Development of Small Industries in Tamil Nadu : A Case Study

This paper studies the pattern of growth of small-scale units in Tamil Nadu with the help of some productivity indicators. A major obstacle in the development of small scale units in India is the existence of idle capacity. A solution could be found in encouraging them to sub-contract for large units and to undertake production of ancillaries, bought-out components and sub-assemblies. This would enable the large-scale units in utilising their advanced technology for producing more sophisticated items. At the same time, it will also help the small units by ensuring a regular flow of work.... V. Swaminathan (Page 414)

Management Consultancy Services for Small-Scale Industry

Most of the small-scale units are 'owner-managed' and do not possess the advantages accruing from the employment of professional managers or technicians. The cost of employing them is found to be beyond the capacity of the small-scale units. Yet, for a successful operation of small enterprises, the entrepreneurial abilities of the 'owner-manager' need to be supplemented by suitable technical and managerial consultancy services in such a way that required expertise can be obtained at a cost which is economical and within the paying capacity . . . . M. Yoga, S.A. Khader (Page 428)

Sub-Contracting : To Foster the Growth of Small Industries

A systematic development of ancillary industries to complement the production of large industries is found critically missing in our country. The main reason may be the lack of necessary organisational link-up between the large and the small units. This paper suggests the development of Sub-Contracting Exchanges, which as an instrument of economic planing, can ensure a regular flow of work not only between large and small units, but also amongst small-scale units by co-ordinating supply and demand of machine capacity. . . . . L.R. Upasani (Page 433)

Productivity Study in a Small-Scale Industry : A Case

The task of managing the small units may be comparatively simple, but not simple enough to dispense with the basic elements of modern management. It is true that economic consideration may not permit the small units to hire on a permanent basis the costly services of professionals, but in no case it would be uneconomical for them to hire the services of a consultant to look into their problems. The author presents an interesting case of a small unit which, when faced with the problem of declining production in spite of its best efforts to increase it took the help of an industrial consultancy agency and found to its surprise that production had gone up by five times. . . . . Rakesh Kumar (Page 439)

Entrepreneurship in Small-Scale Industries : A Case Study

Factual information and data on the working of small-scale industries is sadly lacking in India Sporadic attempts have, however, been made to investigate into various aspects of this important sector of the economy. This paper, an outcome of research study, conducted by the Gandhi Gram Rural Institute in Madurai, is one such attempt, which analyses the characteristic features of small entrepreneurs, investigates the various factors that influence the entrepreneurship and assesses the adequacy of the existing facilities provided to the small industries. The findings are revealing and the repetition of such studies in other areas will go a long way in the healthy growth of this sector. . . . . Gandhi Gram Rural Institute (Page 443).

Need for Entrepreneurial Universities

The manufacturing activities in the small-scale sector must be given full support for their development and diversification. The Fifth Five-Year Plan has laid the much-needed emphasis on the development of small and medium scale industries as a part of the strategy to combat poverty and unemployment. However, the development of this sector has to be systematic and on scientific lines. This would mean a right type of selection of persons with required aptitude, proper training and on-the-job experience. It can be done by creating a network of 'Entrepreneurial Universities' for providing the necessary help, guidance and training to the prospective entrepreneurs. This paper sketches the author's conceptual image of such an 'Entrepreneurial University'. . . . . S.A. Khader (Page 448)

Population Pressure & Agricultural Development : A Regional Analysis

Factors responsible for low productivity in agriculture are mainly the traditional methods of cultivation, Inadequate irrigation facilities, non-availability of modern inputs like fertilizers and pesticides, surplus labour in agriculture, etc The excess dependancy of economically active population on agriculture has manifested itself in the form of disguised unemployment. This paper aims at examining the determinants of population pressure on agriculture with the help of relevant variables in the context of agricultural development. . . . . S.M. Pandey, Rajendra Prasad (Page 453)

A Case for Productivity Circles in India

More than a concept, productivity is a movement, a way of life. It needs to acquire the dynamics of a movement, pooling together the intelligent concern of all people at all levels and, particularly, the organised sections of society—the government, industry, management and trade unions. Creation of a network of 'Productivity Circles' is suggested as one of the ways to make productivity a mass-based movement. The authors define some of the basic steps that can be taken in this direction. . . . . Charles F. James, Jr., Thaddeus M. Glen (Page. 464)

Improving Productivity of Indian Railways

Indian Railways, one of the largest mass transportation systems in the world, portray a picture of extreme contrast where relatively advanced technology co-exists with archaic administrative structure. The result is the present bottlenecks, given a convenient name of 'wagon shortages'. The ailment is, however, much serious than the mere shortages of wagons and tracks. And the cure lies not in piece-meal measures but in an all-out effort to optimise the productivity of all the functional areas. The paper identifies some of the most important areas and provides guidelines for taking remedial measures..... R.K Chowdhary (Page 470).

Authors

1. Chowdhary, R.K.	Senior Professor, National Institute for Training in Industrial Engineering, Vihar Lake, Bombay.
2. Glen, Thaddeus M.	Professor, Industrial Engineering, University of Rhode Island, Kingston, U.S.A.
3. James Jr., Charles F.	Chairman, Department of Industrial Engineering, University of Rhode Island, Kingston, U.S.A.
4. Kasturi, K.	Senior Economist, National Council of Applied Economic Research, New Delhi.
5. Khader, S.A.	Deputy Director (Management Services), National Productivity Council, New Delhi.
6. Pandey, S.M.	Senior Research Officer, Shri Ram Centre for Industrial Relations and Human Resources, New Delhi.
7. Rajendra Prasad	Research Associate, Shri Ram Centre for Industrial Relations and Human Resources, New Delhi.
8. Rakesh Kumar	Assistant Director (Management Services), National Productivity Council, New Delhi.
9. Swaminathan, V.	Senior Research Officer, Industry & Minerals Division, Planning Commission, New Delhi.
10. Upasani, L.R.	Director, Small Industries Service Institute, Bombay.
11. Yoga, M.	Director (Management Services) National Productivity Council, New Delhi.

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EDITOR

Small-Scale Industries : Too Much of Feather-bedding ?

K. Kasturi*

The modern small-scale industry has become an important component of Indian industry. Over the years the small-scale sector has been assiduously nurtured through official patronage. A plethora of institutions has been set up to promote and develop this sector. Finance is being provided for the small units at a handsome subsidy, both for their long-term as well as working capital needs. Subsidised infrastructure facilities have been provided in almost all the States. Technical assistance is also given to them in a limited way through official agencies.

Advantages of Small Sector

Small-scale industries have been accorded a special place in India's industrial development strategy. An inherent bias exists in favour of these in the country's licensing policy. Certain areas of production have been exclusively reserved for this sector while in a few other lines expansion in the large sector has been virtually choked off. The alleged gains of the small sector are many—they are relatively less capital-intensive; they offer much employment potential; they facilitate mobilisation of capital and skills which would otherwise have remained basically in trade ; they are easily adaptable to local market conditions ; they help in a more equitable distribution of income; they assist in developing indigenous skills and utilising indigenous resources ; and they help in decentralising manufacturing activity. To these are added in recent times a more forceful argument, at least socio-politically, of the need for reducing regional imbalances. It is argued that industrialisation of the backward areas can be easily carried out by setting up smaller plants with lower investment.

Promotion—Economics or Emotion?

Pointing out the various desirable features of the small-scale industry,

* The views expressed here are personal and do not represent those of the Institution.

the Industrial Policy Resolution, 1956, emphasised the need for integrating the development of this sector with that of the large and called for suitable policy formulations for improving the competitive strength of this sector. Nearly two decades have passed since the country started seriously engaging itself in the promotion of small-scale units. Imported raw materials worth over a million rupees are currently being fed into this sector while credit to the tune of several million rupees is regularly being pumped in through a variety of institutional sources. The Fifth Plan envisages a more ambitious programme of development for this sector during the next quinquennium.

It cannot be denied that during the last decade or so the country has witnessed a fairly rapid rise in the number of small industrial units. It is also to be conceded that production in this sector has witnessed greater diversity and a higher degree of sophistication. But it is doubtful whether the gains to the economy in this field are commensurate with the costs involved.

The stress in the etiren promotional policy in respect of small-scale sector has been more on numbers rather than on the quality of the enterprises. Tall claims are usually made on behalf of the small industries as to their inherent strength and capacity to manufacture a variety of products in a competitive fashion. Areas of production then get reserved for them. Then passionate pleas are made for a large and increasing number of incentives just to enable them to produce these goods competitively. It would appear that the propulsive force behind all this promotional activity is emotion rather than economics. Curiously enough there is a confluence of self-interests—be they in business, bureaucracy or politics, in perpetuating such an inefficient promotion. The time has come when the policy makers should examine the real costs and benefits to the nation of promoting small-scale industries in an indiscriminate fashion.

Weak Statistical Base

What is the real extent of contribution of small-scale sector to the nation's industrial product and employment? Unfortunately in the present state of knowledge of the operation of most of these units no precise answer could be given. One has perforce to fall back on

conjectures or Informed guesses. Even the number of small scale units in existence is not precisely known, let alone their capital structure, productivity or employment. Some sort of statistics do no doubt exist on the so-called registered units, but these unfold neither a true nor a complete picture. Administrative laxity is a major factor responsible for this sorry state of affairs, though the very nature of the sector, and its organisation, has not made things any simpler.

One perhaps cannot draw a rigid line of demarcation between the small-scale industry and the large. It is true that several criteria can be thought of in this connection, but no single exclusive criterion could be perfect. Manpower has been widely used in several countries as a possible criterion but one has to take into consideration here the value produced as also the technology applied. The value of machinery has been used as a possible criterion but here again much will depend on the nature of the industry itself. In such fields as electronics or TV manufacture, for example, the value of machinery involved has no relation whatsoever to the total turnover. Still, for administrative reasons, one has perhaps to fall back on some criterion.

In India the definition of small-scale industry has undergone several changes over the years, moving from manpower to capital size. Even in capital the coverage has changed from all fixed assets to only plant and machinery currently. According to the definition currently in force an enterprise with an investment in plant and machinery not exceeding Rs. 0.75 million is regarded as a small industrial unit. The ceiling is Rs. 1 million for an ancillary unit. It is to be remembered, however, that there is only a ceiling and not a floor. The small sector thus subsumes different tiers of industrial activity ranging from the artisan enterprise to the most modern small-scale industry, each falling under the purview of different administrative authority.

As was mentioned earlier, the statistical base of the small-scale sector in the country is so weak that even the number of units is not precisely known. Around 4,00,000 units are reportedly registered with the State Directors of Industries. But even for these it is almost impossible to get a complete or up-to-date list with such basic information as name and address of the units or the industry to which they belong. This is rather surprising since registration entails such details besides description of the machinery installed and its capacity, the raw materials used,

average daily employment and the products manufactured. Some sort of directories do exist in a few States but these are out-dated.

No one really knows how many of the registered units are really working. Recent reports in the press would confirm the general belief that nearly half of those registered exist only on paper. This is partly confirmed by the fact that less than 200,000 units are taking advantage of the assistance provided by the financial institutions. It is reasonable to expect that no entrepreneur with a worthwhile enterprise would bypass an opportunity of getting finance at subsidised rates.

Some information, no doubt, is available on the units registered under the Factories' Act. But even here the time-lags in the publication of information are enormous. The position is even worse in regard to the unregistered units which are stated to number over 3,00,000. It is a pity that with such a vast resource of manpower at command the concerned official departments could not come out with up-to-date or reliable information on the small-scale units even on basic things. Of course attempts are being made by official as well as non-official agencies to bring out such lists from time to time but only those who have taken the trouble of using these know how misleading such lists are. Several of the units listed are just not traceable by the Indian postal service.

Over the years there has been a rapid growth in the number of small-scale units seeking assistance from institutional sources and these institutions do have a mass of data on their constituents. If only an attempt is made to collate this information, a veritable store-house of data could have been built up, over the years, on this sector. But it is surprising that not only the commercial banks but even the other financial institutions have not bothered to do this. It was stated some time back that the State Bank of India has made a beginning in this direction. One hopes others will follow suit.

The recent attempt at a comprehensive census of the small-scale industry is thus a most welcome, though belated, step. One only hopes that the census will throw up interesting, if not alarming, insights into the working of this sector.

Growth—Real or Illusory?

The 'panorma of progress' generally painted on the basis of the number of registrations with the various State Directors of Industries is at once flattering and misleading. As against 36,109 units registered at the end of 1961 the number of registrations has reached 4,05,000 at the end of 1973. It needs to be recognised that a small-scale unit is not obliged to register with the Director of Industries. But since registration entails a variety of benefits, the incentive for registration has grown over time. Voluntary registration has, therefore, been on the increase in recent years. Thus a large proportion of the growth in registration comes not from new units but from units already existing but previously unregistered. Also, as registration is voluntary, so is deregistration. Any unit going out of business need not necessarily inform the official agency and consequently may not have been struck off the list.

Further, over the years the system of allocation of raw materials on the basis of so called capacities has encouraged setting up of the paper capacities on a wide scale. The growth in the number of such bogus units whose main aim is to make a fast buck has been on the increase in recent years. It is not as though such a tendency could not have been curbed and the bogus units eliminated by the authorities concerned. The fact is, this was simply not done. Time was when the very mention of the word 'bogus' used to be frowned upon by not only business but also the officials concerned.

A welcome change appears to have taken place now, and the existence of the so-called bogus units has come to be recognised. Great hopes are now pinned on the census that is currently on to ferret out these paper capacities. One really wishes it does. But it is doubtful whether this can really take place in any serious fashion. After all, the official agencies concerned have always been aware of the existence of such paper capacities. And several ways exist for finding out these—from the allocations, electricity consumption and such other indicators. If they have not bothered so far to eliminate these, surely there must be other extraneous considerations at work. If the very same authorities are connected with the census operations as well one wonders whether one can expect the real truth to come out. Unless the census is being conducted independently of the official agencies connected with the small scale sector, it is rather too much to expect that

the present census of small scale units will bring out a true picture of this sector. One would perhaps have to wait, one hopes not too interminably long, for the results of the census before one could pass any judgement.

What is the reality in regard to the growth of this sector? The Ministry of Industrial Development, in its Annual Report, 1970-71, observed that the 'annual growth has been about 11 per cent in the registered factories sector and about 8 per cent in the case of units which are smaller than registered factories'.[1] And this figure was repeated *ad nauseum* in all circles and crude comparisons were made with that of the large-scale sector. But the basis of this figure was never made clear except that it was related in some way to a study by the Reserve Bank of India, which incidentally seems to have depended on data supplied by the Office of the Development Commissioner, Small-Scale Industries. Obviously the Ministry itself had second thoughts on this figure as it quietly dropped this in its subsequent annual reports and reverted to its normal bland statement 'Small-Scale Industries in India continued to record satisfactory progress during the past year . . . . .'. An official spokesman of the Ministry seems to have admitted that 'it is all just a lot of paper work and I do not know whether we can really give a correct estimate of how much the production of the small-scale industries has been'.[2]

The mid-term appraisal of the Fourth Plan reported a dismal picture by estimating the average annual growth of the sector at only around 3.5 per cent during the period 1969-71. It pointed out though that accurate and adequate information was not available, and the actual growth might be much higher. Such estimates as could be prepared with the help of indicators like electricity consumption, albeit subject to several limitations, do not present a flattering picture.

Contribution to National Product

The national income accounts do provide us with a basis, though rough, for estimating the contribution of the small-scale sector to the Indian economy. Value added by the manufacturing establishments in the

1. *Report 1970-71*, Ministry of Industrial Development and Internal Trade, Government of India.
2. *Estimates Committee, 1971-72*, Lok Sabha Nineteenth Report, EC No. 715.

country are presented in the national income accounts under two heads : *registered* and *unregistered*. The latter corresponds to the non-factory segment of industry, i.e., manufacturing and processing activities undertaken by households and non-households, all of which do not strictly fall under the purview of modern small-scale industry. For want of data, however, one may regard the entire contribution here as that of the small scale sector. The *registered* sector, on the other hand, covers all factory establishments whether small, medium or large, registered under the Factories, Act. Only a portion of this sector, viz., the small scale factory establishments, form part of the small-scale sector. Data on these could be called out of the statistics given in the Annual Survey of Industries (ASI). Using this information and the national income data, an attempt has been made here to estimate the contribution of the small sector to the national economy (Table 1).

TABLE—1

The Small Sector--Contribution to National Income

(at current prices) *(Rs. million)*

	1960-61	*1965-66*	*1968-69*	*1970-71*
Net Value added by				
1. Manufacturing	18,560	30,640	37,480	44,080
1.1 Registered	10,710	18,390	21,920	25,970
1.2 Unregistered	7,850	12,250	15,560	18,110
2. Small Factory establishments	2,666	3,605	4,504	5,200*
3. Small Sector– total	10,516	15,855	20,064	23,310
4. All Economic Units	132,940	206,210	286,780	339,460

* Estimated.

The data reveal a few interesting insights into the working of the small industries. Nearly half the value added by the manufacturing establishments in the country seems to originate in the small sector. It needs to be remembered though that small sector here is broadly defined to cover cottage as well as household industry where a major portion of the value added seems to originate. It was found that during the sixties the small sector as defined here recorded an annual growth of 8.3 per cent, in current prices. When adjustments were made for price changes during this period, the growth rate worked out to hardly 3.7 per cent per annum. In this sector, the small-scale factory establishments, which incidentally form an important part of the modern small-scale industries, recorded an annual growth, in real terms, of only 3.3 per cent. By contrast the large-scale factories grew at a more rapid rate during the same period, with

the result that share of the small factories in the *registered* sector has witnessed a decline over the years.

Efficiency of Small Industries

Such a poor show by a sector which enjoys an array of incentives, not to mention the vast institutional support, is indeed disappointing. This would raise some doubts on the relative efficiency of the small-scale industries. This question assumes special importance now when the lines of production exclusively reserved for the small-scale sector are being increased year after year. From a modest begininng of 47 items in the mid-sixties, today the areas of production reserved for the small-scale sector number 177. The criteria for such reservation, it is understood, are that the lines of production should be technically, economically and financially feasible in the small-scale sector, that the items should be such where the small-scale sector has already proved its capacity to produce, and where this sector is capable of meeting the demand for the items concerned. One wonders how seriously these criteria are applied when the reservations are actually made.

Unfortunately, the data available on the operational efficiency of the small enterprises are so meagre that no precise conclusions could be drawn in this regard. The ASI data, no doubt, provide some guidelines in this regard, although these are subject to several limitations. The latest ASI data regarding small industries pertain to 1968, covering 51,729 small factories with a productive capital of Rs. 9,807 million. Some of the relevant magnitudes worked out from these data are given below :

(In rupees)

	Small	Large
Gross output per unit of fixed capital	5.28	1.10
Gross output per unit of productive capital	2.95	0.87
Net value added per unit of fixed capital	0.82	0.27
Net value added per unit of productive capital	0.46	0.21
Fixed capital per employee	3,168	21,944
Productive capital per employee	5,669	27,883
Gross output per employee	16,720	24,186
Value added per employee	2,603	5,991

It can be seen from the foregoing that the small factories produce on an average, more output per unit of investment compared to the large. Even the value added per unit of investment was relatively large in the small factories. Also they offered larger employment opportunities for the same amount of capital. But when productivity was considered, the small factories did not appear to fare well compared to the larger ones. Output per person, as also wages, were distinctly lower in the small factories. As for value added, the large factories gave more than twice the value added per employed person as in small.

Of course, one has to interpret these results with caution. The figures are aggregative. As the industry mix of the two sectors may be entirely different, no definitive conclusions could be drawn on the comparative advantages of size. The variations between industry groups in the two categories are rather large. Even within the same industry group, comparisons between the small and large factories do get vitiated by differences in the product pattern or technology employed. Further, studies have shown that intra-industry variations are extremely large, especially in the small sector, in view of the highly personalised management involved there. Hence, any generalisations in regard to the comparative levels of efficiency are likely to be subject to severe limitations. Only a micro-level observation of the sectors can give possible guidelines. Such information as exists here would suggest that as one goes down the industry groups, in certain lines of production like chemicals, plastics, paints and varnishes, metal products, rubber products or tobacco manufactures, the smaller units were relatively less efficient. That some of these lines of production like paints and varnishes or plastics are specifically reserved for the small-scale sector would suggest that the reserved list would bear a more serious and detailed scrutiny.

Poor Export Performance

The relatively high cost of production in the small sector in many lines shows up much more glaringly when considered in the context of international competition. One often hears of the vast potential that exists in this sector for export in view of its diversified production and high degree of sophistication. But even as late as 1970-71 hardly 400-500 small units were engaged in export and the total value of exports from these

amounted to a mere Rs. 300 million. Nearly half of this was on account of such items as woollen hosiery, ready-made garments, cast iron pipes and bicycle parts. It is true that the real contribution of the small sector to India's export effort may be larger in view of its indirect export. But the fact remains that the contribution of this sector to the country's effort at earning foreign exchange is not significant. This is in spite of the fact that exports themselves enjoy a more handsome subsidisation over and above what the small-scale units get by virtue of being 'small'. True, the small units suffer from certain drawbacks like the absence of suitable market intelligence or sales network needed for export efforts. But the major constraint is the high cost of production which, to a large extent, is the result of the high degree of protection enjoyed by this sector. There has been no compulsion whatsoever on the small entrepreneurs either to improve efficiency or reduce costs. This fact is often glossed over and recommendations get made for giving special incentives to enable small entrepreneurs do export. The foreign exchange earned thus would hardly be worth the high costs involved.

Unutilised Capacities

A disturbing aspect of the operation of small industries in the country is the persistent and widespread underutilisation of capacities. Of course, under-utilisation of capacity is a common feature of Indian industry but it seems to be only more acute in the small sector. Here again precise estimation eludes us for a variety of reasons. Data limitations apart, estimation problems arise as the very concept of capacity is rather tenuous. So far there does not appear to be any scientific or systematic assessment of capacities that exist in the small sector although raw material allocation is supposed to be made to this sector on the basis of capacities year after year.

Such limited information as currently exists on the extent of utilisation of capacities in this sector would suggest that the level of utilisation is hardly around 50 per cent in a majority of cases, though exceptions may exist.[3] The situation appears to be more acute in some areas. This should not cause any surprise, for such a poor utilisation of capacities in this sector is in-built in the very system of allocation of raw materials.

3. *Study of Selected Small Industrial Units,* National Council of Applied Economic Research, New Delhi, 1972.

What is surprising, though, is that instead of taking corrective measures we seem to go on merrily creating new capacities year after year. In a country like ours where essential raw materials are scarce, and capital even more so, economic rationale would demand that the greatest care is exercised in conserving these resources and utilising them in the most productive way. But we seem to be hardly bothered about it at all.

Why Unutilised Capacity

The constraints on full utilisation of capacity in the small sector are several. The off-repeated ones are raw material shortages, credit inadequacy, demand limitations and, in a few exceptional cases, misjudged investment. There are also instances where the extent of utilisation is deliberately kept low by the entrepreneur as he does not feel like putting in the extra efforts needed for better utilisation or where he feels he is already getting the optimum returns. The most commonly voiced constraint is, however, the shortage of raw materials, both indigenous and imported. Here the situation is rather peculiar. It is not that shortages do not exist at all—they do in several cases. The general claim is that the small industries get hardly a third of their requirements at controlled rates as against the large units which meet their full requirements at controlled prices. The small units are thus forced to buy a major part of their needs from the open market at a premium, often ranging as high as 100 per cent, thus starting off with a cost disadvantage.

In a majority of items, however, the shortages appear to be artificial. For it is accepted by small industrialists themselves that so long as they are willing to pay the premium they can buy as much as they want in the market, even those items which are ostensibly allocated only to *actual users* on the basis of either their capacities or past consumption or value of machinery. There is thus a seeming adequacy of materials at the aggregative level with perhaps only marginal shortages, if any, in a few cases. But it is the defective allocational system that has created the problems and it is here that the bogus units with their paper capacities play the havoc. The inability, or unwillingness, of the authorities concerned to weed out such units has merely aggravated the problem. It is just possible that even under an ideal system of allocation some transfer of materials will ensue and trade-offs occur, but the magnitudes

involved are not likely to be large.

The crux of the problem lies in the acute and widespread shortages of raw materials and the resulting premium enjoyed by entitlements to allocation at controlled rates. As long as the premia are high the tendency to inflate capacities, or create paper capacities, will always persist. This is the main reason why there is always a rush of entrepreneurs into such lines of production involving non-ferrous metals, plastics or stainless steel or iron and steel. There were cases where units often got registered ostensibly for the manufacture of surgical instruments solely for securing allocation of stainless steel which could be diverted for utensil making to earn higher profits. Tallow allocated for soap manufacture reportedly often ended up in the manufacture of ghee or got transferred to other sectors, naturally at a premium. Then there was what was known as the zinc oxide syndrome till a few years back, where tremendous interest was shown by small entrepreneurs for manufacture of zinc oxide. It was found that an initial investment in machinery of around Rs. 2,00000 would secure for a new unit an allotment of electrolytic zinc, which at the premium that existed till some time back would have fetched for the entrepreneur an *extra* income roughly equivalent to a third of the value of the machinery invested, in the very first year. He could always buy impure zinc in the domestic market at comparatively low prices for purposes of showing actual consumption. Also, he could, if enterprising enough, make an extra buck by exporting the zinc oxide, even at throw-away prices, and secure import entitlements, besides getting credit for being an exporter in the small sector. And when one considers the fact that a substantial portion of the initial investment in machinery would have been financed by institutional sources one can easily understand the real attractiveness of such a scheme. Of course, the situation is entirely different now with declining zinc prices, but one can trust the enterprising small industrialists to find out suitable alternatives.

Surely this is not the type of entrepreneur that deserves promotion at such a high cost to the economy. Unfortunately, this is precisely the type that, by and large, gets promoted under the present system. It is not as though the authorities concerned are not aware of such happenings or that they do not have the necessary powers to control these. It is just that somehow they appear to lack the will to take corrective action. Remedial measures are immediately called for to stop such abuses, for the way it is

going the small-scale industry is fast becoming the bane of Indian society.

A more enduring solution to this problem, however, is to be found only in attacking the basic malady, namely, the widespread and persistent shortages of raw materials. As pointed out earlier, as long as shortages persist and premium exists, the vicious circle will continue. It is only by boldly taking necessary steps to remove such shortages that a permanent solution can be found. For once the premia vanished there will hardly be any inducement to inflate capacities or create paper capacities. As we had occasion to mention earlier there seems to be an overall adequacy of raw materials with perhaps only marginal shortages. What needs to be done is to remove these shortages through adequate, and timely, imports which incidentally should not cause any undue burden on the exchange resources of the country. It is only through such timely and bold action that the raw material problems of the genuine users could be alleviated.

Fortunately, we are in a position today to take some action for eliminating bogus units in the field of non-ferrous metals. With the decline in the price of copper and zinc the premium has almost vanished. Naturally this has resulted in a lack of interest on the part of the non-actual users to claim their entitlements, with the result one hears about quantities piling up with the canalising authorities. This is the time for taking necessary steps to scrutinise the release orders given to this sector and check the genuineness of the allocations made.

Checks on Capacity Utilisation Needed

In the mean time the need is imperative for a quick and systematic assessment of the capacities that genuinely exist in the small sector. There is also need for introducing constant checks on the allocations that are made. One could possibly think of a few counter checks in this context, between raw material allocations, production reported for excise and sales tax purposes, returns of income tax submitted, employment strength and energy consumption. Such checks are also needed to see that the small entrepreneur, who benefits to a substantial extent from the props given to him, also contributes his mite to the national exchequer. Today one often hears about the widespread

evasion of excise and sales tax by these enterprises. Newspaper reports would suggest that the Venkatappaiah Committee recently came across a wide range and diversity of evasion of central excise in the small sector in several fields.[4] One hopes the Committee would have suggested necessary remedial measures in this context.

The returns of income tax would also suggest that a large number of units do not come into the tax net. While the number of small units in existence reportedly run to lakhs, hardly 40,000—50,000 non-company manufacturing units were assessed for tax in 1969-70.[5] Even for these units, which have been assessed for tax, it would appear that the incomes declared are rather grossly understated, especially if one considers the fact that it is the units at the higher end of the scale that normally would come into the net. The number of units in the various industry groups assessed for tax, the incomes assessed and the average income per year are given in Table 2. It would seem that the average monthly income in most of the cases works out to hardly Rs. 3000. It is surprising that even in such fields as manufacture of woollen goods, ready-made garments, leather and leather products, printing or brick kilns, where a large number of units operate in the country, hardly a handful pay income tax. It is true that a large number of units in operation may be really small. Even if allowance is made for this, it becomes rather difficult to swallow such low levels of income as declared.

TABLE—2

Data on Non-company Manufacturing Units Assessed for Income Tax in 1969-70

	Industry Group	*No. assessed*	*Income assessed Rs. '000*	*Av. Income Rs.*
1.	Forestry, Mining and Quarrying	1,024	43,427	42,409
2.	Primary Industries & Processing	8,102	321,747	39,712
3.	Processing & Manufacture of Textiles and Leather and products thereof	7,991	274,039	34,293
4.	Processing & Manufacture of Metals and Chemicals and products thereof	14,786	566,561	38,317
5.	Processing & Manufacture of Cement, Rubber, Paper and other Mineral products	9,413	278,861	29,625

4. *Financial Express,* August 10, 1974.
5. *All India Income-Tax Statistics, 1969-70,* Directorate of Inspection (Research, Statistics & Publication), Mayur Bhawan, New Delhi.

There are also ways of avoidance of tax. A common factor one finds in the financing of small units is the extent of credit supplied by the so-called 'friends and relatives'. It is often claimed by the small industrialists that because of difficulties in obtaining necessary finance from the various institutions they are forced to borrow from their 'friends and relatives'. In reality, however, these are none other than the family members, often minor sons and grandsons who have no visible means of income. This results in a double advantage to the entrepreneur and a double loss to the exchequer. On the one hand the tax liability of the enterprise is reduced, as high interest is often paid on such borowings. On the other, saving also occurs on personal income tax as the interest payments often accrue to persons not in the tax net. And yet often these very entrepreneurs tend to exaggerate their credit problems and claim that they groan under credit squeeze.

Industrial Estates

The establishment of industrial estates in our country is a pioneering effort in stimulating small entrepreneurship and dispersing industrial growth. Subsidised infrastructural facilities are provided to the entrepreneurs through such programme. Every year public funds to the tune of Rs. 15-20 million are currently spent on this programme. A number of industrial estates of different categories—urban, semi-urban and rural—have been set up throughout the length and breadth of the country, prompted by economic as well as political considerations. The major objectives of this programme were to promote and disperse small industries in backward and rural areas and encourage the growth of ancillary relationship between small industries and the large, through special purpose estates.

Our experience in this field, however, does not appear to be a complete success. The large number of sheds remaining unoccupied in many of these estates would suggest that the programme suffers from several shortcomings. It would appear that considerations other than purely economic have played a more crucial role in deciding the location of several of these estates. Even a cursory look at some of these locations would give one the impression that the choice was dominated more by the naive assumption that where nothing else grows at least industry will.

This is not to decry the entire programme as there have been several brilliant successes. The experience with specialised industrial estates programme in a few States in recent years would be a pointer to the inherent dynamism of the programme. But while we applaud the Guindys and Okhlas we should also not lose sight of the Nainis. The real cost of the industrial estates programme being so high it is time that an evaluation is made to examine as to how far the programme has helped to stimulate entrepreneurship and raise the productive efficiency of the units in these estates.

Need for Reorientation of Policy

With so much dispensations from the government the small entrepreneurs today have become a much pampered lot. They have come to depend on these props so much that they display their enterprise mostly in exaggerating or inventing more problems, to derive larger benefits. This is not to deny that some props are needed to stimulate the small entrepreneurship. But such extraneous support to prop up an economic activity can be justified only on the 'infant industry' principle, with the understanding that the activity will gain in strength over time and cease to look for continuous support. But the peculiarities of our support system only encourage the infant to remain an infant clamouring for increased support all the time. Under an ideal system one would expect the small industrial units to benefit from the props offered, grow in strength and cease to look for support. This has, no doubt, taken place in our industry but only in a few cases. The general pattern seems to be 'once small, always small', so that one does not get disqualified for support. As the eligibility for support rests solely on the criterion of 'smallness' simply defined in terms of the value of plant and machinery, with a ceiling, every effort is made to fall within this definition somehow. The equipment may be claimed as second-hand or even scrap, or claimed to have been donated or rented for a nominal sum. One has to only go round the country and visit some of the small units to see the several gimmicks that are employed for this purpose. In some cases the entrepreneurs do really gain in strength but then use such strength to set up another small unit and qualify for further support. The net result is that the exchequer bears the unnecessary burden of providing unearned gains to some small entrepreneurs who do not really deserve any support. One cannot surely

conceive of such a system as a means of achieving a more equitable distribution of income. Also, the incentive to grow or improve productive efficiency is greatly weakened, with the result a larger number of units just settle down to a comfortable but low level of efficiency.

Obviously, the remedy does not lie in re-defining 'smallness' or having further special groups within the sector. The remedy must lie in devising a suitable support system which will become self-effacing rather than self-perpetuating as it is today. A proper time schedule should be drawn, beyond which a small unit should not be allowed to claim any special support. The period can be suitably fixed after studying the nature of the industry, the normal gestation lags and other relevant details. One can even think of building into the system a sort of tapering off of support. The point that needs stress in this context is that a mere proliferation of small units on public disbursements is not good economics. It is not enough to pay attention, in policies, merely to the status of the entrepreneur or the size of his enterprise. Attention also needs to be paid to the efficiency of operation and the quality of investments made. Policies have to be so designed as to enable the small industry gain in strength, improve quality and become viable on its own. It is only then that a solid basis will be provided for a healthy and efficient growth of small industries in our country.

Development of Small Industries in Tamil Nadu : A Study

V. Swaminathan

The development and promotion of modern small-scale industries has been widely recommended as one of the most suitable means of industrialising overpopulated backward economies. The term "modern small industry" is generally used to mean the small factory type of industrial unit using machines and involving relatively small capital as against the cottage type of unit mostly involving manual operations.

Among the developing countries, India is recognised as one which has very successfully launched one of the most comprehensive small industry development programmes.

The arguments in favour of encouraging modern small industries in developing economies are fairly obvious. Firstly, small enterprises are, by and large, considered to be labour-intensive and employment-oriented and hence a great blessing to the capital-starved developing economies with acute problem of unemployment and under-employment of their work force. One of the most serious problems which confronts every developing economy is the low rate of capital formation coupled with a fast growing unskilled and semi-skilled labour force. The gravity of the unemployment problem in India is highlighted by the fact that on 31.12.1968[1], there were 20.50 lakh applicants on the live register of employment exchanges in India, out of whom 19.33 lakhs were matriculates and above. An estimate[2] (as on 30.10.70) puts the figure at 39.66 lakhs, out of which Tamil Nadu accounts for 4.11 lakhs. The task is, therefore, to evolve a strategy so as to make the best use of available labour force, while keeping capital requirements to the minimum.

Secondly, small industries help in decentralising economic development through dispersal of industries into semi-urban and rural areas. Decentralisation and dispersal of industries is recognised as a 'must' not only to carry the fruits of development to the underdeveloped

1. "India 1969".
2. "Report in *"The Hindu"* dated 5.12.1970".

regions but also to check the ever-increasing menace of environmental pollution and industrial congestion arising from unplanned metropolitan development. India's Third Plan spelt out that balanced development of different parts of the country, extension of the benefits of economic progress to the less-developed regions and wide-spread diffusion of industry were among the major aims of planned development. Small industries lend themselves with greater ease to decentralisation than the large-scale industries.

Thirdly, small industries offer a method of ensuring a more equitable distribution of national income and of avoiding concentration of economic power in a few hands. The incomes generated by a large number of small firms are bound to be not only more numerous but smaller, on an average, than those of a few large units producing the same output.

Fourthly, small enterprises afford an opportunity for the dormant entrepreneurial talents of the community to come up freely and get fully utilised. Small enterprises are a nursery to nurture and grow entrepreneurship.

Small factories account for about 96% of the total number of registered factories in India. The number of small units registered with all the State Directors of Industries has increased from 59,000 in 1963 to over 300,000 now. Registration being voluntary, the above number does not reflect the complete picture of the size and growth over these 7 years. An idea of the position which small units occupy in the national economy can be had from the following figures of National Income by Industrial origin :

TABLE 1
Position of Small Units In National Economy

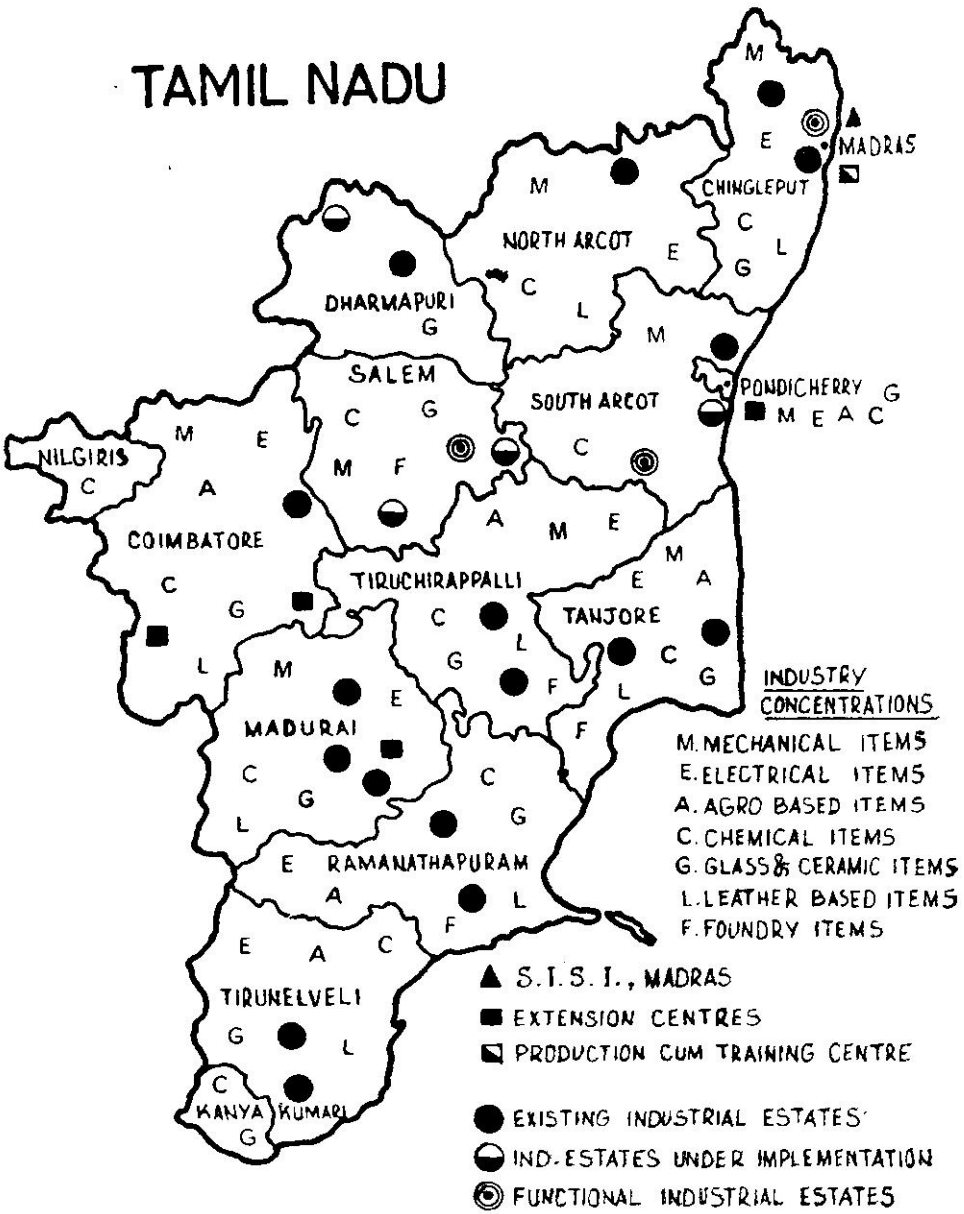
(Rs crores)

Industry	*1960-61*	*1965-66*	*1967-68*	*1968-69*
Large scale manufacturing	1071 (8.0%)	1822 (8.8%)	2050 (7.3%)	2243 (7.8%)
Small scale manufacturing	785 (5.9%)	1225 (5.9%)	1456 (5.2%)	1560 (5.4%)

Note : Figures in brackets are percentages to total

The object of this article is an attempt to study the pattern of growth of small-scale units and some of the productivity indicators.

Diagram 1


TAMIL NADU
MADRAS
CHINGLEPUT
NORTH ARCOT
DHARMAPURI
SALEM
SOUTH ARCOT
PONDICHERRY
NILGIRIS
COIMBATORE
TIRUCHIRAPPALLI
TANJORE
MADURAI
RAMANATHAPURAM
TIRUNELVELI
KANYA KUMARI
INDUSTRY CONCENTRATIONS
M. MECHANICAL ITEMS
E. ELECTRICAL ITEMS
A. AGRO BASED ITEMS
C. CHEMICAL ITEMS
G. GLASS & CERAMIC ITEMS
L. LEATHER BASED ITEMS
F. FOUNDRY ITEMS
S.I.S.I., MADRAS
EXTENSION CENTRES
PRODUCTION CUM TRAINING CENTRE
EXISTING INDUSTRIAL ESTATES
IND-ESTATES UNDER IMPLEMENTATION
FUNCTIONAL INDUSTRIAL ESTATES

Small Industries in Tamil Nadu

Small industries in Tamil Nadu have made rapid and significant strides during the last decade, both quantitatively and qualitatively. The system of voluntary registration of units was started in 1961. The progress made in registration is evident from Table 2.

Diagram 2

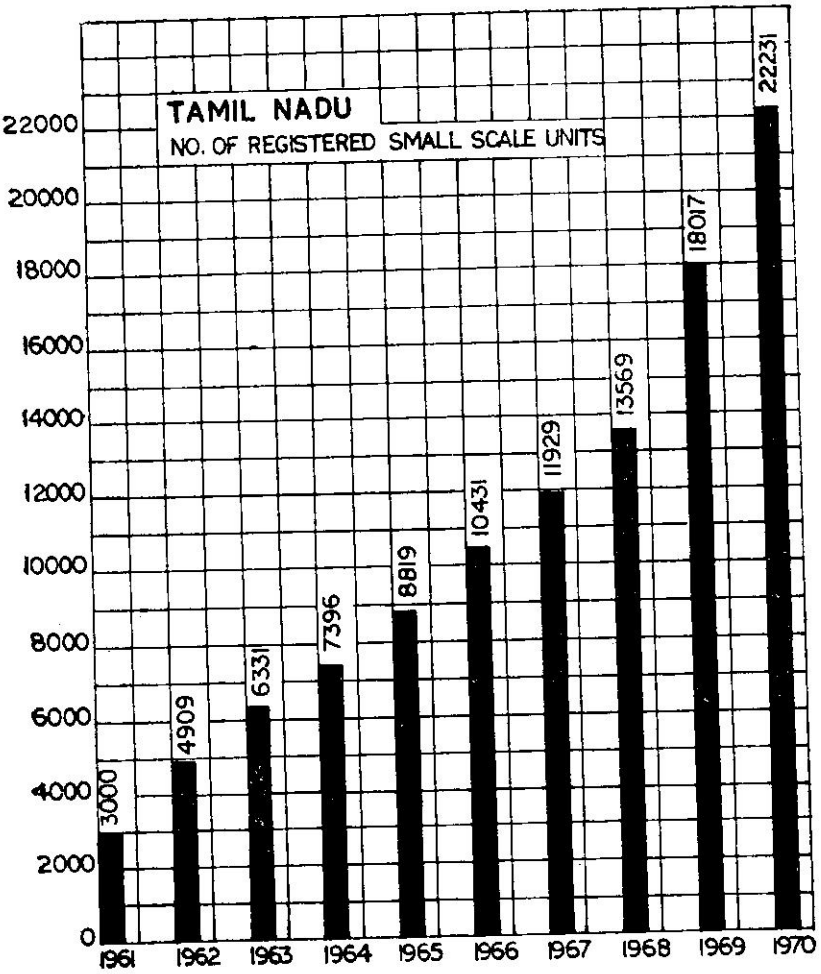


TABLE 2

Number of Units Registered at the End of the Year (Cumulative)

Year	*Number of Units*
1961	3,000
1962	4,597
1963	6,331
1964	7,396
1965	8,819
1966	10,431
1967	11,813
1970	22,231

A large number of units remain unregistered and hence are left out of the above figures.

There is a good spread of units among the various types of industries. The number of industries runs to about 40 though the major concentrations are in the 11 industries shown in Table 3. Area-wise, most of the units are concentrated in certain centres, viz. Madras, Chingleput, Coimbatore, Salem, Madurai and Thanjavur.

Diagram 3

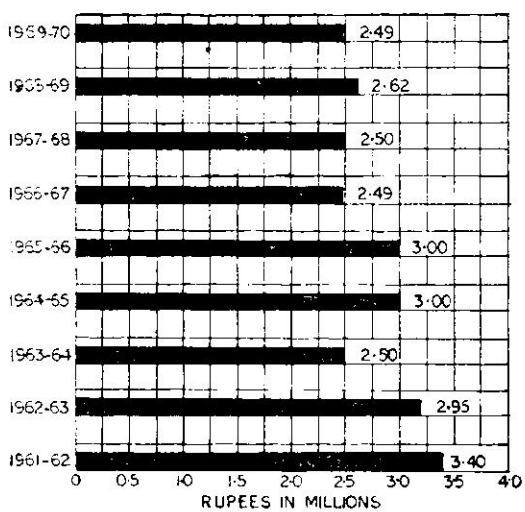
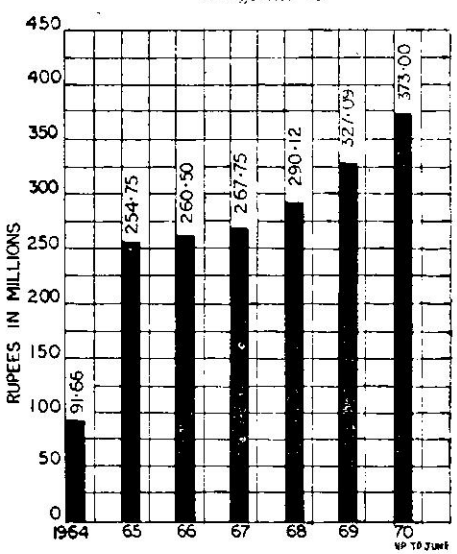


Diagram 4



The charts which accompany give an idea of the progress of small industries in the State.

A study of the registered small-scale units in the State was conducted in 1967. The study revealed that the total amount of capital invested by all the 11,813 units was Rs. 63.94 crores (or an average of Rs. 54,130 per unit). The total amount invested in machinery alone by all the 11,813 units was Rs. 28.77 crores, or an over-all average of Rs. 24,358 per unit.

Some of the significant figures in respect of the major industries are given in Table 3.

TABLE 3

Statement Showing Fixed Capital Per Worker

Industry and No. of Units	*Capital Investment (in Rs. Lakhs) Total*	*Capital Investment (in Rs. lakhs) Machinery alone*	*Labour employed (in nos.)*	*Fixed capital* / Labour ratio*
				(Rounded to the nearest rupee)
1. Iron & Steel (2308)	1059.26	527.48	22,085	2,388
2. Textiles (1323)	479.79	212.87	16,601	1,282
3. Printing (544)	412.63	239.60	6,938	3,453
4. Non-ferrous metals & alloys (895)	411.73	180.75	13,394	1,349
5. Food products (721)	337.44	123.59	16,510	772
6. Chemicals and Fertilisers (338)	263.25	116.57	4,055	2,874
7. Electrical accessories and equipments (238)	232.24	91.87	2,433	3,775
8. Glass & Ceramics (303)	222.37	92.94	9,843	944
9. Matches, fireworks & amorces (625)	219.06	41.49	32,167	128
10. Paper & Paper Products (238	209.34	110.89	3,409	3,252
11. Automobile (365)	208.75	158.66	3,863	4,107

* Machinery alone

Table 3 shows that the requirements of fixed capital in the form of machinery per worker is highest for automobile industry, closely followed by electrical accessories and equipment, printing paper and paper products. It is significant that electrical accessories and equipments industry, which ranks second in regard to the requirement of machinery per worker, employs only 40% of its total capital investment

in machinery. The same comparison for the other industries is as follows:

TABLE 4

Statement Showing Machinery Per Worker

Industry	*Percentage of machinery to total capital invested*	*Ranking in regard to* $\frac{\text{Machinery}}{\text{Labour}}$ *ratio*
		(In Rs.)
1. Automobile	76	4,107
2. Electrical accessories and equipments	40	3,775
3. Printing	58	3,453
4. Paper	53	3,252
5. Chemicals and Fertilisers	44	2,874
6. Iron & Steel	49	2 388
7. Non-ferrous metals & alloys	44	1,349
8. Textiles	44	1,282
9. Glass & Ceramics	48	944
10. Food products	37	772
11. Matches, fireworks & amorces	19	128

Comprehensive and up-to-date statistics of small industries in Tamil Nadu are not available. However, for the purpose of studying the productivity of at least some of the small-scale units in Tamil Nadu, the results of an annual survey conducted by the C.S.O. for the year 1967 in respect of small scale units engaged in five priority groups of industries, are studied here. The survey covered small factories, registered under the Factories Act, 1948, where the gross value of plant and machinery installed did not exceed Rs. 7.5 lakhs.

The five industrial groups are :

(i) Ferrous basic metals;
(ii) Non-ferrous basic metals;
(iii) Metal products;
(iv) Machinery other than electrical; and
(v) Electrical machinery.

A summary of the results of the survey so far as it concerns Tamil Nadu *vis-a-vis* other States in the above industries is given in Table 5.

TABLE 5

Statewise comparison of output per employment and output per fixed capital

Sl. No.	State	No. of units reported	Fixed capital (Rs. crores)	Employment (000 Nos.)	Gross output (Rs. crores)	Value added (Rs. crores)	Output / Employment	Output / Fixed Capital
1.	Tamil Nadu	785 (8)	10 (10)	27 (9)	35 (8)	9 (10)	1.27	3.5
2.	Gujarat	943 (10)	10 (10)	27 (9)	42 (10)	10 (11)	1.55	4.2
3.	Maharashtra	1642 (18)	26 (25)	63 (20)	102 (24)	24 (26)	1.62	3.92
4.	Punjab	10 8 (12)	7 (7)	27 (9)	45 (10)	7 (7)	1.67	6.43
5.	U.P.	821 (9)	8 (8)	30 (10)	35 (8)	8 (9)	1.16	4.37
6.	West Bengal	1483 (16)	17 (17)	62 (20)	77 (18)	16 (17)	1.24	4.53
	Sub Total	6762 (73)	78 (77)	236 (77)	336 (78)	74 (80)		
	Other States	2497 (27)	24 (23)	74 (23)	95 (22)	19 (20)		
	Total :	9259 (100)	102 (100)	310 (100)	431 (100)	93 (100)		

Note : Figures in brackets are percentages to total.

The figures in Table 5 show that Tamil Nadu accounts for 8% of the total number of units under the 5 industrial groups and with a fixed capital investment of Rs. 10 crores (10% of total), they produce Rs. 35 crores (8%) and Rs. 9 crores value added (10%).

It is significant that both $\frac{\text{output}}{\text{employment}}$ ratio (or Labour Productivity) and $\frac{\text{output}}{\text{fixed capital}}$ ratio (or capital productivity) are the highest in the case of Punjab, with only 7% of the total fixed capital investment and 9% of the total employment. The labour productivity in the case of West Bengal is low.

A summary statement showing the main characteristics of the 5 groups of industries in Tamil Nadu is at Table 6. As may be seen therefrom,

TABLE 6

Statement Showing Productive Capital, Employment, Output And Value Added In Various Industries

S. No.	Name of the Industry Group	No. of units reported	Fixed Capital (Rs. lakhs)	Productive capital (Rs. lakhs)	No. of employees	No. of workers	Total output	Total Input	Net Value added	% of net Value added to total input
							(Rs. lakhs)			
1.	Iron & Steel basic metal industries.	122	208.80	323.83	4738	3810	657.63	487.37	151.14	31.11
2.	Non-ferrous basic metal industries	51	47.71	95.67	1397	1086	342.46	291.55	45.47	15.59
3.	Metal Products except machinery and transport equipment	244	259.98	425.65	6428	5016	728.56	528.88	173.31	32.76
4.	Manufacture of machinery except eletrical machinery.	265	297.54	505.51	9477	7617	921.09	584.55	305.68	52.29
5.	Manufacture of electrical machinery	103	175.14	293.91	5270	4135	876.12	622.82	236.34	37.94

the net value added as a percentage of the total input, is the highest (52.29%) in the case of "manufacture of machinery except electrical machinery", followed by "manufacture of electrical machinery" (37.94%). The lowest is in respect of "non-ferrous basic metal industries" (15.59%).

Productivity Indicators

Some of the productivity indicators of the five industry groups are now analysed in Tables 7 and 8.

TABLE 7

Capital Productivity

(In Rs.)

Industry Group	Fixed capital per employee	Productive capital per employee	VALUE ADDED		OUTPUT
			per employee	per Rupee of productive capital	Productive capital
1. Iron & Steel basic metal industries	4407	6835	3189	0.46	2.307
2. Non-ferrous basic metal industries	3422	6848	3255	0.47	3.558
3. Manufacture of metal products except machinery & transport equipment.	4044	6621	2696	0.41	1.711
4. Manufacture of machinery except electrical machinery.	3139	5334	3225	0.60	1.822
5. Manufacture of electrical machinery etc	3323	5577	4484	0.80	2.980

Capital productivity, taken as the ratio of output to capital, is the highest in the case of 'non-ferrous basic metal industries' (Rs. 3.558) and lowest for 'manufacture of metal products except machinery and transport equipment' (Rs. 1.711). But it is usual to measure factor productivity as a ratio of Value Added to the Factor Input. Using this

measure, we find that Value Added per rupee of productive capital (both fixed and working capital) is the highest in the case of 'manufacture of electrical machinery etc'. (Re. 0.80) and the lowest for 'manufacture of metal products except machinery and transport equipment' (Re. 0.41). Value Added per employee is also the highest (Rs. 4484) in the case of 'manufacture of electrical machinery etc'.

The figures in Table 7 also bring out one interesting feature, viz., that a high fixed capital or productive capital per employee (that is, equipping an employee with better and costlier tools) has not necessarily generated high Value Added per employee or per rupee of productive capital, as for example, the industry groups at (1) and (2) of the above table. At the same time 'manufacture of electrical machinery etc.' which has a low fixed capital and productive capital intensity (Rs. 3323 and Rs. 5577 respectively) has generated high Value Added per employee and per rupee of productive capital. This may sound paradoxical but one could possibly infer that this group is a labour-intensive one. Out of the 103 units reporting in the State under this group, 32 relate to electric motors, constituting the single largest number in this group.

Labour Productivity

Table 8 gives some indicators of labour productivity :

TABLE 8

Labour productivity *(In Rs.)*

	Industry Group	*Output per unit of employment*	*Value Added per unit of employment*	*Per capita wages (1967)*	*Value Added per Rupee of wages*
1.	Iron & Steel basic metal industries	13878	3189	1583	2.50
2.	Non-Ferrous Basic metal industries	24514	3255	1489	28.1
3.	Manufacture of metal products except machinery & transport equipment	11334	2696	1515	2.28
4.	Manufacture of machinery except electrical machinery	9719	3225	1713	2.34
5.	Manufacture of electrical machinery etc.	16624	4484	1723	3.31

Labour productivity measured as a ratio of output to employment is seen to be the highest in 'non-ferrous basic metal industry' (Rs. 24514) and the lowest in 'manufacture of machinery except electrical machinery' (Rs. 9719). However, the Value Added per unit of employment is the highest in 'manufacture of electrical machinery etc.' (Rs. 4484) and the lowest in 'manufacture of metal products except machinery and transport equipment' (Rs. 2696). Judging by this criterion, 'Manufacture of electrical machinery etc., appears to have the highest labour productivity. It is significant that higher per capita annual wages (Rs. 1723) have generated higher Value Added per rupee of wages (Rs 3.31) and higher Value Added per rupee of productive capital (Re. 0.80).

Role of SISI

One of the greatest obstacles which the industries in India and particularly small industries face in attaining optimum productivity is the problem of exsistence of idle capacity. One of the best ways of overcoming this problem, so far as it concerns small industries, is to encourage them to sub-contract for large units and to undertake production of ancillaries, bought-out components and sub-assemblies. This helps both the small and large units as the small units are enabled to utilise their machine and labour capacities optimally and the large units are free to specialise in their own fields of production without cluttering themselves up with the manufacture of small items. The economic benefits of sub-contracting are :

1. It reduces capital investment. The large as well as the small units need not have to buy a machine as they can buy time more cheaply on someone else's machine.

2. It reduces work in-progress and inventory as less money is locked up in the process.

3. It enables better use of skilled workers. By sub-contracting, a large unit frees itself from the problem of engaging such people or having to train them.

As part of the drive for developing ancillary small industries and for

improving the productivity of small industries in general, a special information bureau called the Tamil Nadu Sub Contract Exchange was set up in May 1970 in the Small Industries Service Institute, Madras, with the help of an UNIDO expert. The Exchange registers the spare machine capacity of small units manufacturing mechanical, electrical and other engineering items and records them on information cards which are prepared machine-wise, process-wise and product-wise. The large-scale units both in the public and private sectors are approached and requested to farm-out items which could be manufactured in small units and the Exchange links the two parties. Till 31st January 1971, it has handled 242 enquiries and processed 166 of them. The enquiries handled include those from Defence, Railway and Public Sector undertakings. The Exchange has pooled information relating to about 65 items of Defence requirements and 40 items of private sector parties which involve import substitution.

The Small Industries in Tamil Nadu are increasingly availing of the services of the Small Industries Service Institute in raising the efficiency and productivity of small-scale units. The Institute renders a package of technical, economic and management consultancy services During the year 1969-70 such assistance was availed of by 22,225 parties as against 18,752 in 1968-69. The Institute renders "Enterprise Counselling"—an integrated service comprising technical and managerial advice, under which a team of officers conduct diagnostic studies of the units and give suggestions for cost reduction, better management and increased productivity.

Skilled labour being another requisite of increased productivity, the Institute conducts training in various technical trades to improve the skills of the workers of small units which can hardly afford to have their own facilities for such training. During 1969-70, 257 persons were given such training.

Small Industries are now on the threshold of a new and dynamic development. The management of small units is now in the process of transition from the predominantly traditional, trader-owner class to a more enlightened, technocrat-based entrepreneurship. The emerging class of technically qualified young men who want to be self-employed is going to rapidly change the traditional set of values which centred mainly round earning profits. In the context of this transition, the

Central Government, particularly the Small Industries Service Institute, and other agencies have started training programmes for young engineers in Small Industry Entrepreneurship and management.

It is hoped that these and similar programmes will go a long way in increasing the productivity of small-scale units and in making them more efficient and viable.

Statement about Ownership and other particulars about Newspaper PRODUCTIVITY, to be published in the first issue every year after last day of February

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(as per Rule 8)

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2.	Periodicity of its publication	Quarterly
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6.	Name and addresses of individuals who own the newspaper and partners or shareholders holding more than one per cent of the total capital	National Productivity Council, 5-6 Institutional Area, Lodi Road, New Delhi-3.

I, V. K. Goel, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/- V. K. Goel

Dated : 1st March, 1975

Signature of Publisher

Management Consultancy Services for Small-Scale Industry

M. Yoga S.A. Khader

Small-scale industries sector has been identified as one of the essential sectors to be strengthened during the Fifth-Plan period. It is intended to serve as a major means of tackling the problem of unemployment and promoting balanced and integrated development of our economy. It is envisaged that under the Fifth Plan two lakhs of additional small units will be established.

These small-scale units, by virtue of their nature and size, would pose certain problems peculiar to their techno-economic and techno-managerial aspects. Most of the small enterprises are "owner-managed" and do not possess the advantages which accrue from the employment of professional managers or technologists. The cost of employing such personnel is normally beyond the capacity of such small units. Therefore, for successful establishment and operation of the small enterprises the entrepreneurial abilities of the "owner manager" need to be supported by suitable technological and managerial consultancy services so that the required expertise can be utilised for the improvement of performance at a cost which is economical and within the capacity of small units. It is, therefore, clear that such consultancy services would be as important an input for the small scale units as inputs of other types such as finance, power and other facilities.

Concept of Management Consultancy

Small-scale units are normally promoted by persons with "natural" entrepreneurial ability. These are one class of small-scale entrepreneurs. However, with the passage of time it is expected that persons with "acquired" entrepreneurial ability are likely to come into the field and in any case this class of entrepreneurs will have to be encouraged and provided with appropriate training and grooming. Consultancy services, therefore, must take care of the requirements of both types of small-scale entrepreneurs. These services, whether technological or manage-

rial, will have, therefore, to provide for the needs of those who have made the venture and established entreprises as well as of those who propose to make the venture and go about it in a reasonably systematic manner.

The existing established units face problems which are both technical and managerial in nature. These problems may be identified under the following categories :

(a) *Technical :* Plant layout, machine utilisation, tooling, quality control, maintenance, fuel and power utilisation, utilisation of scrap, material substitution etc.

(b) *Managerial :* Organisation and planning, financial management, accounting, costing, inventory management, marketing, sales-promotion, personnel management etc.

Any scheme of management consultancy service for small-scale industries, if it is to be meaningful and practical, will have to be based on two clear assumptions, which are :

(a) that, barring a few exceptions, the consultancy services required for small-scale enterprises have to be direct, simple and intelligible in nature and management concepts and techniques which need to be applied through consultancy service have to be basic and often elementary. There is, therefore, not much scope for providing sophisticated services ; and

(b) that, while the needs for technological and managerial consultancy services can be identified separately, in their actual application it will be difficult to make a water-tight distinction between technological consultancy and managerial consultancy.

The entrepreneur, in order to be able to take proper decisions, needs to be provided with expert advice on these and allied matters for solving the concerned problems. The objective of the consultancy services should be two fold : (i) to provide expert advice for dealing with the kind of problems which arise from time to time, which cannot be tackled with the help of internally available know-how, and (ii) to help the enterprise in improving its productivity.

The consultancy service provided to small industries should preferably be followed by implementation service, wherein the consultant assists the entrepreneur in implementing the recommendations and reaping full benefits from the study. It is very essential that the consultant is associated with the unit during implementation stage, as the managements, generally, are not fully aware of the modern management techniques.

Problem Areas and their Coverage

The following are the areas in which managerial consultancy expertise is generally needed by small enterprises :

(a) *For established units :*

1. Diagnostic Survey to identify weak areas
2. Organisation analysis and systems & procedures
3. Costing and Controls
4. Tooling and quality
5. Production planning and production management
6. Material management and inventory control
7. Personnel policies and administration
8. Marketing and sales promotion
9. Resource utilisation & cost reduction
10. Fuel-efficiency
11. Systems for maintenance and process control
12. Application of productivity techniques
13. Training of personnel.

(b) *For prospective entrepreneurs :*

1. Market research and market surveys
2. Preparation of product profiles

3. Preparation of investment analysis, cash flow statements, projected balance-sheets.
4. Preparation of techno-economic feasibility reports.
5. Evaluation of techno-economic feasibility reports.
6. Information about agencies which provide financial, technical and other types of assistance.
7. Selection, recruitment and training of personnel.

During its last decade of experience, National Productivity Council (NPC) had been extending consultancy services to the sector in techno-managerial and techno-economic fields and served more than 400 units. There is increasing demand for services in the field of method study, layouts, production planning, costing and cost control, inventory control, fuel efficiency, market surveys and techno-economic feasibility studies.

Operation of Management Consultancy Services

With the expansion of the small industries sector and the growth of the existing units, the demand for management consultancy services is likely to increase at a very rapid rate. It will be, therefore, necessary to organise these services in a competent manner and man them with personnel possessing the necessary expertise and concern for professional integrity. At present such services are being provided by Development Commissioner, Small-Scale Industries (DCSSI) and, to some extent, by N.P.C.

N.P.C. has special productivity services cell in 8 states, providing consultancy services to small industries at subsidized rates, wherein the local governments have come forward with timely subsidy to promote such a service. Most of the State Goverments have made a basic policy decision to develop and strengthen the small-scale sector through establishing small scale industry development corporations, to promote small industries and to assist the existing units in improving their productivity.

The total number of consultants operating to provide consultancy service, however, is too small in relation to the existing as well as the potential demand. While, therefore, promoting the awareness amongst

the small-scale enterprises of the advantages of consultancy as a major input in their activies, the organisations providing consultancy services will have to be strengthened. This can be done by augmenting the resources of DCSSI and NPC and also by encouraging small business consultants after proper verification of their credentials. It should be also possible to create an executive volunteer service under the aegis of DCSSI and NPC, whereby competent executives from medium and large industries can be encouraged to offer their services on mutually agreed basis for relatively short periods of time.

Sub-Contracting : To Foster the Growth of Small Industries

L. R. Upasani

During the last two decades, India has been formulating and implementing development plans with a view to achieving a viable national existence, both in economic and social spheres. This post-war quest for economic security, in its train, has brought about technical changes and dynamic consequences in the economy of the country. The developed nations have been keenly watching the winds of change sweeping this country with much interest and hope and providing technical and capital assistance to support her efforts.

One of the significant outcomes of this economic planning is the emergence of small industries as a strategic segment of the country's industrial economy. How important is the sector could well be gauged from the following statistics. No fewer than 190 thousand units are registered with various directorates of industries of the State Governments as against 121 thousand units four years ago. Employment provided by the sector rose from over five millions in 1965-66 to 6.5 millions in 1970-71. The value of output of the units covered by the small industry development programme was about Rs. 36 billion.

Importance of Small-Scale Sector

The importance of growth and development of modern small-scale industries in India can hardly be over-emphasised, particularly in the light of dispersal of industries to correct regional disparities and prevention of economic concentration and development of monopoly. Being relatively labour-intensive, they provide vast employment potential which is an important consideration in the Indian context as the country is now faced with growing ranks of educated unemployed. It is worthwhile to recall, at this juncture, the Industrial Policy Resolution of both 1948 and 1956 in which the Government of India acknowledged in broad but unmistakable terms the distinct role of small industry and

announced a firm policy of support. The aim of the Policy, it was said in the Resolution of 1956, would be to ensure that the decentralised sector acquired sufficient vitality to be self-supporting and its development was integrated with that of the large-scale industry; the State would, therefore, concentrate on measures designed to improve the competitive strength of the small-scale producer.

Considering the prevailing socio-economic and technological conditions in the country, only a harmonious combination of large, medium, and small-scale manufacturing units could provide the most productive industrial structure. This could perhaps be achieved only through a medium, powerful enough to induce the small and large units to co-operate and work effectively. One such institutional arrangement could be Sub-Contract Exchange. It is against this background, that the role of sub-contracting as an instrument to tap the latent resources of small industry is attempted.

It would not be an over-simplification, of course, to regard sub-contracting as the ever-widening application of the principle of the division of labour. The division of labour when viewed from the individual's point is specialisation, and from the point of view of society it is nothing more than cooperation. Adam Smith, in his treatise titled 'Wealth of Nations', writes: "The greatest improvement in the productive powers of labour and the greater part of the skill, dexterity, and judgement with which it is anyway directed, or, applied, seem to have been the effects of the division of labour".

Concept of Sub-contracting

The American pioneers of work-study, both Gilbreth and Taylor, term the sub-contracting simply 'division of labour'. In an advanced industrial society of today, it has acquired operational designation at the hands of Fletchar and Wainwright and Thatcher. Thus, there is nothing new about the concept of sub-contracting which is only an 18th century principle of division of labour and the economy of specialisation which is fundamental in the modern economic organisation. As pointed out earlier, even the Industrial Policy Resolution recognises the importance and effectiveness of the complementarity of small industry and large. We might as well take ancillary production as a synonym for sub-

contracting. Charles Rene Droesch[1], Expert, OECD Development Centre, West Germany, has observed that in developing countries small and medium sized industries are increasingly finding their way in producing, as sub-contractors, parts for large groups such as automobile manufacturers, TV and radio makers, etc. This trend has been fully recognised and in all the Asian countries visited, the responsible persons are convinced that this is the direction in which their country should go.

Ancillary Development

One of the earliest attempts made by the Government to integrate small units with those of large ones was to constitute a Committee in April, 1960 with a view to considering measures to be taken up for the development of ancillary industries. This would help the large industries to concentrate on sophisticated areas of production and leave the less sophisticated fields to small-scale sector. The latter has an important role to play in supplementing the efforts of the larger industries. Initially, 8 industries were selected for this purpose and the then Ministry of Commerce & Industry fixed total investment up to Rs. 1 million for ancillary units. Later on the number of industries were raised to 15 so as to include tooling and sub-assemblies within the definition of ancillary industries. Later on, this was increased to 16 industries. Four regional Ancillary Industry Sub-Committees, one each at Bombay, Calcutta, Delhi and Bangalore and also three more such Committees in the States of Madras, Bihar and Gujarat were set up with a view to speeding up the development of ancillaries as a part of the over-all development programme for small-scale industries. The terms of these Committees are as follows :

(1) To prepare lists of parts, components and sub-assemblies required by those large industries which are directly connected with the Defence effort.

(2) To prepare lists of parts, components and sub-assemblies required by other large industries.

(3) To suggest items of production to be demarcated for the small-scale sector so as to fit in with the common production programme proposed for large and small scale industries.

1. Modernisation of Small Industries, 'Productivity', Vol. XI, 1 & 2.

It may be recalled, earlier in 1966, the Estimates Committee of the Parliament which went into the working of the Ancillary Industries and Industrial Estates made the following observations :

> "The Committee are particularly distressed to note the very slow and insignificant progress made for fostering ancillaries by public sector undertakings which might well be given a lead in demonstrating the usefulness of ancillary arrangements and setting an example to their counterparts in the private sector..... The Committee urge that intensive efforts should be made by the public undertakings to farm out their parts and components to ancillary units."

These observations clearly show that ancillaries could not make any headway. To speed up this important developmental activity which is primarily designed to foster the healthy growth of small units, the following suggestions were made towards the end of 1969 by the Cabinet Secretariat to all the Ministries dealing with public sector undertakings :

(1) All public undertakings should indicate what provisions they are making for the purchase of components from ancillary and feeder industries before they seek licence for their production capacity.

(2) All undertakings in public sector should set up ancillary Industrial Estates.

(3) Scarce raw materials and imported raw materials and inescapable components of sub-assemblies should be supplied by undertakings for the small-scale ancillary units, whenever possible.

(4) It will be advantageous if long-run purchase arrangements are made with small-scale units to give them a sense of security, thus encouraging them to develop new items.

Although a decade has elapsed, the concept of ancillary production has not found its practical application. One of the reasons, perhaps, is due to lack of organisational link-up between the major production units in the large-scale sector and the small industries which are supplying spares and components. Except, perhaps, the Hindustan

Machine Tools, Bangalore, which really started the programme of ancillary industries in right earnestness, the other public sector undertakings are yet to give due consideration to the idea of ancillaries. The response from the private sector is disappointingly poor. Only M/s. Enfield (India) Ltd. Madras has been successfully encouraging the small units to manufacture spares and components. All these things clearly indicate that the development of ancillaries or sub-contracting is a problem of organisation and methods. No doubt, the Government is well aware of this deficiency and towards this end a major step has been taken in as much as two Sub-contract Exchanges have already been established, one each in Bombay and in Madras.

Sub-Contract Exchanges

In this context, it is important to remember, in December 1968, at the request of Government of India, Mr. Robert Holtz, Secretary-General of the Federation of Small-Scale and Medium-Size Industries in France, came to India on a three-week visit to advise on the utilisation of idle capacity of small industries through the establishment of Sub-contract Exchange. He visited many large-scale automobile and allied products' units and held discussions with the All-India Automobile Ancillary Manufacturers' Association and also with the Federation of Associations of Small Industries of India. Immediately after Mr. Holtz's visit, Mr. Krastovsky, Chief, Small Industries, Technical Division, UNIDO, Vienna, visited the country. It was he who gave a green signal that under the prevailing conditions an organisational set-up like Sub-contract Exchanges in India would make substantial contributions in services and supplies to large-scale units.

As a result of the visits of these two experts, the services of Mr. Emrys Edwards, British Expert on Sub-contract Exchanges (Managing Director of the Central Production Information Registers Ltd., England) were requisitioned in 1970 by the UNIDO to assist in setting up two Sub-contract Exchanges in India on a pilot basis, one each at Bombay and Madras. Both the Sub-contract Exchanges are now located in the premises of the Small Industries Service Institutes at Bombay and Madras. To start with, the Exchanges are acting as an engineering super encyclopaedia, providing positive and immediate information to engineering units desirous of utilising the surplus capacity of firms able

to meet the exacting requirements. As an instrument of economic planning, the Sub-contract Exchange by coordinating the supply and demand in machine capacity can ensure a regular flow of work not only between large and small-scale units, large and large units, small and large units, but also makes possible regular intra small-scale industry sub-contracting resulting in improvement of the overall productivity of a region.

Working of the Exchange

The internal working of the system itself is simple and makes use of modern time-saving ideas and office equipment for recording data and processing enquiries. Effectiveness is achieved by expert technical knowledge coupled with wide coverage of the existing manufacturing capacity of the area and the extreme mobility of action.

The vital importance of this organisational arrangement has been aptly summarised in an introductory leaflet of a recent P.E.R.A. conference "Profiting from Sub-contracts" (reproduced from *North-West Industrial Review*, England, Vol. II, No. 2, April 1970).

> "Sub-contracting has become a major industry in its own right. No firm can afford to ignore the opportunities for placing work on sub-contract, or for obtaining such work on favourable terms. The Sub-contract network is often widespread and complex. Its efficient management is vital to economic manufacture."

Productivity Study in Small-Scale industry : A Case

Rakesh Kumar

Invariably, a patient approaches a doctor when the cure for any disease is out of his bounds. But at times if one happens to meet a doctor casually, he may come out with some of the problems he has been facing in the past, various corrective measures he has taken and their results.

In one such encounter, a small-scale industrialist from Tamil Nadu once expressed that in spite of a number of measures which he had undertaken, he had not been able to raise production in the shop. This small-scale unit was engaged in the production of Vibratory Road Rollers. The production did not exceed more than 2 rollers a month. The General Manager had in the past augmented the machinery and the labour force to achieve higher production. So much so, in order to put an end to the complaints of raw material stock-outs, sufficient materials were purchased, in order to increase the production from 2 rollers to 5 rollers a month. But surprisingly, production did not increase. On top of it, marketing agents could successfully book orders for more than 50 rollers. At this juncture the General Manager was quite at a loss as to what he should do. He had already blocked an additional Rs. one lakh in plant and machinery and about Rs. 30,000 in raw materials. Wages bill had gone up, thereby adding to working capital stringency. Additional working capital had to be raised by taking more loans from banks at exhorbitant rates of interest. In short, the industry met with crisis. Once under the direct supervision of the General Manager, the production did go up to 5 rollers a month, but subsequently, came down, as it was not possible for him to devote full time on the shop-floor.

At this juncture, the General Manager thought of consulting an external agency, which should study the working of the industry and study the problems which came in the way of increasing production, and suggest remedial measures. An external agency was asked to undertake the study and implement the measures suggested by them. The industry on their part, offered to extend all the co-operation needed by the consultants.

Approach of the Study

i) To begin with, for a period of about two days the working on the shop-floor was observed and discussions were carried out with the production staff to know various methods followed in organising production, fitting and assembly. It was found that different workers were allotted a set of components which they used to prepare by various fitting and fabrication methods and along with machined components and proprietory items they would fit these parts on the main assembly. This method was found to have a number of drawbacks. Some of them are:

a) When one gang was busy with the main assembly, others would wait till their turn came.

b) Every fitter in the assembly shop took part in the final assembly, and though they were responsible for the proper functioning of the parts fitted by them, none was responsible for functioning of the whole assembly. This resulted in wastage of time in dismantling and re-assembling afresh. And for inspection and rectification of a roller, it took nearly 5-10 days.

c) There was no standardisation at all. Each roller was being made like a new product. Components made for one could not be readily fitted on to the other.

ii) The roller assembly was studied and was broken into various sub-assemblies which were further broken into components. All this was presented on a set of charts. It was decided to have a permanant gang of workers who may attend to the final assembly and the remaining strength of workers to be assigned to various sub-assemblies and component fabrication.

iii) It was decided to carry out an experimental assembly to find out the time which a gang of persons would take to assemble a complete roller in case they were supplied with all sub-assemblies, components and proprietory items.

iv) Preparations were made for this experimental assembly. A gang of four fitters was selected. None of the fitters had the experience of putting all sub-assemblies and components in the final assembly. But

each had the experience of fitting one important sub-assembly. For the first time such an exercise was being done. In a week's time the various sub-assemblies were got ready. The four fitters started struggling with the various sub-assemblies; fitting, dismantling, rectifying, fitting again, and so forth. In two days the gang of four men by working one shift of 8 hours each day assembled the roller and put it on the road after inspection.

v) This was an eye-opener for the management. It meant that 15 rollers per month could be assembled by this gang in case they could be supplied with sub-assemblies and components. The General Manager was convinced of the success of the new method. He decided to implement it then onwards and the consultants were asked to outline the various actions to be taken, so that the production staff and various facilities could be geared up to reach 15 rollers per month.

vi) It was decided to launch a programme of producing 8 rollers during the next month and 10 in the second month which would be raised to fifteen within a period of 6 months.

vii) The workers in assembly and fitting were divided into three categories (a) Main Assembly Gang (b) Sub-assembly Gangs & (c) Component Fabrication Gangs. The layout of the shop was modified to suit this new organisation. Separate working area was allotted for various assembly gangs and fitters producing components. In every area small stores were recommended for components and sub-assemblies. Safety stocks were recommended in order to keep the main assembly gang going in case of any eventuality leading to a temporary setback in production.

viii) A large number of components were being sub-contracted. Load on these outside facilities was going to increase substantially in the near future. A few more sub-contractors were added and a special supervisor was appointed to follow them up. The success of the new method depended upon the efficiency in keeping the various assembly and sub-assembly gangs fed with components without any interruption. It was recommended that some stores of these components be built and while placing orders some allowance be made for rejections during assembly. For planning and chasing the production of components on various productive facilities inside and outside, the use of bar charts was recommended.

ix) Timely supply of component was dependant on timely availability of raw materials. Thus, raw material purchase was planned. A-B-C analysis was done and accordingly purchase policy was recommended to see that while capital locked in inventories was not high, the stock-outs too were quite low. The same exercise was done for proprietory items. The stores arrangement was also modified to meet the demand made by the new production plans.

x) Orders were placed as per new purchase policies and material was delivered to various inside and outside facilities for conversion into components well in advance. A small contingent of new fitters was also recruited. After a month's duration the study came to an end.

Conclusion

The above approach prepared the small unit to know its capabilities and the experimental assembly induced the confidence in the management and workers to launch a programme to raise the production from 2 rollers per month to 10 rollers per month. As planned the management realised it and the benefits accrued, and prepared itself for bigger ventures and more challenging tasks.

Entrepreneurship in Small-Scale Industries : A Case Study

The entrepreneur is an integral part of economic transformation in India and, for that matter, in any developing economy. The problems of poverty and unemployment can be met by generating induced economic activities, the focus of which should lie in the entrepreneur pertaining to Agro-small-scale and medium-scale industries in India.

The Department of Research of the Gandhigram Rural Institute of Higher Education, Gandhigram, Madurai carried out a descriptive and statistical study on "Entrepreneurship in Small-Scale Industry in the Madurai city and its Environs". The research project was sanctioned by the ICSSR, New Delhi, in November, 1971. There have been extremely few statistical studies on small entrepreneurship in India and this is a pioneering and impartial study of its kind in Tamil Nadu. It is potent with guidelines for policy and action, both by the Central and State Governments as well as by private agencies, dealing with Entrepreneurial Departmental Programmes as far as Small-Scale Industries are concerned.

This study is an attempt to delineate the characteristic of entrepreneurs in small-scale industries in a particular locality—Madurai City—and factors influencing small entrepreneurship. Invariably, the examination of entrepreneurship has to be done in terms of the economic structure of the small-scale industries which it has built up, perhaps, with or without the supporting facilities. The objectives, on which the study is focussed are :

(i) to identify the characteristics of entrepreneurs ;

(ii) to investigate the various factors that influence entrepreneurship ;

(iii) to understand their economic structure and to find out the adequacy of the existing supporting facilities for these industries.

Sample

For the purposes of the study Small-Scale Industry is defined as one which has a present capital investment of Rs. 7,50,000 inclusive of plant

*Prepared by the Department of Research, Gandhigram Rural Institute of Higher Education. Madurai, Tamil Nadu.

and machinery. The purview of the study covers all small-scale industries in general. The criteria that weighed in the selection of the sample were :

(a) The industry should be either a manufacturing unit or a non-manufacturing (servicing) unit.
(b) The industry should be on-going as on March 31, 1971.
(c) The industry should not be an inherited one.
(d) The industry should not be run on lease.

Only 457 industries constituted the population of the study. Out of them 175 were chosen by random sample method and the sample size was 150 and 25 industries were kept in reserve in order to cover the quantum of non-responses during data collection.

Summary of Findings and Conclusions

(a) *Entrepreneurial Characteristics :* The small entrepreneur in Madurai city, as shown by the study, possesses the following four attributes :

(i) he is a credits oriented pre-planner ;
(ii) he is more dependent than self-reliant ;
(iii) he is more imitative than innovative ; and
(iv) he is a moderate traditionalist with occasional risk-shifting.

(b) *Influencing Factors :* The factors influencing small entrepreneur are :

(i) he has a small family with a sound economic base.
(ii) he can concentrate on production and sales; he feels less need for reinvesting his profit for further growth because of favourable economic background of his family.
(iii) he may not belong to an industrial family; he is migrant in Madurai ; and has no political affiliation ; his occupational mobility, adequate educational (or technical)

qualification together ensure his knowledge and ability in administering his industry ; he is pervious to personnel training and bettering management of the industry.

(c) *Economic Structure :* These small-scale industries are mostly proprietary and many are newly manufacturing units. About 90.7 per cent of the industries are able to capture a steady market in the context of changing demand-pull for their commodities. Most of them (96.7 per cent) do not exercise any form of quality-control for their products. In about 72.0 per cent of the industries, employment potentiality is comparatively low, but where it is even, the industries are run on a routine basis. Personnel training according to job specifications is found in some of these industries. The majority of them (87.4 per cent) have records of the business transactions both financial and others for evaluating their own industries. One may say that small-scale industries manifest limited knowledge and experience, in managing their industries with certain amount of ability.

(d) *Adequacy of Existing Supporting Facilities :* The facilities provided by various institutions such as, SISI, SIC, NSIC, MMTC, Handloom Finance Corporation, to name a few, are not utilised by most of them as they are not aware of the facilities provided by them to small-scale industries. More so, they are unaware of the consultancy services provided by State Government agencies and others. If the small-scale industries are to develop and grow, an awareness of supporting facilities offered by various State and Central organisations and agencies should be created among the entrepreneurs and inadequacy should be rectified by improving the services of the organisations that are set up to foster small-scale industries.

Implications for further Research

The entrepreneur has certain characteristics and his entrepreneurial activities, as influenced by various social, psychological and economic factors has been shown by the study. Therefore, the future course of research on entrepreneurship in India can be in such possible areas as :

(a) the need to develop a reliable measure of risk in small industries ;

(b) the present study has shown that, to a preponderant degree, economic factors build up small entrepreneurship in Madurai city, though social factors cannot be relegated to the background.

Suggestions for Action and Policy making

(i) *For Action :* A small entrepreneur has to take advantage of the Central and State assistance in order to help disperse industries in rural and semi-urban areas, and assume social responsibilities of modernisation of the Indian rural society. In India, entrepreneurial training programmes were being conducted in the past. But, to impart suitable training to educated youths of rural and urban area, unemployed engineers and technicians more ventures of this kind have to be formulated and built into the development programmes in our country because unless the right type of entrepreneurial leadership is forthcoming the programmes for industrial growth would be futile and devoid of any meaningful impact on the country's economy.

(ii) *For Policy-making :* Both the Central and State Governments in their keen interest to accelerate the tempo of small-scale industrial growth, have been formulating measures of assistance from time to time. However, the entrepreneurs of small-scale industries in Madurai city reported problems they faced in procuring raw material, obtaining easily adequate finance, equipment, finding an enlarged market for their products etc.

The reason for the prevalence of such problems can be the entrepreneur's ignorance of the supporting facilities or their inadequacy. Nevertheless, the problems have been persistent for quite some time now. A solution to each of them may necessitate suitable policy-making on the part of the authorities concerned. The guidelines to policy-making

presented here are based on the study.

(a) *Raw Materials :* According to the study, about 61.3 per cent of the entrepreneurs experienced the problem of shortage and high cost of raw materials. State and Central distributing agencies like the SIDCO, STC, MMTC etc. may fix the margin of profit at a lower level at the time of distribution, so as to help the entrepreneurs get raw material at a lesser price.

(b) *Finance :* (i) In granting loan to small industries, the emphasis may be more on prospects of the industry, the entrepreneur's capacity to run his industry profitably etc. (ii) The period of repayment and the rate of interest may be decided not on the quantum of loan but on the time consumed by the entrepreneur for manufacturing the particular type of product for which assistance is sought.

(c) *Machinery on hire purchase :* According to the study, 21.3 per cent of the entrepreneurs know that SIDCO supplies machines on hire purchase and 16.7 per cent are aware of the same type of supporting facilities extended by NSIC. In order to extend the facilities provided by SIDCO and NSIC for the large number of entrepreneurs, the NSIC may function in conjuction with the Assistant Director of Industries and Commerce, Madurai in popularising the supply of machines on hire-purchase.

(d) *Marketing :* In order to widen the market's facilities for small industries, SIDCO may make it obligatory on the part of the beneficiaries (entrepreneurs who take advantage of its service to sell at least half of their output at a fair price to the SIDCO which can, in turn, resell it later. This will not only eliminate middlemen but also help the entrepreneurs to have assured markets.

(e) *Taxation* : The high rate of existing taxation, it is opined, nip off the enthusiasm of the entrepreneurs, especially when they venture to organise small-scale units or to expand them. Liberalising this, would attract entrepresentship.

Need for Entrepreneurial Universities

S.A. Khader

Introduction

It has now been recognised that social and economic development cannot be achieved by the establishment of a few enclaves of modern technology and economy in the midst of general backwardness. As such, the process of industrialisation, instead of bypassing or even destroying the manufacturing activities in the traditional sector, must give full support to their development and diversification. This would imply that in the course of industrial development the growth of small-scale industries must be stimulated as much as possible in order to accelerate economic development and it is widely recommended as one of the most suitable means of industrialising an overpopulated backward economy. In this context, it is encouraging to note that the Planning Commission in its 'Approach to Fifth Five-Year Plan' had laid the much needed emphasis on the development of small-scale industries and, in fact, considered it as one of the most effective means of fighting poverty and unemployment.

The Government of India proposes to encourage establishment of small-scale industries to the extent of 2,00,000 additional units during the Fifth Plan period. Amongst other requirements, this proposal calls for a number of prospective entrepreneurs with specialised ability to manage small industries. Entrepreneurs cannot spring out of no where, but will have to be developed through proper training and on-the-job experience, after selecting the persons with the right aptitude for such tasks. Prime Minister, Indira Gandhi has expressed her grave concern over the existing entrepreneurial talent in the country and said; "We have people ! People everywhere, but so few who are innovators, so few risk-takers, so few who feel the urge to create and the will to take the country forward". She stressed that entrepreneurs of today will have to develop professional pride and desire to achieve excellence rather than be concerned with profit motive.

Having identified the need for such training and on the basis of the conviction that it is possible to generate such abilities in persons with the given aptitude which can be developed through right type of grooming, this paper envisages the establishment of five Entrepreneurial Universities in properly selected centres all around the country. These Entrepreneurial Universities may be centrally co-ordinated by a National Board on Small Industry development set up at Delhi and will be running on the pattern of Agricultural Universities, like the one in Punjab, to inculcate entreprising abilities and to generate full confidence to manage small industries.

Concept of Entrepreneurial University

Socio-economic objectives of national development would require creation of a large body of entrepreneurs, capable of establishing and operating small-industry units dispersed all over the country.

Can entrepreneurs be trained and developed, or are individuals born with the ability of entrepreneurship? At one time, it was believed that managers were born and not made. This hypothesis has been proved wrong. The parallel hypothesis that entrepreneurs are born and not made can also be proved to be wrong if appropriate active programme is implemented. How can we conceptualise and operate such a programme? This can be done on the basis of combining the concepts of Agriculture University and the concept of the Business School to evolve an Entrepreneurial University.

These Entrepreneurial Universities may be located suitably in five important centres, covering all the regions of the country. These would be functioning on the pattern of the Agricultural Universities, like the one in Punjab. This would draw upon the expertise already available in the field of small industries from various institutions, to make their programme effective. These would be centrally coordinated by the National Board on Small Industry Development, with a view to maintaining uniformity in approach and to ensure qualitative excellence in their services.

The training would be imparted normally to a group of 20 to 25 persons for a duration of three months (12 weeks).

Objective of the University

The object of the University is to select individuals identifying the basic traits necessary to become an entrepreneur, to impart training on various aspects of small industry management in the country and thus sharpen their basic traits to be groomed as prospective entrepreneurs and to guide and assist the graduates of the University to start their ventures and be on productive footing to further the economic development.

Modus Operandi of the Scheme

Successful operation of a scheme of this nature has to start with selecting and developing the trainers/specialists needed to impart training to the prospective entrepreneurs. This task will have to be taken up by the National Board on Small Industry Development, as an apex organisation to administer the scheme. A training of one month's duration may be planned with a view to orient the specialist from various faculties to the needs of small industries and to acquaint them fully with the problems of the small units and with very many organisations that are rendering multifarious services to the small industry sector. The quality of specialists play a greater role in the success of such a programme. Hence it is necessary that these specialists/trainers are selected, keeping in mind the basic requirements and aptitude for such a task.

The second important factor which adds to development of successful entrepreneurs is rightful selection of unemployed and other individuals through proper identification of basic traits, aptitude and background for the future endeavour that they are likely to take up. Apart from the usual personnel selection procedure it is necessary that various aptitude and psychological tests be designed, keeping in mind the requirement of the situation and administer them effectively. This task again should be taken up by the National Board on Small Industry Development, with necessary help from specialists in personnel selection.

The major contribution to the quality of the scheme would be the programme contents and the method of training. The entrepreneurial training programme aims at developing confidence in the trainees to take up challenging endeavours through the following stages:

First of all, trainees are inducted to this sector through class-room session and also visits to various small-scale industries in the region. The class-work comprises of orienting the trainees to small industries through lectures and discussions on topics such as : Industrial Potential in India ; Entrepreneur-Small Industry ; Small Industry Organisations in India ; Institutions Financing Small Industries ; Market and Marketing for Small Industries ; Raw Materials for Small-Scale Industries; Feasibility Aspects (Technical and Economic) ; institutions Providing Assistance in this regard ; General Management ; Industrial Management—Present Industrial Situation ; Personnel Policy—Legislation ; and Financial Management and Account-keeping. This would provide a theoretical basis for the trainers and induct them into this sector. Some of the faculty for these sessions would be drawn from various specialised and outside organisations apart from the internal faculty. The trainees will be visiting small units and holding discussions with the present entrepreneurs and managers about the problems faced presently in the sector during the second stage. They would also be visiting other organisations, both national as well as state level including financial institutions, to acquaint themselves with the nature of assistance provided and to discuss various implications of such assistance. The trainees will be provided an opportunity to discuss among themselves in the class room with the faculty their problems and connected clarifications that arise out of their visits to various organisations.

Finally the participants of the programme would be preparing a project report for their own venture under the guidance of the faculty from the training institutions; they undergo the stages of carrying out a market survey, techno-economic feasibility of their venture and finally prepare a viable project report. The participants would also be guided throughout by the organisations like FASSI, NAYE, NSIC, DCSSI, etc. in getting their units registered and giving them information regarding financial and technical assistance.

Lastly the participants will have evaluated from the angle of their potential abilities to be a successful entrepreneur, so that the university could be of help to other institutions in recommending the trainee to promote ancillaries and other purposes. The university will also be having a follow up scheme to assess the performance of the trained personnel during their operations, in the pursuit of improving the quality of training and to

render any additional help needed by the trainees during their functioning.

Management of Universities

The management of each of the above five Entrepreneurial Universities could be advantageously entrusted to five specialised bodies already working in this field, i.e. DCSSI, NPC, SIET, NAYE and FASSI. This would not only enable the gigantic task of training to be managed effectively, but also the skill and expertise already accumulated by each of these organisations would be effectively utilized to the development of our economy. It will also ensure the achievement of qualitative excellence on the basis of institutional competition.

The National Board on Small Industry Development should be entrusted with the task of preparing the overall policy framework, the training of trainers/specialists and co-ordination.

Benefits

It is possible to train entrepreneurs to meet the requirements of our expanding economy and thus help in tackling the problem of poverty and unemployment.

A common base and background for training entrepreneurs will be made available for further extension to the future requirements of small, medium and large sectors of industry and trading.

The proposed Entrepreneurial Universities should also be able to develop extension services and techno-managerial consultancy services for the benefit of small-scale enterprises. Extension services can be organised on the pattern of extension services of the Agricultural Universities

Population Pressure and Agricultural Development : A Regional Analysis

S.M. Pandey **Rajendra Prasad**

The two most formidable problems which are sought to be tackled through the planned economic development are the raising of food production to the level of self-sufficiency and lifting the level of income and employment to reduce and gradually eliminate the incidence of poverty. The available data show that nearly three-fourth of the rural poor, i.e., marginal farmers and landless labourers are living below the minimum desirable per-capita consumer expenditure. However, the magnitude of rural poverty seems to be directly associated with low agricultural productivity and low agricultural wages than with unemployment. Our earlier analysis has revealed that the incidence of unemployment, defined in terms of the ratio of mandays idle due to non-availability of work to total mandays is considerably low in the case of many agriculturally less developed states of India.[1] In other words, although rural poor, especially males, are reported to be "gainfully employed", for the most of their available time they are employed at low wages. As a result, their total household income is less, their living standards are poor and they have to take loans to make up the gap between their household income and expenditure. Low agricultural wages, low income and low living standards are, thus, to a great extent, the outcome of low agricultural productivity.[2]

The main factors responsible for low productivity in our agricultural sector are reported to be : traditional methods of cultivation; lack of adequate sources of assured irrigation; non-availability of necessary inputs; increasing pressure of population on agricultural land. There is no difference of opinion with regard to the first three factors. However, the relationship between the agricultural backwardness and pressure of population on agricultural land does not seem to be very clear. The burden of this paper is on understanding the nature of this relationship

1. S.M. Pandey, "Nature and Magnitude of Rural Unemployment in India," *Indian Journal of Industrial Relations,* Oct. 1974, Pp. 221-238.
2. S.M. Pandey, "Wage-Determination in Indian Agriculture: An Empirical Analysis', *Indian Journal of Industrial Relations,* July 1973, pp. 83-99.

through a study of some important economic factors that are reported to affect the pressure of population on agricultural land.

The population pressure could be determined by a number of socio-economic factors—birth rates, death rates and migration. Thus, a higher birth rate, lower death rate and relatively less migration may increase the population pressure. Migration, which undoubtedly plays an important role in the sectoral and geographical transfer of population, may be determined by factors such as the level of income, employment, literacy and mobility proneness of the population. A lower income and lack of employment opportunities, which characterise backward agriculture, may act as powerful push factor in causing migration. However, illiteracy, low economic base which also characterise backward agriculture, and risks involved in out-migration, may work in an altogether different direction. It may not be unrealistic to argue, therefore, that a greater awareness of employment opportunities outside, higher level of literacy, and some economic base to fall back upon influence a person's decision to move out or not. All these factors would ultimately determine the population pressure.

This paper aims at examining the determinants of population pressure in the north-central wheat zone of India. We have used the following four indicators of agricultural development as independent variables: (i) agricultural wage-rates; (ii) cropping intensity; (iii) level of irrigation; and (iv) size of effective landholdings.[3] The analysis covers a total of 83 districts.

Variables and Hypotheses

The effect of above-mentioned developmental variables on population pressure, on agricultural land or man-land ratio, measured in terms of the ratio of agricultural population to total land under cultivation, is analysed by assuming an exponential relationship of the following form:

$$y = k \prod_{i=1}^{4} x_i^{d_i}$$

$$\text{or } \log y = k' + \sum_{i=1}^{4} d_i \log x_i \text{ where } k' = \log k$$

3. For definitions of variables, please refer to "Wage-Determination in Indian Agriculture" *ibid.*

Our tentative hypotheses with regard to the relationship between dependent and independent variables are briefly discussed in the remaining portion of this section.

(i) *Wages* (x_1) should have negative relationship with the man-land ratio. We assume that the agricultural wage-rates are indicative of income level of the population in the entire rural sector. Thus, an increase in the wage rates should decrease the man-land ratio. Such a situation will suggest a highly rational planning on the part of agricultural workers. The moment they find that the level of earnings is above the subsistance level and all members of the family need not stay in village to make a living, they move out towards urban sector : (a) to reduce competition in agricultural labour market; and (b) to earn extra money through employment in the tertiary sector rather than remain in the village, maybe, without a regular job. For, it can be expected that with high level of wages the employers (cultivators) will tend to minimise the amount of hired labour with a view to economise on labour cost.

(ii) *Intensity of cropping* (x_2) should have positive relationship with the man-land ratio. An increase in the level of cropping intensity is expected to increase the demand for labour and result in greater concentration of agricultural population through increased income. Now this appears to be contradicting the argument forwarded in the previous case—that a rise in wage causes a fall in man-land ratio. In fact, without proper knowledge of the impact of this demand variable on man-land ratio and the wage level respectively, the possibility of both the arguments being true is bleak. However, on the assumption that when the impact of demand on increasing of man-land is considerably stronger than that of wages in decreasing the same, it will be possible to visualize the situation when all the three factors will be moving in the same direction. Moreover, in such conditions the role of 'prosperity push' becomes more relevant.

In normal circumstances, increased intensity of cropping may lead to increased employment opportunities or an increased duration of employment. In the former case farmers may employ different persons for different seasons. In the latter case, however, same persons may get longer period of employment in a year. The first may result in a movement of agricultural labour from areas of low intensity of cropping to one of high intensity of cropping, provided the local labour supply is

unable to meet the increased demand. The latter situation may indicate a reduction in migration from areas of high intensity of cropping. In either case the impact of increased intensity of cropping will have an increasing effect on the man-land ratio.

(iii) *Changes in the proportion of area under irrigation* (x_3) should also have a corresponding change in the man-land ratio. The former variable is taken as another indicator of demand of agricultural labour. Thus a positive relationship between the two is expected. The same logic as in the preceeding case holds for this variable also. A larger proportion of area under irrigation will induce farmers to bring maximum possible area under crop and make more intensive use of it which in turn will generate more employment opportunities. An agricultural labourer who is by nature attached to his village may, therefore, prefer to remain in the village than move out to urban areas in search of employment opportunities.

(iv) Man-land ratio should show a strong negative relationship with the *average size of effective holdings* (X_4). It is expected that regions having a high average size of the holdings have larger proportion of landless population. Also that land is possessed by a limited number of people. In such case, cultivators may have some economies of scale. However, if necessary infrastructure facilities are not available to farmers, and they are unable to make intensive and full utilization of the land they possess, there may be considerable reduction in the potential employment opportunities. This may generate an 'unemployment push' factor active on the landless labour force of the region concerned. This push factor is different from 'poverty push'. As we conceive, 'poverty push' can only emerge when the person is in employment and his earnings are hardly at subsistance level, whereas an 'unemployment push' means that the person is unable to secure any gainful employment whatsoever.

Interpretation of the Results

1. *Correlation Analysis* : In the light of the foregoing hypotheses the correlation coefficients appearing in Tables 1 1, 1.2 and 1.3 make interesting reading. The man-land ratio and average size of cultivated holdings are highly correlated. The coefficients of determination have

TABLE 1.1

Correlation Matrix for Districts with Low Man-Land Ratio (43)

Variables	*y*	x_1	x_2	x_3	x_4
(y)	1.0000	−0.0942	0.2570[b]	0.1364	−0.7070
(x_1)		1.0000	0.4813[a]	0.6622[a]	0.1484
(x_2)			1.0000	0.5849[a]	−0.2944[b]
(x_3)				1.0000	−0.1610
(x_4)					1.0000

TABLE 1.2

Correlation Matrix for Districts with High Man-Land Ratio (40)

Variables		*y*	x_1	x_2	x_3	x_4
Man-land Ratio	(y)	1.0000	−0.2702	0.4231[a]	0.2870[c]	−0.7448[a]
Wage-Rate	(x_1)		1.0000	0.4518[a]	0.0418	0.5921[a]
Intensity of Cropping	(x_2)			1.0000	0.5289[a]	−0.0386
Proportion of Irrigated Area	(x_3)				1.0000	−0.0636
Av. Size of Cultivated Holdings	(x_4)					1.0000

TABLE 1.3

Correlation Matrix for All The Districts (83)

Variables	*y*	x_1	x_2	x_3	x_4
(y)	1.0000	0.0549	0.6867[a]	0.4874[a]	−0.8630[a]
(x_1)		1.0000	0.4793	0.5704[a]	0.1503
(x_2)			1.0000	0.6686[a]	−0.5159[a]
(x_3)				1.0000	−0.3940[a]
(x_4)					1.0000

Note : In all the tables,

a = Significant at 0.01 level
b = Significant at 0.05 level
c = Significant at 0.10 level

as high values as 0.74, 0.50, and 0.55 respectively for all the districts, districts of low man-land ratio, and districts of high man-land ratio. Rest of the variables are either not correlated with man-land ratio or the value of their coefficients of correlation are very low. The coefficient of determination between intensity of cropping and man-land ratio at 0.18 is higher for the districts with high man-land ratio than the other group of districts (0.07).

Surprisingly, wage-rate is found to have no significant effect on man-land ratio. This finding is of remarkable interest. It is of common knowledge that prices do ultimately influence supply. However, for this influence to be observable the price should show such rise as will have an impact on the supply. Our analysis suggests that probably the fluctuations in agriculture wage rates have not been of the magnitude which will have a significant impact on supply of labour measured in this case by man-land ratio (or population pressure).

The correlation coefficients between wage-rate, intensity of cropping, and proportion of irrigated area are all significant for the districts of low man-land ratio. They suggest that wage rates are in fact significantly influenced by the demand. In these districts, however, the average size of the holding does not seem to influence the wage-rates, probably because cultivators with large holdings usually keep permanent labourers at a relatively fixed wage. On the other hand, in case of high man-land ratio districts, the size of the holdings does have significant correlation with wage rates.

2. *Regression Analysis* : The correlation matrix does indicate significant correlations between the independent variables which are expected to pose the problem of multicolinearity. However, comparison of the values of R^2 with the zero order coefficients of correlation between the independent variables, in many cases, suggests that our results do not suffer from serious multicolinearity and are amenable to useful interpretation.

Districts of Low Man-Land Ratio

Out of the eight equations in Table 2.1, I, II and VI are found to have the best explaining capacity. The last one consisting of only two

independent variables, namely intensity of cropping (x_2) and average size of cultivated holdings (X_4), has the highest F value Surprisingly, x_4 appears to be the only significant variable in explaining the population pressure. Whenever this variable is not considered, other variables have shown some explaining capacity, but the value of R^2 is considerably reduced. The data establishes that in districts where the man-land ratio is low, and therefore, there is all possibility of size of holdings being large, the population pressure is highly dependent upon the latter. In these districts there appears to be less employment opportunities for the agriculture labour, which factor pushes them out. This force appears to vary directly as the size of the holdings. Lack of employment opportunity, as has been hypothesised, is due to cultivators' reluctance to make full utilization of their land holdings. It is logical to assume that larger the size of the holdings lesser will be the proportion land cultivated to meet the requirement of the owners. Thus it is evident that in these districts the only factor which can generate a demand is the size of the holdings, and, therefore, only this factor appears to influence the supply. Owners of large land holdings may not feel the necessity of multiple cropping and, therefore, the coefficients are not significant in all but the last equation. There also it is so because more significant variables are excluded

Districts of High Man-Land Ratio

Since the districts in this group are mostly of high man-land ratio, their average size of the holdings will be smaller than the previous group of districts. In such a situation cultivators might have to make more intensive use of land through multiple cropping. Consequently, intensity of cropping should emerge on a significant demand variable in explaining the population pressure.

The results of regression analysis show that in equations I, II and VI of table 2.2, the proportions of variance in the dependent variable explained by the independent variable are the highest. When, however, size of the holdings is not included in the equation, the value of R^2 reduces considerably. All the equations, barring the last, suggest a decreasing return to scale. However, if only wage-rates and intensity of cropping are included as independent variables, the equation indicates an increasing return to scale.

TABLE 2.1

Results of the Regression Analysis done on the data relating to districts of Low Man-Land Ratio

Regression equation	d_1	d_2	d_3	d_4	*Constant*	R^2	*F*	*D.F.*
I.	−0.0189 (0.1055)	0.2528 (0.5763)	0.0017 (0.0365)	−0.6751[a] (0.1294)	1.0120	0.5029	9.612[a]	4,38
II.	−0.0066 (0.1006)	—	0.0065 (0.0344)	−0.6937[a] (0.1209)	3.2975	0.5004	13.922[a]	3,39
III.	0.0162 (0.0858)	0.2609 (0.5420)	—	−0.6764 (0.1247)	0.9764[a]	0.5029	13.152[a]	3.39
IV.	0.0068 (0.0707)	—	—	−0.7018[a]	3.3264	0.5000	19.997[a]	2,40
V.	−0.2057[c] (0.1266)	—	0.0756[b] (0.0432)	—	1.6722	0.0794	1 723	2,40
VI.	—	0.2042 (0.4452)	—	−0.6846[a] (0.1156)	1.2637	0.5025	20.198[a]	2,40
VII.	—	—	0.0049 (0.0242)	−0.6965[a] (0.1121)	3 2958	0.5004	20.030[a]	2.40
VIII.	−0.1775[b] (0.1054)	1.5020[b] (0.6427)	—	—	0.0017	0.1280	2.935	2,40

Note : Figures in parentheses are the respective standard errors of the coefficients
d_1 — wages; d_2 — intensity of cropping; d_3 — irrigation; d_4 — size of holdings
a — significant at 0.01 level; b — significant at 0.05 level; c — significant at 0.10 level

TABLE 2.2

Results of the Regression Analysis done on the data relating to the districts of High Man-Land Ratio

Regression equation	d_1	d_1	d_3	d_4	*Constant*	R^2	*F*	*D.F.*
I.	−0.0464 (0.1037)	1.3114[a] (0.3906)	0.0206 (0.0410)	−0.5759[a] (0.1090)	0.0077	0.7133	21.766[a]	4,35
II.	0.0964 (0.1073)	—	0.0628[a] (0.0443)	−0.6845[a] (0.1180)	3.3373	0.6209	19.656[a]	3,36
III.	−0.0274 (0.0955)	1.3715[a] (0.3679)		−0.5920[a] (0.1031)	0.0061	0.7112	29.551[a]	3,36
IV.	0.1826[b] (0.0896)	—	—	−0.7557[a] (0.1083)	3.8275	0.5997	27.717[a]	2,37
V.	−0.3282[a] (0.1076)	—	0.1719[a] (0.0550)	—	2.8573	0.2667	6.730[a]	2,37
VI.	—	1.3094[a] (0.2935)	—	−0.6123[a] (0.0743)	0.0080	0.7105	45.413[a]	2,37
VII.	—	—	0.0854[a] (0.0364)	−0.6122[a] (0.0861)	3.3718	0.6124	29.233[a]	2,37
VIII.	−0.4026[a] (0.0952)	2.2716[a] (0.4545)	—	—	0.0001	0.4466	14.928[a]	2,37

Note : Figures in parentheses are the respective standard errors of the coefficients

TABLE 2.3

Results of the Regression Analysis done on the data relating to all the districts

Regression equation	d_1	d_2	d_3	d_4	*Constant*	R^2	*F*	*D.F.*
I.	0.0109 (0.0777)	1.4155[a] (0.3245)	−0.0060 (0.0285)	−.7514[a] (0.0750)	0.0049	0.8244	91.546[a]	4,78
II.	0.1555[b] (0.0779)	—	0.0249 (0.0305)	−0.9229[a] (0.0707)	3.6542	0.7818	94,225[a]	3,79
III.	0.0026 (0.0868)	1.3983[a] (0.3124)	—	−0.7457[a] (0.0696)	0.0052	0.8243	123.540[a]	3,79
IV.	0.1796[a] (0.0561)	—	—	−0.9570[a] (0.0570)	3.8209	0.7797	141.601[a]	2,80
V.	−0.3494[a] (0.1193)	-	0.2607[a] (0.0436)	—	1.6681	0.3113	18.083[a]	2,80
VI.	—	1.4066[a] (0.2339)	—	−0.7442[a] (0.0587)	0.0051	0.8243	187.652[a]	2.80
VII.	—	—	0.0672[a] (0.0225)	−0.8527[a] (0.0626)	3.6778	0.7706	134.333[a]	2,80
VIII.	−0.3762[a] (0.0883)	3.6655[a] (0.3574)	—	—	0.0000	0. 693	52.870[a]	2 80

Note : Figures in parentheses are the respective standard errors of the coefficients

Summary and Conclusion

In the foregoing discussion of the results of our exploratory study of the determinants of population pressure in the rural sector, it is seen that there are some strong demand variables of the agricultural labour market which explain a considerable proportion of the variability in the population pressure. The choice of double log regression function also shows a good fit.

Our analysis indicates that the size of holdings (x_4) and intensity of cropping (x_2) are largely responsible for the variation in y. The coefficients of x_4 suggest that the average size of the holdings are such that any increase in the size is bound to have a decreasing effect on man-land ratio. On the other hand, the coefficient of x_2 indicates that any increase in the intensity of cropping will necessarily increase man-land ratio.

It can logically be inferred that an increase in the intensity of cropping, together with reasonable decrease in the average size of the holding will generate demand of agricultural labour to such an extent that the rise in wage rate, which will automatically follow, will fail to reduce the man-land ratio. This, in turn, will check the increasing slum development in the urban areas due to the inflow of the rural population.

It seems that larger landholdings are not conducive to either higher agricultural productivity or reduction in the incidence of rural to urban migration. A redistribution of cultivated land may, therefore, appear to be desirable from the point of view of agricultural development.

A Case for Productivity Circles in India

Charles F. James, Jr. **Thaddeus M. Glen**

Is it possible to reverse or radically change any basic characteristic of a large, complex economic system? The answer to such a question in Japan, in all probability, would be an unreserved Yes. The reason for this optimism lies in the recent history of Japan itself. After the Second World War, the Japanese economy, notorious for its cheap but poor quality products, has transformed itself into an economy characterised as the producer of reliable quality goods.

How and in what manner did this remarkable change take place in Japan? It came as a result of a phenomenon, now internationally famous, referred to as "Quality Circles". The most remarkable feature is that it was an enormously successful national effort involving Japanese people from every strata, every sector, every walk of life.

In Japan, there came a national realization that the quality image of the country was a major barrier and deterrent to ready access to the international market. The problem that loomed large before them, was of creating a more acceptable image that would permit not only the opportunity to create larger volumes of goods and services but expand market potential into areas where established quality is an important prerequisite to entry.

The problem, which affected every citizen of Japan, was imposed directly on the people. Throughout the country, they began to meet in large and small groups to discuss the problem and the ways and means by which each could contribute towards a solution, individually and in unison. Labourers would meet in small seminar-type meetings after working hours; top managers, middle managers, and labourers would meet together in vertical and horizontal groups. Clubs, professional societies, civic organisations would meet and promote meetings devoted to discussions of this national problem and these came to be known as the "quality circles".

The process itself was nothing short of a fantasy. A workable solution, indeed, was the objective but it was absolutely essential not only to define the problem but define it as it related to each individual. The process of "circles" with its broad involvement (honest-to-goodness involvement) was able to bring about a national recognition and understanding of the problem. Subsequent to this comprehension, solutions at all levels readily emanated. The Japanese not only shed their image of poor quality but totally reversed that image. They are now world renowned in optics, photographic equipment, electronics, automobiles, and other areas where their products simply would not find a market if they did not have the reputation for quality.

Low Productivity — the Ailing Factor

The authors were recently assigned as consultants by the Asian Productivity Organization to provide expert assistance to several industries in India in problems of productivity. Their work in these industries led them to have a conviction that the major problem and barrier to economic growth in India is low productivity. Some of the underlying causes of low productivity in India could be summarised as follows :

1. There is a broad misunderstanding or lack of understanding of the concepts of economic utilization of resources.
2. Concerns for social problems have inundated managerial decision processes at all levels, directing resources toward short-run measures which directly fly in the face of productivity—the problem that must be adequately resolved to bring about real and lasting social improvements.
3. Union structure and labour legislation are such that they tend to thwart productivity rather than promote it.
4. The Government appears to conduct itself in such a way that it tends to perpetuate the current conditions.

Ex-gratia Not the Way Out

Concerning conclusions one and two, immediate short-run type of relief

is the easiest, more immediately satisfying path to follow. Examples of such action are: Creation of jobs in order to reduce unemployment by allowing five persons to perform a job where two would be adequate; knowingly using methods and tools which maximize use of manual labour. It is easy to understand the tendency to react in this way when stark hunger is so evident. However, this is precisely the behaviour that will perpetuate living standards and poverty at their present level or lower them. This kind of "giving" can as a national practice be of value only in the most immediate short-run. An analogous situation was described in the workshops and seminars conducted by the authors in Bangalore. It would be greatly welcomed by the recipients and satisfying for the giver if every man, woman and child in India would be given a gift of eight rupees (approximately one U.S. Dollar), but tomorrow the gift would have been spent, leaving the individuals in the country relatively unchanged. Even the gratitude would be short-lived. However, if 600 million U.S. Dollars were invested in productivity in India the impact might be of great proportions, extending indefinitely into the future and growing with each passing day (or as said more basically on a television programme recently, "Give a man a fish today and tomorrow he will be hungry again; teach him how to use a fishing pole and he may be able to sustain himself").

Assign a man meaningful, productive work that makes the best use of his capabilities and the unit value of labour stands the best chance of being increased. Assign a man meaningless, unnecessary work just to busy his hands and the unit value of labour will be demeaned and most likely devalued. What can be the long-run outcome? If a unit of labour is not worth more, it cannot in the long run and on the average be paid more. This is the essence of productivity.

Need for Productivity Circles

The four points indicated are monumental barriers to a workable solution of productivity. No simple governmental, management, or labour programme, increased investment, legislation or foreign aid will be able to surmount them. In the judgment of the writers, it will take a ground swell of coordinated, intelligent concern of the people, activated on many fronts, i.e., a contagion of concern among the populace, which in turn develops or creates pressures for the development of

programmes aimed at solutions, as opposed to programmes conceived and developed (unilaterally or nearly so) by governmental, management, or labour organizations. Hence, the question is posed, "Could productivity circles work in India?" If this question is a relevant one, the gigantic task of organizing such an effort still remains. Things will not happen unless organized and initiated. Circle meetings will not be meaningful or productive without catalytic action. The programme, in order to be effective, must obviously be introduced, promoted and activated in all areas of the country at the same time.

Initial Steps

India is indeed fortunate to have a national organization devoted to productivity, the National Productivity Council (NPC). The NPC has its central administrative office in New Delhi and regional offices in eight places. They are currently providing productivity services of many varieties through each regional office. NPC, being already playing the role of a catalytic agent, is ideally suited to the task of organizing, initiating, instructing and administering a programme of productivity circles. The planning, organization and execution of such a project might proceed as follows :

1. Determine how to reach the industrial sector of the populace with which it is desired to work initially. Let us assume for the sake of example, that employees of organizations employing 250 or more people is the criterion to be used to select the subset of the population to work with in the initial phase.

2. Assign to each of the eight Regional Offices of the National Productivity Council the responsibility for working with the employers and employees of the region.

3. Train selected NPC personnel to initiate, organize, and administer the programme; train them to serve as leaders and catalysts in group discussions; train them to train others to serve in the same capacities.

4. Develop a criterion for selecting key people in the employers' organizations, "Key" with respect to personal qualities and peer and/or

subordinate acceptance as well as ready access, not with respect to management position.

5. Train the key people to initiate, energize, promote and perpetuate efforts in their organizations in a programme of productivity circles.

   Needless to say that any communication with a given group of employees should undoubtedly be initiated through both the management and the union local leadership.

6. Prepare at NPC Headquarters in Delhi, with the aid of very competent writers and artists, one-page flyer materials that can be readily mailed or otherwise distributed to managers and supervisors; prepare bulletin board materials for the blue-collar and lower echelon employees; prepare more extensive, descriptive materials for top management personnel. The materials should accomplish the following :

   (a) Explain the broad objectives and nature of the programme.
   (b) Explain the reasons for the programme.
   (c) Describe how the programme relates to everyone.
   (d) Describe how the programme will operate.
   (e) Encourage, promote conversational discussions among individuals.
   (f) Describe the organization and operation of the seminars in which 5 to 15 people meet.
   (g) Explain that the seminars will attempt two major thrusts at each meeting: Define the Productivity problems in the sphere of influence of the participants and develop or seek to develop measures that can be taken or shared by the participants.
   (h) Explain how improved labour productivity can improve the quality of life.

7. Prepare instructor materials for company-run programmes.

8. Initiate the programme by organizing several meetings where an NPC staff member is available to act as discussion leader and catalytic force.

9. Obtain intensive national and state press coverage.

10. Seek to get demonstrated enthusiasm by national and state political leaders.

11. Get union involvement, particularly at the local level.

12. Obtain the cooperation and involvement of educators, clubs, professional societies, civic organizations, governmental employees, and others who are in a position to provide valuable service or assistance.

No Westernised Model

This paper serves as only a sketch of the idea of a productivity circle and the organization of the effort to achieve success. It is recognized by the authors that the planning and organizing must be done by people who are more knowledgeable about and familiar with the culture. It is an enormous undertaking. It is desperately needed.

As a precautionary bit of information, in no way should productivity be interpreted in terms of "a westernized model of automation". The concern is for effective utilization of resources and the most abundant resource in India is labour, Advances in standard of living and decreases in breadth and depth of poverty cannot be assured with productivity gains. This is also a function of other fundamental things such as distribution of gains. But it can most assuredly be said that standard of living increases and poverty decreases cannot be realized in the absence of productivity gains.

It has been said that there is nothing more powerful than an idea that has reached its time. This was dramatically true for Japan—the idea was the Quality Circles. We believe the Productivity Circles for India have the possibilities for even more dramatic results; the population to be served is far greater, the needs are far more fundamental, and the potential of this great nation is unparalleled in history.

The time for this idea is now !

Improving Productivity of the Indian Railways

R.K. Chowdhary

Public concern and anxiety for India's largest mass transportation system are increasing day by day. Few would dispute the fact that Indian Railways portray a picture of extreme contrast, embodying advanced technology coexisting with unbusiness-like administration trying to support a system that is out of tune with the rising demands of the changing traffic. The crisis is further deepened by the fact that our railways are trying to preserve their unique monolithic organisational culture without showing much concern and need for importing better values obtaining in some other sectors of our economy. It, therefore, is not surprising to observe that our railways have not earned for themselves the proud status of serving as a vital instrument of economic development in India. The sooner the Indian Railways emerge as a powerful source of serving the economic priorities on a national scale, the better it would be in their own interest. There is a near unanimity of opinion in the country that railways can serve the Indian masses better and have enormous potentialities to usher in an era of smooth distribution of goods and services in the country.

Outmoded Outlook

With more than 100 years of operations, the Indian Railways still regard themselves to be in the business of railways rather than that of transportation and mobility. It is high time that the outlook of railways is changed in favour of an integrated instrument of transportation and mobility, be it in respect of movement of foodgrains, industrial raw material, manufactured, finished and semifinished goods, or men as factors of production and guardians of our frontiers. It is well recognised in business parleys that the seasonal fluctuations of demand are special features and challenges of business life. Railways, like other business enterprises, are no exception to these fluctuations. Rather than assuming full and indivisible responsibility for their failure to foresee the future events, on different occasions railways have tried to shift

the incidence of blame to customers who have failed to avail their services. By doing so, Railways forget that accusing customers is against the business ethics. Moreover, how can one explain the persistent wagon shortages for distribution of cement, coal, foodgrains, etc.? A recent sufferer is the coal industry which, once again, is in the clutches of transport bottlenecks. The biggest problem of collieries is that of shortage of transport facilities. One is reminded of the scenes from the old drama when coal pitheads overflowed with stocks and utmost scarcity and abnormal prices prevailed in the rest of the country. Similarly, the bottlenecks in the foodgrains distribution have added to the miseries of the consumers burdened with galloping prices of essential commodities. Our Railways must realise that they have a basic obligation to help the consumers, agriculturists and manufacturers, with goods and services in the right conditions, at the right time, at the right place, in right quantities and at the most economical cost. Instead of waiting for the customers to converge on them, they should be seeking customers like the Food Corporation of India, Cement Manufacturing and Distribution units, Steel Authority of India, Coal Corporation etc. All this calls for a change in outlook, policies and programmes which should be customer-oriented.

Duality in Obligations

By virtue of its size and extensive operations, Railways is a unique organisation employing about 1.4 million persons with an investment of over 4,000 crores. As a service organisation the work system in the Indian Railways is heavily man-oriented with labour costs forming about 60 per cent of its total operational costs. While it is interesting to learn that railways operations are greatly man-centered, it is distressing to know that organisationally they have twin obligations, one to the Government and the other to the public. The dichotomy binds the Indian Railways to the Government in certain forms and allows it to enjoy an autonomy in other forms. This duality of obligations has given it the worse of both systems . . . the Governmental system in the form of elaborate rules and procedures and the commercial system that demands a viable organisation with flexibility to take decisions that are in the best interests of the enterprise. One need not elaborate the virus of the governmental regulatory system that chokes the flexibility and freedom of entrepreneurial system. Perhaps, we require the genius and action of an organisational prophet to get the best of both the systems, and

railways at present do not have this genius. It is time we ran Railways as an independent corporation and remove the discord originating from quality of obligations especially in its day to day operations. A higher form of organisation which carves its own style in the best interests of self and country should be evolved. As users, we have come to the end of it and are saturated with the endless endeavours devoid of implementations to make Indian Railways as a model service organisation. We do not expect them to act like God but we hope to avoid a devilish system that brings to light the inorganic products defying human needs and comforts. The dichotomy of the railway organisation should be removed rather than battered into oblivion and argued away.

Productivity Improvement

The railways have prime responsibility to invest in operating and management processes that will vastly contribute to individual and group productivity. There are many areas where the application of modern Management and Industrial Engineering techniques could improve the decision-making skills of the authorities and thereby help bring about a much-needed measure of satisfaction and efficiency in the railway operations. At present, many a decision is made on the basis of experience, intution and hunches. These though good to a certain extent, have an in-born danger of forestalling efficiency at the sub-optimisation level. Further, it is extremely difficult for the decision makers to consider simultaneously all the various interlocking decision factors impinging upon a given situation. It is, therefore, important that the railways operations attached a much greater importance to scientific analysis to those decisions which affect interlocking operations. Some of the areas which are more amenable to the application of modern management are discussed below. By no means, the treatment given is exhaustive but is only illustrative.

Organization and Manpower Management

High morale and motivation of employees are the major stimulants for the success of any enterprise. One does not have to introspect on the morale and motivation of the railway employees. Raising the morale and motivation of the railway employees is one of the most urgent tasks

facing the Indian Railways. A prerequisite for achieving higher productivity is to create a meaningful, credible and congenial climate in the entire fabric of the organisation. An unfortunate aspect of our railways has been the lack of effort to create by and large a climate whereby, the employees feel highly motivated and align their efforts to do the best for the users, the organisation and themselves. It is doubtful whether the railways have so far attempted to find out the factors that are responsible for motivation and frustrations of their employees. Even if they had spent time and efforts to do so, what implementation measures had been initiated and with what results? Rather than wasting time on the old debate whether they have improved the climate or not it is prudent to have a fresh look at the factors that can contribute to improvement of climate and lead to employee's motivation. Presuming that the organisational dichotomies have been attended to, it would be most profitable to :

(i) Carve out well-defined organisational objectives.

(ii) Help employees in identifying and integrating their own objectives with those of the Railways.

(iii) Inject and promote job enrichment opportunities.

(iv) Re-organise the present para-military type of organisational structure to a structure most suitable to our economic, social and political aspirations.

(v) Bring about a balanced expansion in the opportunities in railways with those obtaining in other sectors of the Indian economy.

(vi) Dispense with outmoded systems and procedures to deny the employees the opportunity for flexibility in the context of expanding horizons of the users' demand.

(vii) Upgrade human resources through training and encouragement for rewarding productivity improvement ventures.

(viii) Evolve reliable, timely and adequate information system for self-direction, self-development and self-control.

(ix) Try to dispel public misgivings through organised public education campaigns.

If Railways have to emerge as a model service organisation and serve

as the most powerful instrument for fostering modernisation in the socio-economic fabric of the Indian society, its roles and responsibilities have to undergo a change. No amount of face-lift without upgradation and creation of human assets of committed employees will do.

Organisational Reforms

Today, the railways are fraught with multiplicity of organisational structures operating at the Railway Board level, the Zonal and the Divisional levels. These structures require immediate re-alignment and uniformity, which is the most arduous task and may offer some of the most challenging opportunities to the specialists in the management field. For instance, the Railway Board is concerned both with the operational and policy-making functions, whereas it should mainly be concerned with the policy matters, leaving the operational ones to the care of Zonal General Managers. This will not only enable the Railway Board to devote its energies for policy-making functions but also keep itself close to the other Economic Ministries. Centralisation of the major operational and policy-making functions at the Railway Board level limits the operational efficiency of the 9 Railway Zones and eroces the operational flexibility at the zonal levels.

Instances of inter-zonal rivalries are very common. One comes across cases where the actions of one zone are at cross with others. Rather than promoting and protecting the overall interests of the Railways as a whole, petty quarrels in safeguarding sectional interests by not releasing wagons beyond zonal boundaries are not uncommon. Similarly, a dangerous imbalance exists at the zonal levels, where also the same style and pattern is noticeable. An immediate rationalisation of the policy and operational functions right down the line commencing with the Railway Board is railways' best hope which can immediately remove a plethora of anomalies obtaining in the organisation.

Manpower Planning and Utilisation

It is amusing that a gigantic organisation like Railways have yet to evolve an adequate system of manpower planning and utilisation. Not only it is crucial to match the demand and supply of various categories of skills required for keeping the Railways running, it is equally important to assess and plan for future requirements. While railways have expanded fast in

the past decade, strategic planning for manpower and its utilisation has not been given a serious consideration. This lack of strategy on their part proclaims its own defeat and many of the problems of the railways can be traced back to the problems of growth and inadequate manpower planning. This brings us to the crux of the matter. Is it possible to bring about radical transformation in the organisation without adequate thought being given to the manpower needs, their training and job efficiency? Decidedly the answer is in the negative.

The strategy for normal and efficient operation of railways places a great responsibility for taking an inventory of the various jobs to be carried out by the railway personnel and study the man-machine utilisation system in the context of the capital equipment viz., locomotives, coaches, wagons, track control cabins, railway yards, track, railway stations, etc. created at huge investment. To utilise the capital base of the railways, it requires the development of manpower inputs in the required quantities and apply them at proper time and appropriate places with utmost speed.

An overwhelming concern for the subject was expressed by the Railway Accident Enquiry Committee (1962) which focussed attention on serious shortages obtaining in various categories of Railway employees, particularly in respect of Station Masters. Unfortunately, not many lessons have been drawn from the findings of this committee.

Each of the four Railway Service Commissions set up at Allahabad, Bombay, Calcutta and Madras are mainly concerned with the requirement of service personnel rather than the manpower planning and utilisation at the Zonal levels. An increasing awareness will have to be created in favour of human resource planning, development and utilisation. Development and utilisation are contemporary and both depend heavily on infrastructural training facilities, motivation, skills, systems and procedures and organisational climate. It has been rightly said* : "In manpower planning, the Indian Railways' main preoccupation will have to be with training". The Railways should address themselves to this stupendous task and they should not have any hesitation in obtaining outside help to reinforce their training facilities. Particularly in the fields of training of their officers for productivity improvement, the railways would need external help as their own resources are extremely inadequate.

* G. S. Khosla's "Railway Management of India", p. 169

Marketing Intelligence/Marketing Research

There is a definite evidence that marketing in Railways is yet to be given the prominence it rightfully deserves. Lack of this could be due to a host of factors, historical, environmental, psychological and absence of competition. This should not lead to a complacency of free-roaming and care-free style and in making railways a production-oriented organisation. Such myopic considerations will not serve the long-term interests of the railways. The railways as service-oriented industry will have to be market-and customer-oriented. From its business standpoint, *ceteris paribus* surpluses and tapping of economic opportunities should be successfully exploited by mastery of marketing skills. For making marketing decisions on forward planning and expansion programmes, railways need marketing intelligence much more than any other enterprise in the country. Before introducing any new service, should they not assess for what share of the "transportation market" they would be in a position to tap after initiation of the new service ? They should be interested in gauging consumer/user reactions to the various railway services both quantitatively and qualitatively. They should be concerned with obtaining realistic feedback from the users. If they succeed in getting impartial feedback from a representative cross-section of the travelling public/freight customers, they would soon realise the need for modification of some of their services. It may be argued that they have a system to elicit feed-back. Surprisingly this system is through the consultative pannels whose members, perhaps, have too weak contacts with today's railway operations . . . they might have been doyens of conveying public opinion in yester-years when they used to have first-hand knowledge of Railways' privations. Many of the panelists may be travelling by air or by first class while they are still being consulted to provide information on second class railway journeys.

Railway management needs to be aware of the changing conditions in the technique of marketing research and should be in a position to assess objectively the traffic forecasts, their origin and destination, their composition and distribution both in the passenger and the goods sector. The futurity of events can be predicted with varying successes depending upon the preciseness of the short and long-term objectives sought and the probabilities of success and failure. It is railways' responsibility to predict with a fair degree of accuracy the nature, composition and periodicity of the future business they expect to be generated.

Similarly for any new service creation, introduction and development, studies are needed for specifying the size of the market in first year, second year and the subsequent years and the associated chances these services will have for the market at various tariffs. The technique of decision trees can be adopted for working out the incremental cash flow after taking into consideration whether market accepts the new services in toto, partially due to technical and delivery lapses or does not accept these at all.

Handling Claims

A deep foresight and simplification of procedures are necessary for handling claims arising on account of loss, theft, pilferage, mishandling, delays in transit etc. Instead of throwing up their hands in despair and conceding that nothing worthwhile can be done, it is time some hard thinking was done on classification of priority categories of claims. Often, mishandling and damages result both due to outmoded methods of handling and equipment employed.

While railways are much more procedure-oriented, they fail to realise whether their procedures are in tune with the increase in volume of traffic and the speed expected in handling. Our railway yards, parcel offices, goods sheds, not to speak of the railway stations, are poems in mercy ! Loading and unloading operations are conventionally the same that they used to be in the good old days. Embarking on plans to attack the root causes that give rise to claims would be a better long-term solution while in the short run, a speedier and just disposal would go a long way in assuaging the sufferings of the claimants.

Ticketless Travel

From the reports appearing in the press and the debates in the Parliament, ticketless travel is assuming monstrous proportions. It is estimated that about ten to fifteen crores of rupees of the railways' revenue is annually lost on account of ticketless travel. The problem is not so simple as to be tackled by imposition of fines and other deterrent measures. Apart from those who are habitual offenders, perhaps some element of extreme compulsions are involved in resorting to ticketless

travel for non-habitual ones. The present handling is based more on inspection and punitive measures. Does one come across habitual ticketless travellers or there is a segment of population driven by object poverty who take recourse to ticketless travel for heading towards destinations in search of bonafide living ? We give free tickets to the prisoners for journeys to their home-town at the time of their release, to public servants for visiting their home-towns in the form of leave travel concessions, to politicians for "Bharat Darshan". Can we not evolve a mechanism whereby we could show compassion to bonafide employment seekers to migrate to places where employment opportunities exist and there is scarcity of labour ? Even this initial subsidy can be recovered subsequently if the authorities so desire. Of course, administratively this is not free from many intricacies and abuses. If fear of fines and imprisonment were the solution, this world would have been a lot happier place. Man is more dreadful of his society's disapproval and criticism, A good educative campaign for generating public opinion against ticketless travel could be more rewarding than through fines and punishments which have not solved the problem for more than a century' of Railways' living history. Some traffic departments in association with oil companies in a couple of cosmopolitan cities have started 'teach them while they are young' campaigns for school children in various facets of traffic regulations. What have railways done ? Their public education announcements made at the Railway stations fall on deaf ears as the travellers are in great hurry to attend to their hazardous travel. A good deal of work can be done by relying upon some of the mass media techniques of educating the public.

Ergonomics

In the manufacture of coaches, wagons and locomotives Ergonomics/ Human Engineering have a pivotal role to play. For instance, a number of cases can be quoted where our railways have not shown any concern for human comforts both in respect of coaches and wagons. Human engineering aspects have not caught much of the imagination in the manufacture of coaches and wagons. For designing coaches the habits of the Indian travelling public and their anthropological data ought to be studied in deciding the width of a seat, the angle and height of back support, the capacity of water tanks for the water closets, the location of alaram chains, the overhead holding

support, etc. In the long distance trains, one notices insanitary conditions because of dry latrines in the II Class compartments. The capacity of the tank is mainly meant for the prescribed seating/sleeping capacity of the compartment but experience has shown that these compartments specially on trunk routes are full to twice or thrice their capacities. As such, the in-transit availability of water, originally provided for normal carrying capacity falls short of requirements, thereby causing inconvenience to the travelling public. Besides, our, topographic and socio-religious consideration makes us consume more water than our counterparts in the western countries. It is doubtful whether such factors might attract the attention of our designers. Similarly, the plight of the occupants in a three-tier sleeper is not different from that of an animal in an undersized cage that has to shrink its physical size according to the cage by adjusting the limited flexibility of the body to the rigid flexibility of the size of the planks.

While designing locomotives, ergonomic considerations for reducing the fatigue elements of the locomotive drivers and their accessibility to various operating mechanism ought to be taken into consideration. Specialists in Ergonomics can assist the Railways to a very great extent by collecting anthropological data for various regions for the nature of the task that human beings have to perform for running these locomotives. A beginning can be made by carrying out a survey of the facilities available in the existing locomotives for creating conditions which could ease the operations of locomotive drivers.

Similarly, there are a host of other areas where Ergonomics studies can constructively be employed for improving efficiency of the operators, comforts of the travelling public, for reducing damage to the goods and the hardware viz., coaches, wagons, locomotives, tracks, signalling equipment, etc. etc.

Stores and Purchase

The railways offer a good scope for effecting economies in stores and inventory through proper management and control. Very recently, a committee headed by the Deputy Minister for Railways had been appointed to look into it. The railways purchase every year stores worth Rs. 400 crores which include 35,000 items from different sources.

These consist mainly of locomotive parts and fitting of rollings stock, permanent way materials and track tools, building, signal and interlocking material, fuel or fuel oil, electric fittings, engineering parts, etc. It will, no doubt, be most beneficial if the railways introduced an integrated system of purchase management, inventory control, material inspection. Besides formulating effective forecasts and monitoring of prices, there is need for rationalisation of materials. Introduction of Parefo's ABC analysis, development of material code and colour coding scheme, vendor rating system and laying down of sound foundations by way of computerised materials management information system on a total systems approach would greatly improve the decision-making skills in the area of stores and inventory control. Through forecasting and inventory control, a better purchase management system can be very rewarding. Further, by reconditioning and retrieval of old parts, an overall economy to the tune of 20 to 25 per cent can be achieved. The extent of pilferage and leakages in the stores can be reduced if systematic sample checks and immediate information on material issued and utillsed is made available.

Management Information System

The rapidly changing demands in the context of which railways are operating today makes their task very exacting. These demands can be well met when relevant, accurate and timely information is available. Decision-making requires a bilateral flow of information, information going to the manager who triggers off a decision and decision put into operation generates information which could be fed back to the manager to see the wisdom of his decisions and the corrective measures needed for modifying the same. The present reporting system in the railways suffers from a variety of non-essential, superfluous information. A good and effective system of reporting has so far been eluding the railways. Of the large number of reports and returns that are being obtained, hardly 15-20 per cent of the information contained therein is utilised for purpose of routine decisions. Moreover the form and content of the various reports flowing from one department to the other, one zonal railway to the other and from railways to the economic ministries need a radical change. Many of these reports are without any long-term objectives and have originated to satisfy short-term expediencies.

Take a look at the railway bradshaw ; even its creators may be afraid of referring to it lest it should consume more time and confuse them. How, then, can its efficacy be accepted by the public who would take much longer time to trace the pedigree of a train on the one hand and what it procreates on the other. Simple and easy to interpret information is the unanimous demand of the users. Can something be done in this direction ? If nothing can be done, perhaps, it is time when special courses on 'how to read a bradshaw' should be organised.

The prevailing reporting system for managerial decisions in the railways is another area that needs toning up of operations. Most of the information required for future planning, for answering questions in the Parliament, for public education, have to be collected every time it is asked for and is perhaps different for different audience depending upon the ingenuity of the information collector and processors—for bridging the missing links through estimation techniques. It is surprising that with the advent of computers the information system in the railways still leaves much to be desired.

Optimisation of Results

Over the past few years there has been a steep rise in the capital investment of the Indian Railways. Part of this has been spent on doubling of lines, dieselisation and electrification of large number of sections for which the traffic has been heavy. It is common knowledge that revenue earned from construction and maintenance of any track depends upon the number of trains run and the percentage utilisation of its capacity. Underutilisation of capacity is a national waste and results in less earnings and losses on the capital investment. Studies on optimum utilisation of tracks, optimum traffic mix, optimum load mix, optimum technology mix (diesel, steam, electric engine), optimum speed mix, optimum coach mix, class mix and optimum tariff mix will greatly help improve the operating efficiency of the Indian Railways. Indian Railways offer immense opportunities for creating real worth by better utilisation of its resources through the application of operation research techniques. Equipped with such scientific studies, the authorities will be able to make comprehensive and interacting decisions. With the aid of good information system, computers and identification of the

environmental constraints, various models and configurations can be worked out to arrive at the optimum solutions, implementation of which, it is hoped, will be in larger interests of attaining higher productivity in the Indian Railways.

Layout Studies

From the point of view of users and railways alike, efficiency can be achieved by improving the layout facilities at various places. For instance, on many railway stations, there are only one or two window counters for the purpose of ticket reservations and bookings. As if these were not enough, most of these counters are such that the ticket clerk cannot see the passengers in the queue and is denied the opportunity to adjust his speed of work according to the increased length of the queue. Where should the reservation and booking windows be located ? Where should be the eating stalls, water coolers, bookstalls, entry and exit gates, railway cloak rooms, public lavatories, etc. Such studies get relatively low degree of priority in our railways. For example, whereas the traffic handled at both Bombay VT and Bombay Central stations have increased more than five-fold during the last decade, there has not been much of improvement in the exit and entry points. The same is the story of reservations and booking windows, save for marginal location changes. With a population of over 60 lakhs spread throughout the length and breadth of Bombay, why should reservation and booking facilities be available only at two or three points ? Should such facilities be planned from the point of view of the producers of services or those of the user public ? If Railways have to be service-oriented, they have to change their outlook and plan more for the convenience of the users than those of producers of these services. Similarly, the better layout plans for material handling, railway yards, location of signals, overhead/under-coach water filling facilities, etc. can be very beneficial to railway operations.

Safety in Railways

It is a happy augury that the incidence of accidents in the Indian Railways have declined substantially. According to available figures,

the incidence of consequential accidents (accidents which involve risk of life and lives of the travellers) have gone down from 6.5 per million train kilometre in 1951 to 1.8 in 1970-71. Safety in railways is of paramount importance. The customers' prime consideration lies in the purchase of arrival, with additional requirements of speed, safety and economy.

The nature and the types of accidents which the railways have been meeting are those of collisions, derailments, trains running into road transport at level crossings, failure of engines and rolling stocks, defects in the permanent way, trains running over cattle, human beings, etc. Though each accident is investigated from technological consideration and the offenders are punished for their acts of negligence, it is unfortunate that the real causes leading to the accidents, by and large, are not within the grip of the authorities. There are no two opinions that some of the routes are heavily overloaded and are imposing a much greater strain on the use of railway tracks than what these were originally intended for. Normally, the railways should have, as a measure of preventive maintenance, done their utmost to increase frequency of repairs and replacement as well as inspection of the tracks. For reasons best known to the railways, this vital aspect of track maintenance has not got the serious attention which it deserves. The gravity of this neglect is felt much more at the level crossings where excessive bumps are experienced. According to experts' opinion these bumps are caused by improper position of sleepers or their being in badly worn out conditions. Strange are the ways of God and will of railways that with such vulnerable points threatening the safety of life and property, the arrears for replacement have accumulated. According to one estimate about 6291 kilometres track is due for immediate replacement. Salvage operations of overaged locomotives and their replacement with new ones should guarantee better efficiency, safety and performance. Overaged locomotives in service constitute about one fourth of the total stock in the broad gauge sections. Besides, there are weak bridges and culverts which need immediate strengthening. Further, it is alarming to learn that over 60 per cent of the 31,600 level crossings are unmanned.

All these are pointers to the need for taking additional steps for reducing further incidence of accidents. Studies on traffic densities should be taken up at various unmanned level crossings where the

density and distribution of traffic is high. Preventive maintenance schedules will enable speedy attention to track repairs and sleepers renewals.

The most significant cause of railway accidents is human failure. About 65 to 75 per cent of the accidents result from the failure of the railway staff, a factor that ought to attract the maximum attention. Though punitive actions, as a post-mortem, are taken against the guilty, few steps are taken to go into the environmental and psychological factors of the people facing departmental enquiries or court trial for charges of negligence. There could be reasons of uneven distribution of work and unusual fatigue arising out of poor track, hostile terrain and running conditions, and other socio-economic domestic disorders. In-depth interviews and studies may reveal how far the external causes are responsible for causing human failures.

Thefts on trains and of other railway materials further contribute to the accidents in railways and, in recent years, tampering with the track and sleeper for political reasons, student unrest, have become almost prestigeous symbol of violence. Sample checks through the incorporation of sampling techniques either in terms of time sampling and/or in the shape of track sampling could be fruitfully employed in track inspection operation. A hundred per cent check of track is beyond the scope of accomplishment of the railway authorities.

It will surprise many of us to learn that about a third of our trains are not fitted with speedometers as yet. We normally depend upon driver's ingenuity to assess the speed at which he is travelling and human ingenuity runs the risk of failures. It is a crime against humanity to run these trains without speedometers.

Future Strategies

How soon the Railways can shed the age old tradition ? Perhaps, they will have to undergo a series of mutations, technical, technological and managerial to emerge as a vibrant force of economic development. The picture of diversity of obligations leads one to recognise that existing organisational structure requires a different pattern of relation-

ships, span of control, re-zoning of railways, reward and recognition system etc. Until now, the mixed blend of commercial and bureaucratic way of operation has already taken a heavy toll in the form of public sufferings and earned the railways its share of displeasure and disrepute. For establishing a long and enduring tie of efficiency, the action machinery will have to shed its inertia of traditionalism and embrace strategies from modern management science to rapidly shape itself into a model and modern organisation.

Through various productivity improvement measures and adoption of unorthodox formats of rules, systems and procedures, Railways can feel the essence of tomorrow's economy. For erasing inefficiency, pessimism of the employees, they should adopt innovations that can spark off personal growth through radiation of new opportunities, human resource development and enrichment of jobs. A beginning in the form of productivity cells functioning in Zonal Division levels has already been made. Unfortunately, these cells are most inadequately mannec; and do not get the much-needed organisational support for introducing change. The unleashing of the forces of innovation and novelty run the risk of being slammed in the face of their originators as the line managers are not yet ready to adapt new changes. Let us hope that by combining new knowledge, skill, productivity techniques and change of attitudes, we shall soon have Indian Railways travelling deep into our economic and social culture.

NPC National Conference on "Productivity in Textile Industry in India"

(Ahmedabad, November 30 to December 1, 1974).

A two-day national conference on Productivity in Textile Industry in India was organised by the National Productivity Council at Ahmedabad from November 30 to December 1, 1974. The Conference brought together top representatives of the textile industry in India, labour, professionals and Government departments connected with the textile industry. The issues for consideration at the conference included post-independence trends in production, productivity and profitability in the textile industry as well as the problems of the industry concerning capacity utilisation, modernisation, availability of essential inputs, industrial relations and the current market trends. We are documenting below the policy statement adopted by the Conference.

—EDITOR

Statement Adopted by the Conference :

1. About 20 percent of the mills suffer from lower productivity. The factors leading to lower productivity in these mills should be investigated and corrective measures taken to improve their productivity.

2. In order to improve total productivity of textile industry, greater emphasis should be given to improve productivity of machines, materials and capital.

3. In order to achieve this goal the Conference recommended that the services of successful managers working in high productivity mills should be spared to advise the low productivity mills to improve the latter's performance.

4. There is an imperative need on the part of the Government to clearly define its policy on textile industry, with particular reference to :

(a) adequate rate of return on the investments

(b) future place and role of private sector in the textile industry.

5. Equally important it is for the government to effect greater coordination between its various ministries in order to synchronise the various directives issued by them.

6. For the unhindered growth of the industry there is a need to minimise the fluctuations both in the supply and prices of cotton. Some of the specific measures that have to be undertaken in this field are :

(a) Greater cooperation between cotton growers and the industry with a view to evolve cotton development programmes.

(b) Assurance of a floor price to the cotton growers.

(c) Earmarking by the Government a certain portion of the revenue accruing from export earnings and excise duty etc. from the textile industry for the purposes of cotton development.

(d) Equal emphasis on both the qualitative and quantitative aspects of cotton production, keeping in view the needs of the industry.

(e) More reliable forecasting of production data of cotton in order to minimise speculation.

(f) Need for creating an appropriate agency to take effective measures in the areas listed above.

7. In the absence of an assured supply of required quality cotton to the mills, the recommendations of Tandon Committee on the working capital requirements of the textile industry are likely to run counter to enhanced production and productivity of the industry.

8. On the question of modernisation of industry, in the present context, it would be more appropriate to think in terms of "renovation" instead of large-scale replacement of existing

industries, keeping modernisation as the ultimate goal. This is particularly important when the country is not in a position to meet the requirement of the textile industry both in terms of finances and the required new machinery.

9. The immediate problem is not to create additional capacity in the textile industry but to ensure the maximum utilisation of the existing capacity. It was estimated that if the existing capacity is fully utilised, the industry can produce additional 200 million kgs. of yarn and 1200 million sq. meters of cloth which would enable the industry to nearly meet the targets envisaged in the Fifth Five-Year Plan.

10. Towards this, there is a probing need for generation of adequate capacity for manufacture of critical equipments required for renovation and for machines for modernisation.

11. At the same time it is also essential to develop a cadre of efficient and dynamic managers, capable of gearing the organisation towards fulfilling the targets.

12. Equally important in this regard is to evolve suitable training programmes for training and retraining of the workers. Such training programmes, the conference felt, should be in consonance with the modernisation needs of the industry.

13. A systematic study of the product-mix vis-a-vis marketing strategy and radical improvements in the distribution system should be given immediate attention.

14. There is an obvious need for developing reliable, uniform and comparable statistics on all the aspects of the industry so that the planning and programming could be done on a more realistic basis.

15. Some of the problems that call for an immediate action for improving production and productivity for the textile industry are :

(i) Power shortage and fuel utilisation,

(ii) Lack of adequate maintenance system,

(iii) Lack of spare parts,

(iv) Renovation of critical equipments and modernisation of obsolete machine and equipments,

(v) Inadequate financial resources,

(vi) Non-availability of raw-materials and particularly cotton in required quantities and at reasonable prices,

(vii) Fluctuating demand for textile products,

(viii) Absenteeism,

(ix) Labour-Management relations.

16. Towards the remedial measures, detailed investigations into the problems identified above, should be made by appropriate agencies and more particularly by the Textile Research Associations, and National Productivity Council. The Conference also favoured the idea of creating a Standing Committee of representatives of the employers, labour, Government and professional/technician's bodies, provided, such a forum does not merely add to a number of the existing forums and that :

(a) its areas of functions are clearly defined.

(b) its makes use of the existing organisations in the collection and analysis of data and in carrying out investigational studies.

(c) it works as a non-partisan committee.

(d) the recommendations made by it are given due consideration by various decision-making bodies.

Productivity Services for Small Industries by National Productivity Council*

It has been widely realized at all levels that development of small-scale sector is an essential requirement for balanced economic and industrial growth and development. This sector assumes such an importance in our industrial structure as it contributes about half of the domestic product from the industry. It is also encouraging to note that the Planning Commission, in the Fifth Five-Year Plan, has laid considerable emphasis on the development of Small-Scale Industries and, in fact, considered it as one of the most effective weapons for fighting poverty and unemployment. The Government of India thus envisages an accelerated growth in this sector, nearly doubling the existing number during the Fifth Plan period.

It is needless to stress that this sector should be productive, more so in the context of the multifarious problems presently faced by our economy. The Small Industries suffer from a number of difficulties such as lack of raw materials, distortions in demand owing to wrong planning at the inception, ineffective utilisation of resources, stringent financial situation, outmoded technology and equipment available and such others. This sector has been traditional in nature, normally owner-managed, and there has been limited inflow of professional management. Consequently there is considerable opportunity for applying productivity techniques in small units and this would result in better performance and reasonable profitability.

Cell for Productivity Services

Realising the need for improvement of productivity in this sector, National Productivity Council (NPC) has been laying considerable emphasis on this aspect, right from its inception. In the initial stages, NPC collaborated with the Office of the Development Commissioner in training small-industry entrepreneurs in the concepts and techniques of productivity. Consultancy Services in the techno-managerial fields were also made available to SSI units at 75% subsidised fee. Later, NPC

* Prepared by S. A. Khader, Deputy Director, Management Services Division, National Productivity Council, New Delhi. Management Services Division of NPC can extend its consultancy services to concerned organisations relating to problems covered in this document.

intensified its services to this sector by establishing cells for productivity services for Small-Scale Industries, the first of which had been started in Tamil Nadu. The financial assistance provided by the State Governments is being utilised for subsidising the consultancy charges. A typical scheme of subsidy is as under :

Year of Start of the Cell	*Subsidy as Percentage of Consultancy Charges*
First Year	75
Second Year	60
Third Year	50
Fourth Year	40
Fifth Year	25

Presently, seven such cells with modified rates of subsidy are in operation in the States of Mysore, Punjab, Haryana, Uttar Pradesh, Bihar, Madhya Pradesh and Andhra Pradesh.

These cells which are manned by experienced specialists in various fields, provide the following services :

(i) Diagnostic surveys to locate, identify and analyse areas of strength and weakness of an enterprise, with a view to increasing productivity and profitability ;

(ii) Training and consultancy service in the areas of organisational analysis, systems and procedures, control systems, production management, inventory control, marketing, personnel administration, fuel efficiency, tooling, plant engineering, management accounting, financial planning etc.

These cells are also equipped to provide the following specialised services to the Small-Scale Sector :

* Market Surveys on behalf of the Union and State Governments, for identifying investment opportunities ;

* Preparation of Techno-Economic Feasibility Report for young entrepreneurs ;

* Evaluation of Techno-Economic Feasibility Reports on behalf of financial institutions ;

* Techno-Managerial services to young entrepreneurs on behalf of the financial institutions, with a view to minimizing the period of repayment of loans advanced by them, by improving the productive efficiency of the resources invested in the enterprises.

Since 1969-70, NPC has been able to serve about 300 small-scale units in the above fields. The potential scope of improving Productivity through the use of simple Productivity techniques in the Small-Scale units is illustrated by NPC publication (in 2 volumes) entitled : "Impact of Productivity Services in Small-Scale Industries" which describes the actual case histories of the above service. Small-scale entrepreneurs have benefited to a large extent from the use of these services both in southern as well as northern states

Special Services during Fifth Plan

The planned growth in the Small-Scale Sector during Fifth Five-Year Plan Period would pose a problem of training and developing a number of prospective entrepreneurs and guiding them through the stages of project formulation and evaluation, planning, construction and running of their units on sound lines. Realising the magnitude of this task and also at the instance of the Planning Commission, the National Productivity Council has launched a special service in the name of "Package consultancy services for small scale industries" on a national scale. This service is provided through cells located preferably at each State capital, under the supervision of NPC. The service charges would also be within the reach of the young entrepreneurs, as this service is expected to be heavily subsidised by the local State Government.

Concept of Package Consultancy Service

Similar to a package-project deal in the case of middle and large-scale industries, the package consultancy service of NPC envisages providing consultancy and guidance service to the small industrialist in all the

stages of pre-investment work, investment activity and also post investment operation of the small unit. As this service provides all the assistance and guidance needed for an entrepreneur in one package form it derives the name of package consultancy services. However, an entrepreneur is free to choose either in full or in part the services mentioned below in all the three stages of formulating and establishing a small unit :

A. Pre-Investment Services :

(i) Undertaking market surveys for identifying investment opportunities and consumption patterns of the prospective entrepreneurs.

(ii) developing data bank for providing information to them in respect of: (a) available data estimates about the number of production capacities of the industries already established in the country and in the States concerned. (b) present and likely availability of the infrastructure facilities required for industrial development in the growth centres of the States, (c) Investment opportunities and financial resources required, (d) various types of facilities and assistance, like purchase of equipment, raw material, marketing opportunities, sales promotion from various Central and State level organisations and agencies including public sector undertakings, financial and credit institutions, non-Government institutions and associations.

(iii) undertaking techno-economic feasibility studies for preparation of detailed project report.

B. Investment Services :

(i) assisting the entrepreneurs in negotiations for securing loans on the basis of detailed project reports ;

(ii) assisting them in recruitment and training of workers in specific trades, supervisory and managerial personnel in techno-managerial subjects ;

(iii) providing counselling services for negotiations with the financial and credit institutions ;

(iv) providing technical advice for selection/choice of process/technology of manufacture, selection of the plant and equipment and main raw materials and location of their supplies along with particulars of prices, import policy etc.

(v) supervising construction of building and installation and commissioning of plant, etc.

C. Post-Investment Services :

(i) rendering advice regarding fixation of prices of finished products ;

(ii) giving advice regarding keeping accounts, payment of excise duties and sales tax, stocking of raw materials, etc.

(iii) assisting in market studies and sales promotion including internal marketing and exports of products through Government departments, public sector projects, emporia, Sate Trading Corporation and others ;

(iv) assisting in payment of loans in minimum possible time by helping in improving enterprises level productivity through periodic visits and guidance ; and

(v) undertaking periodic visits to selected existing units, with a view to assisting them in (a) overcoming their problems of production and management, so as to improve the quality of products and bring down cost of production, and (b) to prepare detailed project reports for extension, modernisation and diversification and generally bothering the entrepreneur for the first two or three years till he is well on his feet.

These productivity services when provided at the right time, will go a long way in enabling the entrepreneurs to make sound investment and make a sizable industrial infra-structure to the economy.

Other Developmental Activities

During this year, NPC has organised specially designed training programmes for personnel from small industry organisations, financial institutions and consultants engaged in promoting and serving the small

scale units. These programmes are intended to orient and develop those concerned with the small industry to the specific needs of the sector in the light of the new dimensions added during this Plan Period. Two such programmes have been conducted at our Regional Directorates and they are "Package Consultancy—a Total Approach" and "Preparing Project Feasibility Reports" and the same are being repeated in the other regions. NPC had been working in association with other specialist organisations such as DCSSO, NSIC , Planning Commission, State Industries, FASSI & IDBI etc., to improve the qualitative excellence of its programmes and services by drawing specialists/experts to take up session and guide participants, alongwith its internal expertise developed over one and a half decades of its service to the nation.

Regional and National level workshops / siminars are planned to be held during this year with a view to bring all parties connected with small industries together to tackle the problems of improving productivity in this sector. NPC, under the direction of Ministry of Industrial Development, New Delhi, is negotiating with all the State Governments to establish suitable productivity cells to provide the much-needed service to small industries in the respective states. Of late, the research activities of NPC have also been extended to the small-scale sector, by initiating projects of the nature namely (i) Planning systems for small engineering units around Delhi. (ii) Status of technology in Batala Engineering units (iii) Maintenance Practices in Small Industries etc. Based on these surveys NPC is planning to bring out small industry management guides in the form of check-lists and these are expected to be used by the entrepreneurs themselves to identify the problems and plan for corrective actlon at their end.

NPC has offered its services to take up the job of training and developing young entrepreneurs needed during the Fifth Plan Period and also to undertake service to identify industry potential in the backward districts/states. NPC is striving to provide the best of its services to small industry sector and be instrumental in improving productivity in this sector and thus better the national economy.

Readers' Page

Neglected

In his article, Education in Production : The Case of Indian Agriculture (*Productivity*, Oct.-Dec. 1974, p. 352-368), N.K. Nair treated the concept of production function in a narrow and loose way. He includes only long-term factors (area, irrigation, manpower, fertilizer and education). Such exercises in production function should also include the short-term factors and could thus, become more relevant. Short-term factors, which are sometimes more important in Indian agriculture, should include such factors like environmental variations, fluctuations in rainfall etc.

Secondly, all the zero order correlation coefficients having the value more than .70 or .75 (and significiant) must be treated as important and useful rather than ignoring them as 'relatively inferior'.

However, the author's contribution should be welcomed because of its importance in policy making process.

—Pradeep Kumar Mehta
Bhilwara, (Rajasthan)

A Reply

The contention that an exercise in agricultural production function for India should also include short-term factors like environmental variation, rainfall etc. is relevant only if the purpose is to explain variations in output of the sector. The attempt in the paper was not to construct a fool-proof production function for agriculture, but only to test whether education is statistically significant in the context. Admittedly, the relevant factors in an agricultural production function for a country like India could be any in number. But the limitations of data availability sometimes make any such attempt almost impossible.

—N.K. Nair

Book Reviews

Planning and the Poor

B. S. Minhas

S. Chand & Co., New Delhi, 1974, Price Rs. 25.00

Reviewed by P. Chattopadhyay*

As the author states, "Securing rapid economic growth and expansion of employment, reduction of disparities in income and wealth, prevention of concentration of economic power, and creation of the values and attitudes of a free and equal society, have been among the objectives of all our plans". The relative emphasis on different objectives has differed in different plans despite their inter-relationships. However, all these objectives together have not presented any positive plan for ameliorating the conditions of the poor, particularly the rural poor. The Fourth and the Fifth Five-Year Plans have encountered untold rough weather from all sides. The Fourth Plan followed an interregnum in planning ; the Fifth has also faced a similar fate. Since the Fourth Plan onwards, the basic goal of planning shifted from the achievement of a certain rate of economic growth to a rapid increase in the standard of living of the people. This causes a flutter among the growth enthusiasts. However, *garibi hatao* as a plan-objective did not have much of a fortune of being taken seriously. It was only in the outer coating that *garibi hatao* was imprinted. There was also a mixed feeling about how *garibi hatao* as a plan objective can be given a working shape, particularly, in view of the commitments made earlier and of the continuing responsibilities arising from these commitments. These got economic planning and planners in India as also the Government in soup.

Minhas is among those few who took this ideal of *garibi hatao* seriously and wanted the planning mechanisms, objectives and programmes to be logically tenable from that point of view. This book, for the first time, explores the tricky areas of planning process in this country with particular reference of eradication of poverty and the strategies adopted therefor. In an objective, frank and forthright manner the author brings out the weaknesses in plan objectives and policy frame. All this under-

*Director (Research), I.C.W.A., Calcutta.

lines the author's grasp of the whole question, the sympathy with which he approaches the issues involved and the manner in which the planning process itself requires to be revamped to be more responsive to the requirement of the situation

For more than a couple of years the author was an insider gaining sufficient insights into the planning mechanism in this country, the numerous influences to which the plan targets are subject and the inadequacy of the methods by which implementation of the plan targets is sought. In three chapters, the author lays these important issues bare. In the first chapter, dealing with objectives and policy frame, the author stresses the evolutionary aspects in respect of agriculture, prices, self-reliant growth, investment and output and regulations and control. In this context, he notes different difficulties inherent in our situation which can be successfully dealt only with a clarity of purpose, imagination and above all, political courage. He stresses that the Planning Commission have all but missed their opportunity in the fourth plan draft to grasp the compulsion of India's poverty and focussed the nation's attention on the courses open to us.

In chapter two, which is a reproduced paper originally published in the *Indian Economic Review* (Delhi University), the author draws a statistical outline of the poor in the rural sector, identifies rural poor into broad land-holding and other occupational classes, assesses the likely impact of radical land redistribution policy on the lot of the rural poor and finally, indicates some crucial defects in the present approach towards rural development, suggesting an alternative strategy for tackling the problems of rural employment and growth. He recommends an integrated programme of compulsory consolidation and complementary public works for augmenting employment opportunities for rural labour and also for a variety of technical personnel in survey, design and construction operations. He rightly stresses that implementation of radical land redistribution programme is not going to obviate the need for consolidation and complementary rural works.

Chapter three highlights the problem of rural development for weaker sections with reference to our past experience and lessons to be derived therefrom. In this chapter, he notes the quantitative studies, including his own, bearing on the incidence of low-end poverty in our rural areas highlighting the extent and magnitude of abject poverty of the majority of

the rural masses. For improvement of their lot on a permanent basis the author considers the following types of policies relevant :

(1) We may accelerate the pace of growth in the non-farm sectors of the economy and in the process help pull out the rural poor from agriculture into more productive activity elsewhere.

(2) We may try to achieve some redistribution of incomes through fiscal and pricing policies.

(3) We may redistribute the available cultivated area and bring out a more equalitarian distribution of land. We may also supplement this effort by way of revision in tenurial relations.

(4) We may suggest modifications in the strategy of rural development and take specific measures to improve the productive capabilities of scores of millions of small peasants and also increase work opportunities for the landless in rural areas.

He notes in this context the basic contradiction, in that, there exists considerable potential for acceleratng rate of industrial growth and that no effort can be spared for exploiting these potentials, but any foreseeable acceleration in the industrial development may not produce enough of jobs to make even a slight dent on rural unemployment and poverty over the next decade. Our previous plans did not quite appreciate this question and shortfalls in this area had a chain reaction.

Pleading for financial discipline for the purpose of meeting out a fair deal to the poor, the author underscores in the last chapter that inflationary finance hurts the poor most. Achievement of a certain growth rate would require large investment in power, irrigation and a number of public sector industries; but to finance this investment through successively large doses of deficit financing and indirect taxation will turn out to be counter-productive and socially dangerous. The inflationary consequences of such courses of development would be suicidal to the interests of the poor, the unemployed, the fixed income groups and the pensioner He recommends that in order to keep our mixed economy on an even keel, we should have recourse to the following measures :

(1) In pricing the clearly identifiable private benefits of public invest-

ment in fields such as irrigation and power, we must make sure that sufficient returns on such investments materialise.

(2) We must ensure that the autonomous enterprises of the Central Government are efficiently run so as to generate net surpluses for the further growth of the public sector.

(3) We must try to raise our tax resources, as far as possible, through direct taxation and limit the scope of indirect taxes to commodities which cater to the comforts of the relatively well-to-do.

He underlines that in the exercise of strict financial discipline it would be necessary to cultivate a stern political will at all levels of Government. The inflationary route will not assure a fair deal to the poor. In the Appendix, Minhas has added the text of the note on the draft fifth plan (laid on the table of Lok Sabha on 27th February 1974) along with his letter to the Prime Minister. In this note he raised several crucial issues which would require serious consideration if we want our planning machinery to be effective and responsive to the popular will towards rapid economic development with social justice, particularly for lifting the present lip service of *garibi hatao* to the realm of practical reality. The book commends itself to all those desirous of having a close look at the Indian planning process, plan objectives and methods.

Economic Growth and Technological Change in India

Bepin Behari

Vikas Publishing House, Delhi, 1974, pp. 274 + xx, Price Rs. 40.00

Reviewed by V.S. Mahajan*

Technology plays an important role in economic development. The selection of an appropriate technology is an easy aid in raising production and productivity, and also national income and economic development. On the other hand, technology not well adapted to social and economic environments would be a big obstruction in the path of economic development.

* Lecturer, Department of Economics, Punjab University, Chandigarh.

Further, agriculture being the most dominating sector in developing economies, this sector also has a determining voice in rates of development. Consequently, a high priority would have to be accorded to the introduction of appropriate technology in agriculture, as well as in agro-based industries. The latter as well helps modernisation of the farm sector itself, i.e. encourage bigger cultivation of superior (or commercial) crops in place of inferior and fodder crops (found in the pre-industrial stage of economic development). Further, these agro-industries are an important source of productive employment for the growing rural population. While agriculture and agro-based industries would call for the introduction of simple technology, it would also be necessary at the same time to develop more complicated technology for power, irrigation, communications and other heavy projects. The planning authority would, therefore, have to make a multipronged attack on the technological development for obtaining optimal results from the national resources.

Bepin Behari, in the book under review, addresses himself to these issues in context with recent development of technology in India. The task is indeed a difficult one, for data on technological development in the country is not easily available. Further, India has been borrowing technology from other countries at such a fast speed that it becomes difficult to keep a track of the same. While among the developing countries (perhaps including even China) India has been the largest borrower of technology, she has failed to adapt it to her factoral limitations. Here, India has lagged behind seriously despite a heavy budget devoted in maintaining a chain of national laboratories in the country, where research has unfortunately remained confined to the four walls of these laboratories, rather becoming field or plant oriented. This has been a serious drawback in India's technology, and here China is far ahead of this country.

The book is divided into 16 Chapters. Chapter I highlights the role of technology in economic development and rightly warns that the Western technology developed under different set of environments (including temperate climate) is ill suited to developing economies which usually have tropical and sub-tropical climate. Further as agriculture is the most important sector in developing countries, the latter would do well to develop technology which meets the need of their agriculture in particular and rural development in general. This equally applies to India. But here unfortunately not sufficient attention has been given to the

Director, highlighted different burning issues which require a thorough discussion for straightening several problems that have haunted the public sector over time. The volume is a welcome addition on the growing literature on public enterprises, throwing up important issues on which policy decisions at the top-most level would be called for. A highlight of this volume is an excellent, original, paper by Dr. V.V. Ramanadham on debt-equity ratio, underlining different considerations attending on debt-equity ratio and its impact on the enterprise practices in different areas. For discussion in seminars, the eight working papers submitted by him, along with that of Dr. Laxmi Narain, explore considerable depths in regard to such vital issues as deficits, pricing, township outlays, capitalization and establishment of Public Enterprise Commission. A close look at the proceedings of the discussions would bring out the fact that the discussions were frank and forthright, taking on the issues in their proper perspective. A treat of this part of the volume is that the public enterprise executives have not been unnecessarily defensive and their contribution to these seminars on the basis of their experience was valuable. Indeed the association of the Bureau of Public Enterprise and official and non-official executives brought to light different facets of the themes under discussion at the seminars.

In line with the freedom of thinking expected of a seminar, the discussion on the relevance of a Public Enterprise Commission was quite objective and the tenor of arguments did not favour the Commission as a structure super-imposed on the public enterprises, prying into their affairs and taking away the decision-making prerogative of the enterprise-executives. As noted in the volume, the participants were not favourably disposed to the establishment of such a Commission. While the need to preserve enterprise autonomy is recognized only half-heartedly, proliferation of agencies for controlling the affairs of public enterprises has seen to it that most of the powers that should legitimately belong to these units have been taken away from them. As a matter of fact, there is need for reconsideration of whether some of the agencies that now exist should do so, in view of the underlying need for cultivating enterprise personality in the public sector in the interest of their viability.

The volume commends itself to all those concerned with managing the public enterprises and policy-making at the government and national planning levels. To students of public enterprise, the volume is an indispensable guide to major issues of national importance.

India And the World Oil Crisis

Balraj Mehta

Sterling Publishers Private Limited, New Delhi, 1974, p. 148, Rs. 25.00

Reviewed. by V. R. Srinivasan*

Mr. Balraj Mehta is not unknown to most of us, but his recent book "India and the World Oil Crisis", is among the very few, if not the only book written on the present oil crisis and its impact on India.

The book deals with the problem of oil from an early stage when it did not assume such proportion. In fact, after going through the book, one finds that the present oil crisis is not one that has erupted suddenly but has been there from the time oil was struck in the Middle East. The crisis has assumed alarming dimensions only in the recent months, because the OPEC have awakened to a feeling that they have been exploited by the oil companies who were taking away bulk of the profit, while the suppliers of the crude were just benefited only to a limited extent. Now when the Middle East countries want their full share, the oil companies are reluctant. In the earlier chapters, the author has dealt with the problem mentioned above, very extensively, although he tends to be somewhat more critical of the Western World *vis-a-vis* Soviet Russia. Mr. Mehta has brought to light the fact that the developed countries have been caring too little for the development of the under-developed and developing countries. The developing countries have been the main suppliers of an extensive range of raw materials to the developed countries, not only the crude but other raw materials as well. While the developed countries have taken advantage of the situation, they seem to be taking little interest in bettering the lot of the peole in the developing countries, or more popularly known as the 'Third World'.

The formation of OPEC has been welcomed by the author; the attitude of the Middle East countries towards countries in the wake of the present oil crisis is heartening and, if the nations of the 'Third World' act in union the economic situation in these countries is bound to take a turn for the better.

* Industrial Finance Corporation of India, New Delhi.

Labour Management Relations—New Perspectives and Prospects

R. V. Rao

D.K. Publishing House, Anand Nagar, Delhi, 1974, pp 136. Rs. 25.00.

India has made rapid industria growth during the past 20 years as seen from the increase in employment with registered factories from 2-9 million in 1951 to 44.7 million till 1966, but somehow the employer-employee relations have not shown a healthy growth, resulting in industrial disharmony. The book aims to describe the inhibiting factors in the way of New perspectives and prospects in labour-management relations and attempts to suggest solutions for industrial harmony.

Workers and Employers in Japan : The Japanese Employment Relations System

Kazuo Okochi, Bernard Karsh and Solomon B Levine (ed).
Princeton University Press, University of Tokyo Press. Tokyo, 1974, pp. 538, $ 20.00.

The study aims to project the salient features of industrial relations in Japan and provide perspectives and insights concerning different aspects of the system hitherto unclarified.

Divided into four broad categories and thirteen chapters the book covers the economic, political, social and legal arrangement from which industrialization proceeded; the rule makers, rule making and participants of the system and the progress of the interaction among them; the substantive rules and their administration at the plant and public agency levels; and an overview of the system compared to the western system.

A Richer Harvest — New Horizons for Developing Countries

Sudher Sen

Tata Mc. Graw-Hill, C-98 A, South Extension-II, New Delhi, 1974, pp. 540. Rs. 51.00

The book deals with the problems of accelerating economic and social development of the poor nations and of raising their standards of living

above the poverty line. It dicusses how to exploit fully the new opportunities opened up by dwarf wheat, miracle rice and other high-yielding varieties.

The study discusses mainly India's problems in the context of its historical background. The technological prerequisites of intensive agriculture, irrigation, production and distribution of seeds and fertilizers, plant protection, selective farm mechanization, rural electrification and education, research and extension service, etc. are examined.

The author points out why the food-first approach should be applied to developing countries and how such a policy will speed up their overall economic growth and make an immediate impact on their standards.

Project Appraisal and Planning for Developing Countries

I.M.D. Little and J.A. Mirrles.
Heinemann, London, 1974, pp. 388 + xii, £ 4.50

This is a successor volume to the "Manual of Industrial Project Analysis for Developing Countries, Vol. II, Social Cost Benefit Analysis" (OECD Development Centre, Paris, 1968). This book is in four parts. Part I deals with the economic rationale of social cost benefit analysis in developing countries, and develops procedures for evaluating investment projects. In part II, a system of analysis and planning is outlined. Part III is devoted to methods for estimating the accounting prices that are needed, and explains how to deal with large-scale projects, private projects, and other problem cases. A discussion of the way in which income distribution can influence decisions is included. Uncertainty and external effects are also examined. In part IV objectives are discussed, and the system proposed is compared with other methods of project analysis that have been put forward.

Case Studies in Management Accounting

John Sizer
Longman, London, 1974, pp. 247, Sh. 75.00

This book is a follow-up to "An Insight into Management Accounting" (Penguin Book, London, 1969), which describes the management techni-

ques with an insight of financial aspects. The case studies which are 20 in number describe events that actually took place in Britain and most of them are concerned with the examination of systems and procedures, and the evaluation and interpretation of control and decision information presented to management. Discussion questions are suggested at the end of each study which provides a lead into some of the issues raised in the study. The suggested background reading at the end of each case study provides a cross reference with the relevant chapter (s) of "An insight into Management Accounting".

Managing Technological Innovation

Brian C Twiss

Longman, London, 1974, pp. 237 + xxi, £ 5.95.

Businessman is a man of action rather than a thinker, and has little understanding of technology while the technologist often finds commercial considerations frustrating to creativity and the intellectual excitement of technological innovation. Thus there is a managerial gap. This book aims to bridge the gap which is of understanding attitudes and motivations. The author focusses on those areas of management where the technology can play a vital role in the profitable success of business. The areas discussed are strategies for research and development, technological forecasting for decision-making, project selection and evaluation, financial evaluation, programme planning and control of research and development projects and organization for innovation, Each chapter carries summary and reference at its end.

Agricultural Prices in a Backward Economy

R.C. Gupta

National, Delhi, 1974, pp. 238, Rs. 40.00

The studies on behaviour of agricultural prices are of great importance to the economies, especially for those which are in the development

stage. An attempt has been made to analyse agricultural prices in the state of Madhya Pradesh and the study aims to handle a mass of data relating to agricultural prices, acreage, market arrivals, etc., covering a period of nearly 16-17 years.

The study has eight chapters dealing with economic background of Madhya Pradesh, marketing environments of the agricultural products, supply response in agriculture in underdeveloped countries and seasonal variations in price and pricing efficiency and marketable surplus in the state. The last chapter carries statstical tables, also. Bibliography and Index are given at the end.

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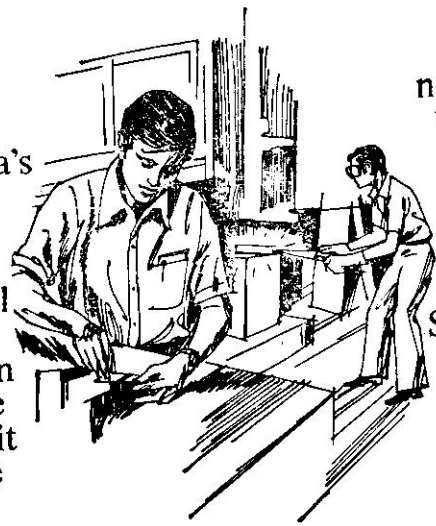

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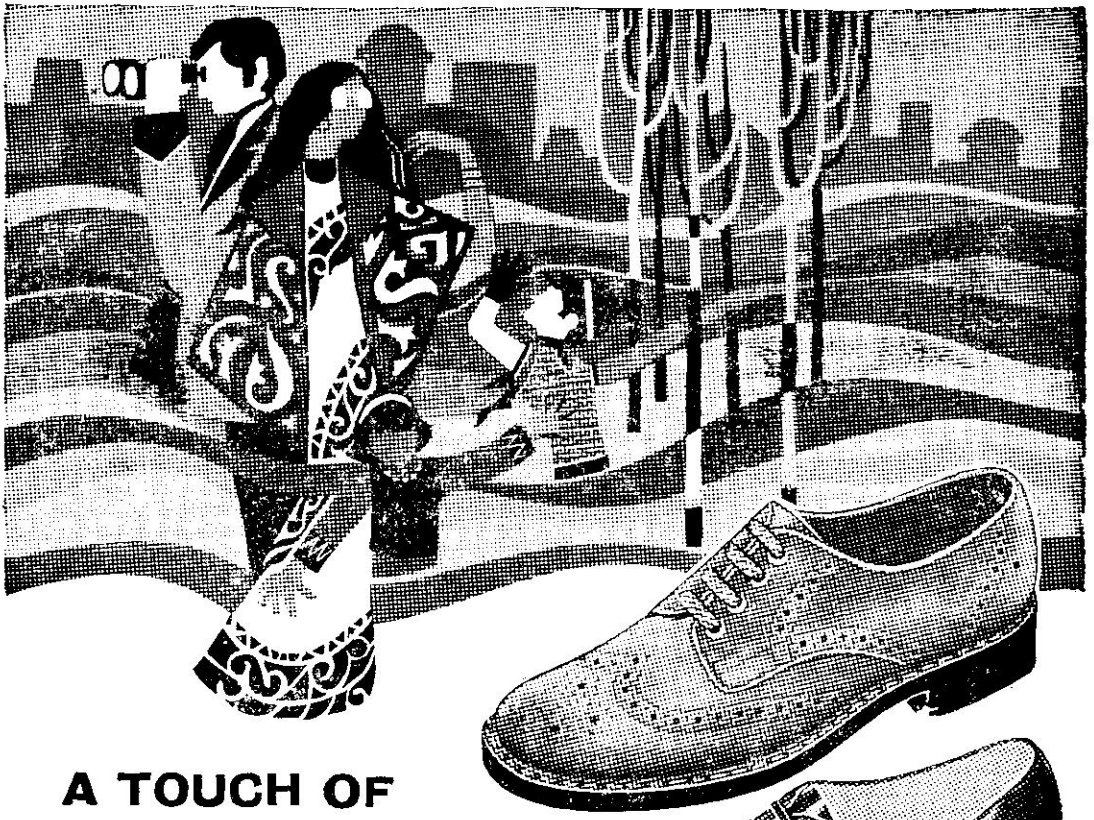

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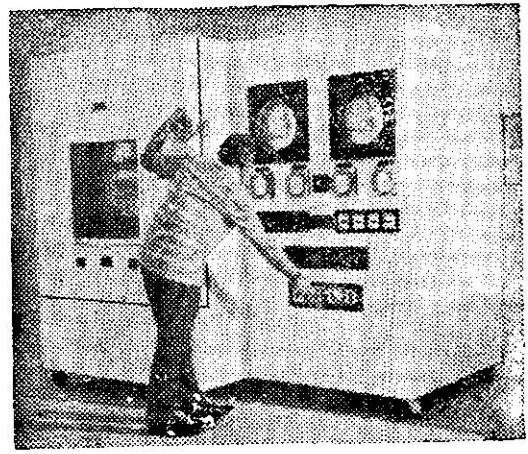

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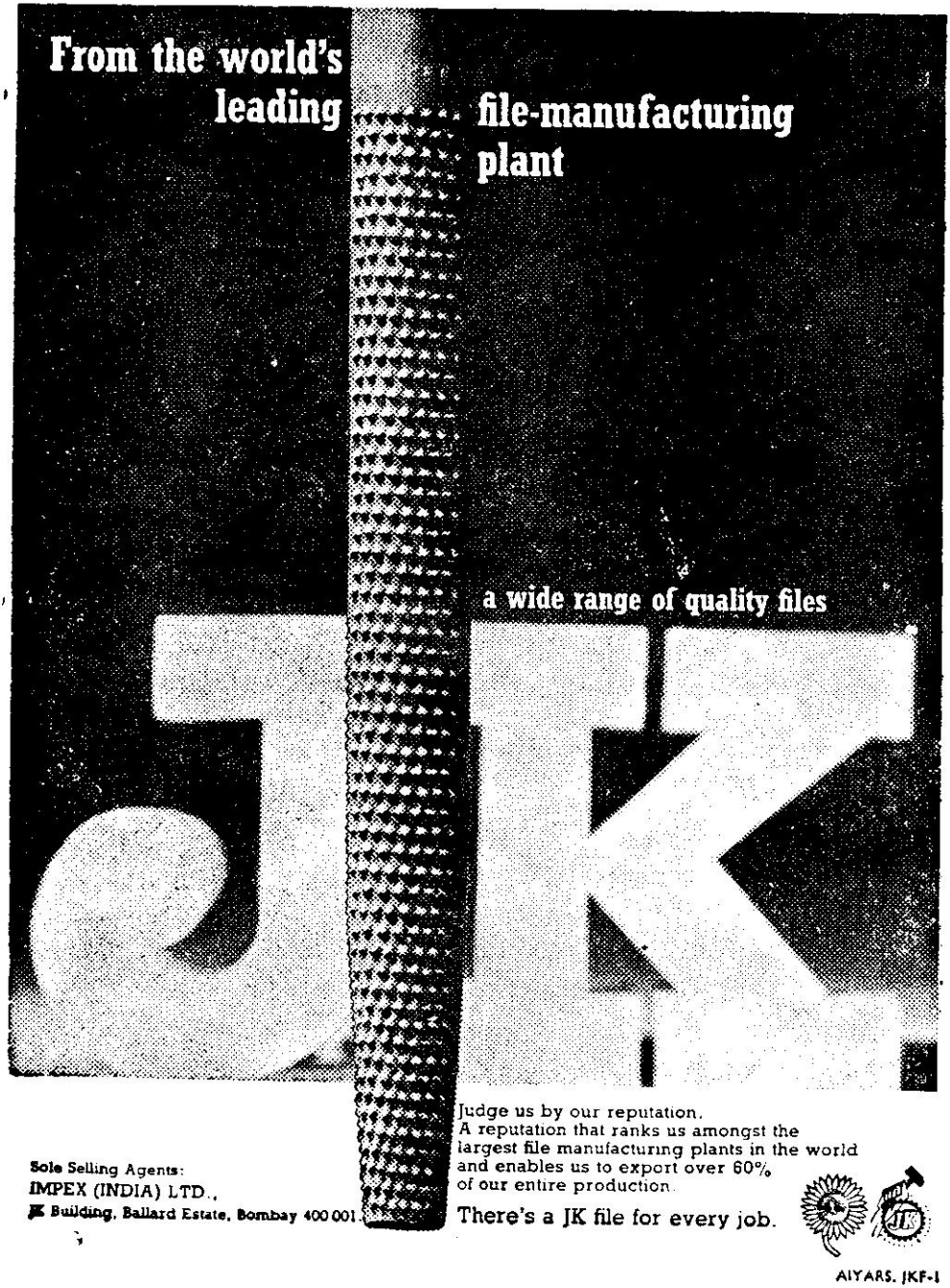

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