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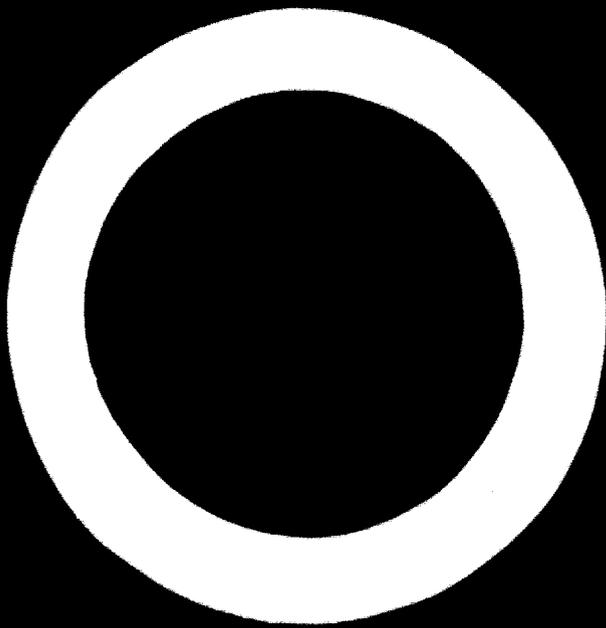
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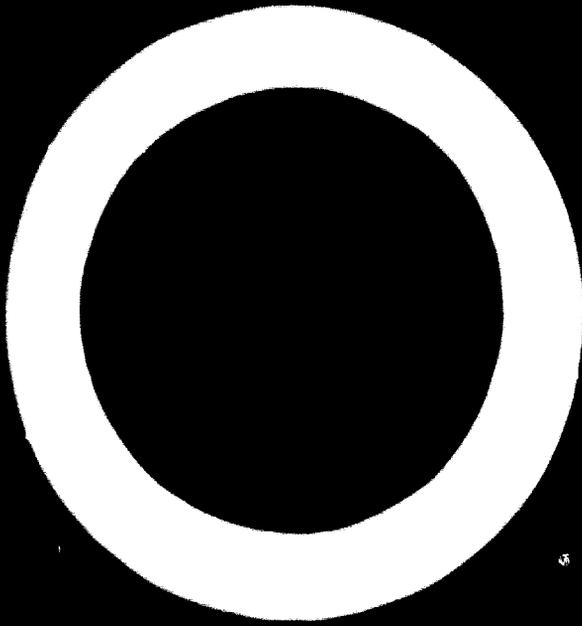


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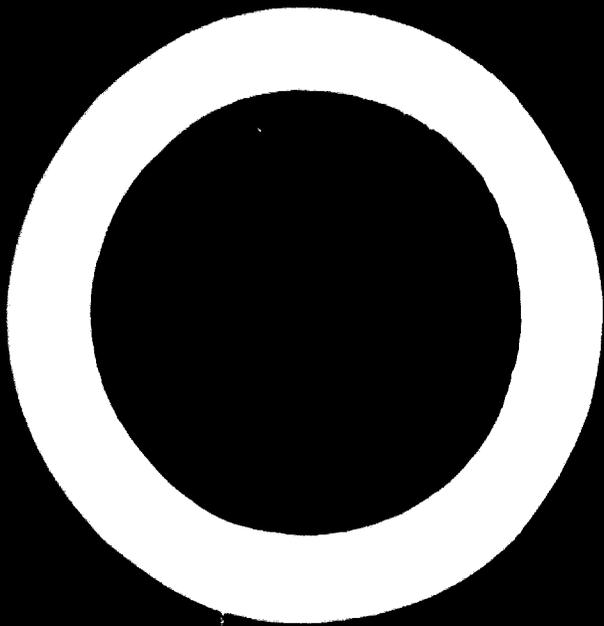
New Perspectives in Management Development
Monograph No. 2

**A SYSTEMS APPROACH
TO THE INTRODUCTION
AND USE OF
CORPORATE PLANNING
IN THE
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**UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
VIENNA**

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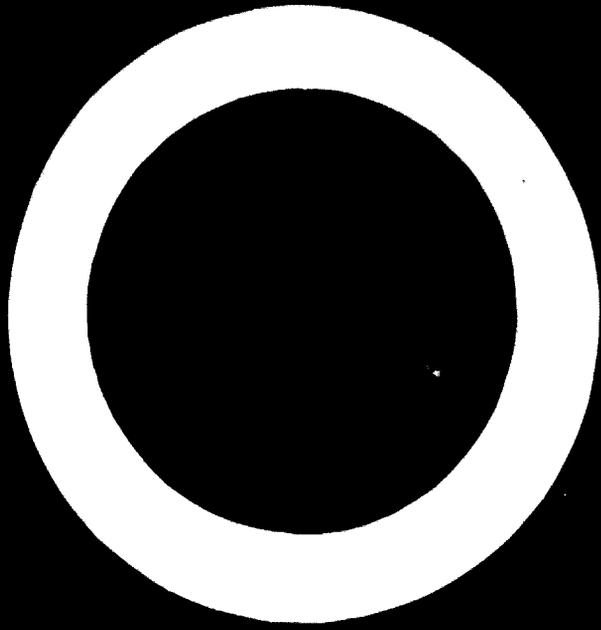
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July 1973

Preface

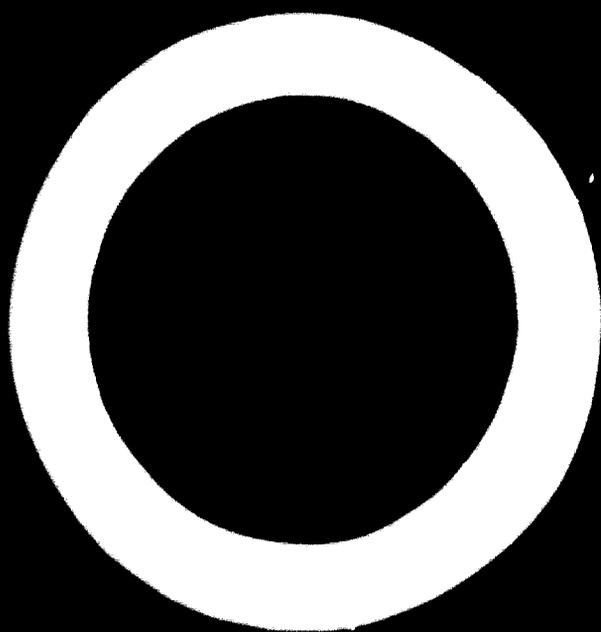
This series of monographs is based on the premise that the United Nations Industrial Development Organization (UNIDO) can meet the management needs of the developing countries effectively and efficiently only if technical assistance programmes are focused on the practical problems confronting managers and industrial administrators in these countries.

This monograph is concerned with corporate planning, which is simply the basic managerial function of co-ordinating and directing an enterprise or groups of enterprises. It discusses difficulties in improving corporate planning in the developing countries and suggests a constructive assistance programme for overcoming them. It examines a planning system that may be applied in stages depending on the particular needs of management and then presents three examples of the kind of assistance in corporate planning UNIDO may provide. Fictitious names have been given to the companies described in the case studies.



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GENERAL CONCEPT OF CORPORATE PLANNING

In a broad sense, the concept of corporate planning is universal and independent of geographical context and stage of economic development. Clearly, company management that fails to plan the future activities of the company is neglecting one of its major responsibilities and is courting disaster. However, it may be difficult to understand corporate planning as a concept and to evaluate it as a management practice because corporate planning methods may range from the very simple to the very sophisticated depending on the size of the firm, level of product technology, type of manufacturing operation, management attitudes and extent of government regulation of business.

Planning, at any level, is required for sustained economic and industrial development. At the national level, development economists and policy makers have stressed the need to plan the allocation and utilization of resources. In some countries, such as India, Pakistan and Turkey, five-year planning has become highly sophisticated. However, as various studies made by the Economist Intelligence Unit (London) and others have shown, the critical factor in industrial planning is the effective implementation of development plans at the enterprise level. In many countries, the failure to ensure efficient planning at the enterprise level has retarded industrialization. This failure is, in most cases, due to two fundamental weaknesses, both of which are managerial in origin. First, too often national plans are based on economic criteria that ignore problems of implementation at the enterprise level. Secondly, external aid given to the lesser developed countries has been largely limited to technology and capital. However, the transplantation of technical know-how, whether in the form of engineering techniques or of plant layout, is only an element in the implementation process and not an end in itself. Although technology and capital are essential factors of production, they must be put to the best use in terms of the local environment if development is to be effective. This is the function of management, which is the link between industrial planning at the national and the enterprise levels. This aspect of industrial management has been perceptively described by Peter Drucker:

“Managing goes way beyond passive reaction and adaptation. It implies responsibility for attempting to shape the economic environment Management is not just a creature of the economy; it is a creator as well.

And only to the extent to which it masters the economic circumstances, and alters them by conscious, directed action, does it really manage."¹

In attempting to evaluate corporate planning practices in developing countries, the analyst will first of all have to select a standard for measuring management practices under varying cultural conditions. The usefulness of the evaluation will depend on the broadness of the range of enterprises covered. In other words, an analytical standard of measure should be applied to various types of enterprises and not be restricted to large business organizations that enjoy a favourable economic climate for managerial achievement, namely, those in the more advanced of the developing countries.

This paper attempts to identify simple as well as sophisticated forms of corporate planning and to prescribe appropriate technical assistance for various types of enterprises through a modular programme. This approach to corporate planning can probably best be described in terms of a basic model. It may be noted, however, that the process of setting corporate objectives, formulating strategy, developing comprehensive plans, monitoring results, and continually revising this basic planning and control system constitutes management. However, in this paper the emphasis will be on analysing the planning of the production, financial and marketing functions of management.

The stages in the development of an integrated planning model at the enterprise level and the planning techniques that are used as building blocks at each stage are shown in table I.

Thus, it would seem unwise to introduce an elaborate training programme in cost-benefit analysis when the recipients are still at the stage of understanding and applying basic cash budgeting procedures and vice versa.

Corporate planning at the most advanced level does not exist in the developing countries. What examples do exist are found in (a) the local operations of multinational companies with headquarters in the United States of America, the United Kingdom of Great Britain and Northern Ireland or the Federal Republic of Germany; and (b) the large public-sector or privately owned corporations in the more advanced of the developing countries. A prospective technical assistance programme in corporate planning will be of value only if managers already have command of basic skills. Then advanced training in management methods and techniques can usefully be introduced.

The stages of corporate planning may be summarized as follows:

1. *Production planning.* At this early stage, the typical owner-manager enjoys a sellers' market. His major concern is to meet the increased demand

¹ *The Practice of Management* (New York, Harper, 1954), pp. 11-12.

² Concerning stages of management responsibility, see A. D. Chandler, *Strategy and Structure* (Cambridge, Mass., Massachusetts Institute of Technology Press, 1962).

TABLE 1. A MODULAR APPROACH TO CORPORATE PLANNING

Stage	Techniques		
	Basic	Intermediate	Advanced
1. Production			
Emphasis on output	Obtaining the factors of production		
Rationalization of work		Time-and-motion studies, cost accounting, layout, inventory control, industrial engineering, preventive maintenance	
Project control			Materials management, quality control, value analysis, project management
2. Finance			
Cash planning	Obtaining and using funds		
Capital budgeting		Break-even analysis, present-value analysis/ discounted cash flow, long-range planning	
Programme budgeting			Unit costing, systems analysis, cost-benefit analysis, simulation studies
3. Marketing			
Opportunistic	Nil		
Competitive		Trend analysis, sales forecasting, market-share analysis, product-profit profiles	

TABLE 1 (continued)

Stage	Techniques		
	Basic	Intermediate	Advanced
3. <i>Marketing (continued)</i>			
Creative			Product-demand analysis and diversification, new-product market testing, consumer surveys, advertising psychology
4. <i>Integrated activities</i>			
Corporate planning (departmental, functional, personal)	Not applicable	Not applicable	Management-by-objectives, management information systems, planning by analogy, free-form management

for his product(s) or services. He accumulates resources, purchases equipment, expands his labour force to meet this demand. The extent of planning is that he introduces an elementary inventory control system to avoid running out of stock. Eventually, as competition increases, the owner-manager becomes concerned with efficiency and cost competitiveness.

2. *Financial planning.* Common to the expanding small enterprise is the need to develop some form of financial control. Co-ordination of accounts payable and accounts receivable can mean, in many cases, the difference between continued viability or bankruptcy, since the scope of the owner-manager's financial commitments has increased significantly with increased payroll expenses, raw material purchases and customer credit.

3. *Market planning.* Although the aforementioned stages of development are not mutually exclusive, emphasis on certain management functions does change over time. Accordingly, as competitors enter the market in direct response to the potential return on their investment, attention is given to the promotion and sale of the product. It may become desirable to develop an internal marketing organization instead of depending on agents and middlemen.

4. *Integrated activities.* The advanced phase of planning is reached when the owner-manager turns over responsibility to professional managers whose purview is the total enterprise system—manufacturing, information flow, manpower, marketing, and long-range co-ordination of operations and end-user demand. This stage of corporate planning is economic only if the

industrial units concerned are large enough to take advantage of economies of scale in applying advanced managerial techniques (sharing in computer use, co-operation in market surveys etc.). Thus, in some countries, use of these techniques can be justified only in government holding companies; in other countries, they can be applied in certain branches of industry.

The importance of improving managerial planning skills in the developing countries can easily be demonstrated.

A newspaper recently reported that in one Asian country the principal reasons for business bankruptcy were: (a) "cut-throat" competition, 39 per cent; (b) over-production, 24 per cent; and (c) failure to collect accounts receivable, 20 per cent. Thus, approximately 83 per cent of the bankruptcies in this country were due to poor corporate planning. Management had failed to cope with market conditions beyond the strategy of price competition, to forecast sales and co-ordinate internal production volume, and to plan and control cash budgeting (revenue *versus* expenditure).

The experience of two companies in the same country and same industrial sector shows that advanced planning techniques cannot be introduced successfully in an enterprise whose management lacks certain basic skills.

Company X was a small company (under 50 employees) engaged in a job-order operation and managed by the founder and owner, apparently successfully, since sales had tripled over the past five years. However, the firm was under severe financial strain, since sales were not increasing fast enough to cover the rising cost of short-term capital. The International Executive Service Corporation had assigned a consultant to this firm, who had advocated a sophisticated type of budgetary controls (profit-centre controls).

Closer analysis showed that the early success of the firm had been due to a temporary seller's market which had led the owner to expand the firm without adopting further measures of corporate planning, especially financial planning and controls. Thus, problems had arisen with which the owner could not cope. The advice of the consultant, while well-meaning, was too sophisticated for Company X. The profit-centre controls he proposed, although highly desirable in principle, would have been appropriate if the enterprise had been larger, if the owner had delegated some of his authority to others, and if he had instituted a formal system of reporting information to supplement his method of direct observation.

Unlike Company X, Company Y was a large (over 3,000 employees), multiproduct company with an integrated production-control system. Like Company X, this firm set objectives and measured performance solely on the basis of increased sales, a tendency commonly observed in developing enterprises. Whereas in the first case, operational and financial planning was almost non-existent, Company Y had matured in the 50 years it had been in business and had outlasted its competitors. The commercial success of

Company Y was largely attributed to an engineering capability that had enabled the firm to expand and diversify its product line.

Now, however, managerial practices were proving to be inadequate. Over-all corporate planning, functional as well as departmental, was still the prerogative of the president, although one man could no longer cope with the planning and control. It was recommended that the president delegate some of his authority to his department heads and act as a co-ordinator of planning rather than as a planner himself.

The president accepted this recommendation. He had, in fact, laid the groundwork for its implementation by organizing a training programme for his top managers, which ranged from short courses given by local professors to programmes overseas in the United States and the United Kingdom.

An analysis of these cases indicates that the development of corporate planning seems to rest on two related factors: (a) the size and complexity of the business; and (b) interest in using professional managers.

Since business enterprises in the relatively advanced developing countries require more sophisticated assistance than those in the less developed countries, a programme of assistance based on a "building block" approach is the most suitable, since it can be modified to meet the needs of companies at various stages of development. The following areas have been assigned a high priority for management assistance:

(a) Production planning and control (plant utilization, quality control, preventive maintenance);

(b) Financial analysis (cash planning, break-even analysis, credit control, cost accounting);

(c) Management control systems (sales forecasting, profit analysis, internal operations reports).

The precise drafting of a given management assistance programme should be preceded by a management audit, which is a comprehensive analysis of the financial, production and marketing activities of an enterprise or group of enterprises carried out by a team of experts.

The following topics warrant further investigation:

(a) The assumption that firms of the same size, particularly small companies, face similar environmental and operating problems and exhibit, accordingly, a similar performance pattern;

(b) The relationship between industrialization (degrees or stages) and management performance;

(c) The relationship between language, learning and managerial behaviour; the probable relationship between management objectives, motivation and performance.

Such studies can have far-reaching effects on the manner and direction of management assistance programmes for the developing countries.

CASE STUDIES

A. *The Consolidated Iron and Steel Company*

(A case study in organization structure and management information systems in a large integrated steel concern located in a less developed country)

Background

In 1939, the Consolidated Iron and Steel Company was a modest workshop catering to the needs of a local, unsophisticated market. Through a series of additions and rearrangements it increased its productive capacity greatly at every stage, so that today it is a large, complex enterprise.

Table 2 shows the growth of the company from 1939 to 1971.

TABLE 2. STEEL PRODUCTION PER WORKER, 1939- 1971

<i>Year</i>	<i>Workers (number)</i>	<i>Steel produced (tons)</i>	<i>Average output per worker (tons)</i>
1939	4 092	79 369	19
1945	2 200	19 904	9
1946	2 827	45 858	15
1947	3 947	99 244	25
1958	13 102	562 533	43
1959	12 993	633 367	49
1965	14 035	827 918	59
1971 (planned)	17 500	1 100 000	63

Table 3 gives production figures for the period 1966-1970 and those projected for 1975. These latter figures represent what the management considers to be the optimum capacity of the company.

TABLE 3. VOLUME OF PRODUCTION
(Thousand tons)

Product	Year					
	1966	1967	1968	1969	1970	1975 (projected)
White pig iron	666	713	706	617	745	1 800
Raw steel	884	905	883	890	1 000	2 000
Final rolled products	679	711	725	752	776	1 641
Forgings	12	9	11	12	11	36
Axle assemblies	9	9	8	8	9	9
Iron ore	2 295	2 219	2 257	2 488	2 500	6 200
Grey pig iron	103	82	40	54	74	242
Castings	55	44	44	53	74	139
Drawn wire	45	36	43	55	59	94
Nails	12	11	7	7	11	15
Screws and bolts	10	7	9	10	10	20

Thus, it can be seen that the company has achieved steady progress in the last few years. The balance between finished and semi-finished products is reasonably good. As the national economy becomes more industrialized, the quantity of the finished products and their share of the total turnover will tend to increase. The projection for 1975 reflects accurately this trend.

The increase in production shown in tables 2 and 3 was, much to the credit of the management, achieved under very adverse conditions that made long-range planning impossible. Such planning is necessary in the steel industry, where investments in plant and equipment are usually extensive. The critical shortage of steel products in the country together with the government's policy of creating employment in the area led the management to concentrate on increasing production at all costs. In the process some serious problems arose.

Recently, a number of changes have taken place. External factors have changed, such as market needs and competition. The Consolidated Company has merged and acquired several other companies some providing raw

materials, others using Consolidated's steel to manufacture finished products. Most important of all, Consolidated has now adopted a long-range plan that will more than double its present capacity of crude steel and triple its finished products by the late 1970s.

Objectives and policies of the company have been to a large extent determined by the government, its sole shareholder since 1936. In recent years, company policy has shifted its emphasis from quantity to quality. The volume produced is no longer the sole or even the dominant consideration. Now the company's objective is to become a leader in its own national market in terms of range of products, quality and service. A new emphasis has been placed on exports. Although the company has exported to neighbouring countries throughout most of its history, these countries are still largely agricultural countries. Their needs are limited to a few staple products, and their industry offers little competition. The company now appears to have the more ambitious goal of competing internationally with the large steel concerns of the industrialized countries in order to dispose of its expanding output. The management realizes that to be a successful large steel manufacturer and a factor in export markets, the company has to be highly competitive. It can become so only by making full use of all its resources: managerial, technical, labour force, plant and equipment, financial.

The Consolidated Company's geographical position is excellent as regards the supply of raw materials—iron ores, coal and also non-ferrous metal ores. The government plans to build up a substantial non-ferrous metals industry in the area. The company's geographical position is also excellent in terms of its national market. Most of the large users of the finished products are nearby and easily reached by rail and road. However, its inland location in the mountains, about 200 kilometres from the sea, makes the access to overseas markets somewhat more costly than it is for the large modern plants now located on the coast. The existing harbour has been used only for local coastal traffic.

In view of its ambitious plans, the management board decided to request outside consultants to appraise the company's operation. Since experience in working with foreign management consultants was lacking in the country, a request for assistance was made through government channels to the United Nations Industrial Development Organization (UNIDO). UNIDO, particularly its Industrial Management Section, deals constantly with such questions in less developed countries. UNIDO evaluated several candidates for the job and eventually selected the most suitable. It was decided after consultations with the Consolidated Company that the magnitude and far-reaching implications of the assignment justified breaking down the work of the consultants into several phases: phase I, a survey; phase II, training; phase III, implementation. UNIDO was to supervise and monitor the project; the Consolidated Company was to evaluate and control progress as the work programme developed. The consulting team began the survey of the organization immediately.

Present organization

The present organization is the result of the merger in 1968, 1969 and 1970 of the Consolidated Company with the following:

(a) Four iron ore mining and ironworks companies. These four companies are all located around Consolidated within a radius of 50-100 kilometres. Each company enjoys substantial autonomy. It has its own management board and is operated as a profit centre, although it may sell all or practically all its production to Consolidated;

(b) A limestone quarry;

(c) Three wire-product manufacturing companies. These companies were formerly competitors of the Consolidated Company, which has had a wire-making department in its own main plant since the 1920s. They purchase all their raw materials from the Consolidated Company and sell their finished products independently of, it not in competition with, Consolidated;

(d) A screws and bolts manufacturing company.

The Consolidated Company thus consists of 10 operating units, or profit centres Consolidated's original plant and 9 previously independent companies. The head of each operating unit reports direct to the general manager of the company. Also reporting direct to the general manager are three directors (technical, financial and commercial) and a legal assistant, plus seven department heads. In all, 21 executives report direct to the general manager as shown in figure 1. The directors, legal assistant and department heads are all located in the head office.

The 10 operating units vary greatly in size and complexity. Some furnish raw materials exclusively; some make finished products using Consolidated steel. These units could probably not have continued in business if they had remained completely on their own. It was therefore a wise move for them to seek the support of a much larger and stronger entity such as Consolidated.

These operating units, particularly those that were formerly independent companies, want to retain their identity. They place great value on preserving the relationship between their contribution to the corporation and their personal earnings. For this reason they call themselves "profit centres". This relationship should be strengthened to motivate workers and managers and to permit them to share in accordance with their productivity. However, these operating units do not have full authority over their commercial activities and in particular do not determine the selling prices of their products, since steel prices are fixed. Profit is not the best criterion of success for all operating units. The fulfilment of plans and attainment of cost objectives may be preferable as measurements of performance, since revenues in most cases are beyond the control of the management of the operating units.

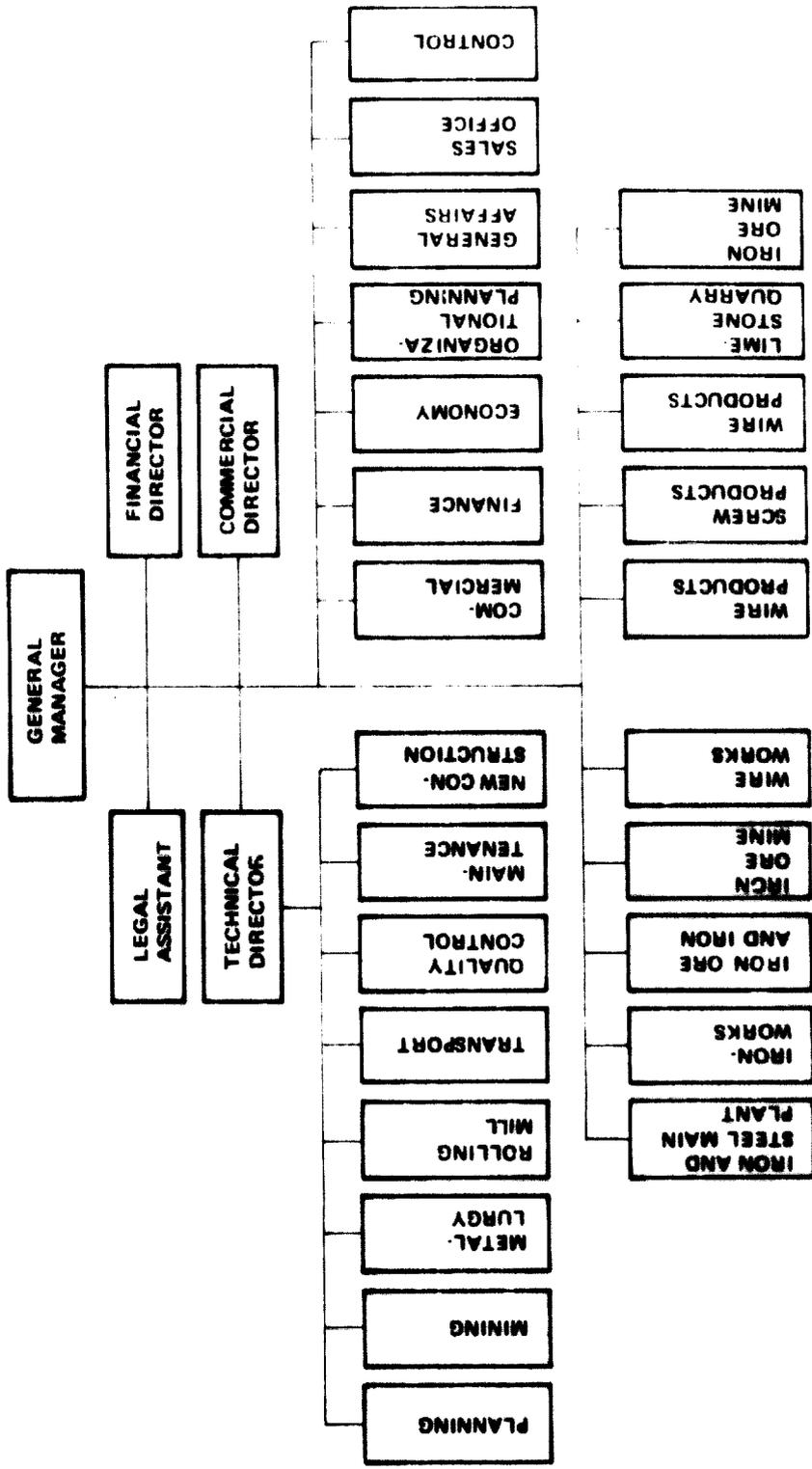


Figure 1. Present structure of the Consolidated Iron and Steel Company

The operating units cannot maintain full technical staffs of adequate quality, yet the best technical capability existing within the corporation must be made readily available whenever an operating unit needs it. This can be done by organizing a group of specialists in various fields to act in a staff capacity alongside the "line" organization responsible for the major functions of production, marketing and finance.

Production plans and quotas are based on past performance rates rather than on an analysis of the potential market demand. It may be noted that these quotas are relatively easy to achieve in view of the backlog of demand for the product, and they do not represent a uniformly high level of performance.

The Consolidated Company has devoted little attention to marketing. Greater profitability and growth could be achieved through more effective marketing. To increase profitability and growth, however, management must have an accurate knowledge of costs, both actual and standard. It is anticipated that by 1975 close to 2 million tons of steel will be marketed annually in the form of finished products. Marketing this quantity of finished products will require careful study and planning.

Management information and business systems are weak points in the present organization of the company. Although a wealth of data is available throughout the organization, it is not in a form most useful to management. There is no organization unit in the company capable of developing and implementing business systems of the magnitude needed. The capability of the present manual data processing is limited. To increase this capability, it will be necessary to train not only the specialists who will provide the data-processing services, but also the executives, managers, supervisors and workers in all areas who will frame and use the systems to be developed.

Recommendations

The major recommendations of the consulting team are described below.

Over-all organization

It is absolutely necessary to clarify the relationship between the 10 operating units and the head office with respect to responsibility and accountability. The expertise existing at the head office should be made more readily available to the operating units.

Fewer executives should report direct to the general manager. This can be accomplished by making a deputy director responsible for a function or a group of functions. For example, the production director could take over the day-to-day management of the 10 operating units; and the marketing director and the personnel director could take over most, if not all, of the departments at the head office. This would mean 5 top-level executives reporting direct to the general manager instead of 21 as at present. Figure II shows the proposed changes in the organization.

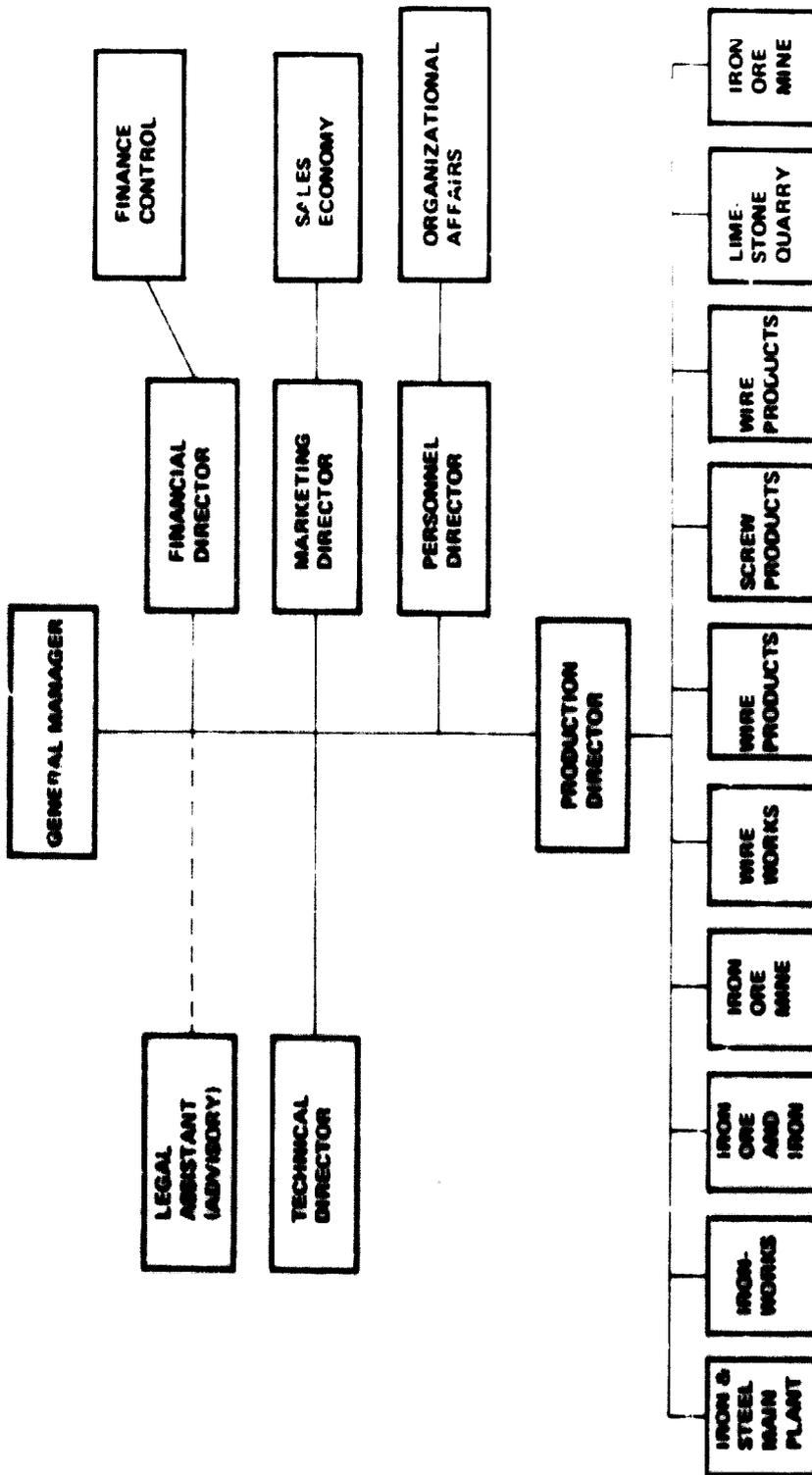


Figure II. Proposed structure of the Consolidated Iron and Steel Company

Lines of communication should be established from the directors to all areas of the company.

To support an effective organization, an integrated, comprehensive information system is required. More efficient systems for collecting data and distributing information must be developed to serve the needs of all levels of management.

To achieve these objectives it will be necessary:

(a) To establish a specialized group in the head office that would initially set priorities and begin the design of applications for a computer. The group would devise, compile and test programs prior to delivery of the computer.

(b) To train a group, with emphasis on on-the-job training, in methods, measurement and control of the administrative and office work;

(c) To establish a strong industrial engineering department at the corporate level that would develop methods for production, maintenance and materials handling. The aim of this department should be to increase the effectiveness of manpower so that all new equipment can be operated without additional personnel.

After the problems have been identified in phase I (the survey), measures to solve them should be carried out in conjunction with a team of consultants. The initial emphasis should be on the training and development of company personnel and on planning and scheduling for the final phase of implementation. Phase II (training) and phase III (implementation) must be carried out simultaneously, since these phases will frequently overlap; on-the-job training in the application of technological concepts should be an important part of the implementation phase. Teams of consultants (local consultants assisted by foreign consultants) should be assigned to work in three separate areas of specialization, namely: manual systems, computer systems and programming and industrial engineering/organization.

The complete implementation, including the format of the organization, and the delineation of the responsibilities of each position, will require one year to complete for a team of company personnel working under the guidance and direction of a team of consultants.

A group (20 persons) should be recruited and trained to develop a master systems plan and to establish priorities for the computer programming of systems. Approximately half of the group should receive basic training in programming. The training may last as long as three or four months. The training should be carried out in specialized schools either in the United States of America or in Europe. The other half of the group, which does not receive programming instruction, should proceed with the development of the master systems plan and the design of specific systems.

Manual systems and computerized systems and programming should be developed completely separately. A group of 15 individuals should be trained to develop methods, staffing criteria and controls for clerical and administrative activities.

Table 4 summarizes the initial personnel requirements for a management information system.

TABLE 4. INITIAL PERSONNEL REQUIRED FOR A MANAGEMENT INFORMATION SYSTEM

	<i>Consolidated personnel</i>	<i>Consultants</i>		<i>Consulting man-months</i>		<i>Duration (months)</i>
		<i>Local</i>	<i>Outside</i>	<i>Local</i>	<i>Outside</i>	
Computer systems and programming	20	2	1	12	6	6
Manual systems and controls	15	2	1	20	10	10
	35	4	2	32	16	

B. *The First Engineering Company*

(A case study of corporate organization, with particular emphasis on the marketing aspect, in a large engineering company located in a less developed country)

Background

The First Engineering Company, which originated as a repair shop for wagons in 1921, is now a large enterprise manufacturing a range of products and employing approximately 6,000 persons. It is apparent that over the years the management of the company was able to react successfully to changing conditions and to take advantage of opportunities as they arose.

The original enterprise was a service enterprise, but it quickly took the short step from the repair of wagons to their manufacture. After wagons, it began to manufacture steam locomotives and then to build bridges, all products for the railroad industry. The company expanded beyond its traditional market in the 1930s, when it started building industrial steel structures (such as hangars and towers, which have much in common with bridges). In 1955, the company manufactured its first diesel locomotive in

collaboration with a well-known foreign firm. Subsequently, First Engineering produced the more powerful diesel-electric locomotives that can be used for long-haul freight and passenger traffic. It thereby expanded its market. Finally, in the 1960s, it added the following new product lines: plant and equipment for the processing industries, for the construction industry, for the mining industry and for the ferrous and non-ferrous metallurgy industries; materials-handling equipment; and boilers and power plants.

Although all these moves achieved various degrees of success, they were all reactions to changing conditions. These changes were not anticipated, and no course of action was decided on in advance. Product development was initiated on an *ad hoc* basis rather than as a result of planning.

In 1963, the management was reorganized. Considerable authority was handed over to the major divisions (rail vehicles, steel structures etc.). For the first time the structure of the company departed significantly from the traditional functional form (see figure III).

In 1969, to the surprise of the management, the First Engineering Company lost money. This was puzzling, since (a) the three previous years had been very good years, particularly 1968, when the company had achieved an 8.4 per cent net profit on the value of production; and (b) the company had done more business in 1969, as measured by invoiced sales, than in 1968. Early in 1970, the top management met to review the situation and to decide what action to take. The projections for 1970 were very disturbing. They showed that even though the company would have a record year, with a 33 per cent increase in turnover, it would not make a profit and might even suffer a loss.

The general manager had been with the company for 13 years and knew the business well. In the past, First Engineering had always made a profit and had expanded in the process. Greater turnover had always meant more profits. Now, all this seemed to have changed abruptly. It was suggested that productivity at First Engineering was declining, but the company had always made a point of increasing efficiency in its plants. It had always paid its workers well and had not hired beyond its real needs. Inflation was said to be the culprit. To be sure, the cost of materials was increasing continuously, and this was the largest single item in total costs—up to 60 per cent in some product lines. However, inflation was nothing new. A shift in demand was mentioned. The bread-and-butter business of First Engineering had always been the rolling and traction stock, sales of which, for example, had accounted for 70–80 per cent of total sales in 1969. The good years of large government orders were over, and domestic demand was limited to replacement. Sales of traction stock abroad were meeting the barrier of national specifications in industrialized countries, where national manufacturers were always given preference, and the market was now a buyers' market. Demand was still largely unsatisfied in many of the developing

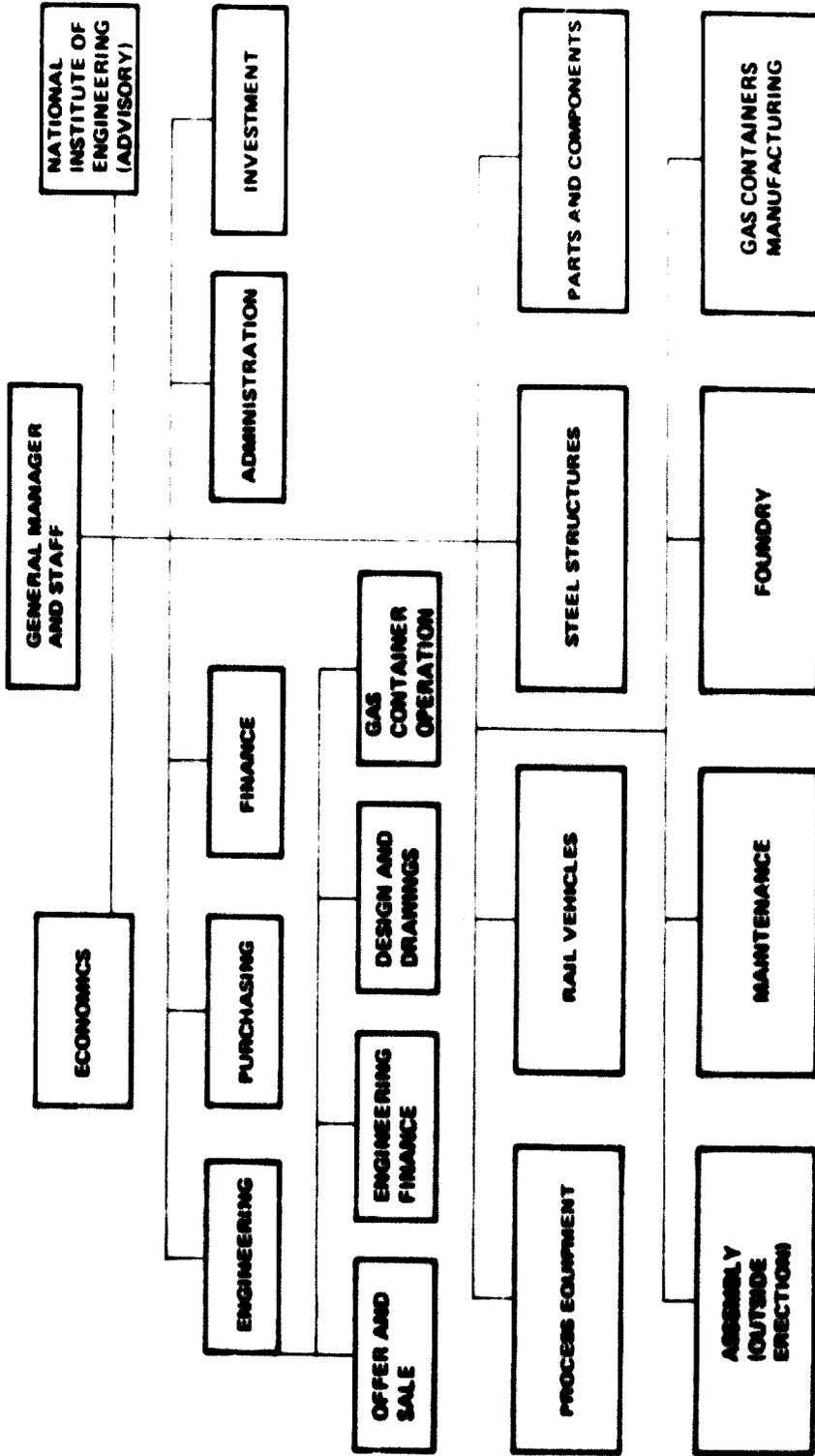


Figure III. Present structure of the First Engineering Company

countries, but these countries needed long-term credit to finance their purchases and the company lacked the necessary financial resources for taking advantage of these opportunities.

Recently, First Engineering had succeeded in obtaining orders for large turn-key projects in some developing countries, and the company was interested in expanding in this direction. There seemed to be growing demand both at home and abroad for large steam boilers, and prospects for business in this area seemed promising. However, the management knew that it would take many years to make a product change of the necessary magnitude.

It was finally decided that the seriousness of the situation called for an appraisal of the company with the help of outside consultants. UNIDO was approached for assistance in selecting the consultants, writing terms of reference and in supervising the project, and UNIDO agreed to undertake this work. Phase I of the project was to be a survey, and phase II, implementation. The consulting team began its work in 1971.

Findings and diagnosis

The general findings of the consulting team are described below.

After a period of rapid growth for 20 years, First Engineering sustained a loss for the first time in 1969. The situation improved slightly in 1970, but the profit achieved was still only minimal.

Even more disturbing for the future is the decline in orders received in 1969 and 1970, shown in table 5. Owing to the planning and production cycle of up to two years, they will be reflected only in the results of 1971 and 1972.

TABLE 5. TOTAL VALUE OF CONTRACTS (ORDERS RECEIVED)
(Millions of local currency)

<i>Division</i>	<i>1968</i>	<i>1969</i>	<i>1970</i>
Locomotives and wagons	344.0	66.0	39.0
Power plants	58.3	86.2	88.6
Industrial equipment	30.0	63.7	73.1
Steel structures	26.0	22.6	34.1
Assembly	21.9	36.4	28.8
Foundry	7.4	7.6	10.1
Machine shop		14.4	21.2
Total	487.6	296.9	294.9

Sales of the main product line of the company, rolling and traction stock, have fallen drastically. This dramatic decline has not been offset by corresponding sales increases of the newer product lines, although some (e.g. industrial equipment) have expanded substantially.

The net worth of the company has remained static for the last two years:

Millions of local currency

1967	180
1968	204
1969	190
1970	190

When inflation is taken into account the real net worth of the company has actually been declining. The decline is a reflection of:

(a) The relatively low profits achieved the net profit is shown below as a percentage of production value:

1962	5.5	1966	9.1
1963	1.1	1968	14.6
1964	1.3	1969	0.2
1965	4.2	1970	2.15

(b) Increases in costs of materials not recovered in selling price increases the costs are shown below as a percentage of production value:

1968	50.7
1969	56.1
1970	57.8

An interindustry comparison suggests that this situation may be due to poor cost control within the company;

(c) Declining productivity of labour, since the cost of labour has been increasing faster than value of production. Over the last 12 years, the total output in tons has increased by 31 per cent, but the labour force has increased by 76 per cent;

(d) The financing of business expansion largely by a substantial increase in long-term loans. Total long-term liabilities increased from 100 million (local currency) in 1968 to 294 million in 1970. This increase was much greater than the increase in turnover, which showed only a 42 per cent increase for the same period—from 286 million to 414 million.

First Engineering was compared with nine other large engineering enterprises in the country for the years 1968, 1969 and 1970. For the nine

companies selected. 1969 compared reasonably well with 1968, with a 20 per cent rise in volume and stable profits. In 1970, these enterprises showed a 5 per cent decrease in volume but nevertheless a 20 per cent increase in profit. It seems, therefore, that the sharp fall in the profitability of First Engineering in 1969, as well as the increased volume in 1970, does not fit into the national pattern.

In short, First Engineering is a marginally profitable business with the prospect of becoming even less profitable, notwithstanding increased volume, owing to an apparent inability to reverse an upward cost spiral caused by ever-increasing costs of materials and labour. Its future is uncertain, owing to declining orders. Its financial situation is very serious, with a decreasing net worth and an astronomically high long-term debt. It will almost certainly need large sums for plant modernization and for new plant.

The consultants' analysis of the current management revealed several weaknesses.

The most significant feature of the current management organization is decentralization, that is, the delegation of authority to the divisions and departments, eight operating units in all, which has gone beyond the point where it is beneficial for the company as a whole (see figure III). While it is desirable to keep as much decision-making power as possible at the operating unit level, any organization must work as a team to achieve common objectives. A balance must be struck between these two conflicting interests. First Engineering has ignored the need for planning and control, with the result that:

(a) Any operating unit can increase its total capacity without considering whether this will benefit the company as a whole;

(b) Operating units can subcontract work outside, while other company units may be short of work;

(c) Economies of scale are lost because of no co-ordination in purchasing and materials standardization;

(d) The performance of the management of an operating unit is evaluated solely in terms of that unit without any consideration for the company as a whole. Consequently, managers at the operating unit level are motivated to optimize results of their unit only, even at the expense of the company as a whole;

(e) The "independence" of the operating units has created a major problem in intra-company pricing. Each operating unit bargains with the next unit to obtain the most favourable transfer price it can. Much haggling goes on over the allocation of common overheads among operating units.

To sum up: the basic organization of the company must be drastically changed to meet business needs rather than to suit particular interests. First

Engineering must be able to operate as an integrated enterprise that can plan and control its activities in an orderly manner if it is to survive as a going concern. Top management must regain control over the operating units, whose basic goal must be to improve the company's position. It is only in so doing that they will improve their own position in the long run.

Specific shortcomings of the managerial structure are as follows.

(a) The span of control of the general manager is too wide to allow him to co-ordinate all activities satisfactorily;

(b) Authority for making financial arrangements with customers, for quoting delivery dates, for some aspects of purchasing, for increasing factory capacity, for arranging credit and for determining selling prices is divided;

(c) The turnover at the general manager level is high; the length of tenure in a given appointment is less than three years;

(d) The average length of service with the company for the top 130 senior executives is 17 years, and only 20 of these senior executives have been with the company for less than 10 years. Thus, few new ideas have been contributed to the company from other areas and experience;

(e) The selection of executives is carried out solely by the management board. Senior executives therefore have little or no part in the appointment of their subordinates;

(f) Planning is on the basis of volume of sales rather than on profit.

Another area that needs immediate attention is marketing. The company as a whole is not at all market-oriented, since no marketing organization as such exists. Selling and marketing activities are badly fragmented throughout the organization. Specific examples follow:

(a) The sales director is responsible to the director of engineering for all aspects of selling the company's products - from preparing bids and estimates to after-sales service, including advertising;

(b) The sales offices located in eight major cities in the country report to the sales director, but the five sales offices located abroad report to the director of engineering;

(c) Each of the major divisions has its own department for estimating, pricing and marketing. The result is that each pursues a different marketing policy;

(d) Establishing a price is a joint procedure involving divisions as well as sales departments. Since half of all contracts involve more than one division, there is considerable scope for errors, inconsistencies and long delays in making a quotation to a customer.

Recommendations

The consulting team recommended major changes in the managerial structure of First Engineering. It recommended reorganization along functional lines as shown in figure IV.

The general manager will now deal with only 5 senior executives (instead of 14), each heading the 5 major functions: marketing, finance, production, management services and personnel. Each functional director will be responsible to the general manager for the planning and control of his function for the company as a whole. The production director, for example, with the help of a production controller and a materials manager and the staff support of a technical director, will make over-all production plans and control them for the company. He will report direct to the general manager. All divisions and departments engaged in actual production and supporting activities (7 units) will report to the production director. Thus, it will be possible to integrate plans and policies and to implement them effectively. Whatever expertise exists in the company will be readily available wherever needed. Duplication will be minimized, and economies of scale will be realized.

Two functions, finance and marketing, deserve top priority because of the urgent need to strengthen them substantially. The present accounting, cost accounting particularly, and the financial reporting systems do not provide managers with the information needed for making the right decisions or for supervising effectively their areas of responsibility. A major review and redesign of the management accounting concepts and systems and the management information and control system should be carried out immediately.

The importance of marketing should be recognized by the top management because the very survival of First Engineering may well depend on the quality of its marketing organization. The marketing director must be given full authority over all marketing and sales activities.

For each major function the consulting team prepared organization charts, job descriptions, outlines of procedures and other aids.

Implementation

The consultants handed over their report and recommendations to the management of First Engineering in late 1971. The management accepted the report in December 1971. It was now possible to begin phase II, implementation.

There still remains much detailed development work to be done before the new structure can be successfully set up. One of the most important tasks is to select the executives for the various positions. Detailed responsibilities must be defined for all senior jobs, the number of staff required established, use of office space planned and procedures drawn up to cover the main functions and activities.

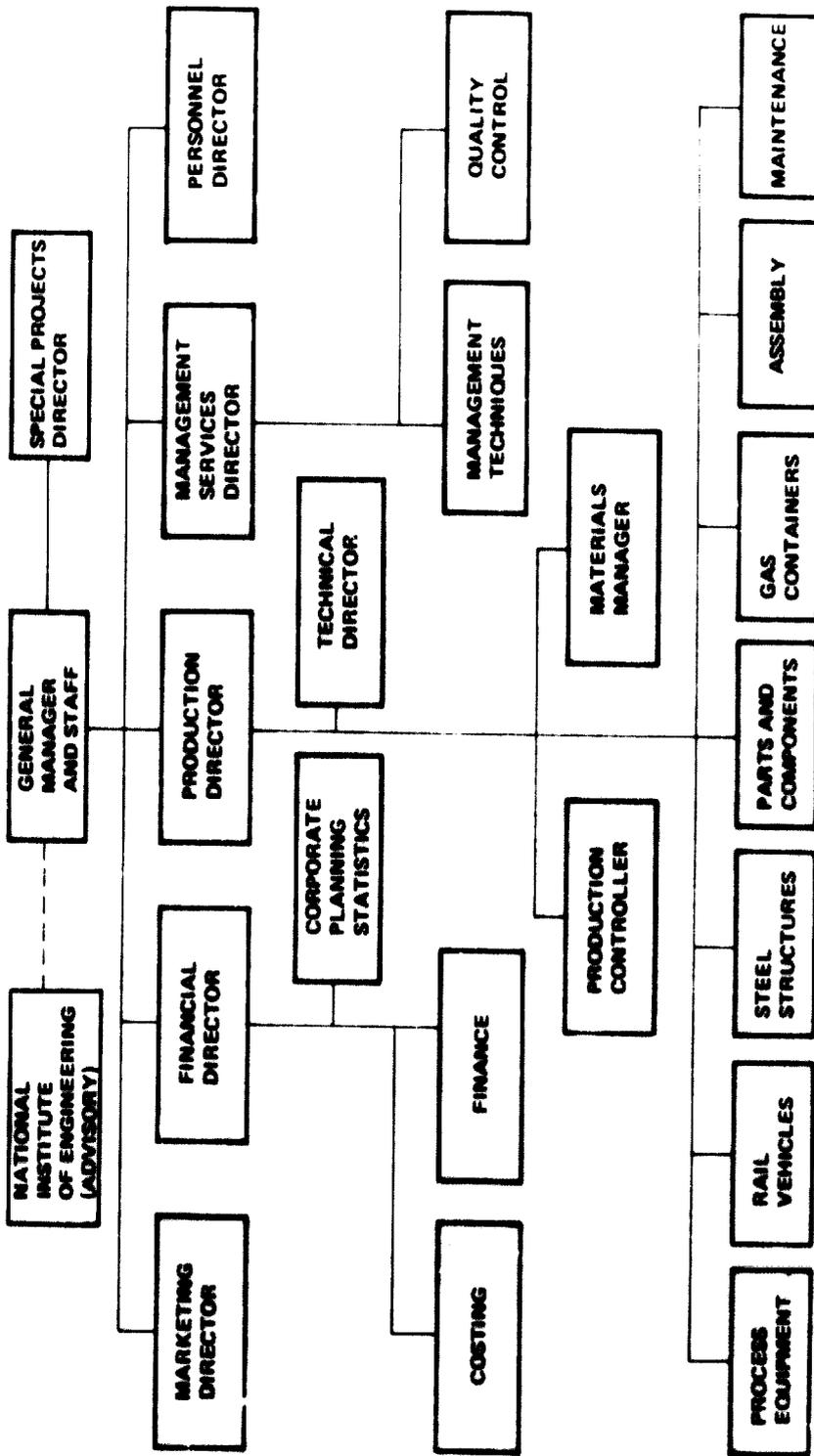


Figure IV. Proposed structure of the First Engineering Company

*C. The ANE Group of companies
(A case study of organization and corporate
planning in a group of affiliated companies
engaged in crude oil refining and petrochemicals
production in a less developed country)*

Background

The ANE Group resulted from the merger in 1968 of four oil-processing and chemical companies in the centre of Country X. The leader of the Group, Refinery A, located at Double Bees, has the largest individual refining capacity in the country, about 2.5 million tons of crude oil per year. Actual production is not far below design capacity. The refinery accounts for 80 per cent of the total sales of the ANE Group. The second largest unit of the Group, Company B, produces lubricating oils, greases and related products and current output is about 25,000 tons per year. It is located some 200 kilometres from Double Bees. The third member, Company C, is a wood distillery, located about 90 kilometres from Double Bees, manufacturing a range of chemicals obtained from the distillation of products of dry wood carbonization. The last and youngest member of the Group, Company D, is a chemical company established in 1961 and located near Company B. The product range includes nitro-solvents, plasticizers, special-purpose soaps, most of them for industrial applications. Also part of the Group is a sales organization set up in 1970 to market the Group's products. This unit has sales offices in the larger cities and operates about 17 gasoline and service stations, all located around the Group's plants. Finally, after the merger in 1968, a head office was set up in the capital of the country, consisting of a general manager and five functional departments.

The ANE Group has a full line of petroleum products: all grades of motor gasoline, jet and diesel fuels, fuel oils, gases (butane, propane), oxygen, bitumen, solvents, motor and other oils, lubricants and greases, charcoal, phthalic anhydride, coating agents and special-purpose chemicals used in the wood and rubber industries.

The main reason for forming the ANE Group was to create a petrochemical combine strong enough to compete with the other two large petrochemical companies in the country and to enable small companies in this field to raise the money needed to finance a profitable expansion. Other aims were:

- (a) To share design, development and problem-solving capabilities;
- (b) To reduce production costs by interchanging raw materials, by-products and other potential feedstocks;

(c) To create common services with a level of expertise that individual companies might not be able to afford;

(d) To rationalize and co-ordinate marketing policies and methods.

The years following the merger were financially bad years. The losses sustained in 1968, 1969 and 1970 amounted to 77 million (local currency); and the company's net worth declined from 195 million to 132 million. Prospects for 1971 were discouraging, and the management was experiencing difficulties in meeting its financial commitments. All lines of credit were seemingly exhausted, and bankers were reluctant to extend further credit. The company was caught in an upward cost spiral, which could not be offset by raising prices because of government price controls.

Besides the problem of meeting the immediate financial commitments, the ANE management was conscious of the need to invest in plant modernization, new plant and new products. Moreover, ANE needed capital for a major investment, the building of a pipeline from the coast (300 kilometres away) to the main refinery at Double Bees. The regional authorities were counting on ANE to maintain economic growth in the area and to provide future jobs and income by serving as the nucleus of a large petrochemical industry to be built up in the region.

A new general manager was appointed who was keenly aware of the strategic role to be played by his company in the economic development of the whole area. He also realized that the long-term investment in the pipeline would bring returns only if present operations were made more efficient. He decided the company needed a thorough appraisal by outside consultants. Assistance was requested and obtained from UNIDO, since there was little local experience in working with foreign consulting firms. UNIDO evaluated several consulting firms and selected the most appropriate one for the job. Work started shortly thereafter under the guidance of UNIDO experts. The work was to be carried out in two phases, phase I, a survey, and phase II, implementation.

The findings and diagnosis

The main finding of the consultants was that during the first three years of the existence of ANE (1968-1971) the four original companies making up the Group were unable to agree fully on the precise actions needed to realize their common objectives. In particular, the lubricating oils manufacturing unit, a highly profitable operation, could not agree with the main oil refinery, which had been suffering losses for the last four years, on questions such as over-all raw material and production policy. This fundamental disagreement

between the various units resulted in a lack of integration, underutilization of productive capacity, duplication of efforts in many areas, failure to make long-range plans and ill-considered investments by various units (e.g. duplicating unused process equipment of other units).

Faced with such a situation, the consultants concentrated on improving the immediate financial situation of the ANE Group. They drew up the following objectives.

(a) To maximize plant utilization and thus improve recovery of fixed costs;

(b) To reduce variable manufacturing, distribution and administrative costs;

(c) To increase sales;

(d) To create an effective organization of the company.

Although all aspects listed above were critical, the consultants felt rightly that the main issue was to strengthen the corporate organization with an emphasis on planning and control, the absence of which had created problems in every major functional area of the business.

Organization

According to the organization chart of the ANE Group, shown in figure V, each of the five operating units reports direct to the general manager. These units are located in an area some 200 kilometres away from the head office in the capital. The general manager is assisted by five directors of functional departments. These head office departments have very little or no contact with the operating units. For example, the administration and personnel department is largely concerned with the day-to-day administration of the head office. Its manager is responsible for drawing up the Group's collective agreements and statutes. The commercial department consists, in effect, of one person—the manager. The technical department consists of a team of 10 specialists in technology and economics engaged in design and feasibility studies for new plant and processes. The finance department consists of 21 persons concerned with financial matters among operating units, relationship with banks, bookkeeping and preparation of financial statements for the Group as a whole. The organizational planning department consists of one manager.

The analysis of the functions carried out by each operating unit revealed many areas in which economies and greater effectiveness could be achieved through more logical organization. Some obvious examples are discussed below; similar remarks apply to other functions such as personnel, financial information, technical and management services.

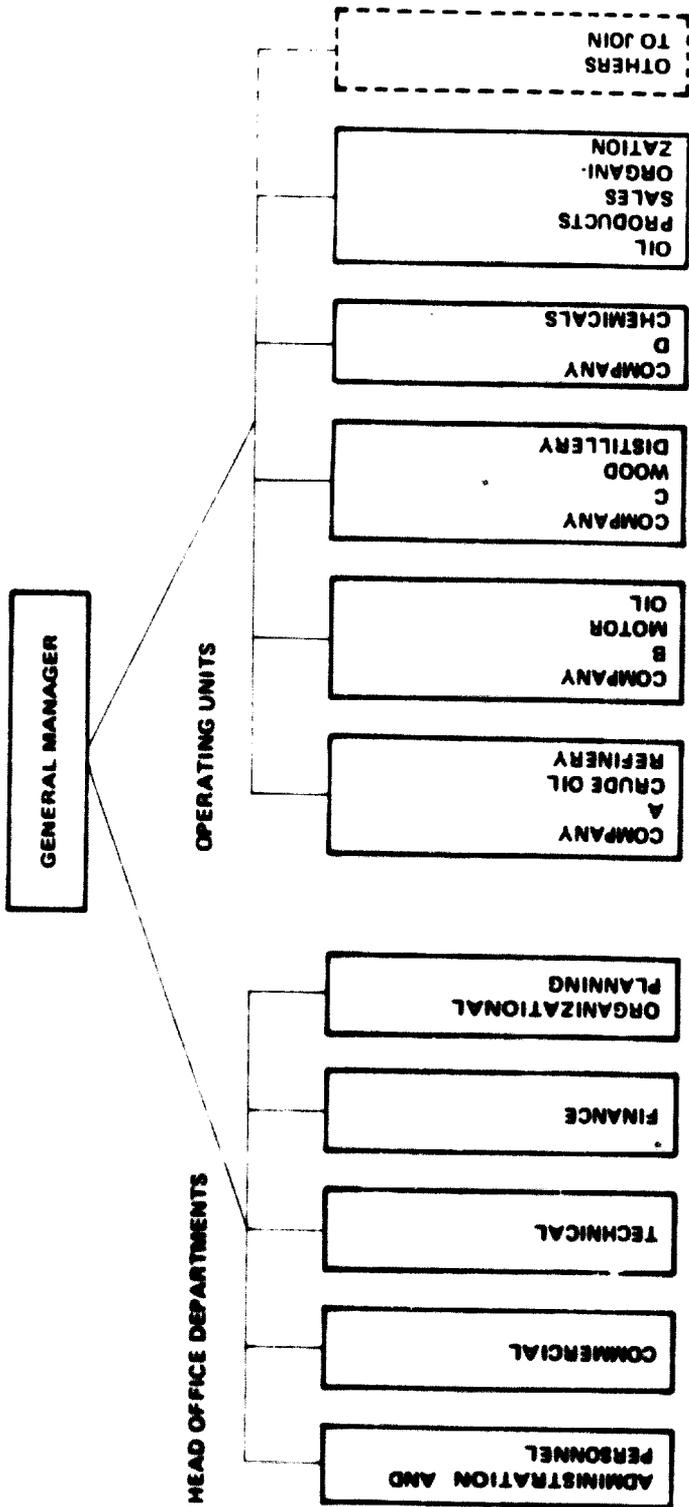


Figure V. Present structure of the ANE Group

Marketing. The oil products sales organization operates as a central unit but handles only about 15 per cent of the Group's total sales. Each other operating unit still retains its own sales team, and some large contracts are negotiated directly by the head office. This type of organization tends to increase the Group's selling costs, to reduce the effectiveness of sales management and to make the over-all customer service more difficult.

The goal of the sales organization is to maximize sales and profit for itself it is not to maximize sales of the Group's products. As a result, the service stations operated by the sales organization sell far more of the motor oils produced by competitors than motor oils produced within the Group by Company B. This lack of corporate goals has created such a fragmentation that there is not yet any true marketing function. Certain important marketing services, such as market research, advertising and sales promotion, salesmen training and distribution planning, do not exist in any organized form.

Purchasing. Purchasing is fully decentralized, each operating unit having its own purchasing staff. Thus, no economies can be achieved through buying in greater bulk from common suppliers or through simplified clerical work.

Transport. The transport needs of the operating units are not co-ordinated. Incoming, outgoing and internal transport is organized under the sales organization or the commercial department. These departments have a direct interest in outgoing transport only.

Planning

No one in the ANE Group is specifically in charge of long-range planning, and no one seems to be an expert in this field. In capital-intensive industries such as the oil and petrochemicals industries, failure to plan in long-range terms can be disastrous. There is no doubt that the inland location of the ANE Group is to a great extent responsible for its present financial situation.

Now that the Group has decided that a pipeline from the coast to the main refinery is indispensable, the next question is how to obtain the best results from this new, substantial investment. To answer this question, the ANE Group will have to decide now on objectives to be reached 5, 10 or 15 years from now. For example, can this new pipeline be used, at least partly, to move finished products as well as crude? Can an agreement be reached with competitors to make it a joint venture and therefore reduce the investment and/or operating expenses? Such questions should be fully evaluated by the long-range planning team (still to be formed) of the ANE Group.

The "development" plans of some of the operating units appear to be production- rather than market-oriented. Market research reports are prepared as part of individual feasibility studies, but the basic philosophy seems to be for a new process to be selected first and the market justification prepared later. With respect to short-range planning i.e. detailed operations planning for up to one year ahead production and financial plans are prepared for one year. In addition, monthly and weekly production plans are prepared. However, these plans are not used fully because:

- (a) They are not revised when actual results suggest changing trends;
- (b) Plans are prepared in sufficient detail to meet the needs of only one level of management. Thus, there may be too much detail for top management or too little for lower-level managers;
- (c) Most plans reflect past performance rather than point to what more could be achieved.

Control

Control systems follow the same pattern as the planning systems. A standard feature of reports is comparison of actual and planned results together with an index of achievement. However, these reports take from six weeks to two months to prepare. With such a time lag it is often far too late to take the action indicated by the report. Certain costs are not reported in sufficient detail. For example, actual figures are not shown for transport costs per ton per kilometre for different categories of transport a basic figure when considering strategy and results. Labour costs are not broken down by plant or group of plants, so that the origins of the variance cannot be identified easily.

The basic shortcoming of the present control systems is that they fail to ensure that corrective action will be taken whenever a deviation occurs. Without this type of control, even the best plan is worthless, since it has no chance of being followed.

Recommendations

The basic reorganization of the corporate structure revolves around two main questions: (a) the degree to which centralization should be introduced and (b) the particular areas in which greater centralization is appropriate. The basic framework proposed is that of a functional type of organization in which each employee or manager may have at the same time a "line" (operating) and a "staff" (functional) superior (see figure VI). The so-called

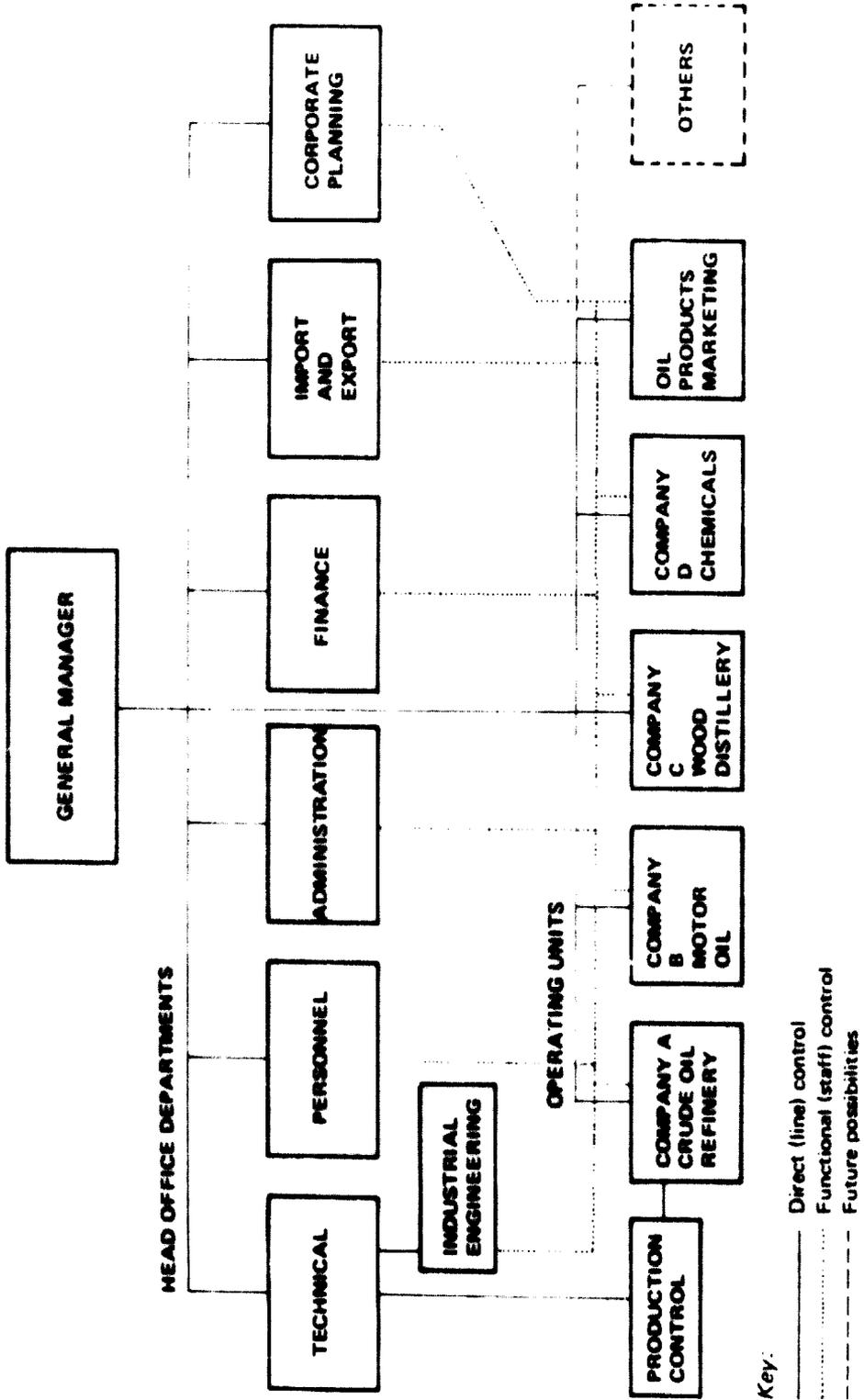


Figure VI. Proposed structure of the ANE Group

"line" organization serves to maintain discipline and stability in supervising the day-to-day activities of the employees. The staff organization serves to bring to the operating units up-to-date information on quality control, scheduling, standards systems, maintenance and the technical aspects of production.

The principle of dual accountability in organization, whereby operating personnel are responsible to headquarters for functional matters and to the local manager for day-to-day administrative matters, occurs frequently in industry whenever specialized knowledge and technical supervision must be provided to individuals who work at locations far from corporate headquarters, as in the ANE Group.

The advantage of this type of organization is that it allows local control administratively while making the best technical advice and guidance available throughout the organization. This type of organization structure also reinforces the potential influence of the head office and guarantees that local managers will operate within the framework of corporate objectives and regulations. The absence of this sense of corporate loyalty has been at the root of the difficulties experienced by the ANE Group following the inadequately prepared merger of 1968.

The proposals are presented by function, with reference to the individual operating units when necessary.

Technical

A production control group should be created at the crude oil refinery (Double Bees unit). This group would report direct to the technical director. An industrial engineering group should be set up to assist all operating units on a project basis. In principle, it should be based at the head office, possibly with subdivisions at some operating units.

Transport

Crude oil purchasing and transport, a joint operation, should be co-ordinated by an import-export specialist at the head office. The transport of other raw materials to four plants is closely linked with the technical function and should be controlled by it. The transport of finished products should be the responsibility of the marketing organization.

Marketing

The new integrated marketing organization should, like the present sales organization, be an operating unit, with its director reporting direct to the general manager at the head office. Unlike the present organization, the new unit would:

(a) Be sole distributor of all ANE Group products except exports; would control both retail and bulk contract sales; all ANE Group products not "sold" internally would be transferred automatically to the marketing unit (to ensure concentration on selling the whole range of ANE products);

(b) Share in decision making concerning new products and processes;

(c) Continue to sell competitor's products but only if it had excess capacity after selling the entire ANE output;

(d) Establish a market-research team and other marketing services (advertising, sales promotion and public relations).

Finance

To ease the cash situation between operating units and to facilitate capital procurement, a centralized clearing account should be established at the head office. Purchasing should become a finance function centralized at the head office, while receipt storage and stock control should come directly under the main user, the technical department. Financial and cash-flow planning should be introduced at the head office. Financial control should be strengthened and directed from the head office.

Corporate planning

A corporate planning group should be set up at the head office to study pricing structures, fiscal policies and over-all company strategy. It should be an independent unit reporting direct to the general manager.

Implementation

The management of the ANE Group studied and accepted the consultants' report and main recommendations. Under UNIDO guidance, the consultants worked out a programme of implementation. A summary of the main changes to be made under each function and at each location was prepared and discussed in detail with the top and lower management.

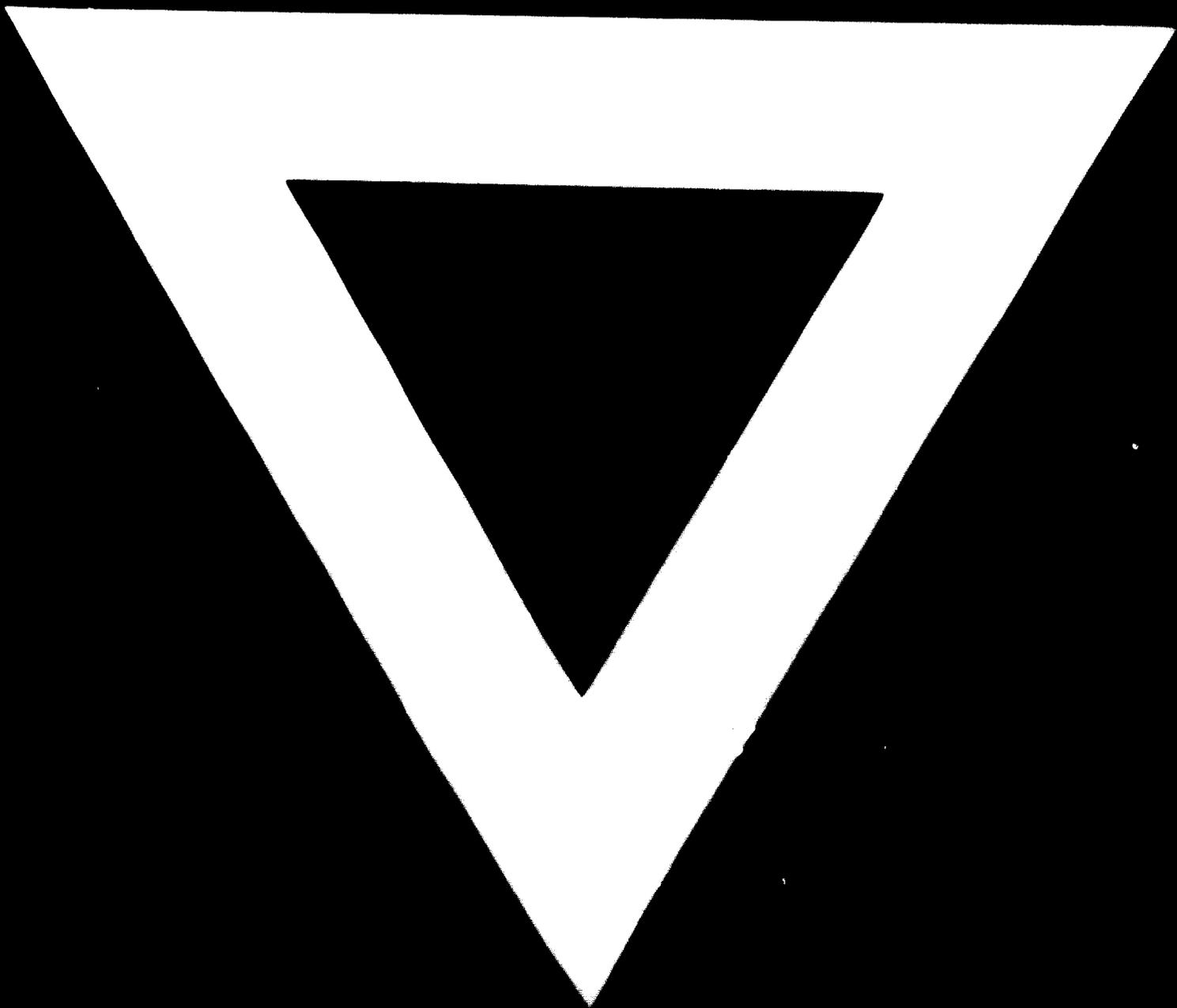


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