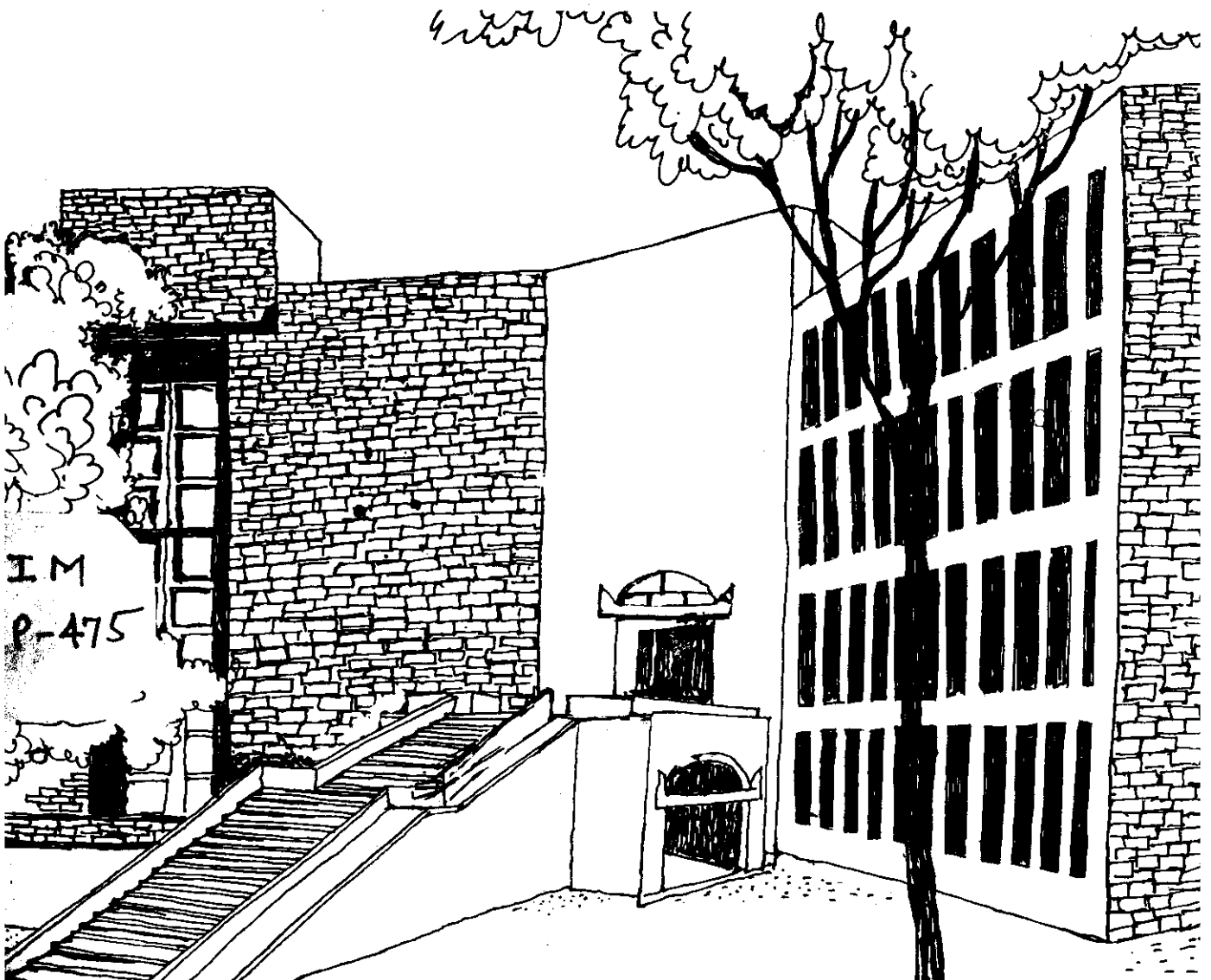




W. P.: 475

Working Paper



MANAGEMENT OF DIVERGIFICATION
IN THE PUBLIC SECTOR

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WP 475
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WP
1983
(475)

W P No. 475

September 1983

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AHMEDABAD-380015
INDIA

MANAGEMENT OF DIVERSIFICATION IN THE PUBLIC SECTOR

Abstract

Public sector enterprises account for a very substantial proportion of the manufacturing activity in India. Public enterprises (PEs) in India are rapidly diversifying their businesses as a response to environmental changes as well as to achieve their growth, profitability and other strategic objectives. Hence, management of diversification has emerged as a major task of PEs. Most PEs are diversifying into related and technologically sophisticated fields ; unrelated diversification is not very uncommon. Based on research done by the authors and pertinent studies by others, three modes of growth and diversification have been conceptualised. The more effective modes amongst them have been identified and the conditions facilitating successful diversification have been delineated. Diversification creates the need for major changes in organizational structure, systems, and management processes. Some of the problems of transition from a single business to multiple product lines have been highlighted. Finally, this paper sketches out major steps in planning a diversification move in the public sector in India.

Introduction

As far as enterprise management is concerned, diversification has come to mean the enterprise's enlarging its range of products. Diversification takes many forms. When an enterprise begins to produce some of the inputs into its products that were earlier purchased from outside, its diversification is of the backward integration type. When it begins to produce some of the products in which its own earlier products were inputs, its diversification is of the forward integration type.

Besides these, an enterprise may differentiate its products further, such as offering a fuller product line, or may produce and market products related to its current line. This would be related diversification. When an enterprise takes on the production and distribution of products quite unrelated to its current products, the diversification is of the unrelated or Conglomerate variety.

Management of diversification is one of the most complex challenges faced by corporate managements. Diversification may lead to simultaneous changes in a number of aspects of the firm : technology, market and organization. In the Indian public sector, too, the management of diversification is emerging as a major task of management.

Reasons for diversification

Why do firms diversify and seek new business opportunities ?
Some of the important reasons are the following :

1. Product and business diversification reduces risk by spreading the investment over several fields.
2. Diversification could be a method of exploiting an enterprise's resources and capabilities when opportunities for expansion in the existing business are either not available or cannot be pursued because of regulatory conditions.
3. Diversification may be a strategy to offset possible decline in profitability and growth in the existing business.
4. Firms may diversify to achieve enhanced growth and profit objectives.

5. Firms may diversify to sustain the motivation of their employees by creating opportunities for their growth and development.
6. Diversification may be a method to improve corporate image and credibility with the regulatory environment.

Diversification has been increasingly used by large corporations as a strategy for adapting to changes in the business environment as well as to achieve their growth objectives when they are no longer met through expansion within their existing product-market domains. Prior to 1910, firms in the U.S. adapted to environmental changes through expansion, acquisition of firms, and vertical integration. However, between 1910 and 1960, large firms diversified in a major way. As of 1970, 65 per cent of the large firms in the U.S. had diversified into fields, related or unrelated to their existing business (17). Likewise, firms in European countries also reveal a trend towards increasing diversification. As of 1970, 59 per cent of the large firms in the U.A., 45 per cent in West Germany, 50 per cent in France, and 55 per cent of the firms in Italy have diversified (9). A similar trend has been observed in India. As a recent study indicates (6) large Indian enterprises, both in the public and the private sectors, have been diversifying rapidly, although their patterns are somewhat different. As of 1975, in a sample of 72 corporations, about 86 per cent of the private sector and 55 per cent of the public sector firms had diversified.

In this paper, the pattern of diversification in Indian public enterprises, as shown by a study of 22 large public enterprises attached to the central government, is identified.

Thereafter models of the management of diversification in PEs, suggested by studies of several engineering Indian PEs, are presented. The paper outlines one of the changes needed in the organization when it diversifies, and the problems it faces. It concludes with a normative model of planning diversification in Indian PEs.

Diversification in the Indian public sector

In India, the public sector enterprises attached to the central government and the various states are, by and large, relatively large enterprises and account for half of the country's industrial production(11). The 200 odd PEs attached to the various ministries of the central government employ nearly 2 million persons, produce goods and services worth nearly rupees 350 billion, and market goods and services ranging from coal, steel, cement, textiles, watches, lamps, scooters, chemicals, and fertilizers to ships, machinery, machine tools and heavy equipments. Being attached to particular economic ministries, PEs tend to diversify within the group of related industries and products, unlike private enterprises that may engage in quite unrelated diversification to escape controls or anti-monopoly legislation (12).

Twenty-two Indian public sector firms (see appendix 1) were examined for their diversification patterns. These firms had annual sales of Rs.200 million or over in 1975. They represented approximately 70% of the total assets in the manufacturing and mining units in the public sector and 95 per cent of their sales in 1974-75. As these companies represented such a large segment of the public sector, the pattern of diversification moves by them may have been representative of the larger units in this sector.

For analysing diversification patterns, the sample firms were grouped into the following categories ; (i) single business, (ii) related business, (iii) related-cum-unrelated business, and (iv) unrelated business.

1. Single business : Where almost all revenues accrue to the organization from the pursuit of a single discrete business.
2. Related business : Where a substantial portion of the total revenues of the enterprise accrues from a series of businesses which are related to each other and which use closely related technical or marketing competence. This category also includes vertical integration as data regarding the extent of integration was not available.
3. Unrelated business : Where various businesses of the enterprise do not depend on any common technological or marketing skills.
4. Related-cum-unrelated business : This category was created to classify those firms, which according to a preliminary analysis, seemed to have a number of groups of businesses with strong relationship through common technological or marketing skills within the group but little commonality between the groups.

As an example of strategic classification, Hindustan Machine Tools Ltd (HMT) in 1960 (see Table 1) was engaged in a single business. By 1965, it had diversified into a number of new fields : a) watches ; b) milling and broaching machines and c) copying and drum turret lathes. The first one was totally unrelated to its existing business of manufacturing lathes, while the remaining to a certain extent had commonalities with the existing business in terms of technological and marketing skills. By 1975 this company had diversified into a large number of fields which could be roughly grouped into a few major ones : machine tools, watches, tractors and printing machinery. The diversifications within the machine tool group were all related in terms of technological and marketing skill requirements. Watches, tractors and printing machinery were quite distinct or largely unrelated to machine tools. Hence, we have classified HMT in the "related-cum-unrelated" strategic category

which means that the company was following a strategy of pursuing groups of businesses which had strong ties within the group through technology or marketing or both but weak relationships between the groups. The diversity score (used as a surrogate for the propensity for diversification) for a company in a given year was denoted by the total number of businesses it was engaged in during that year. Hence, the average diversity score of the sample of firms in a particular year would be given by the total diversity score divided by the total number of firms involved. Though there was some degree of subjectivity involved in determining the strategic categories and diversity scores, it was felt that there would not be very significant changes in the general pattern emerging over the years.

The annual reports of the Bureau of Public Enterprises and the companies' annual reports were the major sources of data.

T A B L E 1

Strategies of Selected Companies : Some Examples

		<u>Hindustan Machine Tools</u>			
Name of the Company/Business		Single	Related	Rela- ted- cur- Unre- lated	Unre- lated
Hindustan Machine Tools Ltd.					
1960	Lathes		X		
1965	Lathes, Watches (1962), Milling & Broaching Machines (1964), Copying and Drum Turret Lathes.				X
1970	Lathes, Watches, Milling & Broaching Machines, Special purpose machine tools (1966) Boring machines (1966) Heavy Duty Press (1970)				X
1975	Lathes, Watches, Milling & Broaching Machines, Special purpose machine tools, Boring machines, Heavy duty press, printing machine (1971) Tractors (1975).				X

Cochin Refineries

Name of the Company/Business	Single	Related	Related- cur- Unrela- ted	Unre- lated
1960	-			
1965	Refining of Crude Oil (1965)	X		
1970	- do -	X		
1975	- do -	X		

Indo-Burma Petroleum Corporation

1960	-			
1965	-			
1970	Indian Oil acquires controlling interest. Marketing of petroleum products, manufacture of electronic and electrical equipments.			X
1975	- do -			X

Each firm was assigned to one of the four strategic categories for each one of these time periods in the manner shown in Table 1, which gives a few examples : HMF, a highly diversified firm ; Cochin Refineries which was a single business firm even in 1975 and Indo-Burma Petroleum Corporation which from its inception in 1970 was an unrelated business firm. The movement of a firm from one classification to another during the period 1960 to 1975 provided clues to the shifts in the strategic posture of that firm. The aggregate pattern of diversification during the period 1960 to 1975 is exhibited in Table 2, which also shows the propensity for diversification as measured by the average diversity score for a given year.

TABLE 8
Public Sector Firms

	Strategy								Total No. of firms	Diversity score
	Single		Related		Related- (Un- related)		Unrelated			
	No.	%	No.	%	No.	%	No.	%		
1960	8	75	5	27	-	-	-	-	11	2.4
1965	11	58	7	37	1	5	-	-	19	2.7
1970	10	47	9	43	1	5	1	5	21	3.8
1975	10	45	10	45	1	5	1	5	22	4.8

Source : Shekhar Chaudhuri

Arishma Kumar et.al., "Patterns of diversification in larger
Indian enterprises", Vikalpa, Vol.7,
No.1 January 1982.

Public sector firms are of relatively recent origin. Many of the sample firms which had a sales volume of Rs.200 million and above in 1975 were incorporated during the period 1960-65. Interestingly, as is evident from Table 2, about 45 per cent of these firms were in single businesses during 1975 and 45 per cent had diversified into related fields. In the public sector, the charters of the firms are defined by the government. The strategic options open to the top managements of these firms may be limited mostly to related fields. For example, the top managements of Cochin Refineries, Hindustan Cables or Hindustan Copper seem to have had little freedom to diversify their operations into unrelated or even related business areas by the very definition of their charter. The key task in these organizations seems to be upgrading product lines, introducing new technologies, and improving production efficiency.

The 12 public sector enterprises whose charters provided scope for diversification, had diversified. Ten out of the dozen public sector firms with flexible charters were very diversified and were mostly related diversifiers. Their diversity scores were also high. The high degree of related diversification in these public sector firms may, as mentioned previously, be due to the limited domains of their parent ministries.

Though the study did not specifically explore the relationship between the nature of diversification and the firm's financial performance, it seems advisable for high technology PEs to diversify initially into areas related to their existing skills or those in which skills may be acquired easily. A premature strategy of diversification into unrelated high technology or turbulent market fields may negatively affect the financial performance of the firm. While favourable environmental conditions (provided by the protective policy environment in India till recently) can lead to enviable performance of a firm diversifying into unrelated fields (because of sellers market conditions) this strategy may make the PE vulnerable when market conditions become competitive and hostile, signs of which are already apparent in the Indian economy.

Top managements of unrelated PE diversifiers may not possess the skills needed to intervene in strategic crises created by abrupt changes in governmental policy. This is because while the corporate offices of unrelated diversifiers may have expertise in legal and financial matters and perhaps some other functions which are common to the various businesses, they may not have expertise in the highly technical or specialized functions unique to a particular high technology or otherwise complex business. In contrast, the related diversifier builds and enlarges upon core competences which facilitates top management intervention in a crises.

Modes of managing diversification

Although the dominant type of diversification in the Indian public sector appears to be one of related diversification, there may be many different ways of going about diversifying in the public sector. The reasons for diversification may vary from PE to PE. PEs also vary vis-a-vis strategic choices as installing a large capacity (in relation to national demand) or a relatively small capacity, changes in the mode of management, export orientation or merely import substitution, and so forth. Case studies of several Indian PEs, especially of four engineering enterprises (11), revealed several alternative modes of managing growth and diversification. The four engineering enterprises were all attached to the Department of Heavy Industry, Ministry of Industry. These were Richardson and Cruddas Ltd. (R & C), Bharat Pumps and Compressors Ltd. (BPCL), Hindustan Machine Tools Ltd (HMT), and Bharat Heavy Plate and Vessels Ltd. (BHPV). Mainly equipment manufacturers, of the four HMT was also a major producer of watches, tractors and lamps. The first type of diversification management identified, could be called the "albatross" mode, the second could be called the "drop out" and the third could be called "mitosis" mode of managing growth and diversification.

The albatross mode of diversification management

In this mode, the pressure of diversify comes from having to carry a large, relatively useless capacity, that shackles the enterprise in losses. BPCIL and BHPV were started with a large capacity well in excess of national demand and thereafter they struggled perpetually to utilize capacity more fully, culminating into a diversification into otherwise unrelated "base load" and other products that could, however, be produced from the same plant. BPCIL was set up with a pumps and compressors capacity quite out of line with the then or future demand (12). The consultant for the project was National Industrial Development Corporation (NIDC). As a senior old timer with BPCIL pointed out, "NIDC never considered the commercial viability seriously. The market survey to establish what capacity BPCIL should have, was very inadequate. As a consequence they recommended a capacity much higher than the likely domestic demand for our products. Also, they did not think of a base load for the company". High excess capacity meant a large annual depreciation and interest burden, and therefore great difficulty in breaking even. Partly to overcome this situation, BPCIL diversified into the manufacture of industrial gas cylinders in 1976, and in 1981 into industrial boilers.

BHPV was set up in 1967 to make the country self-sufficient in equipment such as heat exchangers, pressure vessels, columns, etc., needed by process industries like fertilizers, chemicals, steel plants, etc. It was, however, saddled with a huge capacity. Subsequently it was found that over 20% of the plant could not be utilized due to lack of demand for its products in India or for other reasons. To turn profitable, the company, in addition to the original product lines, got involved in manufacturing and selling cryogenic equipment, finned tubes, paper equipment, and industrial boilers. It had even set up a captive oxygen plant to produce oxygen. Until 1980, the company, however, had made no profits.

Two other firms, Bharat Heavy Electricals Limited (BHEL) and Heavy Engineering Corporation (HEC) showed a somewhat similar diversification behaviour (16). Starting from the manufacture of electrical equipment for power generation and transmission, BHEL diversified into industrial boilers, steam generating equipment for nuclear power plants, pumps, compressors, foundry forge, oil rigs, etc. HEC diversified much less. Commencing operations with the manufacture of equipment for steel plants, it diversified into coal mining equipment, heavy machine tools, and ophthalmic glass. Both the ventures entailed high marketing risk stemming mainly from the fact that the government decided to set up the plants well before domestic demand had grown to the point of running the plants at full capacity. HEC was designed to manufacture equipment sufficient to build a million tonne steel plant every year, whereas the total steel production capacity in India in 1965 was only 1.7 million tons. Likewise, BHEL's plants were designed to produce 4,250 megawatts of electrical equipment each year, whereas the total installed electricity generating capacity in India in 1956 was only 3,400 megawatts. Despite the similarities between these firms in their entry phase, they exhibited remarkable differences in the strategic behaviour during the operations phase. After several lean years, BHEL, because of a rapidly growing market, among other factors, was able to improve production and financial performance and grow into a diversified company in the electrical field, whereas HEC, because of a very sluggish market and a huge underutilised capacity from the beginning, had not been able to show good performance.

All four enterprises - BPCL, BHPV, BHEL, and HEC - show some similarities, but also some differences. All four were started with capacities vastly in excess of market needs. All four failed, at least in the initial years, to develop export markets. Nor did they professionalise their managements during these years to the extent needed for high technology firms. But differences emerged in the long run.

BHEL was the most aggressive in developing foreign markets for its products and know-how, and also the most aggressive in professionalising its manufacturing, marketing, personnel, financial, and planning systems, while HEC was the least aggressive both in developing foreign markets and in professionalising its management. BHEL, as a consequence, perhaps has the best long term performance of the four, while HEC has the worst. The lesson is obvious: if a PE is saddled with a large excess capacity, diversification must be undertaken to develop indigenous markets and break into foreign markets; and for this to happen the manufacturing, marketing, personnel, financial control, and planning systems must be rapidly professionalised. Then only the albatross can be shaken off.

The drop out mode of diversification management

Because of legal and other reasons, divestiture is rare in India. But freezing or curtailing activity in highly competitive product lines and searching for greener pastures is not. Richardson and Cruddas (R & C) exhibited the strategy of attempting to escape from an enterprise's primary industry not so much because the enterprise has been saddled with a large excess capacity but because the environment is highly competitive. Inability to compete effectively leads to losses or low profits, and to improve profitability the enterprise seeks diversification into other industries.

Richardson and Cruddas (R & C) operated in the highly competitive structural engineering industry. Its market share was small and it had many competitors. From the mid-seventies Richardson and Cruddas (R & C) adopted the strategy of reducing its involvement in relatively low valued structurals and diversifying into a variety of equipment industries like chemical, rubber, and sugar machinery industries. However, these diversifications were not accompanied by professionalisation of management, so that in almost every case Richardson and Cruddas (R&C) came in too late or mismanaged the diversification.

As a consequence though the company diversified rapidly, its profit performance was quite poor. While the drop out mode may be fairly common for enterprises operating in competitive industries, what is distinctive about the R and C type dropping out is that the PE, so to speak, drops into equally unfavourable industries through diversification. The PE makes a very limited search for prospective investments and over-relies on published government forecasts of growth rates of industries (which mostly turn out to be wildly optimistic), selects diversification projects on the basis of superficial market surveys, and tries to manage the diversification much in the same way as its existing business. R and C's diversifications in industrial machineries in the mid-seventies are illustrative of the foregoing. In none of these diversifications (into sugar mill machinery, rubber mill machinery, and chemical machinery) did it go in with a dominant market share. All three were competitive, fairly easy entry industries in which R and C had no distinctive market advantage. R and C got into these industries when the long term growth rate had tapered off to virtual stagnation in real terms in the sugar machinery industry and rubber machinery industry. Chemical industry was growing at a real 10% or so a year, but R and C tried to manage its diversification into chemical industry, which was a different kind of business from structurals in terms of the level of technological sophistication, without having an appropriate management set up to manage the business. For instance, until 1980 it had no separate divisions or profit centres for any of its businesses and its marketing capabilities were very weak. As a consequence, the enterprise was not doing well in any of its diversifications, was searching for fresh diversifications, and was seeking to freeze its activities in its earlier ventures or even to getting out of them.

The mitosis mode of growth and diversification management

HMF exemplifies the cellular division or mitosis strategy of starting small (in relation to national demand) but expanding rapidly in a variety of product markets.

The expansion in each product market is planned to be successful and the surpluses from each venture are used to diversify into other unrelated or related profitable product lines, repeating again the strategy of gradual expansion.

Among Indian public enterprises, HMF is something of a legend. Formed in 1955, it grew rapidly, both production-wise and product-wise, and except for some years, by public sector standards it showed a good profit performance (11). Unlike the firms referred to in the earlier sections, HMF started relatively small in each of its diversifications, but then grew rapidly. For instance, HMF was set up to produce a rather narrow range of machine tools and its share of the Indian market for machine tools was initially small. At a relatively small cost it learnt the intricacies of the machine tool market and technology, and thereafter expanded rapidly following an import substitution strategy. In the sixties it set up machine tool plants at Pinjore, Hyderabad and Kalamassery. Similarly, its initial watch making, tractor making and lamp making capacities were fractions of the national demand. In each case, after a few years of grappling with technical and marketing uncertainties, HMF grew rapidly and relatively successfully. In capsule form, the strategy seems to be : diversify by starting small in an industry with high import substitution potential or growth potential, learn fast, and expand rapidly. HMF has also professionalised its systems of management at the same time as its diversification, and this also is a significant factor in the success of its product and business diversifications.

Another public sector company, Punjab Tractors Limited, whose shares are partly held by public financial institutions, Punjab State Government, Government of India, and some individuals and private organizations, has also followed a strategy similar to that of HMF (7). Instead of making lumpy investments, it created half the capacity allocated to it by the Ministry of Industry and expanded capacity from the surplus generated by profitable operations.

It has integrated backwards and has horizontally diversified into related products and is now planning to diversify into commercial vehicles. A major part of the funds required has come from internal cash generation. This has increased its credibility and autonomy vis-a-vis the various regulatory bodies.

The mitosis model of the HMT/PIL type growth strategy may be the generally desirable one for PEs. This is more so in situations where there are both high technical and marketing risks. Developing countries are characterised by small markets, erratic growth rates, low savings, capital shortage, and low technological absorptive capacity. In such environments gradual expansion and diversification accompanied by development of professional systems of planning, marketing, manufacturing, financial and personnel managements provide time for mastering the needed production and marketing know-how. The enterprise generates its own surpluses, is less dependent on the parent ministry, and acquires higher credibility in its regulatory environment, all of which facilitate diversification.

However, PEs in developing countries should view alternative modes of managing growth and diversification in relation to the size of the market for sophisticated products, its rate of growth, and also the character of the technological environment. This is surmised from BHEL's strategy of growth and diversification. Though BHEL's investment was mismatched with the market conditions at the commencement of operations, the rapid growth rate (around 14% per year) of the market helped in improving the financial performance rapidly after the initial start-up problems (16). Today, BHEL is one of the gems of the public sector industry in the country. From this case it appears that even when the country was in the nascent stage of development, a "lumpy, ahead of demand, investment strategy" was effective due greatly to a rapid increase in market size in conjunction with professionalization of management. It is then possible to hypothesize that alternative effective modes of growth and diversification management are available to PEs.

PEs should select modes that match environmental opportunities and their own distinctive competence and resources. Though an incremental growth and diversification strategy is advisable for PEs, they need also to consider the possibility of adopting a lumpy-ahead-of-demand-investment strategy, especially if their management is professionalized and they are willing to develop aggressively export markets for their products.

Organizational design for diversification

Diversification creates a need for major internal re-adjustments within the enterprise. New linkages with the external environment which this strategy implies require considerable changes in organizational structure, system of planning, control and co-ordination; organizational values and norms; operating technology; management skills, knowledge, and attitudes, etc. Chandler's (5) pioneering study of strategic change in U.S. industry indicated that organizational form follows strategy. His model described the pattern of organizational change in the form of five stages. The basic finding was that a strategy of expanding into new products and markets increased the diversity beyond the coping capability of a functional structure which therefore ultimately evolved into the divisional form of organization.

Scott (18) argued that enterprises, as they grow and diversify, transit through three structures: the centralised, when the organization is small and undiversified; the functional, when it is large but not very diversified; and the divisional, when it is large and diversified. In the third stage, certain corporate functions, particularly finance, are centralised, and each division is a profit centre. Besides, the chief executive is less of a coordinator of warring departments (as in the functional form) and more of a strategist. A fourth structure for some enterprises that produce sophisticated outputs that are custom-made (such as aerospace firms or equipment manufacturers) is the so-called matrix structure (10), in which temporary sub-organizations consisting of specialists,

seconded to them from various departments, are created for each contract or project, and dissolved when the contract or project is over.

Several organizations theorists have argued that superior performance necessitates a good fit or synergy between the organization's strategy and structure (5, 18), and the organization's situation and strategy (12, 14, 8). As far as diversification is concerned, essentially the greater complexity of decision making attendant upon diversification implies not merely decentralisation and divisionalisation, but also the development of a more sophisticated management information and control system, and greater technocracy. Technocracy means the hiring of technical specialists and giving them a say in decision making, most commonly by allocating them to staff departments such as industrial engineering, data processing, corporate planning, finance, and legal matters. But these very necessary structural moves - decentralisation, installation of sophisticated management control and information systems (MICS), and the setting up of various high level staff departments may create severe problems in coordination and integration of activities. For example, decentralisation may lead to suboptimisation, MICS to neglect of non-quantifiable variables like morale ; and staff departments may sharpen line staff conflicts. Thus, structural change needs to be supplemented by change in the organization's operating culture. Considerable investment needs to be made in human relations and leadership training, participative decision making and team management, organization development, human resources development systems, etc. To embark on diversification without planning for appropriate structural and cultural changes is an invitation to disaster.

HMT provides a fine example of an effective organizational design for diversification. During the decade of the 1970s HMT diversified from machine tools and watches into not only more

sophisticated machine tools (such as numerically controlled machines) and watches (such as electronic and digital watches) but also into tractors, lamps, dairy equipment, etc. This diversification, however, was accompanied by a series of organizational changes. Early in the seventies the company got partially divisionalised, and each plant became a profit centre. Later, the company got fully divisionalised, into each product group doing its own marketing. The management installed a sophisticated MICS under which a flash report on a unit's monthly performance went out to the headquarters within a week of the closure of the month, and a more detailed report followed within two weeks more. The company initiated long range corporate planning exercises in the mid-seventies, and set up the personnel and finance directorates at the corporate headquarters. Management and staff training were given high priority since the late sixties and HMT set up a full fledged U.D. department to coordinate human resources development activities. As a consequence, HMT has, among Indian public enterprises, been one of the most successful diversifiers.

By way of contrast, Richardson and Cruddas (R & C) in the late seventies was also highly diversified for its size, producing and marketing nearly a dozen different products. But until nearly 1980, it had failed to set up profit centres or an HMT type performance reporting system. Nor had it ventured into corporate long range planning or U.D. As a consequence, perhaps R & C was a marginal operation or lost money in the late seventies.

The problem of culture management exists not only during the transition from a single-product to a multi-product orientation, but also in the stable diversified condition. A diversified firm would by definition have multiple linkage with the environment, thus necessitating, according to contingency theorists, the co-existence of multiple cultures. Simultaneous pursuit of high performance in existing businesses and opportunities for long term performance potential bring a number of problems to the fore :

- a) allocation of scarce resources between on-going operations and innovative activities ;
- b) disruption of existing operations by introduction of new products;
- c) resulting tendency to reject new ventures before they attain self-sustaining state;
- d) conflicts which typically arise between manufacturing, marketing and R & D during transition of a product or technology from development to operational status.

These problems are exacerbated when entrepreneurial activity in a firm becomes equally important to the management of existing operations.

The Indian business environment, with the recent liberalization of industrial policies by the government, including licencing, import and export policies, is already showing signs of increasing competition. It is also likely to exhibit greater turbulence as a result of the increasing introduction of new technology. Under these emerging conditions Indian PEs would have to acquire "integrative management" skills (1, PP 65-67), or in other words skills to manage multiple cultures or capabilities within the same enterprise.

Public enterprises in India are becoming more and more complex. They are not only diversifying their product lines within the country; some of them such as HMT and BHEL, are also increasing their international involvement greatly by exporting products, technology, and capital. Structural mechanisms generally used for coping with the problems arising out of the organization's need to pursue both high performance in existing businesses which are resource generating, and innovative activities, which are resource absorbing, are designed on the basis of the underlying assumption that there are inherent differences in the cultures that support efficiency and innovation and hence should not be combined in the same organizational unit. One organizational form, termed as the 'future/present dichotomous structure' (1, PP.165-175) segregates management of current operations from innovative activities at a very high level in the organization, frequently just below the top executive.

Another alternative design is based on the different characteristics of leaders most suited to these distinct activities. This form differentiates innovation related to external environmental changes from that related to changing internal capabilities of the firm.

Another concern in the design of organization is the relationship between strategy and structure within diversified firms. One study which researched this question (4) indicated that there were significant differences in the role of the corporate office among companies of comparable size and diversity. These differences seemed to be associated with the differing strategies of diversification.

Two groups of companies were chosen for the study. One group, called the 'diversified majors', had become diversified with a characteristic pattern of initial expansion and accumulation of resources in a single business, the rationalization of the accumulated resources, diversification into new but often related, markets, and development of new organizational forms to deal with emerging management problems. The other group, called the 'conglomerates', had become diversified largely through a series of acquisition, often into highly unrelated areas by means of aggressive financial policies. The research brought out clearly the similarity of approach to management within the groups and differences between them. Research, development, marketing, manufacturing, and purchasing were not represented at the corporate level in the conglomerates (with only one exception in the case of purchasing), while in only three cases out of eighteen were any of these four functions not represented at the corporate level in the diversified majors. The diversified majors, on the average, had more than three times as many people at the corporate level as the conglomerates. The greatest difference was in R & D, with an average of 151 in the diversified majors and none in the conglomerates. However, the conglomerates employed a significantly larger number of persons in the finance and control function than the diversified majors.

Top managers in the conglomerates placed great importance on having small corporate offices. They emphasized their role in providing help to the divisional managers in dealing with the financing authorities, regulatory agencies, and stockholders ; and in installing professional management structure and systems. They also underscored the importance of creating an entrepreneurial climate within the divisions which necessitated the above organizational approach. On the other hand the tendency of diversified majors to be in businesses more closely related in terms of customers served, manufacturing skills and technologies involved than the conglomerates, fostered greater exploitation of centralized capability in R & D, manufacturing, marketing, and purchasing.

Diversification planning in a PE

There is a large literature on diversification and its planning (2, 3, 5, 6, 9, 15, 19). Writers such as Steiner (19) have distinguished between mere expansion (increasing the capacity to produce current products for present markets), and diversification, which involves capacity creation for producing current products for new markets, or for producing new products for present or new markets. Ansoff (2) has distinguished between market penetration (capacity expansion of present products for present missions), market development (capacity expansion of present products for new missions), product development (capacity creation for new products for present mission), and diversification (capacity creation for producing new products for new missions). As conceived by Steiner and Ansoff, planning complexity is likely to be least with a mere expansion or market penetration, and most with diversification involving manufacture of new products for new missions such as export, technology development, etc.

PEs, it was suggested earlier, should, in their initial years, stick to related diversification because unrelated or otherwise

complex forms of diversification may stretch thin their management capabilities. As it is, PEs have difficulty/recruiting top class /in managerial talent because of lower ceilings on managerial remuneration in the public sector (20). Besides, many PEs produce technologically sophisticated products. The best of managements may find producing and marketing them profitably a difficult task. Thus, PE wisdom lies in sticking to diversifications that can be handled with available management capability.

Yet there are compulsion on many PEs to diversify into fairly unrelated areas due to excessive installed capacity or competitive pressures or for strategic, political, or economic considerations. In planning such diversifications a good deal of search, data gathering, analysis, evaluation and choice are required. The top management needs to decide such complex issues as :

1. What objectives should be sought for the diversification moves ?
2. What alternative product market areas are available ?
3. Which alternative should be chosen ?
4. How should this choice be implemented ?
5. What kind of organization would be needed to implement the diversifications and then manage the new business ?

The first task of the top management of an enterprise is to decide upon the organizational arrangement to plan the diversification move. Large corporations may use formally organized "corporate planning departments" to co-ordinate and perform a major part of the task. Smaller units may use ad-hoc task forces to do the spade work. In both the approaches it is necessary to have top executives participate in the planning process at various stages so that there is a viable consensus on the decision to diversify.

The next task for top management is to decide upon the objectives of the proposed diversification.

Any diversification move must ultimately be related to the overall mission and strategic plan of the organization and its parent ministry, and hence it is necessary to develop objectives for each diversification move. Defining objectives for the proposed diversification helps in directing the environmental scanning effort. This is an important point as the external information that an enterprise needs to collect for this purpose can be enormous.

As explained in the beginning of the paper, the objectives of a diversification can be stability of earning, exploitation of organizational strengths, increase in earnings and profitability, image building, reducing dependence on existing businesses, etc. In the case of a PE, meeting national priorities is also an important objective. Determination of these objectives depends upon an analysis of the existing strategic priorities of the PE and the government. The top management of the PE might be already aware of this from previous analysis, and based on that it may decide the objectives. The Corporate Planning Department or the task force would have to be familiar with these objectives before proceeding with their work. However, in the course of the total planning process there is a possibility that these objectives might undergo some redefinition, for strategic planning is inevitably an iterative process.

The organizational group responsible for the overall planning task should now conduct a capability diagnosis and a resource audit exercise. This is part of the popularly known SWOT (strengths, weaknesses, opportunities and threats) analysis. For this exercise senior executives from different parts of the organization may be involved to get multiple perspectives. Defining organizational strengths and weaknesses is quite often a difficult task, since the perception of relevant factors is biased by familiarity and by experience.

Also, such assessments have to be done in relation to a standard. When the alternative product market and technology areas are not known the standards cannot also be fixed. Thus, the strengths and weaknesses get defined through an iterative process. They have to be defined with respect to a goal and the potential competitors' ability to perform the same task. Hence initially, a list of tentative strengths and weaknesses needs to be drawn up so that this can be used to develop a preliminary list of opportunities. A short check list of areas which need to be given attention is presented in the Appendix 2 as an illustration.

The next step is that of identifying suitable opportunities. A brainstorming exercise may be performed to generate a large number of ideas. Other sources may also be used to get as many ideas as possible. The parent ministry or the other organizations with which PEs come in contact often, like the Bureau of Public Enterprises, other ministries, etc., may also be tapped. Customers, dealers, and suppliers can also be other sources of ideas. Once a sufficiently large number of ideas have been generated, a few amongst them may be taken up for more careful scrutiny. For this scrutiny, the objectives of diversification and the list of strengths and weaknesses need to be used. The output of this exercise should be presented to the top management. At this stage it may be useful to involve the key officials of the parent ministry to get their approval for going ahead with a detailed examination of a few from amongst the large list of ideas.

The next step is a rough assessment of the external environmental influences on the corporation for each of the selected business areas. Typically the environmental influences on a firm may be categorised into : i) regulatory, ii) political, iii) economic, iv) social, v) competitive, and vi) technological factors. These evaluations of diversification alternatives need to be presented to top management which then finally decides on one or more diversification proposals to be put up to the ministry for approval.

At this stage the PE has to start exploring for technological know-how. Only when it is reasonably sure to get the know-how from some potential supplier will it be possible to make very detailed calculations of profitability and investment requirement. Once these details are available the various governmental agencies that are involved in evaluating investment proposals come into the fray.

Evaluation of PE project proposals by Government is a complex process involving complex institutional relationships. The main actors in this are the concerned ministry, the Bureau of Public Enterprises, the Public Investment Board and the Project Appraisal Division of the Planning Commission. The Finance Ministry and the Union Cabinet also play important residuary roles (12).

The process of providing funds for investment by the concerned ministry is linked with the national five year plan. A provision is made in the plans for each public enterprise and detailed project proposals have to be worked out at the stage when actual approval is required. The funds allocated in the five year plans form the basis of estimating the financial requirements and investments outlay provisions on an annual basis, and these are presented in the annual performance budget of the ministry. An investment proposal, whether for expansion or for setting up new production facilities, is to correspond to these outlays. However, there is no automatic approval for projects included in a ministry's approval investment budget. The approval for the project is given only after its detailed scrutiny by various organs of the Government.

The process of evaluation by various organs of the Government may range from 6 months to several years, during which a variety of perspectives are brought to bear on the proposal. This process of evaluation from multiple and differing perspectives may lead to several recastings of the project to make it satisfy the multiple requirements of the assessors, with resulting delays and cost escalations.

Thus, familiarity with the evaluation criteria used by the different organs of the Government is needed, and the proposal needs to anticipate their objections. The PE may also need to cultivate key officials in their parent ministries as well as in the various appraising organs of the government to expedite the appraisal.

Once the approval of the Government is obtained, the PE would have to work out a very detailed implementation plan which would spell out details of entry strategy, investment programmes, manpower build-up programme, organizations development programme, detailed financial calculation for the first two to three years. This diversification plan might have a longer time span than 2 or 3 years, in which case it may not be possible to spell out details beyond 3 years due to various uncertainties. However, the future growth strategy should be developed of which the entry strategy would be a organic part. Beyond a period of 2 or 3 years aggregate quantitative data would suffice. The premises on the basis of which the projections are made are likely to change as a result of environmental changes. These would need to be incorporated periodically.

Conclusion

In sum, public enterprises in India are diversifying fairly rapidly into related fields and management of diversification is emerging as a major task for public enterprise management. Diversification management can take a number of forms. A sample of Indian public enterprises exhibited three modes of managing growth and diversification ; a) the albatross mode, b) the drop out mode and c) the mitosis mode. In the economic environment prevailing in developing countries like India, the mitosis mode may, in general, be the most effective one. Any significant diversification entails major changes in organizational design. For successful diversification, enterprise management needs to plan the necessary changes in organizational structure, professional

management systems, and organizational culture. Complex diversification need to be meticulously planned and must bear in mind the organization's strengths and weaknesses, the parent ministry's strategic priorities, a wide range of diversification alternatives, fairly explicit evaluation criteria, etc. PEs being extensions of the Government, are subject to control and surveillance by various regulatory bodies. Hence diversifications that need large investments need to be planned with a long time horizon. This is essential for making successful entry in terms of timing, as project appraisal by a host of regulatory bodies takes a considerable period of time. Corporate planners in PEs need to incorporate the divergent perspectives of the appraising organizations in the project proposals, and hence they need to have a thorough understanding of the processes and strategic objectives of the Government.

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List of 22 firms in the Public Sector

(Rs. in Lakhs)

Sl No.	Name of the firm	Products in 1975	Gross Sales 1975	Net Profit to sales (Percentage) 1975	Strategic Category
1.	Bharat Heavy Electricals Ltd.	Electrical Power Generating Equipment (thermal/hydro) Motor, Switchgear, Valve, Indl. boilers, Exports, Captive Power Generating Units. Pumps/Compressors (1971), Merger of HE (I) Ltd (1972-73), Services (1972-73), Consultancy (1972-73), Foundry surge (1972-73), Stainless steel tubes (1974), Oil Rigs (1975)	27,401	16	Related Business
2.	Bharat Earth Movers Ltd.	Scraper & Rear Dumpers, Crawler Tractors, Rail coach, Road Rollers Trailer (1975)	6,410	5	Related Business
3.	Bharat Electronics Ltd.	Radio & Rader Equipments, Components (Valves, Transistors, Capacitors, Crystals), Transformer & Cell Winding. Desk calculators (1971), Recorders (1972), Turnkey jobs (1973).	4,214	7	Related Business
4.	Bharat Coaking Coal Ltd.	Coal Mining and Coke oven plants (1972)	NA	NA	Single Business
5.	Cochin Refineries	Refining of Crude Oil	12,262	-4	Single Business
6.	Fertilizer Corporation of India Ltd.	Ammonium Sulphate, Urea Double salt, Calcium, Ammonium Nitrate, Nitrophosphate.	17,173	-0.5	Single Business

7.	Fertilizer & Chemicals Travancore Ltd.	Ammonia, Ammonium Sulphate/Phosphate/Chloride, Caustic soda, Super phosphate, Sulphuric Acid, Engineering & Design services	5,653	→	Related Business
8.	Heavy Engineering Corporation Ltd.	NPK Complex fertilizer (1975). Heavy machine building, Foundry & forging, Heavy machine tools.	NA	NA	Related Business
9.	Hindustan Aeronautics Ltd.	MIG project, Pushpak, Krishak, Gnat, Civilian Planes, Agricultural Aircraft. Helicopter (1971), Freighter Project (1971), Radar and Precision Approach Radar Equipment (1972)	10,510	7	Single Business
10.	Hindustan Copper Ltd.	Exploration, Prospecting & mining of copper and lead extraction, manufacturing alloys and byproducts of copper.	2,560	NA	Related Business
11.	Hindustan Machine Tools Ltd.	Lathes, Watches, Milling & broaching machines, Special purpose machine tools, Boring machines, Heavy duty press. Printing machine (1971), Tractors (1973)	6,680	NA	Related-cum- Unrelated Business
12.	Hindustan Steels Ltd.	Steels, Pig iron, Special alloy steels, Coal washeries, Fertilizer mixes.	99,815	5	Related Business
13.	Indian Drugs & Pharmaceuticals Ltd.	Antibiotics, Synthetic Drugs, Surgical Instruments. Job Shop Order.	4,584	5	Related Business

14.	Indian Oil Corporation	Refining & Marketing of Petroleum Products.	196,787	1.5	Single Business
15.	Indian Telephone Industries	Stronger Exchange, Telephones, Long distance transmission lines, Cross car exchange Switching Equipments & Transmission Equipments (1972)	6,365	6	Single Business
16.	Indo Burma Petroleum Co.	Marketing of Petroleum Products, Manufacture of electronic and electrical equipments	8,846	0.5	Unrelated Business
17.	Madras Refinery Ltd.	Refining of Crude Oil.	20,021	1.0	Single Business
18.	Mazagon Docks Ltd	Navy ship building & repairs, Minesweeper, Frigate, Dredger, Tanker for carrying oil. Passenger cum Cargo vessels (1972), Export (1974), Dev. of small yards abroad (1975)	4,609	2	Related Business
19.	Mining & Allied Machinery Corporation Ltd	Coal mining equipments Gear boxes, Castings & Forgings & Component for various industries & railways, Coal washery equipment	1,980	1	Single Business
20.	National Coal Development Corporation Ltd.	Coal mining & Washeries	NA	NA	Single Business
21.	National Mineral Development Corporation Ltd	Exploration and mining of iron ore and diamond	1,571	8	Single Business
22.	Oil & Mineral Gas Commission	Exploration, exploitation and development of petroleum resources	14,050	37	Single Business

Source : 1. Annual reports of the firms

2. Annual report of the working of industrial and commercial undertakings of the Central Government (Analysis of accounts) Vol.III, Published by Government of India, Ministry of Finance, Bureau of Public Enterprises (Finance Division), New Delhi.

Appendix 2

Aspects for Consideration in Strengths and Weaknesses Analysis

- Marketing :
- * Characteristics of market segments served
 - * Quality position
 - * Product range
 - * Characteristics of dealer network
 - * Market Share
 - * Profitability of product lines
 - * Market Research capability
 - * Product development
- Manufacturing, Procurement, and Location :
- * Availability of infrastructural facilities
 - * Number of plants, and their health
 - * Availability of capacity
 - * Types of manufacturing processes
 - * Location of sources of supply
 - * Dependence on suppliers
 - * Degree of vertical integration
 - * Dependence on imported raw materials
 - * Productivity record
 - * Quality control capability
 - * Kind and level of skill
- Finance :
- * Nature of assets
 - * Profitability
 - * Cash generation
 - * Borrowing capacity
 - * Cost structure and its sensitivity to various factors
 - * Dependence on external sources
 - * External control of finding sources

Research & Development

- : * Quality assurance
- * Cost reduction
- * New Product Development
- * New process development
- * Physical facilities
- * Capability of R & D Staff

Labour force

- : * Size of labour force and level of skill
- * Training facilities
- * Relationship with management
- * Number of unions and their affiliation with political parties
- * Motivation level
- * Wage structure compared to competitors

Organization and management

- : * Goals, values, and norms of the organization
- * Knowledge and skill level
- * Depth of management
- * Structural arrangements, differentiation, and integration, authority-responsibility, power sharing
- * Informal organizations
- * Management systems, information acquisition, Planning and control, reward and punishment, decision-making, communication, training, and human resource development.

Relationship with key stakeholders

- * Credibility with Government
- : * Credibility with financial institutions
- * Relationship with collaborators

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