonetheless detectable."*

As the report goes on to say :

> "In short, accountability relies on a system of connecting links—a two-way circuit involving a flow of information that is relevant and timely, not only for managers but for those who must scrutinise the decisions and deeds of managers. We gauge its presence when we observe that a certain discipline has been imposed upon those who are assigned roles and duties in the system. In simple terms, accountability is that quality of a system that obliges the participants to pay attention to their respective assigned and accepted responsibilities, to understand that it does matter. Thus, the likelihood that agreed goals and objectives will be attained is enhanced."

It is in this sense that now the concept of 'accountable management' as a part of the administrative apparatus is getting more and more acceptable, so that the accountability is not merely external but gets institutionalised and become self-enforcing. Accountable management in the public service, where the market forces do not and cannot always operate, also implies the need for management services and efficiency audit so that the multiple dimensions of performance can be suitably appraised.

We have used accountability and responsibility interchangeably. But the two can also be differentiated. Accountability may refer to the legal and hierarchical locus of responsibility, while responsibility has a moral connotation. Mosher identifies two shades of meanings :

> "The first, objective responsibility, connotes the responsibility of a person or an organisation to someone else, outside of self, *for* something or for some kind of performance. It is closely akin to *accountability* or *answerability*. If one fails to carry out legitimate

*Report of The Royal Commission on Financial Management and Accountability, Canada, 1978.

directives, he is judged *irresponsible* and may be subjected to penalties."*

He goes on to say :

"A quite different connotation attaches to the second meaning of responsibility, which is *subjective* or *psychological.* Its focus is not upon to whom and for what one *is* responsible (according to the law and the organisation chart) but to whom and for what one *feels* responsible and *behaves* responsibly. This meaning is more nearly synonymous with identification, loyalty, and conscience than it is with accountability and answerability. And it hinges more heavily upon background, the processes of socialisation, and current associations in and outside the organisation than does objective responsibility."*

It is a matter for consideration as to why this higher sense of responsibility cannot be made to permeate the entire aministrative system, more so, when in a democratic and free society the administrator is the citizen and vice versa. If such an administrative elan be created and developed the misgivings and fears of formal and institutional accountability would be dissolved and the administrative performance would be in keeping with people's expectations as well as the imperatives of the situation.

At the operational level, actions which affect adversely the morale in administration must be avoided. Enquiries into anonymous and pseudo-anonymous complaints, despite instructions on the subject, indecision or delay in personnel matters, interference in the details of administration and sweeping criticisms of public services, require a notice of caution. For enforcing accountability in a more positive manner, measures like selection for assignments on the basis of merit, suitable scheduling and time-bound programming of projects, working out of incentives linked with performance, classification of goals, objectives, priorities and tragets, avoidance of frequent transfer of personnel, designing of scientific information and monitoring systems must be realistically conceived and implemented according to the nature of the programmes and projects.

Accountability for administrative performance cannot be equated only with the narrow traditional audit. In any case, in the broader context of performance this approach should not lead to inordinate administrative cost in delays, dampening of initiative, reduction of discretion and flexibility, as this may become self-defeating. Accountability unfortu-

*Fredrick C. Mosher : *Democracy and the Public Service*. Oxford, 1968.
*Fredrick C. Mosher : *Ibid.*

nately becomes more a function of mistrust than positive in apprach. For enforcing accountability there is thus need for understanding of performance objectives and standards in administration with reference to individual functionaries as well as organisations and creation of confidence in the evaluation process in the government.

Accountability can be legal or judicial, financial and audit, legislative and political, administrative and programmatic. It will suffice to mention that there are formal organs of control, apart from the administrative, like the judiciary and the legisiature, intended to enforce accountability. Similarly there are legislative or parliamentary instruments like the question hour, interpellations committees of the parliament, etc. that have a vital constitutional obligation and role to play in this regard.* It is neither necessary nor possible to go tnto any detailed analysis of their functioning. The one important point to note is that the formal controls should not be such as to inhibit initiative for action or for decision-making. It is always easy to be wise after the event, but hindsight in not necessarily foresight when compelling circumstances call for action. The search for a responsible bureaucracy in terms of effectiveness as well as responsiveness is a continuing one. As an administrative analyst says :

> "In the administrative state, control of the bureaucracy by political institutions is a matter of some finesse and subtlety. Control cannot be exercisd by a bludgeon. Administrative breakdown is as much to be feared in the modern state as a politically irresponsible bureaucracy. The administrative apparatus must be well served by its administrative staff and this need is as much the concern of ploitical institutions of government as the assurance of appropriate political direction of that apparatus."** □

*Herber J. Spiro : Responsibility in Government, Van Nostrand, 1969.
Reference may also be made to Accountability and Control by H. V. Krocker, Montreal, 1978.

**John D. Millett : Government and Public Control. The Quest For Responsible Performance, McGraw-Hill, 1959.

Unused Inventories in Central Government Enterprises Producing Transportation Equipment

R. Prakash*

As on March 1978, nine Central Government enterprises were engaged in manufacturing and selling of transporation equipment, viz., aircraft, helicopters, warships, heavy earth-moving equipment, road-rollers, rail coaches, etc. The name of these enterprises and their year of incorporation are given below :

S. No.	*Name of the Undertaking*	*Year of Incorporation (Registration)*
1.	Garden Reach Workshop Ltd. (Govt. Co. since 1960)	1934
2.	Mazagon Dock Ltd. (Govt. Co. since 1960)	1934
3.	Hindustan Shipyard Ltd.	1952
4.	Hindustan Aeronautics Ltd.	1964
5.	Bharat Earth Movers Ltd.	1964
6.	Central Inland Water Transport Corpn. Ltd.	1967
7.	Goa Shipyard Ltd.	1967
8.	Scooters India Ltd.	1972
9.	Cochin Shipyard Ltd.	1972

Over the period 1966-78, the undertakings engaged in transportation equipment have grown in number and size. In 1966-67 there were 5 enterprises with employed capital of Rs. 95.22 crores and turnover of Rs. 44.71 crores. In 1977-78 in this group 9 enterprises had 392% more of capital employed at Rs. 468.17 crores and 7.4 times the turnover at Rs. 329.72 crores. The total equity and loan in these 9 undertakings as on 31 March 1978 was of Rs. 368 crores. Thus currently out of about Rs. 27 crores invested in goods producing enterprises, Re. 1 is in those manufacturing transport equipment. This group contributes 1/29th share of total gross profits earned and is responsible for Rs. 2.91 crores out of Rs. 92.55 crores loss incurred by all the goods-producing undertakings in 1977-78.

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Level of Inventories

The average inventories held by these undertakings during 1977-78 are valued at about Rs. 450. 28 crores as compared to Rs. 89.55 crores in 1966-67. The cost of sales during the period has progressively increased from Rs. 44.44 crores to Rs. 298.42 crores. The inventories as percentage of total produce fell from 201.5(1966-67) to 150.9(1977-78). The average sale per item stocked has always been less than one. The inventories in terms of months of cost of sales had decreased from 24.2 in 1966-67 to 18.1 in 1977-78. It was lowest at 14.6 in 1975-76. The stocks held in terms of months of cost of sales were largest in 1969-70 and were equal to 26. Table 1 shows comparative position of cost of sales and inventories over the period.

Table 1

Year	Rs. in crores		No. of Months	Turnover rate 2÷3
	Cost of Sales	Value of Average Inventories	Inventories in terms of months of cost of sales	
1	2	3	4	5
1966-67	44.44	89.55	24.2	.50
1967-68	68.39	137.22	24.1	.50
1968-69	84.39	169.21	24.1	.50
1969-70	88.38	191.63	26.0	.46
1970-71	106.03	190.81	21.0	.56
1971-72	121.60	195.65	19.3	.62
1972-73	152.90	233.14	18.1	.66
1973-74	159.72	272.27	20.5	.59
1974-75	233.98	304.87	15.6	.77
1975-76	275.47	335.48	14.6	.82
1976-77	286.01	384.39	16.1	.74
1977-78	298.42	450.28	18.1	.66

The turnover ratio gives a quick appraisal of inventory condition and reflects the 'mileage' obtained from the money tied up in stock. It is seen to have progressively increased from 0.5 in 1966-67 to 0.8 in 1975-76. In 1976-77 and 1977-78 it fell to 0.74 and 0.66 respectively. On the whole, during the last four years there are some signs of economies of scale as larger volume of sales is supported by lesser size of inventories. A graphical presentation of the above figures has been made in Figs. 1 and 2. Fig. 1 shows that average inventories had always been more than the costs of sales and Fig. 2 depicts movements of inventories in relation to costs of sales over the period.

Comparable data in respect of companies in similar business under different management style of private ownership could not be available.

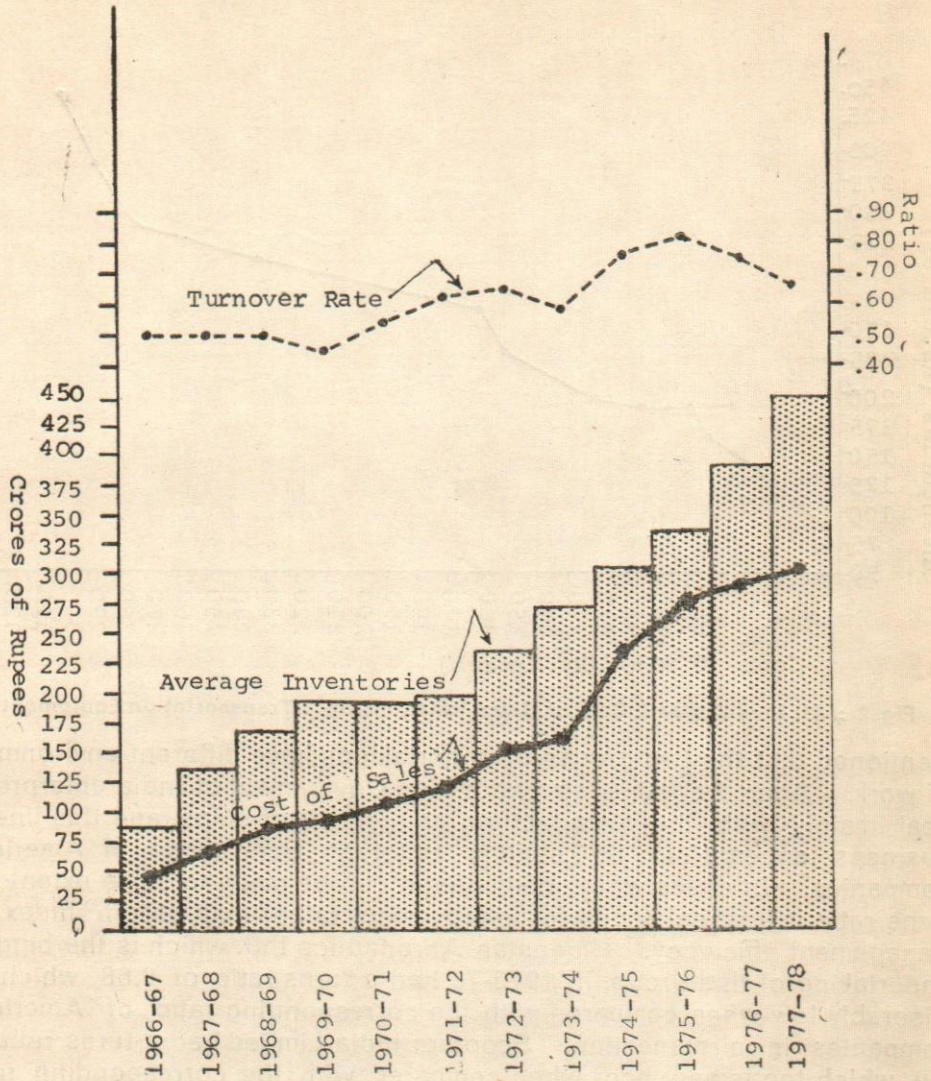

Fig. 1 : Inventory Chartwatch : Transportation Equipment

Data on net sales to inventory for American companies were, however, available for two lines of business, viz., Airplane Parts and Accessories, and Automobile Parts and Accessories. The 40 American companies engaged in manufacture of airplane parts had the turnover ratios lying between upper and lower quartile range of 9.7 and 3.9, and median being 5.3. The 62 other companies manufacturing Automobile Parts in America had turns rate varying between 7.9 to 4.3 and median being 5.2 (Complied by Dun and Bradstreet, Inc. : Reproduced in *Encyclopedia* of *Management* edited by Carl Heyel, pp. 228.) In Central government public sector enterprises belonging to the manufacturing line of transportation equipment, the turnover ratio was less than one. Here, it may be

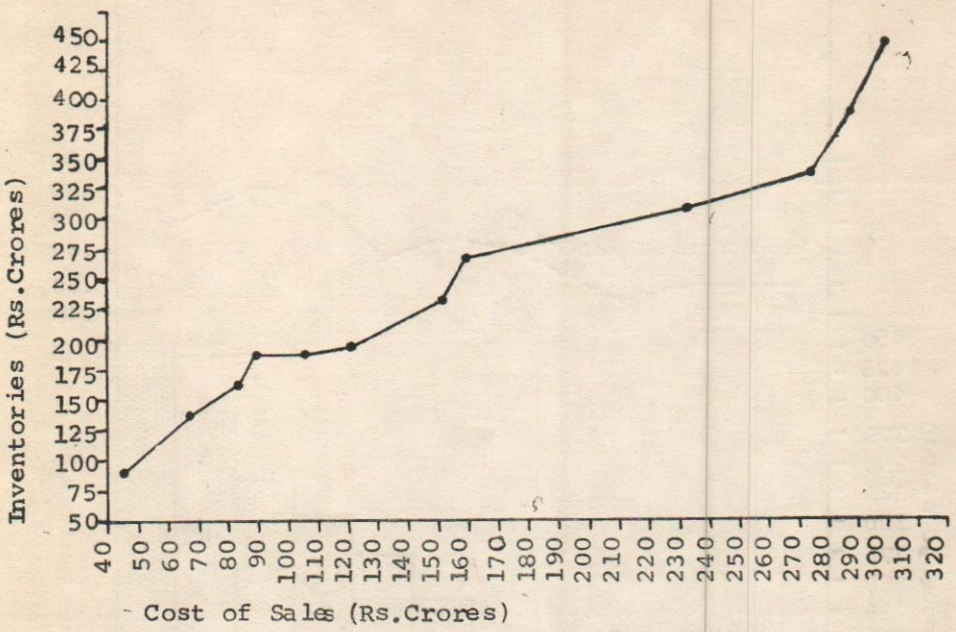

Fig. 2 : All Inventories & Cost of Sales Relationship : Transportation Equipment

mentioned that the two groups of undertakings have different environment of work. Apart from this, six out of nine Government of India enterprises deal mainly with the manufacture and repair of ships, and this line of business appears to be slightly different from those of American companies. In cases where comparison can be made to some extent the turns ratio will reveal scope for improvement rather than set in index of management efficiency. Hindustan Aeronautics Ltd. which is the biggest undertaking of this group, in 1975-76 had a turns ratio of 0.68 which is miserably low when compared with the corresponding ratio of American companies in airplane line. Scooters India Limited had a turns ratio of 1.9, which too is very poor when compared with the corresponding ratio of American Companies. These give evidence of the fact that all is not well with the management of inventories in this group of enterprises and there is scope of improvement. The inventory position is to be further examined in respect of different components of inventories.

Inventory Components

The data on three different categories of inventories, consumption of raw materials and cost of sales are given in Table 2.

Raw Materials : With the exception of one year the inventory turnover ratio of crude materials had been progressively increasing from 0.40 in 1967-68 to 1.09 in 1976-77. On no occasion, except 1976-77, it crossed one. Thus inventories in this category had been always in excess of

Table 2

Year	In Rs. crores					Turnover Rate		
	Cost of sales	Value of materials & spares consumed	Av. inventories of			Materials & spares to their consumption 3÷4	Work-in-process to cost of sales 2÷5	Finished goods to cost of sales 2÷6
			Raw Materials & spares	Work-in-process	Finished goods			
1	2	3	4	5	6	7	8	9
1966-67	44.44	24.84	55.45 (26.8)	29.13 (7.9)	4.97 (1.3)	.45	1.52	8.94
1967-68	68.39	38.23	99.46 (30.0)	34.29 (6.0)	7.47 (1.3)	.40	1.99	9.15
1968-69	84.39	49.78	119.56 (28.8)	40.38 (5.7)	9.27 (1.3)	.42	2.09	9.10
1969-70	88.38	52.52	125.73 (28.7)	54.41 (7.4)	11.49 (1.6)	.42	1.62	7.69
1970-71	106.03	62.70	101.29 (19.4)	78.32 (8.9)	11.2 (1.3)	.62	1.35	9.47
1971-72	121.60	70.60	86.47 (14.7)	101.75 (10.0)	7.43 (0.7)	.82	1.19	16.37
1972-73	152.90	92.46	108.29 (14.1)	118.23 (9.3)	6.62 (0.5)	.85	1.29	23.09
1973-74	159.72	107.61	119.80 (13.4)	145.90 (11.0)	6.57 (0.5)	.90	1.09	24.31
1974-75	233.98	117.56	132.07 (13.5)	166.42 (8.5)	6.38 (0.3)	.89	1.40	36.67
1975-76	275.47	154.21	157.8 (12.3)	169.43 (7.4)	8.25 (0.4)	.98	1.63	33.39
1976-77	286.01	194.05	177.34 (10.97)	190.40 (7.99)	16.65 (0.70)	1.09	1.59	17.18
1977-78	298.42	178.37	197.22 (13.27)	227.82 (9.16)	25.24 (1.01)	.90	1.31	11.82

Figures in parentheses relate to inventories in terms of months of consumption of materials and spares for materials; and of cost of sales for WIP and finished goods.

cost of sales. Fig. 3 depicts the relationship of inventories of crude material and their consumption over the twelve years under study.

Work-in-process : The turns ratio of WIP was highest at 2.09 in 1968-69 and lowest at 1.09 in 1973-74. During the last four years it improved and fluctuated between 1.31 and 1.63, but still remained less than the turns ratio of the second year of the period. Some explanation of high inventories of WIP can be found in the long manufacturing cycle period of these undertakings. In this group the inventories of work-in-process constitute about 50.5% of the total. Out of 9 undertakings, 6 belong to ship-building industry. The WIP as percentage of total inventories on

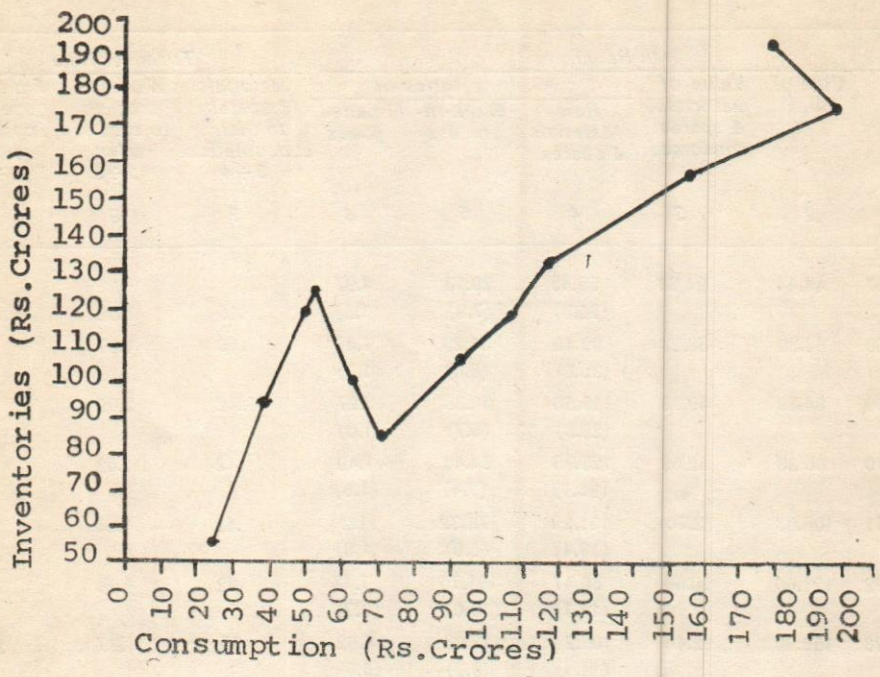

Fig. 3 : Inventories of Raw Materials & Spares and Their Consumption Relationship : Transportation Equipment.

31.3.74 in five of these undertakings was 66.7 (for Garden Reach Workshop), 63.7 (Hindustan Shipyard), 85.8 (Mazagon Dock Ltd.), 68 (Goa Shipyard Ltd.) and 68 (Central Inland Water Transport Corporation). The production cycle varies from 15 to 50 months. Till a ship is completed, it has to be shown as WIP. The longer the cycle time, larger would be the WIP. The reduction in production cycle time, to some extent, can be obtained according to the findings of the Committee on Inventory Control if production is planned with the help of Network Technique.

Another distinct feature in the management of stocks of this component is that their carrying cost is not much because advance payments are received from the customers against the work-in-process. To the extent funds of the undertakings are not significantly involved, the urgency of reducing the stocks has to be emphasised on considerations like business growth, survival in international market, and high social cost arising from delayed deliveries. The trend in the inventories of WIP in relation to cost of sales over the period is shown in Fig. 4.

Finished Goods : In this component of inventory, the turnover ratio has markedly and progressively improved over the first nine years from 8.94 in 1966-67 to 36.67 in 1974-75. In 1975-76 it fell to 33.32, but still it

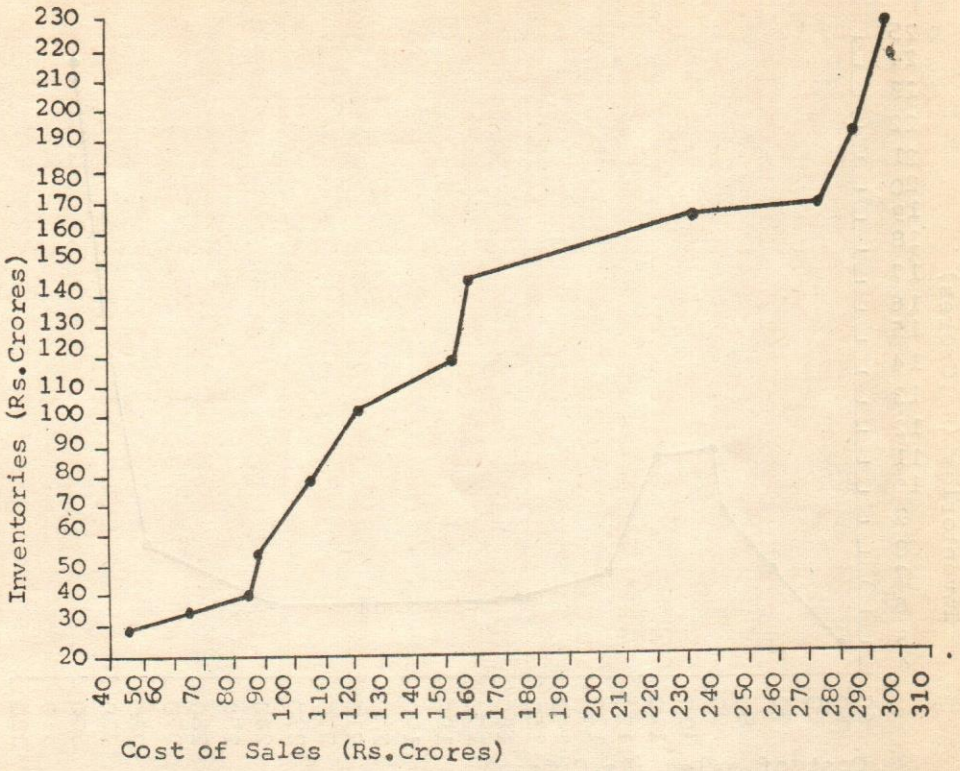

Fig. 4 : Inventories of Work-in-Process & Cost of Sales Relationship : Transportation Equipment

remained the second highest figure of the period. Subsequently, in 1976-77 and 1977-78 it fell to 17.18 and 11.82 respectively. Fig. 5 indicates relationship of finished goods with cost of sales over the period of study. It seems the management in this group of enterprises has taken advantage of economies of scale during the last three years of the decade but could not sustain the same in the last two years of the period under study.

Tests of Optimality

Experience has given some idea of approximate limits, within which, inventories *vis-a-vis* the derived demand/usage would move. These approximate limits suggest three possibilities. First, inventories may move in constant ratio with their usage. Second, according to established belief, with increasing consumption or sales relatively lesser volume of inventories are needed and under ideal conditions of effectuate management, inventories should move in square root relationship with their usage. Third alternative is that inventories increase in between the two extremes.

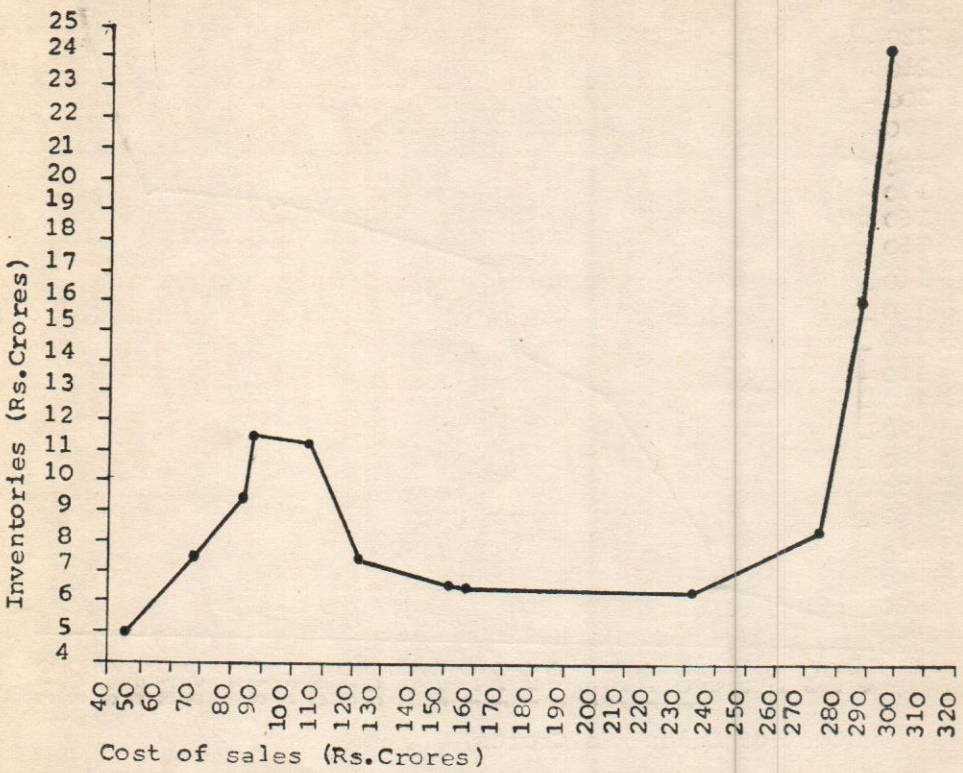

Fig. 5 : Inventories of Finished Goods & Cost of Sales Relationship : Transportation Equipment

These trends can be captured through application of the following three models to time series data :

i) $I = a + bS$

ii) $I = a + bS^{\frac{1}{2}}$

iii) $I = \alpha S^{\beta}$ where $\frac{1}{2} < \beta < 1.0$

Here I stands for inventories, a-safety stocks, b/α-policy variable and S for sales/usage. The value of the exponent β will indicate the degree of economies of scale in the holdings of inventories. A general form equation, $I = a + bS^{\beta}$ could give better idea about the extent of economies of scale, but unfortunately there are statistical difficulties in establishing by linear regressions an equation of the general form and as such this model cannot be applied. The application of three models will give insight into the inventory behaviour, and assess the extent to which there had been economies of scale in inventory holding. In model (i) inventories form a constant ratio with usage. In (ii) stocks are in square root relationship to derived demand. Model (iii) holds the assumption that

economies of scale exist, but are not as great as those indicated by the square root relationship.

Application of Models

Model I : The inventory component of raw materials and spares was correlated with their usage, and those of work-in-process and finished goods with cost of sales according to linear model $I=a+bS$ through regression analysis in six groups of years 1 to 7, 1 to 8, 1 to 9, 1 to 10 1 to 11 and 1 to 12. Some of the significant results are set out below in Table 3.

Table 3 : Simple Regression of Inventories to Usage : $I=a+bS$

Parameters for Analysis	*1966-67 to 1977-78*			*1966-67 to 1974-75*		
	Materials & spares	*Work-in-process*	*Finished goods*	*Materials & spares*	*Work-in-process*	*Finished goods*
No. of observations	12	12	12	9	9	9
a-coefficient	63.07	—1.32	4.32	72.14	—13.95	8.97
standard error	10.88	10.72	2.95	16.37	11.88	1.86
t-value	5.80	—0.12	1.47	4.41	—1.17	4.81
b-coefficient	.6296	.7150	.0363	.4784	.8439	—.0088
standerd error	.0995	.0589	.0162	.2192	.0916	.0144
t-value	6.33	12.141	2.240	2.18	9.21	—.61
R^2	.894	.968	0.578	.405	.924	.051
Variance Ratio	40 00	147.41	5.02	4.76	84.85	.37

Except in case of work-in-process inventories, the R^2 and variance ratio are low. The results of application of the model to other four groups of years also reveal the same position. These go to show that the fluctuations in data are too erratic to be fitted in a meaningful manner from the point of view of this model. Under these circumstances no conclusion can be drawn from the model in respect of the raw material and finished goods inventories. In case of WIP the value of intercept 'a' is either negative or is not significantly different from zero at 95% confidence.

The value of R^2 is reasonably high. The 'b' coefficient is+ve. The results of other four groups of years of WIP also show the same position. These facts clearly go to prove that there are no economies of scale as far as work-in-process inventories are concerned.

Model II : This model ($I=a+bS^{.5}$) assumes that inventories are a square-root function of sales/usage. Regressions were again, for all the three

kinds of inventories, in the same correlations as in Model I and in the same six groups of years. The more important results are summarised in Table 4.

Table 4 : Regression of Inventories to Usage : $I = a + bS^{.5}$

Parameters for Analysis	*1966-67 to 1977-78*			*1966-67 to 1974-75*		
	Materials & spares	*Work-in-process*	*Finished Goods*	*Materials & spares*	*Work-in-process*	*Finished Goods*
No. of Observations	12	12	12	9	9	9
a-coefficient	9.54	—105.91	—0.29	38.94	—112.97	9.31
standard error	19.58	16.82	5.27	28.34	20.83	3.51
t - value	0.49	—6.30	—0.06	1.37	—5.42	2.65
b-coefficient	12.12	18.004	.8569	8.1740	18.7667	—.1300
standard error	2.0065	1.3299	.4165	3.4242	1.9196	.3232
t - value	6.043	13.539	2.06	2.39	9.78	—.40
R^2	.886	.974	.545	.449	.932	.023
Variance Ratio	36.51	183.29	4.234	5.70	95.58	.16

The time series data on inventories of crude materials and spares and of finished goods do not show a meaningful correlation according to Model II. The R^2 is low in one group of years and in others it is extremely low. No conclusion can, therefore, be drawn from this model for two classes of inventories. In work-in-process, the intercept 'a' is —ve and is significantly different from zero at 95% confidence level.

The R^2 is quite high, being .974 for the period as a whole and .932 for first nine years. But mean value of S for the period is more than model value of $\frac{4a^2.}{b^2}$ This indicates the failure of the model to capture reality and as such no consistent conclusion can be reached.

Model III : The equation $I = \alpha S^{\beta}$ with $.5 < \beta < 1$ shows economies of scale but less than those indicated by the square-root formula. Linear regressions on this equation were calculated in logarithmic form $\log I = \log \alpha + \beta \log S$. The important results of regressions for the three components of inventories in the same correlations as in the previous models are indicated in Table 5.

Here also the R^2 in case of material and finished goods inventories is very low in all the six groups of years, thus indicating the erratic movements of inventories over the period. Thus no conclusion can be drawn

Table 5 : Regression of Inventories to Usage : Log I = logα + β log S

Parameters for Analysis	*1966-67 to 1977-78*			*1966-67 to 1974-75*		
	Materials & spares	*Work-in-process*	*Finished goods*	*Materials & spares*	*Work-in-process*	*Finished goods*
No. of observations	12	12	12	8	9	9
β-coefficient	.4622	1.1206	.3733	.3814	1.2503	.0023
standard error	.0832	.0906	.2012	.1385	0.1366	0.2101
t-value	5.55	12.36	1.86	2.75	9.15	0.01
log ∞-coefficient	2.74	-0.9810	.3733	3.05	-1.56	2.02
standard error	5.59	5.68	1.80	6.36	5.67	1.27
t-value	0.49	-0.17	2.07	0.48	-0.27	1.60
R^2	.869	.969	.506	.520	0.923	.00002
Variance Ratio	30.85	152.84	3.44	7.58	83.71	.00

in respect of these two components of inventories. In case of WIP the value of β coefficient is slightly more than one. Application of further tests show that β value is not significantly different from one. The results of other four groups of years also narrate the same position. This model confirms the conclusion reached by the application of Model I that inventories of work-in-process have not shown any economies of scale. Further, there is no evidence for diseconomies of scale in holding of work-in-process inventories.

Impact of All Inventories : Regressions were also run for the data of all inventories in relation to cost of sales according to all the three models separately. The important results are presented in Table 6.

Table 6 : Results of Regression for all Inventories (1966-67 to 1977-78)

Parameters for Analysis	*Results of Models* $I = a + bS$	$I = a + bS^{.5}$	*Parameters for Analysis*	*Results of Model* Log $I = \log\alpha + \beta \log S$
No. of observations	12	12	No. of observations	12
a-coefficient	64.63	—98.76	β-coefficient	.7255
standard error	15.85	28.22	standard error	0.0454
t-value	4.08	— 3.50	t-value	15.99
b-coefficient	1.1350	28.37	log α-coefficient	1.8525
standard error	.0870	2.232	standard error	7.515
t-value	13.04	12.71	t-value	.2465
R^2	.927	.970	R^2	.981
Variance Ratio	170.01	161.56	Variance Ratio	255.60

The high value of R^2 and significantly different from zero positive intercept 'a' at 95% confidence in Model I give definite evidence of economies of scale. In model III it is seen that β value is more than .5 and is significantly different from zero at 95% confidence. In both the cases R^2 is more than .9. The model II gives negative intercept significantly different from zero and high R^2; but average value of S of all the years is greater than model value $\frac{4\,a^2}{b^2}$ These facts prove that the model II has failed to capture reality and the exponent β is more than .5. From the results of these three models as seen separately, there is R consistent evidence that management efforts on the whole have taken advantage of economies of scale.

The application of model to three components of inventories showed that evidence for economies of scale could not be gathered for inventories of work-in-process. The time series data on inventories of raw materials and finished goods do not respond to any of the three models due to their erratic movements over time.

Excess Holdings

The applications of models give evidence of some rationalisation in the management of inventories at the aggregate level, but no such evidence could be gathered through application of models to three different components of inventories separately. The models also did not assist in assessing the excess inventories on any date. An approximate idea of the excess holdings can be formed through analysis of growth rates on the assumption that safety stocks and policy variables have not changed over the last eleven years. (The mechanics of working out excess holdings were explained in paras on pages 323-325 of the article published in *Productivity*, Oct.-Dec., 1978).

Analysis of Growth Rates : During the period under study, the value of produce and total inventories respectively grew at 18.45 and 13.17. If inventories had moved in the square-root relationship of the cost of sales, the growth rate would have been $\left(\sqrt{1.1845}-1\right)\times 100$, i.e., 8.83% as against the actual rate of 13.17 per cent. On the basis of the methodology referred to in the preceding para the excess stocks of all the inventories in the last year of the study as compared to those required under ideal conditions of square-root relationship are worked out at 45%, i.e., Rs. 202.63 crores out of total holding of about Rs. 450.28 crores in 1977-78.

Experience has shown that a reduction of about 20-25 per cent of stocks is within easy reach of management through modern inventory techniques. Even with this standard about Rs. 90-113 crores of capital can be

released for active use apart from saving 10 to 15 per cent of annual carrying cost of stocks.

Case Studies

In this group of 9 enterprises four indepth studies have been made by the Committee on Inventory Control. These relate to (i) Garden Reach Workshop Ltd., (ii) Mazagon Docks Ltd., (iii) Hindustan Shipyard Ltd., and (iv) Bharat Earth Movers Ltd. The Committee on Public Undertakings studied the management of inventories (as part of general working) in Hindustan Shipyard Ltd., and Bharat Earth Movers Ltd. In addition B.P.E., in its Annual Reports for Central Government Enterprises, reviews every year the position of inventories.

On the basis of certain norms laid down by the Committee on Inventory Control, these studies revealed existence of excess inventories between 14-23 per cent of the total stocks in different years of study in some cases. It was also revealed that in the ship-building undertakings work-in-progress constituted major form of inventories ranging between 63.7—85.8 per cent because production cycle varied from 15 to 50 months. Till a ship is completed it has to be shown as WIP. On the basis of comparisons among different ship-building undertakings, the Committee came to the conclusion about the existence of excess inventories. The Committee did not set any norms for WIP but mentioned that reduction in stocks was possible by shortening the production cycle time through application of Network Technique. Despite repeated disposal of surplus stocks as revealed by the Annual Reports of Bureau of Public Enterprises, these undertakings carry huge stocks of more than 3 years non-moving items. The Committee did not find proper application and coordination in the various management practices of stock control like codification, cataloguing, standardisation, variety reduction, value analysis, etc. Emphasis was laid on the need to streamline the system of locating surpluses and arranging for their disposal. In some cases information was not available on the time taken in placing the supply order and in receipt and instruction for incoming materials. There was no proper reporting system for materials management nor was there any system of preparing budgets.

Conclusions

The behaviour of different components of inventories in enterprises engaged in manufacture of transportation equipment was analysed through trends in turn-over rates, comparison of inventory investments over the period, regression analysis according to the three preconceived models, analysis of growth rates and findings of in-depth case studies. The results obtained are consistent in respect of the following conclusions :

(i) This group held inventories more than the cost of sales over the last twelve years. The level of holdings and inventory turnover rates, however, show some improvement over time. In the later years of the period under study, lesser volume of stocks supports larger sales as compared to stocks in initial years.

(ii) The application of models to the aggregate inventories show evidence of economies of scale. The analysis of growth rates shows that if inventories has moved in square-root relationship with sales, then this group would have had 45% less inventories in the terminal years.

(iii) Comparison with American companies in allied line of business shows that there is great scope of making more effective use of capital invested in inventories and of improving the turnover ratio.

(iv) The WIP stocks of this group constitutes 50.5% of the total combined average inventories. A large number of enterprises are engaged in ship-building industry and their WIP vary from 64 to 86 per cent of their total inventories. The main reason of large stock in this category is long production cycle time which varies from 15 to 50 months. Till a ship is completed it has to be shown as WIP. Any reduction in this inventory component is dependent upon the extent to which time is cut for different activities in building a ship. Application of Network Technique in such a situation will be very helpful.

(v) The carrying cost of WIP inventories in enterprises engaged in ship building is not much because bulk of the money is being obtained from customers against WIP. But possible saving in holding of WIP can play rich dividends in terms of reduction in high social cost arising from delayed deliveries of products to public agencies in the country and in the form of better growth and survival in international market.

(vi) The models conceived were not applicable to inventories of crude materials and finished goods separately due to erratic movements of data. In case of WIP the application of models do not give any evidence of economies of scale.

(vii) The four in-depth case studies show scope of reduction in various items of inventories. At aggregate level the concerned undertakings had carried 14-23 per cent excess inventories. In two cases belonging to ship-building industry, the Committee on Inventory Control came to the conclusion that the stocks were high as compared to the need, but the quantum of excess inventories in these two cases could not be worked out due to difficulties of precisely working out the optimum production cycle time.

(viii) The evidence here does not refute but rather supports the hypothesis that level of inventories is higher than what is required for efficient production. The evidence also shows that during the period under study, particularly in the last four years some rationalisation in the inventory policy has also taken place and still there is scope for further reduction in stocks.

(ix) Experience has shown that a reduction of about 20-25 per cent of stocks is within easy reach of management through modern inventory techniques. With this standard, about Rs. 90-113 crores of capital can be released for active use apart from saving 10 to 15 percent of annual carrying cost of stocks. □

Organisational Analysis for Effectiveness : A Case

S. C. Vohra*

The need to carry out a study of an organisation could arise due to many reasons. It could be a problem of adapting to growth, i.e., enterpris es which start on a small scale and then expand considerably may feel the need to restructure the organisation. Reorganisation may become necessary due to moving out of key personnel, induction of new blood or when there is a change in the role of an organisation. Apart from these, an enlightened management may want to reorganise just because it wants to perform better or increase its effectiveness as a whole.

In the latter category falls the study of the organisation under discussion. Although the study pertains to a Military Unit, its parameters, approach and methodology followed to carry out the organisational analysis and to some extent the results achieved would be equally applicable to civil organisations. The study was carried out in 1979 by a team of four officers from the Defence Institute of Work Study, Mussoorie.

The management, while requesting for a study felt that practically everything was centralised at the Head Office and managers of sub-units had little say in either the conduct of training which was their main function or in policy matters. As a result, the managers of the sub-units carried little accountability and also did not derive sufficient inner satisfaction.

Regarding the organisation under study, it is engaged in the training of drivers for Mechnical Transport. Additionally, it also trains catering personnel and mule drivers. There are five sub-units, located within the same premises which are reasonable for training. There is a separate sub-unit for administration. To coordinate the activities of these sub-units and to exercise control functions, there is a Headquarter which has the top functionaries of training, administration and the Head of the Organisation (called Commander in this case). An outline chart of the existing Organisation is given on page 112.

The Adjutant of the Commander is responsible for matters pertaining to discipline and personnel and also acts as a Staff Officer to the

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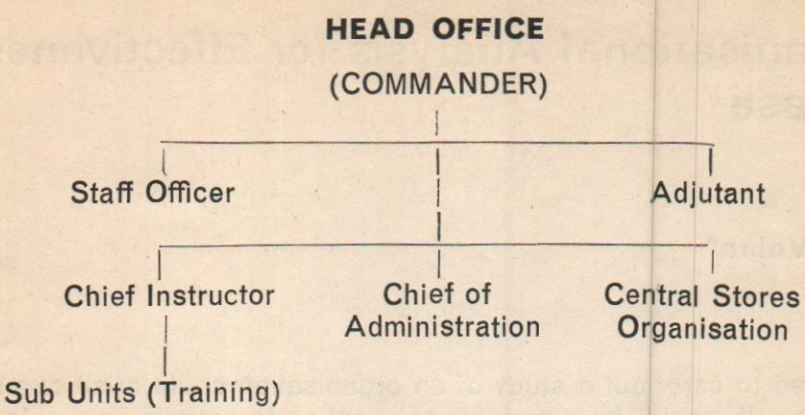

Commander. The Staff Officer is a newly-created post and the incumbent is required to act as think-tank of the organisation. His responsibilities also include follow-up of cases initiated by the Commander, liaison with civil authorities, i.e., function of PRO and to act as stand-by for the Adjutant. There are five training units – 2 pertaining to transport drivers, 2 for mule drivers and one for catering training. The training units are responsible for the complete training, i. e., from induction to passing out. The Commanders of these units have the powers of punishment over their personnel but enjoy no financial powers. The Chief Instructor is responsible for laying down the policy on training, indicating general guidelines and supervision of trainining activities. The Chief of administration through an administrative unit, looks after reception of recruits, their documentation, police verification, etc., till these are despatched to the training units. Similarly, at the end of training, the drivers are routed through this administrative unit. Administration of staff posted against the strength of the unit, i.e., instructors, clerks, etc., is also the responsibility of this unit. Financial matters pertaining to expenditure, disbursement of pay, etc., is the responsibility of the Chief of Administration through an Accounts Officer.

Approach and Methodology

The most difficult part of the study lay in deciding the approach to be adopted and the methodology to be followed in diagnosing strength and weakness of the organisation. Organisational effectiveness is a wide term which encompasses almost every area of the organisation and hence it is essential to sub-divide the subject at the initial stage itself. In this particular case, the areas selected for detailed study were :

(a) Structural aspects of the organisation;

(b) Human effectiveness; and

(c) Study of certain procedures which caused organisational strain.

Having selected the sub-areas, the team went about the task of collecting information/data with regard to the present practices. Interviews were the main tool of enquiry and these were preferred to questionnaires since the former provided better quality of information. Random sampling and activity sampling were used in determining the workload and work content in sub-systems. Certain solutions were also simulated, during the course of the study for testing their validity.

Structural Aspects

Status of the Sub-Units : The sub-units are responsible for training of the recruits. Sub-units Commanders who are sufficiently experienced senior officers enjoy disciplinary powers, i. e., they can award punishments. They make their own training programme within the framework of guidelines issued by the Chief Instructor. However, stores, accounting and financial matters, are centralised and for these the sub-units are dependent on stores organisation and Chief of Administration. The team suggested that as a long term measure, the training-sub-units should be made independent in matters of stores. For financial outlays, limited decentralisation was recommended which is discussed subsequently. This decentralisation would help the organisation derive maximum benefit from the experience and talent of sub-units Commanders. It will also provide better motivation and sense of achievement to the Commanders (say managers, if you like) of these sub-units.

Authority Structure : The team examined the authority structure as laid down and as was actually being practised. Certain anomalies were noticed among the officers under Chief Instructor in that one officer had assumed the role of a Deputy Chief Instructor although he was supposed to be one of the five other functionaries. It was found that for quite some time the post of Chief Instructor remained unfilled and this officer was officiating in that post. Additionally, certain posts under Chief Instructor had remained unfilled for quite some time. The team after examining the necessity of these posts, recommended that these be filled without further delay. The authority exercised by the staff officer to the Commander, who was comparatively a junior officer but exercised undue authority was also examined with a view to redefining his functions. The proposed charter of his duties is discussed separately.

Testing of Trainees : On completion of training, the recruits are required to be tested. Earlier practice was to detail officers of one sub-unit for testing the recruits of the other sub-unit. The team recommended that testing of recruits, being vital to the objectives of the organisation, should be centralised and independent. A testing cell was proposed to be constituted under the Chief Instructor for this purpose.

Staff Officer to the Commander : This post was created some time back to help the commander in futuristic planning, public relations and other *ad hoc* tasks. The study team accepted the necessity of an officer for these tasks but suggested that he be redesignated as Planning Officer. Additionally, the team also recommended creation of a management information centre and it was suggested that the Planning Officer could look after this centre in addition to his present duties. The office of the Planning Officer was also recommended to be located within this information centre so that data inputs for futuristic planning could be made easily available to him.

Decentralisation of Authority : In the matter of finance, the team did not consider it worthwhile to completely decentralise the accounts functions on account of the following reasons :

(a) Responsibility for accounting of revenue and expenditure lies with Commander/Chief of Administratation which cannot be delegated.

(b) Decentralisation would require additional resources as each sub-unit would require to do the same amount of documentation and the gains accruing would not be commensurate with the expenditure.

Keeping in view the above limitations and also with a view to cutting down delays on account of sanction of expenditure, the team recommended that a certain fixed amout be placed at the disposal of sub-units for incurring expenditure on training with maintenance of financial documents remaining centralised. The amount recommended for sub-units was worked out based on past expenditure.

Vehicles required for training were decentralised and given to training sub-units. This resulted in removing friction between the authority responsible for holding charge of vehicles and the users and ensured better availability of vehicles for training purpose. The team recommended that an element comprising Mechanics and Electricians be detached from the repair organisation and placed at the disposal of sub-units where the vehicles were held. Thus minor defects could be rectified at site. Morever, it was seen that about 30% of unserviceable vehicles remained unattended as drivers were not available for taking the vehicles to the workshop. This category of vehicles could be rapaired at site, once the rapair party was attached to the sub-unit.

The stores organisation is centralised and located in the training area. Earlier the recruits used to visit the stores section in small batches during an early phase of the training for collection of kit, uniform, etc. This affected the training schedule in view of the large number of recruits involved. To avoid this, certain sets of kit were issued on loan to the sub-units.

The latter could affect the issue and obtain replenishment of their stocks from the stores section. As a longterm measure, it was recommended that the sub-units should be made independent in respect of stores in that they should be authorised to demand, store and issue stores directly. Thus the manpower that is employed on these jobs in the central stores could be distributed among the sub-units. As an interim measure, it was suggested that the officers of the central stores organisation be affiliated to the sub-units. In other words, the stores organisation, being a service should reach out to the training units which are ultimately achieving the organisational goal.

Human Effectiveness : Management by objectives is a laudable goal in any organisation since such a system of management reduces subjectivity and introduces objectivity to a great extent. Yet, it is difficult to implement it because in most cases it is not possible to define the job of major functionaries in precise, quantified terms. The problem is worse in the case of military officers where a large number of primary and secondary duties are assigned to an officer. Despite these limitations, the team made an effort to introduce MBO to a limited extent. Since the main role of the organisation is training, it was recommended that the performance of sub-units in training could be a major factor for their evaluation. Since the final test of trainees has been recommended to be conducted by the Chief Instructor, pass percentage in this test could be a reliable criteria for judging attainment of objectives. However, it was emphasised that the limitations of MBO should be borne in mind during its application, i.e., performance of trainees should remain one of the major considerations for evaluation of a sub-unit, but this should not become the sole criterion.

Awards and Punishments : The team suggested that there should be a regular communication between top executive and his main functionaries with regard to attainment of organisational goals, primary as well as secondary. In furtherence of this, it was suggested that a written confidential communication should be addressed whenever an executive has performed well or his performance has not come up to the expectations. This record can also form basis for objective assessment of performance at the end of the year.

Age Pattern—Officers : An analysis of the age group of officers revealed the following pattern :

(i) Below 30 years — 3 officers

(ii) Between 30-40 years — 22 officers

(iii) Above 40 years — 31 officers

In view of the fact that the organisation was concerned with training of young recruits who are in a very impressionable stage and there has to be a judicious blend of experience and youthful energy, it was recommended that a larger number of young executives should be inducted in the organisation.

Activity-Time Relationship for Management : The team studied the type of work done by top management executives and time spent on each activity. These were analysed and revised time schedules were suggested; e.g., it was seen that 48.43% of the Commander's time was taken up by conferences. To reduce this, the team suggested conferences at the level of Chief Instructor and Chief of Administration prior to Commander's conference so that only limited points were discussed with the top executive. Similarly, other matters needing his intervention were pruned to enable him to detach from the routine and devote time to futuristic planning.

Conclusion

The team also studied certain procedures with regard to reception of trainees, their documentation, routing of mail, etc., which were causing strain or bottlenecks in the functioning of the organisation. These have not been detailed as it is felt that these problems were specific to that organisation. At the conclusion of the study the recommendations were accepted by the management *in toto*, and in quite a few cases implementation process was started by the management during the course of the study itself. □

Book Reviews

Design and Manufacture of Plastic Injection Moulds

Productivity Series No. 13

Asian Productivity Organisation, Tokyo, pp. 70.

Reviewed by B. S. Shankara*

In the present era, when more and more plastic goods are produced for various end-uses—industrial, domestic, entertainment and toys—this publication will serve as a very good guide to the designers of injection moulds. Although the title suggests that it concerns mould design, the book also gives fairly good coverage to the properties and product design of plastics. The presentation is excellent, concise and to the point.

Topics covered include detailed design limits on fillets, radio, thicknesses, ribbing, bosses, drafting, thread production, shrinkage allowances, provision of runners, gates, cooling system, mould construction, finishing and tryout. Typical mould materials and their composition and heat treatment are also covered. Although the book volume is small and handy, it is full of illustrative sketches, diagrams and tables.

Some of the avoidable mistakes, though rather minor, have, however, found their way. These include, mixing of British and Metric units, use of wrong terminologies (for example 'pressure' is used where 'force' is actually meant). Further, on Page 45 under 'Cavity design' we should decrease 'W' if deflection is to be kept minimum. A conspicuous omission is the reference to sources and select bibliography. And yet the book is very rewarding to the practical designer, as it incorporates the rich expertise of two countries, namely Japan and Pakistan. The credit of bringing out such a highly technical subject as a practical guide goes equally to the authors and the Asian Productivity Organisation. It is, no doubt, a step in the right direction of effecting productivity increases through dissemination of information and their practical application. □

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the industry would have derived some satisfaction from its sacrifices if they had really benefited the deprived sections of the population.'

In the end, he underlines that a frank recognition of the fact that production in the private sector adds as much to the national wealth as the public sector output, can go a long way towards inspiring confidence among the persons in charge of this sector about its future. He questions Government's attitude towards modernisation of the industry and suggests that stunted modernisation would be suicidal particularly because the organised mill sector continues to play a crucial role in textile exports, which has much further scope in view of the fact that the value of garments alone sold in the world market was as much as Rs. 20000 million Revitalisation of the industry is, therefore, much to the benefit of the country in reestablishing some of the grounds already lost and some at the point of losing.

The volume smacks, *albeit*, the factual support on several issues, of the author's holding brief for the industry. A good opportunity of presenting both sides of the coin has been missed. Government measures and policies towards the organised sector of the industry have been largely in response to demands of circumstances. Vested interests, development of a strong and vocal lobby and inadequate attention to managerial and techno-economic innovations have spelt roadblocks for which Government may not have been entirely responsible. Presentation of some of the problems faced by the Government and the pressure of priorities for rapid economic development of the country which required a tough line for the old, traditional and agro-based industries, would have made the picture more realistic. □

People's Participation in Development Process

Edited by Romesh K. Aurora

H. C. M. State Institute of Public Administration Jaipur, pp. 220, Rs. 40.00.

Reviewed by Biman Sen*

"People's Participation in Development Process" is a compilation of twenty essays contributed by twenty-three authors. It covers wide functional areas like agriculture, education, health, mass-media, etc. The book is rather a review work on experiences and experiments of various individuals or groups

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or agencies working in various fields, where there have been some efforts to stimulate people's participation in development processes.

The book is the outcome of an all-India Seminar on People's Participation in Development Process organised to commemorate the Twentieth Anniversary of the HCM State Institute of Public administration, Jaipur, and to bring out a volume on the theme in honour of Late Mr. B. Metha who made the greatest contribution to the development of this institute of national standing.

Prof. Romesh K. Aurora has given a statement of the contents of the book and an appreciation of the views and ideas given by various authors who have contributed in this volume. The book deals with the concepts of development, concepts of participation, ideological rationale of people's participation, strategies for administrative action, political leadership and people's participation, etc., based on case studies, experiences of working of community development programmes, panchayati raj and other experiments involving people's participation. While narrating the experiments and experiences, various authors have highlighted the weaknesses and limitations of such programmes.

Some of these may be narrated here. It has been stated that not all types of development projects and schemes may be susceptible to people's participation, and administrators' role can become significantly positive only when it is supported by the constructive attitude and contribution of the political leadership, particularly the one functioning at the local level. It has also been emphasised that very often the elected representatives of the people do not relish the idea of augmenting people's participation as it may give rise to a parallel system of representation.

Iqbal Narain, in his essay, while analysing the Panchayati Raj system, and development in rural India, has highlighted that the system has failed to bring about any fundamental change in social attitudes of people—"Rural people, by and large, continue to be fatalists and defeatists in the psychology, where the dent, if any, can at best be said to be very weak." He also has said, "Much headway cannot be said to have been made in regard to attitude-orientation towards social change. Social evils like dowry, death, feasts, child marriage, aversion to widow re-marriage still possess the rural society. It has also not taken to family planning programmes and exults in treating childern as gifts of God". Iqbal Narain goes on to say, "One cannot escape the conclusion that Panchayati Raj appears to have contributed more to the deepening of economic disparities than to have levelled them".

Hooja, while commenting on people's participation in agricultural development, has also highlighted some of the failures of the projects like Community Development, Panchayti Raj, etc. He says, "But over the years, Panchayati Raj institutions have become better ground of political power (or sharing of political power) at the local level, between the local vested interests and

Provident Fund Act, membership of trade union as regulated under the Trade Unions Act, the terms 'Workman' and 'Factory' as defined under the Factories Act, jurisdiction of Industrial Tribunals when adjudicating disputes as to termination of service reinstatement of employees with or without wages or part of wages, and constitutionality of Sections 25FFF, 25-O and 25-R of the Industrial Disputes Act.

The book is without any Preface or Introduction. Its price is also on the higher side. In the Contents, which cover nearly seventy pages, the author has summarised judgements of Supreme Court in 750 cases listed in the book. All the verdicts and observations of the Supreme Court may not be agreeable to the parties concerned and even to the Government. But these have to be accepted and acted upon unless the relevant provisions of concerned laws are amended suitably. Being the highest court of the country, its interpretation and clarification of the provisions of industrial laws are final.

This publication is a mine of information and it can be of great help in understanding the real meaning and intention of the provisions of important labour laws. It should, therefore, prove useful as a reference book to all employers, trade unions and employers' organisations, labour lawyers, and students of labour laws and industrial relations. □

Small Industries and Developing Economy in India

R. V. Rao

Concept Publishing Co., New Delhi, 1979, pp. 210, Rs. 50.00.

Reviewed by J. D. Verma*

The author, a veteran Gandhian and an economist, has brought out this book which is yet another addition to a large number of books and papers which have already been brought out on the subject. This book deals with various aspects of decentralised sector of Industry in India as defined and understood today. But it does not gauge the impact of small Industries on India's overall economic development. Furthermore, the concept of small Industries as described in the book is not the one which is commonly accepted today. The author categorises Khadi and Village Industries, handicrafts, sericulture, handloom and modern small scale industries as 'small industries'.

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There is no dispute about the contention that for economic development of a country like India, where more than two-thirds of the population still lives in the villages and where agriculture is the main occupation of the people, small scale industries can play an important role. In fact, since ages immemorial people in villages (not as much for supplementing their income as spending their idle time left from the seasonal nature of agriculture as occupation) have been associated with the handlooms, khadi and similar other cottage industries. During the Gandhian era, all these schemes of the decentralised sector got a conceptual and, to some extent, organisational support to develop units in these industries on an organised basis. Undoubtedly, they lacked in the essential economic inputs of raw materials, required productive tools and equipments, natural markets, managerial ability, etc. It is only after the Independence that the government at the centre and the states have recognised that the industries in the decentralised sector can play a vital role in the development of national economy. To that extent, Rao's dissertation that this sector is poised for 'management growth in the years ahead' is justified.

However, the book lacks in making meaningful recommendations to the authorities concerned to deal with the numerous problems which industries in this sector suffer from. Some suggestions have been made regarding the role of industrial cooperatives but they are confined to mere descriptions of rules and regulations which the industrial cooperative societies have to follow. Likewise, the role of the organiser of the society has been given a place of prominence in the chapter on Industrial Cooperatives. It would have been worthwhile had there been some suggestions so as to improve the working of Industrial Cooperatives.

The statistical data and information given cover only up to early seventies. Quite substantial changes have taken place since then, like the definition of small scale industries, its new dimension and role, etc. The author could have made a useful contribution had he examined the changing needs of the small scale units, which from mere generalities have come down to specific. What they need at present are different types of assistance open to them, ways to modernise their plants and equipment, improved designs of their products and innovation in management.

The chapter on Rural Industrialisation, gives some data and information up to 1975, but here too, the author has not examined the role of District Industries Centres which have now been established in nearly 400 districts of the country. The DIC programme has, in fact, embraced the role of all expert agencies to provide assistance to the entrepreneurs in the rural areas, small towns and district headquarters irrespective of the nature and scale of industries the entrepreneurs are interested to establish. □

Technology Transfer to Some Asian Countries

Asian Productivity Organisation, Tokyo, 1979, pp. 180.

Reviewed by G. Chandrasekharan*

The book under review presents the views expressed on the subject of Technology Transfer at the symposium organised in India by the APO in 1978.

The paper by Prof. Masaru Saito deals with various features of technology transfer problems in the Asian countries. This gives a detailed analysis of the social, geographic and the natural conditions in various Asian Countries and also highlights the need to improve technology transfer mechanism and development of transfer agents. Inadequate organisation and lack of infrastructure which hinders technology transfer is discussed in detail. The principle and policies for indigenous assimilation and diffusion of technology has also been touched upon The paper also gives comprehensive details on the methodology adopted by Japan in the field of technology transfer. It provided the background material for the discussions at the symposium.

The paper presented by the expert from the Philippines also deals in detail the process of technology transfer and the need for institutionalising the same. The publication also gives the experiences of technology development and transfer in Korea, India and Japan which gives the reader a complete overview of technology transfer problems faced in three different situations which will be extremely helpful in deciding specific cases of technology transfer.

Dr. V. Nayudamma's paper contains the whole gamut of technology transfer strategies and problems. It touches upon the effect of technology in the different walks of life and also the basis for evaluating the relevance of technology.

Lastly, a model for technology transfer priorities has been included which gives a number of factors which are to be considered in making technological decisions and selecting the technology transfer mechanisms. The publication also includes comprehensive recommendations regarding the role of National Productivity Organisations and APO in technology development and transfer. In general, the publication treats in a condensed form the various problems of technology development and transfer and provides a good base for those interested in the subject of technology transfer. □

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Systems Contracting—A New Look

Ralph A. Bolton

AMACOM, A Division of American Management Associations, New York, pp. 48.

Reviewed by Kewal Soeny*

This booklet is part of AMA's management briefing series and its purpose is to bring to the notice of top management what the concept of systems contracting is, what its uses are and in what situations it can be used in a company.

It is during the last decade or so that systems contracting has been adopted by companies of all sizes all over the world as an effective means of simplifying the acquisition of repetitive supplies. The advantage is that it reduces the amount of paperwork and detail normally associated with the procurement of materials from vendors. Perhaps an equal beneficiary is the accounts department because it also improves the control of the expenses and authorisation of requisitioning low-value repetitive-type supplies.

Systems contracting is often compared with other methods of purchasing, like blanket orders, automatic order entry, etc. While the basic procedures of all these methods remain the same, methods other than systems contracting do not provide the cost reduction potential which the systems contracting method gives. Of course, its main advantages accrue to repetitive ordering of low-value items and considering that 80% of all purchasing activity involves repetitively used materials of nominal value, the benefit from the system is obvious. It eliminates the procedural time delays in filling out several forms like material requisition, stock record, request for quotation, quotation, purchase order, shipping paper, receiving report, invoice, statement of account and check for payment of account. In terms of mandays, along with the other work to be handled, this could take anything from 10 to 15 days and in the meanwhile either considerable amount of safety stock throughout a plant has to be maintained or one runs into the risk of being caught short. Sometimes when a particular item is to be used in several departments (like lead pencils), it may be carried in central stores as well as in departmental stores or purchased directly from outside vendors in case of possible needs. The cost of trying to control these non-inventory inventories is too high even to be praticable; therefore, most companies allow them to exist. In general, these inventories are large enough to enable the user to continue his normal operation from one day to a week without requiring additional supplies.

Systems contracting can, in particular, be applied to items like cutting tools, electrical supplies, office supplies, printing, mill supplies, general hardware,

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bearings/transmission supplies, plumbing/heating supplies, pipe/valves/fittings etc. However, before getting on with this system, one has to evaluate the impact of the programme on personnel, paper work, inventory, supplier relations, current procedures, etc. Another prerequisite is that negotiations have to be conducted with the utmost integrity by both the parties. There cannot be a one-sided agreement as it will not work. The object of systems contracting is long-term association with selected suppliers so that they can provide the needed supplies at the least cost and with a high degree of reliability.

Bolton rightly emphasises the management responsibility in this type of contracting, the importance of responsibility of various functions and then leads step by step to the implementation of a test programme. His ten steps are : select the right product line to negotiate the contract with the supplier; identify any problems that might be associated with ordering the test materials before trying to set up the programme; select the right vendor; negotiate the agreement; be sure to obtain a complete catalogue from the vendor; once the material required is known, give the requisitioner an opportunity to review the list; make the supplier print the catalogue in its final form; design the material requisition form; have the departments authorise their requisitioners. select the receiving area. □

Corporate Fraud

M. J. Comer

Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 1979, pp. 387.

Reviewed by K. S. Sastry*

The book under review, while dealing with systems and procedures, explains that the act of fraud originates in the systems and procedures that are operating in an organisation. It is emphasised throughout the book that an opportunity to commit fraud coupled with a low chance of detection leads to actual commitment of fraud; and therefore, the organisational systems and procedures must be such that they leave no opportunity to commit fraud by way of providing control checks for high chance of detection. The author, formerly an Excise & Customs Officer and presently with the ESSO Petroleum Company, London, has opened doors of yet another area of Management—Security Management. He argues that the security function is not one of those usual and minor functions of the management, but one of its most important functions. He proves his point by giving a number of illustrations, flow charts and even

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financial accounts. The author's presentation of the subject is quite interesting. He discusses the nature of fraud, the motives behind fraud, the types of fraud and the related systems and procedures before suggesting a few but practical defensive systems to combat the fraud. It will be amazing for all those, who think that the job of a security man is to stand at the factory or office gate and check the pockets of incoming and outgoing people or vehicles, to know what constitutes the security function and what an organisation needs to have effective security management in operation and the benefits that can be reaped by following a few practical suggestions.

The book is divided into 13 chapters in addition to a well-built glossary and an index. The first chapter explains the importance of the security function with the help of quantified data. Even if we do not have the comparable idea in the Indian context, it is not difficult to imagine the magnitude and the complexity of this problem Corporate fraud in India also. The second chapter deals with the different types of frauds. In this chapter it is interesting to read all those examples and illustrations that the author has given to explain each type of fraud. The third chapter examines the nature and purpose of the records which a business may keep. The fourth and fifth chapters deal with evidences which fraud in its different stages leave behind in them. It is in these chapters that the author has extensively used the flow chart technique to explain clearly how the financial accounts are being manipulated in cases of frauds. Chapter six emphasises that the internal frauds are not the only ones to have an impact on the victim records, but external or third party frauds are also very clear from the same records. Seventh chapter covers risks involved in computerisation. The author tries to bring home that a rapid development in computer technology has occurred against a back-ground in which security precautions have been of secondary importance and the drive had been towards faster and improved processing, often regardless of risk. The eighth and ninth chapters discuss the techniques of detecting fraud. Out of all the techniques described in these chapters, the critical point auditing technique is very much interesting. This technique aims at filtering out the symptoms of fraud from the thousands of other regular and normal transactions in which they are mixed or concealed. Chapters tenth to thirteenth discuss the defensive systems to prevent all types of frauds.

It is true that "This book examines the problem of Corporate Fraud including petty theft, embezzlement, unfair competitive activity, Commercial espionage and white blue collar crime both, logically and clinically". □

"Although the management educational sector has responded in evolving empirically new forms of teaching to put over its subject, it has so far failed to develop a satisfactory framework through which such skills can be taught. The management teacher not only requires a depth of knowledge of his subject : he needs a better and different grounding in teaching methods than most of his University Colleagues."

It may not be out of place to mention that to understand the existing shortfall in management education, one needs to study the development of the management education and training programmes in commonwealth countries from historical perspective specially its growth in India. The management education in India has either developed as an extension of the obsolete commerce education or programmes developed by traditionally trained management experts. There has never been any serious attempt to develop it as an integrated inter-disciplinary programme to train leaders for managing the complex system of modern organisations where there is need of proper appreciation of machine-man relationship for increasing productivity. One

Action-Centred Leadership

John Adair

McGraw Hill Book Company, (U.K.) Ltd. (Second print by Gower Press) 1979, pp. 186.

Reviewed by Biman Sen*

Dr. John Adair is well known in the field of management education and training. "Action-Centered Leadership" is a functional approach to Leadership training originated by Dr. John Adair. The concept flows from the fact that modern managers are not bosses but leaders in their respective field of activities which varies according to the situational environments and the individuals are part of a group for accomplishing a task given to them. A manager's ability as a leader determines how successfully he can motivate and manage people and thus how effectively his organisation performs. This

of the failures of the Indian economy is bad management and poor leadership in all spheres of human activities.

It is felt that Dr. John Adair's book will be of immense value to all persons interested in training and management development specially those wanting to experiment on newer methods for training leaders to man the managerial positions in industrial and other organisations. ❑

Enterprise and Society : A Study of Some Aspects of Entrepreneurship and Management in India

Vinayshil Gautam

Concept Publishing Company, Delhi, 1979, Rs. 35.00.

Reviewed by P. Chattopadhyay*

The author notes that research gaps in the study of our socio-economic growth in general and entrepreneurial growth in particular have been many, due, among others, to inadequacy of data and analysis on many aspects of entrepreneurship and management in India. Underlining the need for an increasing awareness of the fact that better market research involves removing researches from isolation and making them part of an organised process, he points out that the typicalities of the Indian context make it incumbent that management recognised the fundamental truth that no machine could be better than its data input and where hard data were not available, human judgement had to be substituted. Similarly, quantitative techniques suffered from severe limitations in many sectors of the Indian managerial scene, especially in the rural sector. He candidly brings out that experience of many in the field of entrepreneurial research is that facts are difficult to come by because concealment processes are significant and free-booting abounds. His short discussion thus seeks to fill up a void in the process of inter-action between enterprise and society. In seven chapters, he discusses different issues related to this inter-action starting from the initiation of the author, the entrepreneurship and the heritage variable, managerial issues in entrepreneurial development, problems of growth of industrial entrepreneurship, economic growth and entrepreneurship and a summary of his findings.

Though the author takes the reader along for a look at different issues involved in the inter-action process between enterprise and society, the reader is left alone to fend for himself on several intricate aspects of this inter-action. While the author moves from one area to another with a graceful

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abandon, the reader is hardly helped to understand the contextualities of each individual issue and the way the issues themselves have shaped due to various factors. A broader canvas has been drawn where the author seeks to disaggregate managerial issues in entrepreneurship but does not distinguish one from the other in clear terms nor does he take into cognizance the inter-changeability between the two. It is indeed a typically Indian phenomenon that due to perhaps circumstantial factors entrepreneurship has shown multiplicative tendencies in family groups; for, apart from other factors, effective curbing of risks and uncertainties and borrowing from the accumulated experience of the family group. may be also a cushioning effect, such entrepreneurs have not found their going as tough as it is with totally new entrants. On this ground his observation that an absence of progressive attitude and entrepreneurial aptitude among the rural people has been a major impediment in promoting and developing self-employment in the villages can be contested. Exposure to the rural conditions would convince one easily that apart from progressive attitude and aptitude, absence of infrastructure has acutely come in the way of many aspirants. On the other hand, that self-employment is not a borrowed quality from the external situation would be underlinked by the fact that farmers cultivating their own land would like to continue to do so unless forced by circumstances. The author acknowledges that such self-employment may be with respect to any occupation whatsoever, covering industry, agriculture and the services. It has to be acknowledged, however, that ours is such a country that one would get factual evidence to prove perhaps diametrically opposite points of view and debates on this count may continue infinitely.

However, the discussion on technology transfer in the context of rural self employment has been logically consistent. It also raises different issues that should be taken seriously for initiating integrated rural development. The author may consider it appropriate to elaborate on the issues raised in different chapters of the book in subsequent editions and in this respect, a close look at the materials available in this country would throw several points of approaches One may perhaps mention here that the study of Gadgil and Sovani on the Emergence of the Indian Business Class and the studies on the Parsis and the Marwaris would help him to draw his scale of reference and perhaps a hypothesis for testing with respect to data from different regions and occupations may be developed. The book, *albeit* its provocative pointers, even disagreements, should be read with interest and profit by all those concerned with widespread development of entrepreneurship in industry, agriculture and the services. □

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Compiled by S. N. Vig* & C. V. Rao**

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