



THAILAND

Management Development and Productivity Centre



50302

United Nations Development Programme



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PREFACE

In November 1965, the United Nations General Assembly voted to merge two existing development operations — the Expanded Programme of Technical Assistance (established in 1950) and the Special Fund (established in 1959) — into a single entity now known as the United Nations Development Programme. This merger was accomplished in January 1966.

In the broadest sense, the UNDP assists the developing countries in their efforts to realise the full potential of their human and natural resources. To this end, the UNDP and the United Nations family of agencies work with governments in carrying out priority pre-investment and technical assistance projects. In the pre-investment sector, UNDP provides assistance to governments:

- in conducting resource surveys and feasibility studies to determine the economic potential and to plan the productive use of natural resources;
- in establishing or strengthening permanent educational institutions and training programmes designed to provide these countries with the skilled people needed in their development efforts; and
- in building up research centres for the development and application of new techniques in industry, agriculture, and a variety of other fields.

These pre-investment projects are carried out in response to specific requests from governments.

Assistance is provided for a well-defined purpose and over a limited period of time. The participating government contributes substantially to the project in the form of national staff, project buildings and facilities and other items that can be met from local resources. The UNDP, in turn, meets the cost of international personnel, project fellowships for senior counterpart staff, and equipment.

The implementation of pre-investment projects is entrusted by the UNDP to an "executing agency" selected from among the UN family of agencies. The executing agency is responsible for the day-to-day supervision and execution of the project's work plan. Its other responsibilities include recruitment of international experts, training of national personnel, and procurement of equipment.

Upon completion of project operations, the agency submits a final report to the participating government, describing the work carried out, evaluating the results obtained, and setting forth the agency's recommendations for follow-up action by the government.

In the present instance, the Government of Thailand, with the help of the International Labour Organisation and the UNDP, established a management development and productivity centre.

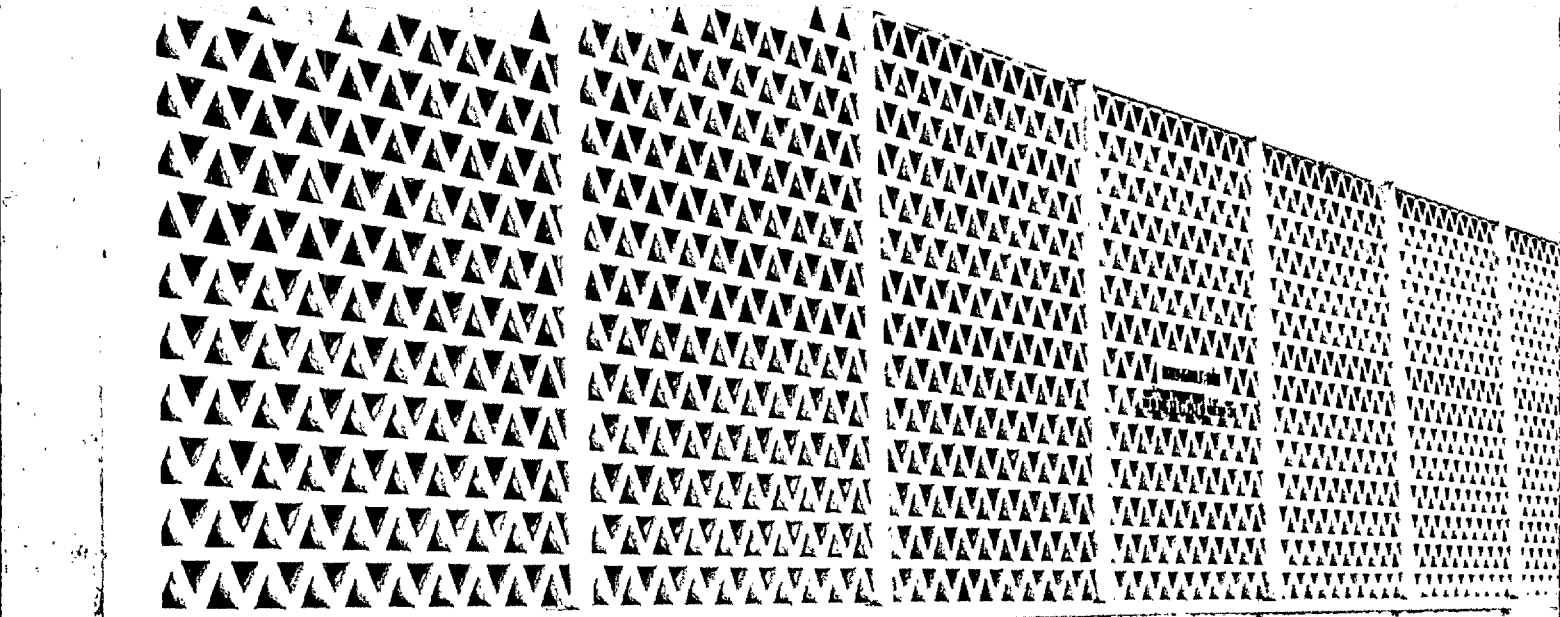
This final report records the results of their collaborative endeavour.



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▲ *The Thailand Management Development and Productivity Centre: the main building, completed early in 1963.*

▼ *This wood-products plant improved work flow and quality control with the help of the Centre.*



INTRODUCTION

From February 1962 to May 1967 the United Nations Development Programme assisted the Government of Thailand in establishing a national Management Development and Productivity Centre located in Bangkok; the ILO served as the executing and participating agency throughout the project. The only institution of its kind in Thailand, the Centre today enjoys a wide reputation as a training facility and a source of modern management techniques for all levels of management. Public sector and private companies of all sizes and from a wide range of business and industry send their executives and managers to the Centre for practical training.

This report is an account of the project. It also outlines the recent development of the Thai economy and its current and projected high-level manpower requirements. The accelerating demand for trained managers by all sectors of Thai business and industry led the Government to request aid from the UNDP in creating a permanent centre where up-to-date techniques, essential for modern production, maintenance and marketing, could be taught to Thai executives in short but intensive and extremely practical courses.

Thailand's economy, like those of most rapidly industrialising countries, is experiencing a steadily growing shortage of qualified personnel to operate its expanding businesses and factories. Public authorities and infrastructure services also increasingly depend upon highly-trained executives and technicians as their activities expand and become more complex. Whereas national demand for people with at least 16 years of education and qualified to fill managerial and professional posts totalled 4,000 in 1961, by 1970 the annual demand for such personnel is expected to exceed 9,000. By 1980 it will come to 16,000.

Even in the intermediate level occupations, such as technicians who require 14 years of education and skilled workers who must have at least 12 years of schooling in order to qualify for supervisory and middle-management posts, there is a rapidly rising demand. Thus 1961's demand for 15,100 technicians is expected to grow to 16,000 annually by 1970 and to 18,000 annually by 1980. The estimated demand for 179,000 skilled workers during the decade 1960-71 should increase by 29,000 for the period 1971-75.

Although Thailand's educational infrastructure is growing rapidly, when it comes to job-oriented training for management, the universities and schools cannot cope with the current and potential demand from business and industry. Tacit recognition of this fact is given by the large number of Thais who have taken modern business and management at United States universities and in Hong Kong, Australia and Japan and by the establishment with Ford Foundation assistance of the School of Business in Bangkok within the framework of the National Institute of Development Administration (NIDA).

The recent adoption of degree programmes in "Business Administration" by Thai universities indicates an official awareness in higher education circles of the practical needs of the economy. Former graduates who did not have the advantage of such training, however, and future graduates of the more theoretical faculties such as science and engineering may find themselves in jobs where a deep knowledge of industrial engineering techniques, marketing methods, management accountancy, and similar practical disciplines is essential to their company's success.

It was with these considerations in mind that the Thai authorities turned to the UNDP in 1960 for help when they decided to close the gap between existing

I THE THAI ECONOMY: GROWTH AND CHANGE

Thailand's economic growth started to gather momentum in the early 1950s, after post-war reconstruction had been completed and the war-torn economy stabilised. Once inflation had been curbed, the currency devalued and domestic production restored to the pre-war level, the stabilisation programme gave way to one of development. The shortage of goods and services experienced during the Second World War prompted the Government to adopt measures to industrialise the economy, with the aim of achieving self-sufficiency, at least in essential goods. Moreover, the war-time production of consumer goods in Thailand had already demonstrated the possibilities of an industrial sector. Thus, large-scale state-owned factories were set up to utilise the country's abundant land-based resources while providing a model for private entrepreneurs. Recent Government policy, however, has been to divest itself of state-owned factories and to encourage manufacturing by private enterprises, both domestic and foreign.

THE RISE OF INDUSTRY

Agriculture has always been — and still is — the mainstay of the Thai economy. Formerly, industrial undertakings were confined to a few land-based products (such as rice, tin and teak), which represented the country's major exports. One result of the successful post-war measures to diversify agricultural output was an increase in the variety of indigenous industries processing and transforming food and raw materials for home and export markets. Flour, sugar and textile mills were added to the rice mills, tin mines and sawmills which had long made up the bulk of the country's industrial production. Other land-based

manufacturing includes vegetable oil extraction, plywood manufacture and tanneries. These enterprises are generally small, the average number of employees per firm being less than ten in 1965. Another aspect of the relationship between agriculture and manufacturing is typified in the rice production-gunny bag cycle. Formerly, gunny bags were imported from India; now, using locally grown raw materials, Thailand produces her own bags because her rice exports need them.

From 1951 to 1960, the economy grew steadily without planned governmental support, although stimulated by the Government's annual budgetary programmes, at an annual average rate of 6.3 per cent. More than 80 per cent of all goods and services came from the private sector. Gross National Product rose from US \$1,540 million in 1951 to US \$2,680 million in 1960, at constant prices. Nearly 40 per cent of GNP was generated by agriculture, which provided employment for more than 80 per cent of the labour force as late as 1960. The growth of commerce and other services also largely depended on the prosperity of the agricultural sector.

By the early 1960s, manufacturing had begun to form an independent economic base, even though it was still linked with agriculture. The rate of industrial growth was remarkable. In 1950 there were only 1,750 industrial establishments, most of them small family-operated undertakings. Less than a decade later, in 1959, the total had grown to 11,301, with public companies being formed in increasing numbers. About 98 per cent of them were small-scale undertakings which employed less than 50 workers. The expansion of industry, which mainly took place in the Bangkok-Thonburi area, was most marked in the private sector, where the number of factories increased from 10,409 in 1957 to 16,005 in 1960. This growth could be explained by the entry of private entrepre-

neurs into new areas of industrial investment, such as basic consumer goods for local consumption.

THE GOVERNMENT'S ROLE

In 1960, the Government realised the urgent need for Thailand to develop at a faster rate. The nation-wide population census of that year revealed that the rate of population growth was much higher than the public authorities had assumed. The country's population had been growing at the rate of 3.2 per cent annually, instead of some 2 per cent as formerly believed; it amounted to 27.9 million in 1960 and 32.9 million in mid-1966. The Government estimates that by 1986 Thailand will have a population of 67.2 million.

Besides the need to provide for a much larger population, government planners also recognised the importance of building up a solid economic infrastructure, which would permit the nation's massive economic potential to be developed. At the same time, the material benefits flowing from economic development would have to be spread to rural areas so as to lessen the disparity of income between the rural and urban populations. This new consciousness of the need to develop the country's resources led to the preparation of a six-year economic plan.

In 1957 the World Bank undertook a study of the Thai economy. On the basis of one of the study's major recommendations, the Government established in 1959 the National Economic Development Board to function as a central planning body. The US \$1,600 million plan that the NEDB drew up was published in 1959 and entitled "An Economic Development Programme for Thailand". Exclusively a public development programme, it was principally designed to increase the country's total productive capacity by creating a dynamic economic base for accelerated and balanced growth. The Government was assigned a supporting role in the creation of the necessary basic infrastructure and of a favourable investment climate for the private sector. The Plan was divided into two three-year phases, the first of which was launched in 1961.

INDUSTRIALISING THE ECONOMY

The promise and predictions of the six-year plan were borne out by events. During the period 1961-65, GNP at constant prices rose from US \$2,790 million to US \$4,010 million, giving an annual rate of growth that exceeded the targeted 5 per cent by 2 per cent.

This growth was realised with remarkable financial stability. Gross domestic investment, as a share of GNP, increased from 15 per cent in 1961 to 21 per cent in 1965. Plan targets had been designed to modify the economy's structure so that agriculture's share in Gross Domestic Product would decline, while its output would be further diversified. In effect, although agriculture was still the mainstay of the economy, its contribution to Gross Domestic Product declined steadily, from 36.7 per cent in 1961 to approximately 30.7 per cent in 1965. At the same time, the combined share of manufacturing, mining, construction, electricity, transportation and communications increased from 26.2 per cent to approximately 30.9 per cent during the same period. The diversification of agriculture continued, with maize, cassava and jute becoming major export items, thus reducing the economy's dependence on rice, rubber and tin as the main exports. Increasing agricultural diversification also served to stimulate industry, particularly manufacturing, which had always depended upon the processing and transformation of indigenously produced basic materials.

Manufacturing grew at a 9 per cent annual rate during the period 1961-65. In 1961, the first year of the Plan, the rate of industrialisation suddenly accelerated: vigorous governmental promotion led to the creation of large-scale enterprises in the private sector in various lines of production that were formerly thought to be difficult, if not impossible, to establish in Thailand. The number of industrial establishments grew from 23,060 in 1961 to 38,393 in 1965, while the number of factories that employed more than 50 workers went up from a mere 2 per cent to 5 per cent of the total.

Much of this expansion can be attributed to the impact of foreign private industrial investment, which brought in not only the necessary modern technology, but also scarce capital. The industries newly established or expanded during this period included the manufacture of textiles, pharmaceuticals, radios, electronic equipment, automobiles and other vehicles, chemicals, chemical fertilisers, paper products, iron and steel forgings, vegetable oils, agricultural implements, and wood products. The Promotion of Industrial Investment Act of 1962, and its revised version of 1965, helped to attract 499 industrial projects by June 1966. Of these, 359 had a total registered and operating capital of US \$463 million and were considered to be of a size and scale suitable to local conditions. Together, they created jobs for 58,766 people, or more than 12 per cent of the



II HIGH-LEVEL MANPOWER NEEDS AND THE PROJECT

Thailand's industrialisation is having a marked influence upon the nation's employment structure, especially in the higher level occupations where the longest period of education is required. The greatest lack of trained people is currently found in the managerial and technical-professional categories, a shortage that is expected to become more acute in the future as the Thai economy becomes more complex. Before summarising the country's estimated needs in these two categories for the next 25 years, the growth of the industrial labour force will be outlined.

THE IMPORTANCE OF INDUSTRIAL LABOUR

In 1960 the Thai labour force amounted to 13,759,000 people, or about one-half of the total population. Of these, 82.4 per cent were engaged in agriculture, forestry, hunting and fishing — a relatively high percentage for a country at Thailand's level of development. The remaining 17.6 per cent, or the non-agricultural labour force, amounted to 2,182,869 in 1960. One-fifth of these were engaged in manufacturing (21.5 per cent or 470,148), while two-thirds were active in the tertiary sectors (35.7 per cent or 779,349 in commerce and 30.0 per cent or 654,215 in services). Most of the remaining 12.8 per cent of non-agricultural labour were found in transport and communications or construction. Compared with many countries at Thailand's early stage of industrialisation, a relatively large percentage of non-agricultural labour was engaged in commerce and services in 1960 compared with manufacturing.

Since most Thai farmers are able to produce sufficient crops for their own needs and a surplus which they can sell, it appears unlikely that a substantial amount of labour will shift to the non-agricultural sectors. Thus, 70 per cent of the total labour force

projected for 1981 will still be engaged in some sector of agriculture.

Nevertheless, industry is expected to absorb a growing share of the future population increase, taking 7 per cent of the annual growth by 1976 and 10 per cent by 1981, when the industrial workforce will probably have risen to 1.5 million. By comparison industry only absorbed 3 per cent of the estimated one million people added to the population in 1965.

In its contribution to national production, manufacturing, relatively speaking, far outweighs agriculture. Therefore it has a far greater impact on the improvement of living standards. Whereas the manufacturing sector employed only about 3.5 per cent of the labour force in the early 1960s, it produced 10.7 per cent of GNP in 1960 and approximately 12.8 per cent in 1965. The situation is the reverse in agriculture, where over 80 per cent of the population has been producing about one-third of the national wealth. (However, it is recognised that the rice export premium, which holds down domestic prices, has the effect of understating the value of agriculture in GNP. In consequence, the contributions of industries and services are overvalued.) Thus, productivity in the manufacturing sector is about ten times higher than in the agricultural sector. In terms of average worker income, the situation is similar. In 1959, the annual average income per agricultural worker was only US \$182 while in industry (including mining) it was about US \$664.

THE HIGH-LEVEL OCCUPATIONS: SHORTAGES AND PROJECTIONS

The occupational composition of the 1962 labour force revealed that relatively few persons were in the

The size of new manufacturing plants in Thailand — like this zipper factory — demands sophisticated skills for efficient management.

professional and administrative/managerial categories. Shortages of trained people, and particularly in the latter categories, were then already recognised to be a serious shortcoming for the country's development. At the time, the professionals outnumbered administrators/managers by a ratio of 7 to 1, with 174,000 in professional and technical jobs and only 26,000 people in administrative, executive and managerial posts. The 1962 labour force survey further

emphasised the growing shortage in the latter three categories, especially in manufacturing, commerce and construction. When the 1962 figures are compared with the projected needs for these and other sectors in 1986 (see Table II), it is clear that the managerial and administrative categories represent a high-level manpower bottleneck in the economy, one that is closely related to the supply of university-trained people.

Table II. Percentage Distribution of High-Level Personnel by Economic Sector, 1962 and 1986

	1962		1986	
	(Total 1960 Labour Force: 13,759,000)		(Total Projected Labour Force: 30,307,000)	
	Managerial Plus Administrative*	Professional Plus Technical*	Managerial Plus Administrative	Professional Plus Technical
Agriculture	—	—	288,000 (1.28 %)	58,000 (.26 %)
Mining	—	3,750 (12.7 %)	1,000 (1.12 %)	1,000 (0.91 %)
Manufacturing	6,100 (1.3 %)	2,800 (0.6 %)	38,000 (2.0 %)	41,000 (2.2 %)
Construction	205 (0.3 %)	620 (0.9 %)	2,000 (1.56 %)	2,000 (1.55 %)
Public Utilities	1,500 (9.8 %)	1,330 (8.6 %)	8,000 (10.8 %)	6,000 (11.0 %)
Commerce	7,000 (0.9 %)	6,250 (0.8 %)	146,000 (5.5 %)	27,000 (1.0 %)
Transport + communications	2,980 (1.8 %)	1,980 (1.2 %)	14,000 (3.5 %)	11,000 (2.7 %)
Services	25,500 (3.9 %)	140,600 (21.5 %)	64,000 (3.0 %)	514,000 (24.2 %)

* Distribution percentages from the January 1963 Labour Force Survey have been applied to 1960 census employment totals.

Source: *Current and Projected Secondary Education Programs for Thailand: A Manpower and Educational Development Planning Project*, Educational Planning Office, Ministry of Education, Thailand, 1966.

If the economy's future needs for highly trained people appear to be gigantic, requirements in recent years have not been less so by comparison. Thus, of those employed in professional, technical and related jobs in 1963, only 18 per cent had obtained university degrees, or 17,150 out of 93,250 people. It was estimated that only about one-quarter of those in administrative, executive and managerial posts had university degrees in that year. The demand for high-

level, university-trained people will undoubtedly increase as Thailand continues to develop a more complex economy and society.

In terms of annual demand of the professional/managerial and technical categories for highly trained manpower from 1961 to 1986, the greatest increase will take place in the former, mainly because it starts at a low base figure. Table III gives periodic projections for both categories until 1986.

Table III. Annual Requirements for High-Level Manpower

Year	Professional and Managerial (16 Years of Education)	Technical (14 Years of Education)
1961	4,000	15,100
1965	5,300	15,500
1970	9,200	16,000
1975	12,000	16,600
1980	16,000	18,000
1986	19,000	23,000
Source: Manpower Planning Office, National Economic Development Board.		

Demand projections for middle-level manpower (Table IV) which includes middle managers, supervisors and foremen – all of whom are highly skilled and require further training at some point in their careers – forecast an even heavier load on the nation's training facilities in coming years than do the projected needs for high-level manpower.

Table IV. Middle-Level (Skilled) Manpower Demand Projections

1960–71	179,000
1960–76	208,000
1960–81	230,000
1960–86	260,000

Source: Manpower Planning Office, National Economic Development Board.

THE WORLD BANK ASSESSMENT

Nearly five years before the Government's concern for manpower development produced the estimates quoted above, the World Bank study mentioned earlier had pointed to the same shortages, although only in qualitative terms. It repeatedly stressed that the shortage and inadequate training of skilled, and particularly of managerial, personnel was one of the most serious obstacles to the country's industrial development. Not only did the report contend that finance, manpower, and equipment had been dispersed over too many projects, but that public sector industries had been developed without adequate studies of markets, raw materials and sites and usually without satisfactory provisions for management.

In general, the study found that marketing problems were often ignored, plant maintenance poor, and accounting rudimentary. Furthermore, the report noted a "tenacious adherence in Thailand to traditional practices and to status relationships which tends to diffuse authority and responsibility, to de-emphasise the need for special training and competence... and to prevent the establishment and exercise of efficient production procedures." In the manpower area, the World Bank identified several segments of Thailand's workforce, from the highest levels downwards, that could benefit from further training.

EXPANSION OF EDUCATION AND TRAINING FACILITIES

Shortly after the World Bank report was issued in 1959 the Government began reshaping the nation's educational system, both academic and vocational. Although the educational level of the Thai labour force was rising in the early 1960s, it was considered to be quite low for a country at Thailand's stage of development. There also appeared to be a high correlation between the low educational levels of the labour force and low productivity, mainly in the agricultural and service sectors but also in some segments of industry.

A new National Scheme of Education was promulgated in 1960. Designed to merge the academic and vocational programmes of secondary education into one broad "comprehensive" system, the scheme now being implemented is based on a core programme that combines both academic and pre-vocational education. With the arrival of new technologies and industries, however, it became clear that an educational gap existed between university graduates at one end of the scale and the people leaving the vocational schools at the other.

The first technical college was opened in Bangkok in 1962. To help bridge the gap further, several more were founded. These admit students who have completed ten years of general education plus three years of vocational training. Diplomas are offered after two years in a broad range of engineering, commercial and service trades. Due to the popularity of these colleges, double shifts had to be adopted in order to cope with the demand for training places. These colleges are source of skilled labour for expanding industries.

Thailand has at present five universities in the Bangkok area whose programmes have been modified recently to respond more effectively to the needs of

the economy. In 1960 the Government began to develop higher education in the provinces. There is now a university at Chiangmai in the north, another at Khon Kaen in the northeast and a third at Songkhla in the south. The addition of degree programmes in "Business Administration" at these new institutions, which admitted their first students in 1964, reflects the Government's policy of adapting higher education to the needs of the economy.

Apart from the creation of institutions for higher learning of the formal sort, the Government became conscious of the need for training facilities of the informal type, designed for people who had already completed their education but still required further training. In the late 1950s and early 1960s, an imbalance occurred in the nation's output of university graduates and the ability of the country's administration and armed forces to absorb them. The most likely alternative for those unable to find a suitable position in either usually turned out to be in the nation's rapidly growing industries and commercial enterprises. Although some of these graduates had received business training after leaving university, most did not. This large pool of university-trained people active in Thai commercial life in the early 1960s required further training of a practical nature in order to perform their increasingly complex jobs efficiently.

TRANSLATING THE NEED INTO THE PROJECT REQUEST

While the World Bank report was still in preparation, Thai planning authorities began seeking other sources of assistance to aid the country's development. The ILO was asked to provide advice on how to raise productivity in Thai industry through the application of modern management techniques. In response to the Government's request, the ILO sent a three-man Productivity Demonstration Mission in 1958.

During the Mission's three months in Thailand, it demonstrated that immediate benefits could result from the application of basic industrial engineering techniques in Thai industry and that Thai personnel could be readily trained to apply such techniques. By this time the Government was already aware of the urgent need to introduce such techniques in the nation's factories and offices. The same year the Minister of Industry stated:

"The word productivity and its concept is still something new to South-East Asian countries, but we in Thailand already know that it has a great deal to do with the standard of living of a nation. . .

Production can be increased by two methods. By investments that allow purchase of machinery from abroad, which in turn draws heavily on foreign exchange. Or by improving the use of our existing manpower, machines, materials, equipment and land. . . We are rich in natural resources, in raw materials and in manpower. . . Our industry can prosper by using modern productivity and modern management techniques."

During its 1958 mission, the ILO team visited 35 private and government-owned plants in the Bangkok area. These plants represented a fair cross-section of Thai industry and ranged in size from the railway workshops, which employed 2,500 people, to a small canning factory with only 20 employees.

The Mission reported that productivity in the companies it visited was low despite the excellent equipment found in some of the larger plants. Often it appeared that the large sums of money invested in top quality machinery were not justified by the rate of return the machinery was earning. The lack of management know-how was frequently cited as the reason for the poor return on investments. The experts also found that most factory layouts imposed an unnecessary amount of work handling. Production methods also required improvement but none of the factories had a formal training system. Moreover, few factories had any production planning and control systems to co-ordinate the work of interdependent departments. And there was little appreciation of the need for costing and cost control. Maintenance of machinery was often inadequate. Although most factories had incentive wage schemes, these were not usually based on proper work measurement or method study. Thus they were likely to lead to anomalies in earnings and to dissatisfaction among workers.

In its report¹, the Mission contended that considerable scope for improvement existed in most plants without the need for any additional large investment. In several plants it appeared likely that a systematic application of industrial engineering techniques could substantially reduce scheduled capital investments. The Mission also drew attention to the fact that the main purpose of productivity improvement is to develop an efficient low-cost industry that is capable of making a direct and significant contribution to the raising of national living standards.

Its main recommendation was that the Government establish a permanent "Productivity and Super-

¹ "Report to the Government of Thailand on a Productivity Mission (September–November 1958)", ILO/TAP/Thailand/R.10, ILO, Geneva, 1959.

visory Training Centre". As described earlier in the "Introduction", the Government soon acted on the Mission's advice and requested assistance from the Special Fund in December 1960 to establish such a centre. There was little doubt that all sectors of the growing economy would benefit from practical training facilities for managers, executives and various types of technicians.

During the late 1950s, little emphasis was placed on solving the operational problems of Thai business administration with a systematic approach. Although two of Thailand's universities had faculties of commerce and accountancy, their curricula treated mainly the theoretical aspects of commercial practice, accountancy, statistics and economics. There was a

growing awareness on the part of the Thai business community, however, of the need for training in business and industrial management, which was becoming urgent in the early 1960s because of the rapid increase of investment in all sectors of the economy.

In view of the numbers of people who needed practical training in management and industrial engineering subjects, coupled with their inability to leave their jobs for extended periods of study, the only solution was to give them short courses of instruction that would be related to the everyday problems they encountered in their jobs. The Centre's organisation and the content of its courses, which were developed under the aegis of the UNDP/ILO project, are discussed in the following chapters.

III DEVELOPING THE CENTRE

THE PRE-PROJECT PERIOD

Although the Centre became operational on 12 February 1962, a few weeks after the Plan of Operation was signed, two of the ILO experts originally assigned to the second EPTA productivity mission had been in Bangkok for nearly a year preparing the groundwork for the project, also under EPTA auspices. One of them was appointed the Chief of Project and the other was assigned to the Centre as an expert in industrial engineering. During the pre-project period, they assisted Thai authorities with the drafting of the application for UNDP assistance and later helped draw up the Plan of Operation. Even though it took more than a year to get the Centre started following the submission of the Government's request, the experts were able to begin training counterpart staff during this period.

The Centre's institutional framework began to take shape during the latter half of 1961, shortly after being formally established by a ministerial order issued in August 1961. Another order appointed the Centre's Director, the Chief of Technical Operations, and the Chief of Administration. Seven counterparts for technical subjects had been appointed by October 1961. All received intensive training in their respective fields of interest and carried out in-plant consulting assignments before the project was declared operational. The Centre was housed until March 1963 in temporary accommodation made available by the Ministry of Industry.

During this pre-project period, administrative and information staff were recruited and trained. Administrative personnel were instructed in the techniques of efficient office organisation and information staff taught the significance of modern management tech-

niques. A technical index by subject matter and an industrial index by products and materials were devised to form the basis of the Centre's future information library and records.

Thus, even before the project got started, the foundations for the Centre's development had been laid, largely due to the resources made available by the pre-project period of EPTA assistance. Any long-term UNDP project benefits from such pre-project assistance, which enables it to build upon well-established foundations. The EPTA mission not only assisted in solving initial administrative problems, such as budgeting, planning, recruiting staff and initial counterpart training, but also helped the embryonic Centre spread the concept of productivity improvement. The mission's activities did much to demonstrate the gains resulting from the application of productivity techniques. The presence of the mission also helped the Centre to acquire the backing of local business and industry, without which little of lasting value could have been established.

A survey was conducted in January 1962 to assess the demand for the Centre's services. Over 800 questionnaires were sent out to all firms in the Bangkok area that employed more than ten people. Accompanying the questionnaire, which was designed to determine the companies' fields of interest in training their management personnel, was a description of the services offered by the Centre. The mailing list prepared on the basis of the replies received was to prove invaluable for recruiting trainees for the first courses. A similar survey – but more comprehensive in its scope – was made three years later, in February 1965. This was designed to assess the probable future demand for the Centre's services. The results of the second survey led to the formulation of the request for the successor project, which would expand the

Centre's work into the area of management consultancy.

THE CENTRE'S ORGANISATION

From its inception, the Centre was attached to the Department of Industrial Works within the Ministry of Industry. When the project ended, it had the status of a "unit" within the Department and was directly responsible to the Director-General of the Department. Throughout the project, executive and administrative responsibility for the Centre rested entirely with its director and his staff. The team of ILO experts served exclusively as a training and advisory group. From the point of view of the UNDP and the ILO, however, the Chief of Project was responsible for the success of the training programme as specified in the Plan of Operation and for the team of experts.

The accompanying organisation chart shows the three divisions that comprise the Centre – Administration, Technical and Information. Each of these is under the control of a chief officer who is responsible to the Centre's Director. Although the separation between the Administration and Information Divisions became less distinct as the Centre developed, the Technical Division retained its unique character throughout the project and grew steadily in strength and importance. It is responsible both for training and advisory work in the five functional management specialisations:

- General and Office Management
- Management Accounting
- Marketing
- Personnel Management
- Production Management

All operating expenses of the Centre are covered by the Thai Government. One-half of the Administration Division's costs are allocated to the technical sections because the Division handles the arrangements for their training courses. A study of Centre operating costs made as part of a trainee's practical project disclosed that in 1962/63 participants' fees covered between 8 and 12 per cent of the Centre's operating costs.

THE CENTRE'S GROWTH

The staffing and housing of the Centre was primarily a government responsibility. The Plan of Operation specified that the Government, acting through the Ministry of Industry, provide staff for the Centre during its first five years of existence. Sixteen admin-

istrative and information staff were already in their posts when the project became fully operational in February 1962. By the time the UNDP assistance came to an end in May 1967, the staff in these categories had grown to 22.

The target called for a slow but steady growth in the number of technical counterparts, starting with 12 in the first year of the project and rising to a total of 17 in the last, or an addition of one counterpart each year. What actually happened was that the project started with 9 and ended with 20 technical counterparts, a total which some experts considered barely sufficient for the Centre's rapidly expanding workload. Appendix E lists the counterparts. In short, the extent of the Centre's activities was underestimated in the Plan of Operation and the very success of the Centre quickly multiplied the work of everybody connected with it. As early as October 1963, it was concluded that the scale of operations outlined in the Plan of Operation was not sufficiently large to enable the objectives of the project to be fully accomplished. A substantial increase in the project's scope was therefore proposed. It was decided to increase the allotted number of expert man-months by 24 and to initiate an entirely new project once the present one had terminated. The successor project proposed in 1965 would meet the growing need for the application of management techniques by training management consultants, whose work in Thai business and industry would complement the existing work of the Centre.

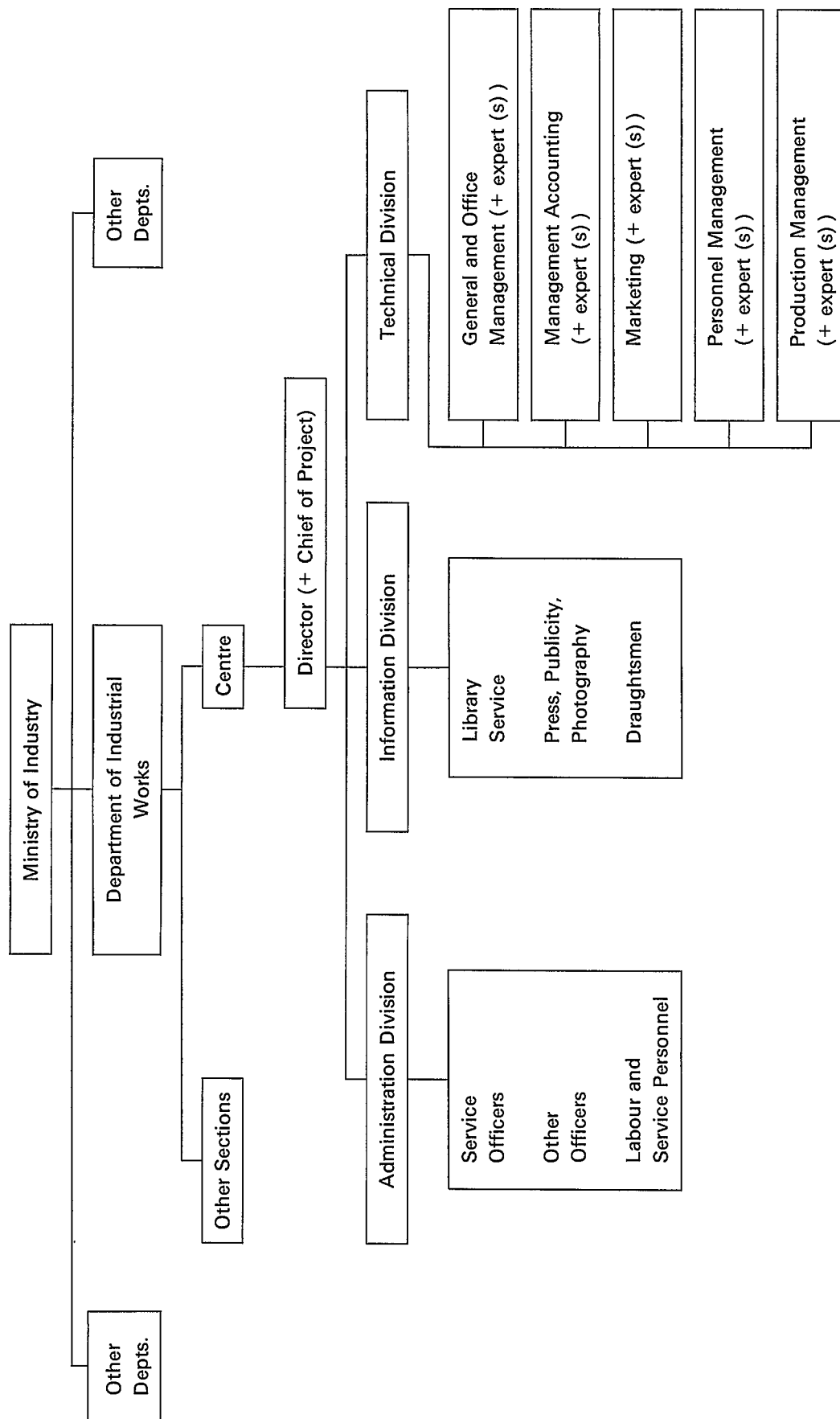
The fact that the Centre's courses were invariably over-subscribed from the start and that it found itself under the continual pressure of increasing demand for its services, are indications of the measure of the enthusiasm that its work engendered.

THE ROLE OF THE GOVERNMENT

From the outset of the project, the most important single factor contributing to the success of the Centre was the Government's unstinted support, which is summarised in Appendix C. This support was responsible for creating an environment that fostered the enthusiasm of the staff and project team alike. Without this atmosphere, the most qualified of experts and counterparts could have achieved little of lasting value.

First and foremost, the Government lost no time in providing a new building that was designed specifically to house the Centre. The Centre's main building

**ORGANISATION CHART OF THE
THAILAND MANAGEMENT DEVELOPMENT AND PRODUCTIVITY CENTRE
AND ITS SITUATION WITHIN THE MINISTRY OF INDUSTRY DURING
THE UNDP/ILO PROJECT
(1962-1967)**



took less than a year to complete; it was occupied from 4 February 1963 onwards.

Early in 1964, when it became evident that more space would be needed to meet the increasing demand for courses, the Government voted an additional \$38,000 to provide an annexe to the building; this exceeded its contractual obligations for accommodation. In doing so, it recognised the importance of creating the correct environment for the Centre's operation. The psychological importance of having modern, rationally designed surroundings in which to teach modern management techniques cannot be overestimated. Work on the annexe was started in 1964 and it was ready for occupancy in June 1966. Besides increasing lecturing space, the annexe also reduced the congestion that had by then arisen as a consequence of expanding enrolment and increasing administrative staff.

The hiring of extra administrative and technical staff was also made possible by the Government's readiness to provide the necessary funds as the need arose. The fact that counterpart staff usually found themselves overworked was not due to the limit set on their total number, but to the lack of suitable candidates to fill the vacancies. This shortage of staff was part of a larger problem, which will be discussed later.

The Government gave other forms of assistance as well: it made available radio and television time to publicise the Centre's activities, encouraged state-owned enterprises to use Centre services and supported Centre-sponsored associations.

THE UNDP CONTRIBUTION

The contribution of the UNDP also went beyond that originally foreseen in the Plan of Operation. The Plan was modified on several occasions in order to make it possible for the UNDP's assistance to meet the Centre's real needs as they became apparent during the project's progress. In November 1963, the Special Fund agreed to increase the original total of 276 expert man-months by 24. But these were not all used because of a very common problem afflicting any enterprise that budgets for five years in advance: inflation. In order to keep within the budget and its 25 per cent contingency allocation, the UNDP found it necessary to withhold seven expert man-months out of the total. The total number of expert man-months used during the project therefore exceeded the number specified in the original Plan of Operation by 17. Appendix D gives the ILO experts assigned to the project.

Another important modification to the Plan of Operation was the lengthening of the project, which was originally planned (and budgeted) to last exactly five years from February 1962 to February 1967. It was agreed to defer the project's cut-off date until the end of May 1967 in order to allow certain experts to fulfil their contracts. This extension proved necessary because of the delays encountered in recruiting suitably qualified experts.

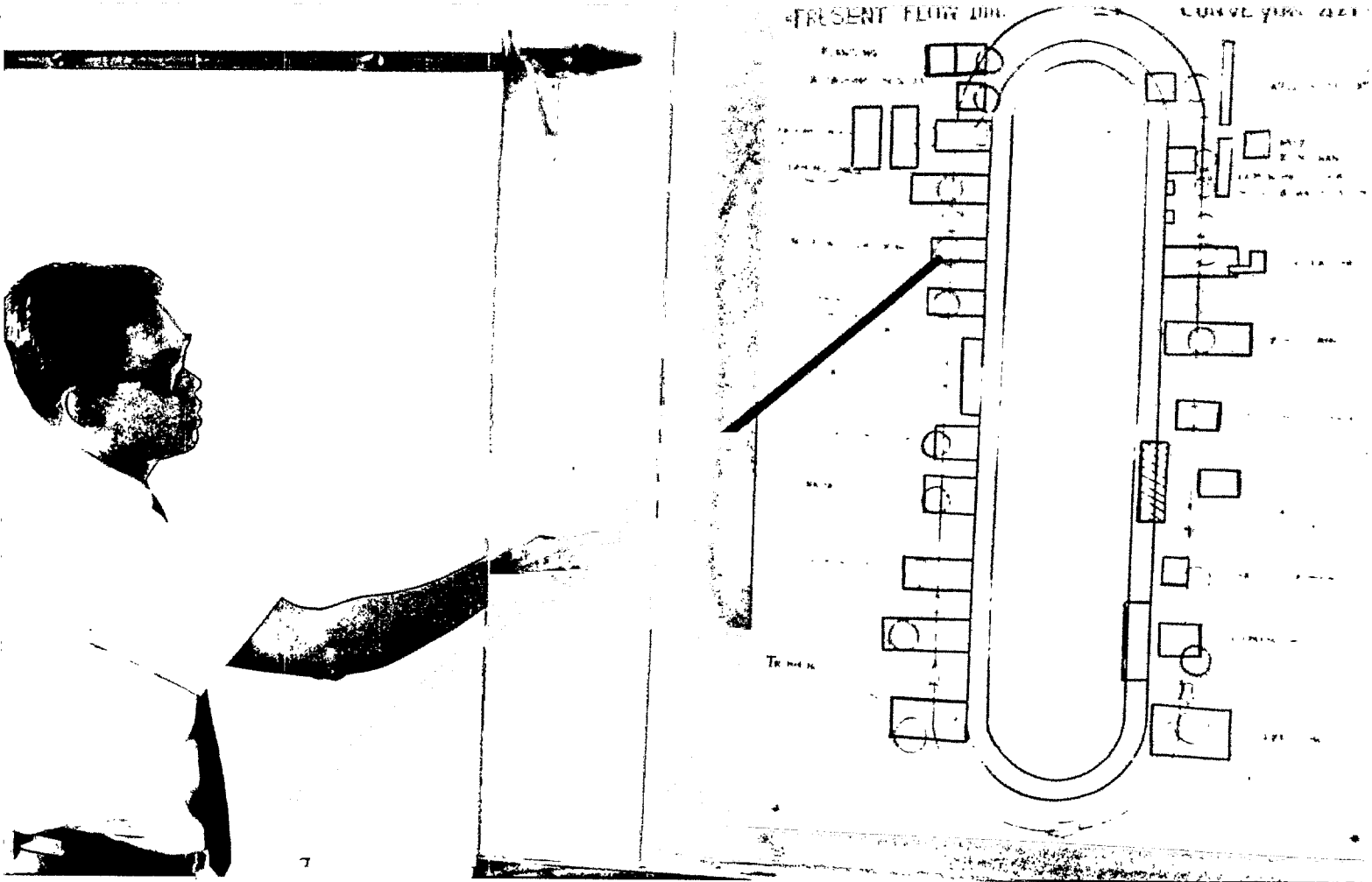
During the early months of the project, the equipment provided for in the Plan of Operation began to arrive. Most of the US \$20,000 equipment expenditure was for teaching aids of one sort or another. Major items included film, slide, strip and transparency projectors, cameras, calculators and simultaneous translation equipment, tape recorders, planning boards, dictating machines, machine speed and time recorders, and many minor items for demonstration and teaching purposes. Appendix I gives a complete list.

All of this equipment was frequently used during the project, except the simultaneous translation apparatus. The language problem that was anticipated when the project was planned did not, in fact, materialise, as will be explained later.

CONTINUITY OF PROJECT PERSONNEL

The continuity of the project was aided by the uninterrupted service of the Centre's Director, Mr. Udomsakdi Bhasavanich; he was present at the Centre from the moment it started until the project ended and did not take up his three-month fellowship. Mr. Udomsakdi was, moreover, well qualified for his post. A civil engineering graduate of the University of Illinois in the USA, his former post as the Chief Engineer of the Ministry of Industry had given him a broad background as a planner and administrator in many governmental projects. The successful development of the Centre was also assured from the start by the qualifications of the technical staff, all of whom had a university degree or were technically trained.

Continuity was also achieved to some degree where the experts were concerned. After the first Chief of Project, Mr. W.T. Utting, had prepared the ground for the Centre's development for nearly a year before it became officially operational, he continued as the project's head for two-and-a-half years before leaving to take up a post at ILO headquarters in Geneva. After a brief interval he was succeeded by Mr. A.D. Granger, who then saw the project through



▲ Seminar participant demonstrates different operations involved in shoe manufacture.

▼ In-plant work-study seminar organised by a shoe factory in Bangkok with the co-operation of the Centre.



Table VII
Course Participants during Project

	1962	1963	1964	1965	1966-1967 (Jan.-May)	TOTALS
Thai instructors	10	5	7	5	4	31
Course places taken by participants	206	646	673	1,100	3,363	5,988

1965 to a large number of prospective applicants elicited their views on the pattern of courses they considered the most desirable. On both occasions a high percentage of responses to the questionnaires was received. Two main conclusions emerged from these responses. (Appendix K summarises the results of the second survey.)

- (1) There was an overwhelming preference for half-day courses, which would permit executives to maintain the momentum of their business activities and which would not entail complete absence from their jobs.
- (2) A distinct preference was shown for boardroom-type courses, e.g. general management and management accounting, as opposed to instruction in shop-floor management.

Over 3,500 requests for courses eventually arose from the firms and organisations that received questionnaires. The project team translated the relative percentages of interest revealed by the requests into index numbers, which reflect popular Thai interest in various management fields. Table VI gives these levels.

In view of these preferences, the Centre developed a training programme designed more for executives – junior, middle and senior – than for supervisors and foremen. Roughly one-fifth of the Centre's participants were of the latter two categories, the remaining four-fifths being in the executive class of management, with the greatest proportion consisting of middle level and junior executives.

The Centre's growth in terms of course enrolment from 1962 to 1967 is impressive. Enrolment increased from 206 in 1962 to 1,385 in 1966. By the end of March 1967, three months before the project ended, total enrolment had attained 4,316 trainees. Of course, many participants attended more than one course. By the end of 1966, 2,939 people, coming from 444 firms and institutions, had been trained at the Centre. Table VII gives a breakdown of Centre

enrolment by year. Table VIII ranks the participants by their seniority.

Table VIII
Level of Seniority of Course Participants during Project (1962-66)

	NUMBER	%
Top managers (managing directors, general managers, etc.)	193	7
Senior executives (departmental heads)	676	23
Middle level and junior executives	1,446	49
Supervisors and foremen	624	21
Total number of participants	2,939	100

Although only 30 per cent of the organisations sending participants to the Centre were governmental in nature, about 56 per cent of the participants themselves were government employees. This indicates that the Centre in a way reciprocated the governmental support it received. The high proportion of public to private participation in the Centre's training courses is explained by the fact that several large government-owned manufacturing enterprises operate with a high degree of autonomy and these gave the Centre enthusiastic support from the start. On the other hand, the fact that, of the Centre's 444 clients, over 70 per cent were private concerns, is a fair measure of the high regard in which the Centre was held by the local business community. Table IX gives the sources of trainees according to economic sector.

IV THE COUNTERPARTS AND THEIR WORK

The objective of the project was not only to train Thai managers how to apply modern management techniques, but also to train people to teach the same techniques. Upon this assumption rested the justification for limiting the UNDP aid to a period of five years. It was anticipated that by the end of the project a sufficient number of Thai staff would have been trained for the Centre to operate without continued international assistance. Therefore, the experts' primary responsibility during the project was to train to a high degree of competence the counterpart technical officers assigned to them. It was intended that each international expert would train two or three Thai experts at the Centre during his assignment. The experts' task was in fact feasible because several well-qualified young people applied to the Centre and were engaged.

The Centre faced a dilemma frequently encountered in rapidly industrialising economies: the higher the standards set by the Centre, the fewer would be the number of qualified candidates; conversely, more technical officers could be recruited if standards were lowered. Should the Centre attempt to train a wide selection of technical officers by accepting a low ratio of successes to failures, or should it maintain high standards at the risk of finding itself short of counterpart staff?

The Centre chose the latter solution and, indeed, one of the project's few operational problems was the shortage of technical counterpart staff. Early in the project, the Centre found it relatively easy to recruit well-qualified Thai counterpart staff. A growing number of graduates leaving the country's universities and technical colleges each year would seek employment either in government service or in private enterprise. As the yearly intake into the former was

limited, and as private industry was only at the threshold of a phase of rapid expansion, there was a brief period in the early 1960s when the supply of graduates exceeded the demand for them.

By 1965 the tables had turned, however, and Thai industry's demand for qualified personnel, especially those with an engineering or accountancy background, far exceeded the supply. The inevitable result was a substantial increase in salaries offered by private industry, with which the Centre found it difficult to compete.

Applications for a post at the Centre were invited by means of advertising — in the press, on the radio, and even on television. The first time an attempt was made to recruit technical staff, 60 candidates applied. They were given selection tests in perceptual and conceptual logic, arithmetic and written English comprehension, after which only four were appointed. Later, as private industry's demand for qualified personnel developed and as it became known that the Centre usually required a university degree in engineering or accountancy, at least two years' experience in industry and a reasonable ability to speak English, the number of applications for a vacancy dropped. Occasionally, counterparts already appointed would leave the Centre for higher pay elsewhere. But the suitable person was always found, and by the time the last expert had left, 31 technical officers had been trained by the 13 international experts. (See Appendix E for the list.) Today a senior technical officer is assigned to each of the five main fields of management development covered at the Centre, and there are 15 intermediate and junior technical officers to support them. The evolution of technical staff recruitment during the project is given in Table X.

Table X
Evolution of Technical Staff Recruitment
1962–1967

(Numbers in parentheses refer to officers absent on fellowships)

TECHNICAL OFFICER BRANCH	JULY 1962	JULY 1963	JULY 1964	JULY 1965	JULY 1966	JAN. 1967
Director	1	1	1	1	1	1
Deputy Director *	—	—	—	1	1	1
General and Office Management	—	—	2	2	2 (1)	3
Management Accounting	1	3	3 (1)	3 (1)	3	3
Production Management	4	3 (1)	5	4 (1)	4	4
Marketing Management	1	2	2 (1)	3	4	4 (1)
Personnel Management	1	2	3 (1)	3	3	4
Totals	8	11 (1)	16 (3)	17 (2)	18 (1)	20 (1)

* Also Technical Officer in General Management.

THE STATUS OF COUNTERPARTS

The question of the relationship of the counterpart personnel of the Centre to the government administration remained unsettled throughout most of the project. Only towards the end of the project did it become clear that the Centre's Thai staff were civil servants. This was of relevance to the whole problem of recruitment. For the first five years of its existence, the Centre was informally attached to the Department of Industrial Works in the Ministry of Industry. Counterparts' salaries were paid out of public funds but, except for the Centre's Director and Chief Administrative Officer, who were both established civil servants, the counterparts themselves were only temporary employees of the Government.

The Centre's lack of official status inhibited the recruitment of counterparts because they neither received the higher salaries of private enterprise nor enjoyed the security and prestige of permanent government employment. There were only two possible solutions to the problem. If the Centre were to continue after the project ended, Thai staff had to be found who would make it their career to run it. Qualified people of the right calibre would have to be attracted either by being offered salaries as high as they could obtain in private industry — in which case the Centre would have to be autonomous — or by being

assured of advancement through the normal ranks of the civil service. In this case the Centre would have to be closely linked to the government administration.

The ILO originally proposed the first solution, but the idea foundered on the question: "Who should pay the high salaries involved?" The problem, obvious from the Centre's inception, was at last resolved in early 1967, when it was decided that all Thai staff would become permanent government employees, with all the concomitant advantages of such a status. It is now confidently expected that the Centre will in the future be in a position to attract and hold men of high calibre. Furthermore, the Management Consultancy Training project now in operation at the Centre is opening further avenues of promotion to the present staff.

Although 31 Thai nationals in all were engaged to train and teach at the Centre, in the first years of its existence there were never more than 22 technical officers present at any one time. Only one left shortly after his appointment. The average turnover rate was 10 per cent a year — considered not to be very high by most standards. Nevertheless, the turnover did create problems in certain areas and in 1963 a decision was made to engage "junior" counterparts — i.e. recent graduates without previous experience in industry.

The situation of the production management section towards the end of the project exemplifies in a rather acute form the difficulties arising from a shortage of

staff, which included participation in practical projects, before they took up their places as regular counterparts.

Apart from their actual teaching, technical officers had a public relations function that also helped to increase their understanding of management techniques. They were frequently requested to give talks to outside bodies, present radio and television programmes, and prepare articles and press releases for the local press and for the Centre's monthly magazine. These tasks trained technical staff in the oral and written presentation in précis form of sometimes complex subjects for lay audiences.

THE TEACHING OF TEACHING

Towards the end of the project a special course, "Teaching and Learning Techniques", was developed by the Chief of Project. Intended for the counterpart technical officers, it was designed to give them an understanding of modern learning theory and a greater skill in designing, developing and presenting their courses. The subjects covered included teaching and learning fundamentals, course design and construction, lecturing and cases, role-playing games and programmes, and the presentation and conduct of courses.

A feature of this course was the model lecture competition at which each counterpart gave a short talk in Thai. During his talk his colleagues marked him on a rating scale that covered such factors as stance and delivery, use of visual aids, interest, etc. At the end of the course these ratings were evaluated to help each man improve the aspects in which he was weak.

Another feature of the course was the same management game that is used in the general management course for senior executives and which is described later. This game demonstrates role-playing techniques, since each man plays the part of an executive in one of several small teams, each of which represents a manufacturing firm. The firms compete with one another on a profitability basis, and their relative success is governed by the executive's decisions in areas such as marketing strategy, production volume, pricing, personnel policies, etc. The counterparts welcomed this course as a means of polishing their ability to present technical knowledge to participants in the most effective manner.

THE FELLOWSHIP PROGRAMME

Undoubtedly one of the highlights of counterpart training was the project's fellowship programme. It permitted eight of the technical officers to study abroad — in Australia, the United Kingdom and the United States.

The value of fellowships cannot be too highly stressed where they have been wisely given and their content supervised. It has been witnessed time and again that a counterpart has developed personally and technically in his field after receiving a fellowship; and that his experience abroad has reinforced the confidence of his approach to work.

The Plan of Operation originally included 63 man-months of fellowship study, but the quota was not fully utilised because of budgetary difficulties. As can be seen in Appendix F, five of the eight fellowships were taken up in the United States, and these cost more than had been expected.

Not all fellows were equally successful. Three of the eight had reservations about the way their trip abroad had been organised. Their main criticism was that too much time had been spent on brief visits to plants, listening to lectures and talking to people, rather than on any practical assignment that could have taught them more than they already knew.

On the other hand, some fellows learnt much, particularly when they had to do a job under supervision. For instance, the senior technical officer for production management spent a very successful 12 months with a firm of management consultants in Australia, where he became involved with the real problems of industry. He was never once taken on a tour of large industrial undertakings or academic institutions.

If the project was unable to use the full quota of fellowship man-months (57 of the 63 allotted man-months were eventually used), it was nevertheless able to obtain several other fellowships for Centre staff from other sources. Over 40 additional fellowship man-months were granted by the following: the UN and ILO regular budgets; the Colombo Plan; the Asian Productivity Organisation; the US Operations Mission to Thailand and the Government of the Republic of China.

V TRAINING PROGRAMMES

(A) GENERAL MANAGEMENT COURSES

The Centre was created on the assumption that men can be trained to become good managers. The science of management is that of planning, controlling and co-ordinating the efforts of people working in groups to achieve corporate goals. Effective management presupposes an element of leadership, a degree of administrative ability and a suitable amount of technical knowledge. Although many Thai managers possessed these qualities and knowledge before the Centre was created, few had acquired them systematically. Others still had to be trained in the basic managerial concepts.

Under the heading of "General Management", the Centre offered four courses: (1) Efficient Company Organisation; (2) Office Organisation, Methods and Management; (3) Office Work Simplification Techniques; and (4) General Management for Senior Executives. The first three courses covered a more limited area than "General Management". The number of times each course was given and total enrolments are given in Appendix G.

(1) Efficient Company Organisation

This course concerned the theoretical study of major management principles, such as delegating responsibility, defining job areas, organising the chain of command and responsibility, and defining the decision-making process. Although designed to last for only two weeks, it was followed up by four or five weeks of critical study by course participants of their firms' organisational structure. Since the course was designed for top management, no practical

projects were envisaged. Two weeks' classroom work was considered to be the maximum duration that would still permit outside follow-up work to amplify the lectures. This course, given twice in early 1963, was not particularly successful because it was too theoretical and, indeed, too far removed from the problems of local Thai industry, which is based mainly on small-scale operations.

The expert appointed to this post was at the Centre for a little over half a year; his trained counterpart left the Centre shortly after he did. It was not until 1964 that the Centre could once more offer general management courses. The first course in the new cycle covered office organisation.

(2) Office Organisation, Methods and Management

This nine-week course treated only one aspect of general management — the administrative function — but it was designed to teach more than simply how to run an office. It was presented six times during the project: three times each in 1964 and 1965. A total of 85 participants enrolled and all reported satisfaction with the results. The course included four weeks of theoretical training, four weeks of practical work, and a one-week evaluation seminar.

The ILO expert for this subject came to Thailand in February 1964, after having completed a successful assignment in Warsaw where he had helped develop office management courses in another UNDP/ILO project. He and his counterpart first undertook a preliminary survey of 26 local enterprises in order to gain first-hand knowledge of Thai problems and business characteristics. In the light of the survey's results, the expert's training manual, already prepared during his Warsaw assignment, was modified and translated into



Thai by his counterpart. In the Thai version, greater emphasis was placed on staffing, work simplification, office equipment, office layout and management techniques. As a result, the course was geared specifically to the needs of Thai business – practical information on how to run an office efficiently with the help of modern office aids.

The course syllabus covered three main topics: staff and work arrangement, operations and mechanisation. "Staff and work arrangement" covered such aspects as how to group people in their work, supervise them, train staff, and prevent occupational risks and hazards, and centralisation versus de-centralisation. "Operations" covered the use of the main administrative tools – the use and design of forms, work simplification, standardisation, duplication, work fluctuation problems, layout, record keeping and micro-filming. "Mechanisation" included a discussion on punched card equipment and the degree to which mechanisation can be adopted in managing a business.

An interesting feature of this course was the extensive use of case studies. Up to seven former participants would be invited to present case studies at a subsequent course relating to their own work. All participants were personally visited at their place of business before the course started in order to adapt course material, whenever possible, to individual needs. The course was considered most useful by large concerns. After having sent an employee to one course, many firms would apply for more places on subsequent courses for other middle managers.

Practical projects covered a very wide subject area, ranging from job analyses and specifications to complete office layout plans in three-dimensional model form to ensure efficient work routing. The number of participants undertaking practical assignments was exceptionally high – 78 out of 85, or 91 per cent of those who attended the courses.

For the first year of the expert's assignment, the progress of the Office Management Section was considerably retarded by the lack of counterpart staff. Only one counterpart was available and, following his year's training, he left the Centre for another job. The work of counterpart training had to start again, but the expert was very fortunate in having well-qualified officers assigned to him. An administrative officer of the Centre was transferred to this branch of the Technical Division and another junior counterpart was engaged. These two technical officers assimilated the course material exceptionally rapidly. Before the expert left, they were conducting the course by themselves.

Thus the expert had the time to prepare material for two one-week courses which were later conducted by his counterparts. One of these courses, "Management Data", was presented four times in 1966 and attended by 55 participants, but other priorities prevented the second one, "Communications and Transmission", from being given at the Centre before the project's termination. In addition, a special one-week seminar, entitled "Information Course for Ministry of Industry Officials on the Application of Management and Productivity Techniques in Industry" was held four times in 1966. A total of 95 people participated.

(3) Office Work Simplification Techniques

A course on Office Work Simplification Techniques was held 14 times in 1966/67 with a total of 241 participants.

The following brief summaries of eight practical projects of the 75 carried out during the period of UNDP/ILO assistance are representative of the results that Centre training made possible in the field of office organisation, methods and management.

Pharmaceutical and Antibiotics Manufacturer. This project sought to improve staff usage and employment. Job analyses were made and job descriptions introduced. Procedure manuals for the various sections were produced. Job rotation and interchange of duties were adopted as standard practices. Staff records were improved and the flow of staff data to the head office was made more efficient. Merit rating schemes – based on course work – were instituted. Standardisation of procedures and equipment was reviewed and new policies were adopted where necessary. New rules and regulations for staff guidance were formulated. The all-round improvement in business methods which resulted was accompanied by a reduction of workload fluctuations and overtime.

Office Duplicating Machinery and Appliance Manufacturer. Job analysis was undertaken in which staff duties were completely reviewed and revised and job specifications were introduced. To increase the usefulness of monthly reports to headquarters, data covering local operations were gathered according to criteria laid down by the head office. In preparation for an impending move to new premises, new office and showroom layouts were made. Stock and materials records were revised, facilitating storage and control procedures.

State Railways of Thailand – Civil Engineering Department Administration (one of the largest depart-

ments of the state railways with a staff of over 60). A study was made of individual staff duties and responsibilities and work routing, with a view to improving over-all efficiency and working conditions. A new office layout was made in the form of a model on the scale of 50 to 1. A model of the original layout was also made to serve as a basis for comparison. Old records were sorted and obsolete ones were removed. After detailed job specifications had been drawn up, all sections were eventually reorganised and individual responsibilities reassigned.

Air-Conditioning and General Engineering Agents. The Director and General Manager of the Air-Conditioning Department completely reorganised his department as his practical project. The duties and responsibilities of all personnel were specified in detail, an organisation chart was drawn up, and a procedure manual prepared. Training courses for all workers were organised and classes started. Records and charts were designed giving the trends in the sale of various products, so as to provide sales information rapidly.

Transport Organisation Audit and Accounts Division. In this practical project, the examination of the procedure and rotation of audit work led to a reduction in the amount of time spent checking certain documents. A study revealed that the auditing of documents first, before the accounting action, resulted in a delay in the preparation of accounts; the duties of audit staff and accounting staff were therefore interchanged. Another study led to the adoption of a punched card service for the processing of various data, including the payroll and billing, and this soon led to substantial economies. The project involved over 180 staff.

Stevedoring and Ship-handling Concern. This firm had 800 employees. The forms it used relating to tonnage records, work gangs, types of cargo, methods of handling, and loading and off-loading data were redesigned in this project. The hiring of work gangs was thus put on a more rational basis; thenceforth management had the complete set of facts at its disposal, including a picture of a gang's past performance. The many problems common to this type of work, which include overtime pay, worker responsibilities, workload, contractual obligations, and hazards and risks, were studied in detail and appropriate measures were adopted to provide management with a maximum measure of control.

Sugar Organisation Accounts and Audit. The centralised structure of this firm, which had a production plant in an outlying northern region, resulted in

communications problems, delays in the receipt of documents, incomplete information, and fluctuating workloads. The seasonal nature of production led to staffing difficulties. During the practical project, duties and procedures were reviewed, forms redesigned, the amount of auditing reduced, staff interchanged, and job descriptions introduced.

Cement Factory Administration. Before the project took place, the transport and handling of the plant's raw materials relied heavily on manual labour. Following a revision of documentation procedures, particularly in the areas of materials requisition and handling, it was found that trucks could be used to a greater extent. The change in procedures resulted in an immediate saving of over 20 per cent in labour costs and further savings were anticipated. A detailed study of operational routing and job analyses were also undertaken.

(4) General Management Course for Senior Executives

Undoubtedly the most ambitious course given at the Centre during the project was the "General Management Course for Senior Executives". Developed by the second Chief of Project, the course's objective was to weave the separate training strands into a more integrated management development programme. The course syllabus was designed to give top executives a broader understanding of the various factors that influence their work, and to provide a forum at which these human and technical influences could be discussed and their interactions fully appreciated.

A two-week, half-day seminar for top-level executives, with no practical work involved, was organised in such a manner as to make possible shifts in the emphasis given to its various component parts. Thus it was adaptable to various types of management: management of private manufacturing enterprises, private commercial undertakings, and public manufacturing concerns. The Centre's five faculties all contributed to the seminar. Technical officers from each section led at least one discussion in their particular field, and sometimes two.

The course was constructed upon the premise that in all commercial group activities, irrespective of their objectives, there are five areas of operation:

- Policy making
- Marketing and sales
- Finance and financial control
- Personnel and human relations
- Production or service.

These five areas must be co-ordinated if the group operation is to be smooth and efficient. And the man charged with this co-ordination must be able to understand and use the basic techniques and skills of management, including socio-psychological skills, in these areas on an integrated basis. He must know how to draw upon the skills of his various experts and use the information they give him for the over-all management of the operation.

The course comprised ten basic subjects, which were presented in such a way that the whole was greater than the sum of the parts. In all, it was given three times in 1966 and once in 1967 shortly before the project came to an end. Attended by 60 senior executives from Thai companies, it was very well received. The course syllabus, given in Appendix J, was designed for senior executives of privately-owned manufacturing enterprises.

Two points of interest emerge from a study of the course programme. First, the pedagogic device relied upon for training senior executives is the seminar-type of discussion rather than the formal lecture. Second, nine out of the ten discussions were conducted by the technical officers themselves, without assistance from the expert; this ensured that the course would continue to be conducted at the same level after the man who helped develop it had left. Equally important, it is a good example of the way in which a group of people were trained to a high degree of competency in their respective fields and made aware of the interdependence of their respective subjects.

(B) PRODUCTION MANAGEMENT COURSES

The ILO productivity missions that preceded the project had already demonstrated that industrial engineering techniques could be successfully applied in Thai industry. As in most rapidly developing economies, the Thai manufacturing sector is faced with the problems that accompany the rapid expansion of industry. Growing demand, fed by a steady rise in personal incomes, demographic pressure and foreign tourist, military and investment expenditures, puts a heavy strain on existing productive facilities. At the same time, with capital and skilled labour relatively scarce, expansion is sometimes difficult to achieve. The alternative, however, is inflation, the bane of stable economic and social development.

In view of the country's limited industrial resources, Thai economic expansion is aided by Centre courses in production management, which are essentially

concerned with improving the efficiency of the production process while employing existing plant and equipment. The purpose of these industrial engineering techniques is to increase productivity directly; they often produce impressive results without calling for outlays for additional machinery or labour. In one case, chosen at random from the scores of practical projects that accompanied the teaching of this subject at the Centre, a company's daily output of a particular medical glass tube was increased from 5,000 with eight workers to 10,000 with nine workers by simply reorganising work flow and overcoming a bottleneck.

The Centre laid particular emphasis on production management, partly because an expert on this subject was available from the outset of the project, and also because it produced results that heightened the interest of Thai executives in the Centre's other types of courses. Four aspects of production management were covered during the project: work study, production planning and control, plant layout, and plant maintenance. Appendix G lists the number of times each course was given and total enrolments.

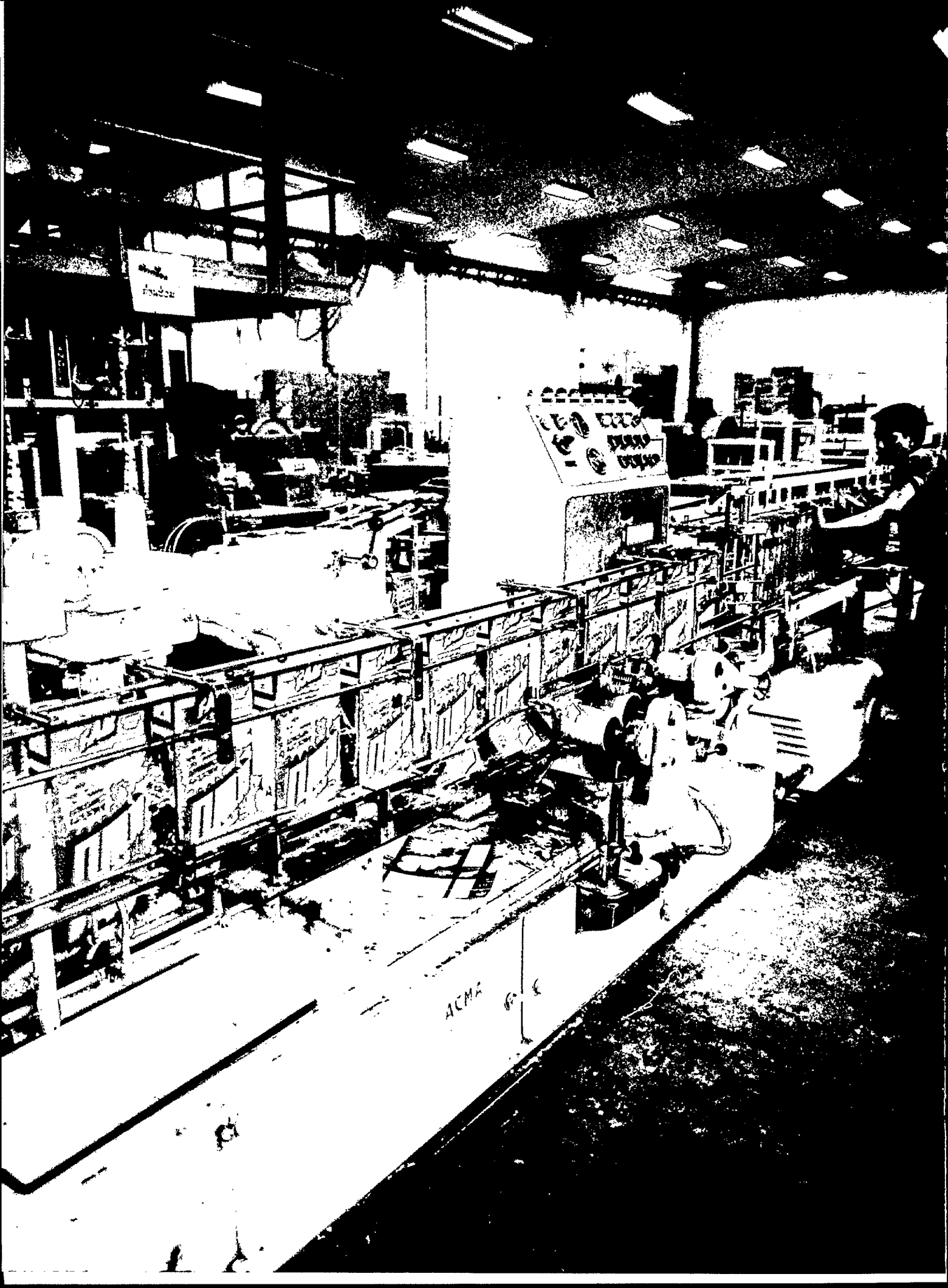
The following summaries, given area by area, of typical practical projects involving industrial engineering techniques, are illustrative of the type of results achieved by most of the 178 such projects carried out.

(1) Work Study

"Work Study" is concerned with the rational division and organisation of labour in the productive process. The technique begins by dissecting a productive process into its component operations, studies and evaluates them, and devises means of improving the speed of the work flow. For example, during the project an inexpensive jig was designed; this reduced waste in the manufacture of cigarette-tins by improving the way in which the tin plate was cut. Annual savings were estimated to be about \$10,000. In a paper manufacturing plant, waste left over from trimming paper was put to good use by *increasing* the width of the paper-machine roll and selling the narrow strip of excess paper for adding machines, bus tickets and telegraph tape.

Twelve work study courses lasting 12 weeks each were given at the Centre from 1962 to 1966, six of them in the first two years. The Centre's first industrial engineering expert was in his post before the project became fully operational and gave his first course a few weeks after the Centre opened.

In general, the practical projects associated with this course produced useful results. Of the 137 parti-



delivery times, consumption rates, etc., based on this sample, indicated that the total inventory could be reduced by half without the company incurring any loss of production or efficiency.

State Railways of Thailand. A course participant from the coach production and repair workshops devised a new production planning and control system. He redesigned all forms, introduced a new work flow, proposed standard procedures, and showed how the various responsibilities involved should be broken down and reassigned. As a result of his work, a central control board was put into operation and a machine loading board placed at each machine in the workshop. A 90 per cent increase in work capacity followed with only a 14 per cent rise in the labour force.

(3) Plant Layout

Plant layout is concerned essentially with the optimal use of available space and the organisation of a smooth and flexible work flow. The technique produces the best results, of course, when it is used while the plant is still in the planning stage, but it can also yield appreciable results in existing factories.

The standard course developed during the project covered these topics: selecting the plant site; evaluating and recognising factors pertinent to efficient layout; determining the flow of production; reducing the handling of materials; making scale models as an aid in determining methods of raising productivity.

In May 1965 the Centre's first plant layout course was designed and started.

The plant layout course was conducted three times during the project and had a total enrolment of 40. It consisted of a three-week period of half-day lectures, a six-week period for practical projects, and the customary one-week evaluation seminar. It was prepared during a short period of intense work in the spring of 1965, when counterparts were given preliminary instruction. Within a short time, counterparts were able to do half the lecturing for the first course and all the lecturing for the second. Finally, the third course, including the practical work, was the entire responsibility of the counterpart to whom it had been assigned.

An interesting feature of the second and third courses was that a participant from the first course provided the practical exercise for its successors. It consisted of the layout for a plant manufacturing leather boots. The former participant considerably enlivened the class discussion by using as exhibits

a range of boots that were in various stages of production.

Some of the other typical practical projects that were carried out during the plant layout courses and the results they produced were:

Automobile Assembly Plant. A bottleneck existed in the production line of this plant's body painting section. Extra work was caused by congested conditions: frequent collisions added to the time and cost of preparing the car body for primer and permanent coatings. A course participant from the company laid out again the entire section to give a better work flow. An area was set aside for repair work and an additional infrared-lamp baking oven was introduced. Besides cutting down production delays and excessive overtime charges, damage to paint was reduced to a minimum and a smoother flow of work resulted. Type A and B car assemblies increased by 30 per cent over the original daily production rate while type C went up by 66 per cent. Demand still exceeded supply, however. The savings that resulted from this project, as reported by the company, were estimated at US \$125,000 annually.

Automobile and Truck Repair Garage. A participant studied the layout of the garage. On the basis of his recommendations, the firm's offices were removed from the centre of the building to another site. A considerable amount of space was thus saved and it became possible to divide the firm's work into job specialities and locate them in specific areas. As a result, the average daily throughput of vehicles increased from 70 to 80, with increased profitability.

Tobacco Company. One of the more ambitious practical projects involved two participants who worked as a team on the laying out again of the maintenance repair section of their company, one of Thailand's largest tobacco producers. The company's management had decided to spend US \$1 million to refurbish the maintenance department. A new building was to be put up and much new equipment installed, including machine tools, cranes, and handling equipment.

The participants made parts of their proposed layout in three-dimensional models. The completed model occupied an area 1.5 by 5 metres on a scale of 100:1. Once the new maintenance section was in operation, it was clear that the careful planning made possible by the scale model resulted in higher quality repair work, fewer accidents, reduced costs, better morale, more rapid completion of repair jobs, improved hygiene, less waste and scrap, better working conditions, and, of course, decreased maintenance in the

teak forest enterprise whether or not to replace its elephants by imported tractors in order to obtain an optimum return on its capital.

All exercises began with the proper arranging of balance sheets for analysis and then continued with the calculation of various ratios that revealed information ranging from inventory turnover to the rate of depreciation on fixed assets. The results were often gratifying in that they frequently revealed large "inactive" assets, generally in the form of excessive inventories, cash holdings and bank deposits. The ratio of practical projects to number of participants – 32 to 42 or about 75 per cent – was exceptionally high for this course, which was conducted three times during the project, almost entirely in Thai the third time.

(3) Inventory Control

In addition to the courses just outlined, a major course "Inventory Control" was developed in the second half of 1964 because the practical projects of other courses had shown that this was a widely neglected field in Thai business management. The course followed the customary pattern of two weeks' theory, two months' practical work, and half a week for the final evaluation seminar. Divided into six parts, it covered: categories of inventories; coding of stock items; inventory organisation; evaluation methods; inventory planning; and inventory statistics and control. Two films were used to amplify course content. Until this course was offered, most of the participants attending the Management Accounting training programme had been accountants. "Inventory Control", however, appealed to a broader range of people and many executives from the higher management levels attended.

Because many applicants for the initial inventory control course did not have a sufficient command of English, an effort was made by the counterparts to assimilate the material in time for the first presentation. As a result, they conducted the first course in Thai, and the expert's role was confined to supervising practical work. Lecturing was rotated among the three technical officers in order to make sure that each could conduct the course alone if necessary.

Practical work was inevitably of an administrative nature. It consisted of installing (or revising) coding systems for stocks of raw materials, spare parts and finished products. The establishment of turnover ratios enabled some participants to determine excessive stocks and to improve the turnover rate. Before the

project ended, the course was given 16 times and was attended by 286 participants. Since many participants came from the same organisation, it would be misleading to relate practical projects to the number of participants. It is estimated, however, that almost all the organisations having sent employees to the course eventually put some of their employees' newly acquired knowledge into practice.

On two occasions governmental organisations requested on-the-spot training for large numbers of employees in special aspects of Management Accounting. As a result, six courses of this kind were given for 148 participants.

(4) Cost Accounting and Control

In May 1965 a new cost accounting course was begun, called "Cost Accounting and Control", while the short introductory courses already outlined continued. The second Chief of Project, on the basis of the former syllabus, recommended that more time and emphasis be given to direct costing as opposed to absorption of costing techniques within the cost accounting courses. The distinction centres around alternative ways of dealing with fixed expenses. Direct costing reveals more clearly the profitability of products and helps guide "make or buy" or "selling price" decisions in the best way.

The courses were well attended, but the number of participants willing to undertake practical work was sometimes disappointing. In one case it dropped as low as 25 per cent. The cause, in so far as it was ascertainable, was the lack of time and insufficient authority to promote change within the participant's organisation. These courses continued to be given at a rate of two a year until the end of the project and were conducted by the Thai counterparts with very little expert supervision. In all, four courses, attended by 60 participants, were given.

(5) Budgetary Planning and Control

The new cost accounting course dropped the budgetary planning aspect that had been a feature of former courses. As a result, a new course, Budgetary Planning and Control, was devised. Its pattern of training followed the usual pattern of the Centre's major courses – two weeks' theoretical training, eight weeks' practical work and a three- or four-day seminar period. The Thai staff gave this course three times in 1966 for a total of 48 participants.

(6) Direct Costing Techniques

In the last year of the project the Centre had the services of a general management expert who was also well versed in direct costing techniques. During his one-year assignment, from June 1966 to May 1967, he familiarised counterparts with the principles of direct costing in two new courses. One, entitled "Management Control through Direct Costing", was designed to teach senior executives how to use direct costing data for rational decision making. It was conducted three times during the project and had a total enrolment of 46. The other course, "Direct Costing in Management Accounting", had the purpose of teaching accountants how to present direct costing data in a meaningful way for the use of senior management. It was given five times and had 80 participants.

The first time these two subjects were presented, they were given in English by the expert and attended by the technical officers. Tape recordings were made of the various lectures, and handout material was prepared, translated and distributed to counterparts. When the two courses were repeated, 53 and 38 per cent respectively of the instruction was given by the technical officers. To prepare themselves, they had listened to the tapes of the lectures, carried out further reading and discussed particular aspects in detail with the expert. These two courses began for the third time just before the expert left and were conducted entirely in Thai.

Of a total of 96 participants from various sectors of the economy attending six courses, 27 came from private manufacturing companies, three from government-financed industry, and 38 from utilities, banking and commerce. Of the 47 accountants attending a course on "Direct Costing and Management Accounting", 17 were women.

Because the expert was to be at the Centre for only one year, and because it was important to repeat each course at least once for the benefit of the counterparts, the traditional course pattern was modified. Each course consisted of two weeks' theory, was followed by five weeks of in-plant project work, and finished with a three-day seminar. The allotted period for the practical project proved to be too short. Moreover, the most successful course proved to be the first one; because no other course was being held at the same time, the expert and the counterparts had time to visit participants in their companies and give them individual attention. Later courses inevitably overlapped with others, to the detriment of the partici-

pants, who received less attention from the technical officer.

Despite the very heavy programme undertaken by the expert and his counterparts, the project's main objective in this area was attained: the familiarisation of the counterparts with the subject to a degree that prepared them to conduct the courses after the project ended. In the expert's opinion, the counterparts' technical knowledge left nothing to be desired. His only reservation concerned their lack of industrial experience, which was noticeable when they had to deal with courses at top management levels. It was hoped that in the course of their supervision of in-plant practical projects they would acquire the needed experience.

Because of the need to concentrate on new areas of work, very little time was spent on the courses previously offered in management accounting. By the end of the project, however, the counterpart situation had improved. Three technical officers had received training in nearly all aspects of management accounting covered by the Centre and one junior counterpart was in training. When the project closed, it was thought possible for the team to provide Thai business and industry with a full range of future courses.

Practical Projects in Management Accounting

The 90 practical projects carried out by course participants during the five-year project varied from the installation of complete cost accounting systems to the selection of data for allocating manufacturing overheads to specific products, re-calculating product costs and modifying price structures. Here are brief summaries of seven such projects which illustrate the type of content and results of most of the others.

Electricity Authority. An analysis was made of turnover ratios for the major inventory groups at the Authority's six warehouses in the Bangkok area. Obsolete and redundant items were identified and sold, which liberated non-productive capital.

Pharmaceutical company. A cost accounting system was already in use in this company. The course participant therefore had a starting point for his project. He allocated overhead costs to existing "cost centres" and computed the production costs of products on the basis of the departments involved: cosmetics and household goods; medicines; stores; administration and sales. During this exercise, sales costs for cosmetics were found to be unexpectedly high; the price policy was modified accordingly.

supervisors and foremen how to prevent accidents and reduce hazards in the plant.

The job relations course was held 46 times during the project and enrolled 599 participants, mostly supervisors and foremen. The job safety course was presented 16 times and attended by 266 participants. As with the other TWI courses, these two were also well received and generally over-subscribed.

(2) Instructors' Course for Trainees in Job Instruction

In late 1963, when the technical officers were fully competent to conduct TWI courses entirely in Thai, the demand for courses from large organisations became so heavy that it was decided to organise one course for a few supervisors from each and teach *them* how to teach job instruction courses. The course was given only once – for ten people – and, as practical projects, the participants gave job instruction courses in their firms or organisations. The resulting multiplier effect was that over 100 supervisors received basic training in job instruction.

(3) Training the Trainer in Job Relations

When the Supervisor Training Department once more found itself with too many requests on hand, the same method of indirect training was used. This time it was in the field of job relations. In 1965, a single course was organised for ten participants. The Centre's training manual was rewritten for this course, and, apart from a detailed analysis and study of it during the instruction period, lectures were given on such general subjects as: "The Need for Supervisory Training", "Communications as a Medium of Instruction", "Learning and Teaching" and "The Use of Instruction Aids". Again, participants conducted job relations courses at their own places of work as practical projects under the supervision of Centre staff.

(4) Personnel Management for Middle and Senior Management

The Centre concentrated on teaching middle-level or senior executives the importance of good personnel relations and the best means of achieving them.

In 1963, a 10½-week course entitled "Developing Your Training Director" was given twice for a total of 33 managers. A four-week period of class instruction and discussion was followed by a six-week period of practical work and a three-day evaluation seminar,

which terminated the course. The purpose of this course was to demonstrate the principles of personnel management and to emphasise the need for an organised employee training programme. All participants came from large organisations, mostly of a governmental character.

One typical practical project carried out during the course was designed to improve dockhand training. The trainee organised a series of courses for about 30 workers at a time. The courses taught the meaning of phrases usually found in various languages on crates, boxes, etc., how to recognise the meaning of various symbols on containers, how to set up a safety programme for the prevention of accidents, and the proper methods of loading and unloading cargo.

Based on a practical project of one of their employees, a regional electricity authority set up a comprehensive training programme for more than 2,000 workers within two weeks of the completion of the first course. All told, 18 projects were carried out, with many participants joining forces on single projects because of their broad scope.

In 1964, the Personnel Management Department presented concurrently with the TWI courses three seminars on "Leadership in Industry" (given entirely in Thai by the Director of the Centre) and two courses on "Developing an Effective Workforce". The three "Leadership in Industry" seminars were attended by 46 people. Each seminar consisted of 30 hours of class discussion, lectures and case studies. It concentrated on human motivation factors as an important technique for increased industrial productivity. Throughout the course, stress was placed on how top executives must explore their position, not only as leaders of an industrial organisation, but as leaders of their community and country.

The course on "Developing an Effective Workforce" was also designed for top executives. The objective of this 30-hour course was to explain how effective management of personnel could improve productivity. After an introductory discussion on personnel administration, detailed explanations were given for the selection, induction and training of the workforce. Topics such as job analysis, job description and the appraisal of employee performance were followed by a discussion of the efficient training of supervisors through coaching and guidance.

A total of 33 managers enrolled. The second time the course was held most of the teaching was given in Thai by the counterpart technical officers. These short courses often led to the establishment of training courses for supervisors and workers in organisations

During the practical project period, participants

The course was given three times during the project and attended by 46 participants in all, of whom

that had not previously used them. The Centre kept in touch with these organisations, providing encouragement and assistance whenever necessary.

In 1965, another course of this type was organised to cover the subject "Advanced Supervision". Given altogether five times, it employed Thai throughout. After the duties and responsibilities of supervisors were described in detail, the two lecture periods were devoted to the planning and organisation of work and to the means of maintaining the work flow. A general discussion of human relations and the problem of delegating authority followed. Concluding seminars discussed the correct basis for decision making; horizontal, upward, and downward communication among employees, and how to judge employee performance. In all, 170 middle-level and senior executives attended the 9 advanced supervision courses and participants found them to be of great value.

The Personnel Management Section was fortunate in that its three man-years of expert services enabled it to develop a very broad range of subjects. When the first expert left the Centre in mid-1965, a year elapsed before another personnel management expert was assigned to the project. It is a measure of the work done by both the expert and his counterparts that the tempo of teaching activity, far from diminishing on the former's departure, increased to the point where five different aspects of supervisory training were being taught annually at the Centre when the project ended.

(5) Other Courses

The project's revised Plan of Operation of 1963 made provision for the teaching of other aspects of personnel management besides supervisory training. Accordingly, an additional expert was engaged to aid in the development of other courses. He spent nine months at the Centre, from July 1966 to March 1967, and trained his counterparts how to teach job analysis, objective recruitment procedures, wage and salary administration, objective appraisal of individual performance, manpower forecasting and control, and, above all, the design and use of personnel records and statistics.

A ten-week course, entitled "Planned Staffing, Remuneration and Records Administration" was designed, with five weeks of lectures and discussions, four weeks of practical work and one week for evaluating the results. It was immediately followed by a second course, in the middle of which the expert completed his assignment and left. All 16 participants

in the first course undertook practical projects which, reflecting the nature of the course, were of an administrative nature. Appendix G lists all the personnel management courses given during the project and their enrolments.

Practical Projects in Personnel Management

Among the 30 projects undertaken during the personnel management courses, the following five are representative of most.

Textile Manufacturer. In-plant training courses for executives, senior supervisors and foremen at two large mills were planned by a course participant and adopted by his company. As a result of his survey of the company's training needs, job rotation was introduced.

Port Authority. Training programmes for 850 dockworkers were drawn up and classes started.

Bangkok and Thonburi Municipalities. A training programme for all supervisors working for the two municipalities was prepared by an executive from one of them during his participation in a course, and soon thereafter put into operation.

Bank of Thailand. All personnel forms in use were reviewed and those relating to recruitment were revised. Analytical statistics were introduced to assist directors in shaping personnel policy. A proposed layout of an annual return form was submitted to the directors for consideration. New performance appraisal forms were modified. A formal management succession plan was also prepared and submitted to the governors' committee. These measures were under consideration when the project ended.

Power Authority. Job descriptions for the personnel department were revised; this improved salary determination and made possible individual training arrangements. Similar revisions were subsequently made for other departments.

(E) MARKETING COURSES

Marketing, which tells the businessman what to produce and how to sell it, is becoming increasingly important in Thailand in view of the economy's rapid expansion. Almost all firms are part of some "growth industry". But the firms that face local and overseas competition at present will be joined by others every year, as Thailand's recently established industries reach maturity, and they will see their temporary protective tariffs and other advantages diminish. Proper marketing techniques are therefore as essential for

to be most popular, and provided excellent training for junior staff.

(6) Sales Supervision

A short one-week sales supervision course, which was also offered as part of the "Sales Training" course, was conducted twice in 1966, attended by 41 participants, and presented entirely in Thai. The marketing section decided to experiment with classes of up to 20 participants for this course but it was concluded that the standard number of 15 was preferable.

(7) Total Marketing

Before leaving in May 1966, the expert helped his counterparts develop a comprehensive "Total Marketing" course. It was designed to cover all aspects of marketing, while allowing each subject (up to a maximum number of ten) to be treated in a separate study when and if such an arrangement could be worked in with the other courses. The lecture period for this course was exceptionally long – three weeks plus a two-day exercise. It was followed by a four-week project period and a week-long seminar to sum up the projects. All important marketing subjects were covered and presented in an integrated fashion.

The course included a number of interesting features. It had several guest speakers, exhibitions of well-known advertising campaigns, a national poster exhibit and an exchange of lecturers with other courses at the Centre.

Over 250 pages of course handout material were prepared and bound. Eventually this material was to be printed. Widely distributed, it went not only to course participants but also to universities, colleges and institutes. The course material was afterwards used at the two principal Bangkok universities and at a number of institutes as a textbook on general marketing. The entire course was translated into Thai. On its third presentation, it was conducted entirely in Thai. In all, it was given five times in 1966 and attended by 76 participants.

Other marketing courses organised and conducted during the project included one on "Sales Administration", given 7 times and attended in all by 131 participants, and one on "Merchandise Management", given twice for 30 people. In addition, a special seminar on "How to Increase Your Sales Profits and Growth" for 37 participants and a conference on international marketing, attended by 31 people, were also conducted.

Practical Marketing Projects

Of the 178 practical projects carried out in the various marketing courses during the period of ILO assistance, here are eight typical projects and their results.

Plywood Manufacturer. The training of salesmen and planning their territories and call schedules increased sales by 30 per cent within three months.

Zip-fastener Manufacturer. As a result of promotional schemes introduced by a course participant, this firm raised its share of the market from 51 to 76 per cent in 12 months. The schemes included a series of incentives and awards for salesmen.

Power Authority. A survey of government and private industrial electricity consumption was conducted in order to formulate a new pricing policy. The new policy enabled the company to embark on a new marketing programme, which was aimed at introducing electrical power into factories in areas away from Bangkok-Thonburi.

Fertiliser Manufacturer. Thai fertiliser sales figures were analysed in order to determine the market potential and popularity of each brand. With this data, the company's import programme could be properly directed.

Sawmill. The potential sales volume and optimum sales price for kiln-dried wood were assessed by means of a market survey that estimated the use of domestically produced and imported wood in various types of construction. The survey results led to the prediction of sales on an annual basis for the following five years. A chart showing break-even points for the company was constructed once the fixed and variable production costs had been determined. An analysis was then made of prices being charged by competitors for equivalent products. Selling prices were then set according to a sliding scale that was based on sales volume. Increased profitability resulted.

Importer and Exporter of Diversified Products. A market survey that covered market potential, prices, and a planned sales promotion programme was undertaken for a new line of chemical products. The data gathered helped the company locate a number of large potential clients. On the basis of the survey results, a proposed sales promotion programme was approved. This eventually led to a substantial increase in sales.

Technical High School. Courses based on the "Total Marketing" course were planned in ten marketing subjects. Each was to last for 18 weeks, three to five hours per week, with 50 per cent lectures, 20 per

cent work projects, 20 per cent case studies and 10 per cent discussion periods. The planned courses were later incorporated in the curriculum.

Government-sponsored Vehicle Importer. A market research programme and a campaign to introduce a

new compact car were planned. These covered sales margins and quotas, a hire-purchase plan, a budgeted advertising campaign and a sales training programme. The complete programme was accepted by the company's management and put into operation.

same amount of goods with fewer resources. Nevertheless, one very good reason why management techniques must be viewed as a whole is to be found in an answer to the following problem. Production management techniques, if taught alone, might indeed "put a man out of work". Work study, for instance, might reveal that a certain enterprise is overstaffed. But the trained manager who spotted this labour surplus would also be able to detect potential areas of expansion and would be able to switch redundant labour to those areas. And it would not necessarily be production management techniques that would help him to solve this problem, but accountancy, and perhaps market research as well.

- (3) To maintain the pace of economic development, it is of the utmost importance to Thailand to attract private foreign investment, while maintaining safeguards against any major part of the economy coming under foreign control. Private investors are more likely to invest in a foreign country if they know that they can count on skilled local managerial talent. There are signs that the Centre's courses are already beginning to assume this function by giving suitable people the knowledge necessary to manage effectively enterprises with Thai and foreign capital participation.
- (4) Thailand will have to increase its export markets if further economic development and improved living standards are to be realised. Here the Centre can be of great help by organising special courses for governmental overseas marketing representatives, by training exporters in methods analysis that will lead to a simplification of marketing procedures in such fields as licensing, customs clearance, insurance, inspection, etc., and by establishing internationally acceptable quality standards for all principal exports through the use of improved production and productivity techniques. In a similar way, the Centre can help Thailand to develop medium and large industries capable of producing economically justifiable import substitutes, and thus contribute to the maintenance of a favourable balance of payments.
- (5) The Centre is providing the necessary training support for the industrial expansion now taking place under Thailand's development plans and thus, in its own way, is contributing to the success of these plans. Certainly the many new techniques taught at the Centre and then applied in government corporations and private offices and

factories contributed to this expansion and to the efficiency of investments in no small measure, even though it is impossible to measure their contribution in concrete terms.

THE FUTURE OF THE CENTRE

In its very early days, before the training programme got under way, the Centre performed management consultancy assignments for business and industrial enterprises. Once training courses were launched, however, the Centre's resources were soon fully occupied; nevertheless, the demand for its consultancy services continued. Moreover, while the Centre's courses had their desired effect of increasing awareness of the efficacy of modern management techniques, many companies found it difficult to apply these techniques beyond what was achieved during the practical project stage. The projects often demonstrated that the techniques taught at the Centre could be applied repeatedly within a company. But most firms rarely had the time or staff to adopt the techniques on the scale required; they needed further guidance and encouragement.

As the project approached its end, it was found that the very success of the Centre's practical work was causing some frustration. It was concluded that it would be logical for the Centre's size to be doubled so that half the staff would continue to do the training with the other half out in the field attending to consultations.

This arrangement, in fact, is now being realised. A new UNDP/ILO three-year project was approved by the UNDP Governing Council in January 1968 and got under way the same month. Designed to create a consulting service within the Centre for Thai business and industry, the project experts — themselves management consultants — have a double task: they offer their services to Thai companies and are training counterparts who will replace them once they leave. There is a large demand for the services of the new project.

When the Management Development and Productivity Centre project ended, two factors augured well for the future of the institution. First, the fact that all technical staff now have civil service status compensates to a certain extent for the low salary scales. Second, the addition of management consultancy to the Centre's range of services is constantly improving the quality of the Centre's activities and providing an avenue of promotion for the staff. A continuous inter-

action between practical consulting work on the one hand and research and teaching on the other probably represents the most important single development that could have been proposed to maintain and improve the quality of the Centre's teaching.

RECOMMENDATIONS

The fact that the Centre is hard pressed to meet the demand for its services is in itself a measure of its success. But it is still not in a position to finance its operations entirely from its own resources. A very small part of its cost is covered by the nominal course fees. Now that the management consultancy training project is fully operating, clients are charged the actual cost of the Thai expert or experts assigned to do a job. This fee amounts to approximately \$300 per expert/month. Even with this income the Centre will not become financially independent for some time to come. Furthermore, if it is to expand its activities outside the Bangkok-Thonburi area and meet the present heavy demand from the rapidly growing manufacturing sector, it is essential that it should continue to receive strong financial support from the Government.

By 1972, the Centre is planned to double in size. Part of the expense of this expansion will be met by the UNDP and part by the Government of Thailand itself. Meanwhile, the Centre's training division will continue to be the sole financial responsibility of Thailand. The training division has proved its worth but still has much to accomplish. It is therefore essential that the training programme should continue at a high standard and, if possible, reach ever larger numbers of people.

The number of participants enrolling in Centre courses is scheduled to continue at a rate of about 1,000 each year. It should be realised, however, that Thai industry is expanding fast and that its need and demand for management training is rapidly rising. Therefore, the Government of Thailand is urged to consider expanding the Centre not only in terms of scope (as the project for management consultancy training is now doing) but also in terms of its capacity.

One of the Centre's basic problems is that of attracting and retaining its technical officers. Unless salaries are raised to levels that compete with those

offered by private industry, the Centre may find itself unable to continue its present level of activity for lack of teachers. There is a very real danger that trained officers may leave the Centre for more lucrative employment. In doing so they would take with them a million-dollar investment in human resources, leaving behind a building, a library and some office equipment. The problem cannot be solved by any means except improved emoluments and benefits. But perhaps one thing that the Centre has shown in its first five years' existence is that money invested in management techniques soon pays substantial dividends.

In order to maintain the present quality of the Centre's teaching staff, it will be necessary to provide for a number of fellowships abroad for technical officers, both those with long service and the new ones. This measure will ensure that the Centre keeps abreast of new techniques in coming years.

Briefly, here are the six important points that require immediate attention if the Centre's future development and success are to be assured.

1. Staff with the necessary qualifications should be recruited and given employment conditions comparable with those in private companies.

2. Practical consulting situations should be used as the training ground for new staff. Case writing or research may be undertaken as part of the training and development programme. These measures will ensure that practical and theoretical studies of management interact upon each other to their mutual benefit.

3. Staff should be further developed by fellowship studies abroad and during refresher trips every few years; these will keep them abreast of new developments.

4. Local case histories should be developed, and programmed instruction should be increasingly relied upon to multiply the effectiveness of the training syllabus.

5. Co-operation arrangements should be established with other Thai institutions that offer instruction in management subjects. In this way the dissemination of know-how and information throughout Thailand will be stimulated.

6. The Centre should be expanded in accordance with the needs of industry since the increasing demand for its courses will follow the direction that industry's expansion takes.

- (iii) Local counterparts to the international staff mentioned in (ii), and administrative and clerical staff, to be provided.
- (iv) Subject to availability from manufacturers and transportation delays beyond the control of the Executing Agency, equipment to be provided by the Special Fund to be delivered as soon after 1 January 1962 as possible.
- (v) Management (including supervisor) training to start early in 1962.
- (vi) Consultancy and technical information service to be established in the Management Development and Productivity Centre during the course of 1962.

D. Organisation

20. Initial responsibility for the Management Development and Productivity Centre will rest with the Ministry of Industry, acting with the advice and assistance of an Advisory Council.

21. The Advisory Council shall be composed of representatives of the Government, including representatives of the Ministry of Industry and of other Government departments interested in the functions and activities of the Centre, such as the departments concerned with questions of economic planning, of labour and of education and research, and of the universities, and representatives of industrial sectors of the community concerned with the operations of the Centre. The Chief of the international team will be invited to attend the meetings of the Council as an advisor.

22. Responsibility for the development, co-ordination and execution of the total programme of the Centre will rest with the Director of the Centre designated as the counterpart to the Chief of the international mission. For the duration of the project the Director of the Centre will consult the Chief of Mission fully and continuously concerning the direction of the Centre and all aspects of the Government's contribution to the project.

23. The Chief of Mission is the responsible chief of the international team, and all questions relating to the work of the team as a whole or of individual team members will be dealt with through him. The duties of the Chief of Mission will include:

- (i) serving as chief advisor to the Government and to the Director of the Centre on all administrative and general matters concerned with the direction of the Centre and the implementation of the project and, in consultation with the international experts, on the technical aspects of any of the activities performed by the Centre;
- (ii) co-ordinating work of all the international experts who will work under his instructions, including those relating to any action desired by the Government or the Director of the Centre;
- (iii) advising on the purchase of equipment and on the fellowship programmes of the Thai counterparts to whom fellowships will be awarded under the project;
- (iv) serving as a channel of communication between the Executing Agency and the responsible minister and his representatives in all routine matters connected with the project.

24. The Chief of Mission, and through him the other experts, will be exclusively responsible to the Executing Agency.

25. The local project personnel will work under the supervision and control of the Director of the Centre; the international experts will train and advise them and they are expected to co-operate fully with the international experts but will not be subject to their direction.

26. (a) Representatives of the Executing Agency may visit the project at any time in order to ensure the fulfilment of the responsibilities of the Executing Agency under this Plan of Operation.

(b) Representatives of the Managing Director of the Special Fund, including the accredited Representative of the United Nations Technical Assistance Board, shall have access to the project at any time.

IV. BUDGET

27. In addition to the services and facilities described in paragraphs 11 to 18 above, which shall be provided in kind to the project by the Government, and estimated to cost a total of 5,717,600 baht (the equivalent of \$272,300), the estimated total cash project budget amounting to \$588,900¹ will consist of the following:

- (a) The gross cost of experts, fellowships, equipment and miscellaneous expenses, described in paragraphs 7 to 9 above, to be met by the Special Fund and amounting to an estimated total of \$534,300 which includes an amount estimated at the equivalent of \$69,000 representing cash payments in local currency to be made by the Government to the Special Fund towards local operating costs described in paragraph 18 above.
- (b) The overhead cost of the Executing Agency in the amount of \$54,600.

V. INFORMATION AND REPORTS

28. *Supply of Records and Information.* The Management Development and Productivity Centre and the Government will furnish the Special Fund and the Executing Agency, from time to time as requested, with such relevant documents as may enable the Managing Director to judge the progress of the project, its continued feasibility or the compliance of the Government with any of its responsibilities under this Plan of Operation.

29. The Management Development and Productivity Centre and the Government will furnish the Executing Agency and its experts with such information and records as may be necessary for the effective carrying out of their work and subsequently such information as will enable them to judge the effectiveness of the work and the benefits derived from it.

30. The Government and the Executing Agency jointly shall present at the end of each calendar year a certified inventory of equipment purchased with the funds allocated by the Special Fund.

VI. GENERAL

31. If in the course of the implementation of this project one or more of the parties concerned consider it necessary to revise this Plan of Operation, such revision will be discussed by the three parties concerned, and any needed changes will be agreed upon by them.

¹ See Appendix B for final accounting of UNDP contribution.

VII. CONCLUSION OF THE PROJECT

32. On the completion of the assistance foreseen under the Plan of Operation, the Government will, in agreement with the Special Fund and the Executing Agency, take over full responsibility for the cost of running and maintaining the Management Development and Productivity Centre organised under this project plan. The Government will continue

the Centre's operations at least at the same level as established under the project.

33. At the successful conclusion of the project the Government, the Executing Agency and the Special Fund will consult with a view to transferring the title to the equipment from the Special Fund, in whose name it has been held by the Executing Agency, to the Government or any agency nominated by it.

Agreed on behalf of the parties by the undersigned:

Date: 18 January 1962

Representative
of the Government of Thailand

Representative
of the United Nations
Special Fund

Representative of the
International Labour Organisation

APPENDIX G

Analysis of Training Courses

I. Number of Participants Trained

Subject	1962		1963		1964		1965		1966-67 (1967: Jan-May)		Total	
	Partici- pants	Courses	Partici- pants	Courses	Partici- pants	Courses	Partici- pants	Courses	Partici- pants	Courses	Partici- pants	Courses
1. GENERAL MANAGEMENT												
1. Efficient Company Organisation	—	—	25	2	—	—	—	—	—	—	25	2
2. Office Organisation, Methods and Management	—	—	—	—	41	3	44	3	64	4	149	10
3. Office Work Simplification Techniques	—	—	—	—	—	—	—	—	241	14	241	14
4. General Management Appreciation for Pharmaceutical Plant Officers	—	—	—	—	—	—	39	1	—	—	39	1
5. General Management Course for Senior Executives	—	—	—	—	—	—	—	—	60	4	60	4
6. Management Data	—	—	—	—	—	—	—	—	55	4	55	4
7. Information Course for Ministry of Industry Officials on Application of Management and Productivity Techniques in Industry	—	—	—	—	—	—	—	—	178	7	178	7
TOP MANAGEMENT CONFERENCES	58	2	—	—	33	1	—	—	135	2	226	5
2. PRODUCTION MANAGEMENT												
1. Work Study	49	3	38	3	14	1	23	2	48	3	172	12
2. Production Planning and Control	—	—	—	—	31	2	40	3	15	1	86	6
3. Plant Layout	—	—	—	—	—	—	26	2	14	1	40	3
4. Plant Maintenance	—	—	—	—	—	—	—	—	73	5	73	5
3. MANAGEMENT ACCOUNTING												
1. Cost Accounting and Budgeting	—	—	46	3	10	1	—	—	—	—	56	4

I. Number of Participants Trained (cont.)

Subject	1962		1963		1964		1965		1966-67 (1967: Jan-May)		Total
	Partici- pants	Courses	Partici- pants	Courses	Partici- pants	Courses	Partici- pants	Courses	Partici- pants	Courses	
2. Introduction to Cost Accounting and Cost Statistics	—	—	90	7	70	6	32	2	172	10	364 25
3. Financial Analysis and Investment Policy	—	—	16	1	26	2	—	—	—	—	42 3
4. Inventory Control	—	—	—	—	65	4	66	4	155	8	286 16
5. Cost Accounting and Control	—	—	—	—	—	—	31	2	29	2	60 4
6. Management Control through Direct Costing	—	—	—	—	—	—	—	—	46	3	46 3
7. Direct Costing in Management Accounting	—	—	—	—	—	—	—	—	80	5	80 5
8. Budgetary Planning and Control	—	—	—	—	—	—	—	—	48	3	48 3
9. Distribution Cost Control	—	—	—	—	—	—	—	—	48	3	48 3
10. Special Seminar on Report Forms for Officials from Government Enterprises	—	—	—	—	—	—	129	5	—	—	129 5
11. Special Course on Financial Analysis for Budget Bureau Officers	—	—	—	—	—	—	19	1	—	—	19 1
4. PERSONNEL MANAGEMENT											
1. Developing Your Training Director	—	—	33	2	—	—	—	—	—	—	33 2
2. Job Instruction	99	11	180	18	161	13	158	13	181	10	779 65
3. Job Relations	—	—	150	14	116	10	171	13	162	9	599 46
4. Job Methods	—	—	—	—	—	—	79	6	157	16	236 22
5. Job Safety	—	—	—	—	—	—	—	—	266	16	266 16
6. Instructors' Course for Trainers in Job Instruction	—	—	10	1	—	—	—	—	—	—	10 1
7. Training the Trainer in Job Relations	—	—	—	—	—	—	10	1	—	—	10 1
8. Seminar on Leadership in Industry	—	—	—	—	46	3	—	—	—	—	46 3
9. Developing an Effective Work Force	—	—	—	—	33	2	—	—	—	—	33 2

I. Number of Participants Trained (cont.)

Subject	1962		1963		1964		1965		1966-67 (1967: Jan-May)		Total	
	Partici- pants	Courses	Partici- pants	Courses	Partici- pants	Course	Partici- pants	Courses	Partici- pants	Courses	Partici- pants	Courses
10. Basic Supervision	—	—	—	—	—	—	—	—	124	7	124	7
11. Advanced Supervision	—	—	—	—	—	—	48	3	81	6	129	9
12. Planned Staffing, Remuneration, and Records Administration	—	—	—	—	—	—	—	—	124	7	124	7
13. Training Techniques	—	—	—	—	—	—	—	—	16	1	16	1
5. MARKETING												
1. Sales Management	—	—	29	2	13	1	—	—	46	3	88	6
2. Marketing Research	—	—	29	2	—	1	—	—	64	4	93	6
3. Advertising, Sales Promotion and Public Relations	—	—	—	—	14	1	32	2	—	—	46	3
4. Sales Training	—	—	—	—	—	—	54	3	—	—	54	3
5. Salesmanship	—	—	—	—	—	—	99	6	335	16	434	22
6. Sales Supervision	—	—	—	—	—	—	—	—	41	2	41	2
7. Total Marketing	—	—	—	—	—	—	—	—	76	5	76	5
8. Special Seminar on How to In- crease Your Sales Profits and Growth	—	—	—	—	—	—	—	—	37	1	37	1
9. Conference on International Marketing	—	—	—	—	—	—	—	—	31	1	31	1
10. Sales Administration	—	—	—	—	—	—	—	—	131	7	131	7
11. Merchandise Management	—	—	—	—	—	—	—	—	30	2	30	2
Totals	206	16	646	55	673	50	1,100	72	3,363	192	5,988	385

Characteristics of Trainees and their Organisations

(1) NATURE OF TRAINEE'S BUSINESS	No. OF ORGANISATIONS	%
Manufacturing	153	34
Merchandising	147	33
Transportation	16	4
Public Utility and Government Departments	53	12
Banking and Insurance	16	4
Education	15	3
Others	44	10
	<u>444</u>	
(2) TYPE OF OWNERSHIP	No. OF ORGANISATIONS	%
Government Enterprise	129	30
Private Enterprise	315	70
	<u>444</u>	
(3) LEVEL OF PARTICIPANTS	No. OF ORGANISATIONS	%
Top Management (Managing Director, General Manager)	193	7
Senior Executive (Departmental Head)	676	23
Middle and Junior Executive	1,446	49
Supervisor, Foreman	624	21
	<u>2,939</u>	
(4) TYPE OF PARTICIPANTS	No. OF ORGANISATIONS	%
Government Employees	1,615	55
Private Employees	1,324	45
	<u>2,939</u>	

APPENDIX H

A Typical Practical Project: Inventory Control in a Thai Battery Factory

This annex summarises the practical project of a participant sent by a battery manufacturer to one of the Centre's production planning and control courses. He selected an inventory control project whose results would be of immediate use to his company, which was finding it difficult to maintain the correct size of stock of zinc cans used in the manufacture of standard flashlight batteries, in this case of type "X".

The Practical Project

The components for the assembly of a dry-cell battery are the core, electrolytic solution, zinc can, formed shell, top and bottom caps, various insulators and sealing materials (see Figure 1). The zinc can serves as the container of the core (which has the positive terminal) and the electrolytic solution. At the same time it serves as the negative terminal of the battery.

In this project, the inventory control of zinc cans in the manufacturing process aroused the participant's interest on account of the many manufacturing operations involved.

Figure 2 is a block diagram that illustrates the steps used in making zinc cans. Ingots of pure zinc are melted and cast into bars of specified size. These bars are then cold-rolled into strips of the required thickness. Presses then punch circular discs or slugs from the strips which are in turn fed into extrusion presses that form the cylindrical cups or cans of exact dimensions.

The can-making equipment accommodates all types and sizes of cans. Difficulties arise when orders are issued that change the types of batteries to be manufactured. Each change of order involves stopping the zinc can line and setting up the machines for the new types. These operations take, altogether, four hours, or half a working day, to complete; meanwhile, the assembly department, where the batteries are assembled, does not stop work.

If a stock of finished zinc cans is not available, the assembly line has to stop and await a fresh supply. The problem is, therefore, to determine how many cans of each type should be kept in stock to ensure that no stoppage of the assembly line occurs when an order is changed. Before this number can be calculated for each type, the "re-order point" (ROP) has to be determined for each type as well.

The Procedure Used

This project employed the "Economic Order Quantity" (EOQ) technique of inventory control and determined the EOQ of zinc cans for the type "X" battery. The "Economic Order Quantity" or "Economic Lot" is the quantity of an item that results in the lowest possible unit cost (see Figure 3). This procedure can also be used to establish the re-order quantity for items that are to be kept in stock.

There are many methods of determining the EOQ; in this case, the following simplified formula was used:

$$EOQ = \sqrt{\frac{2AS}{IC}}$$

Where A = Annual usage of the items in pieces

S = Set-up cost for one set-up in Baht
(Approx. 20 Baht = US \$ 1.00)

I = Inventory carrying charge rate in percentage of item cost

C = Manufacturing cost per piece in Baht

For the type "X" zinc can:

A = 9,000,000 units per year (from sales record and forecast)

S = 100 Baht per one set-up

I = 13.6 per cent

C = 0.25 Baht per unit

Therefore, the Economic Order Quantity for this type of zinc can is

$$= \sqrt{\frac{2 \times 9,000,000 \times 100}{0.136 \times 0.25}} \\ = 230,230 \text{ units.}$$

The Re-Order Point

While the zinc can line is manufacturing other can types, the assembly line of this particular type will, depending upon sales, be steadily using up parts in the work-in-process stock. The problem here is to find the "re-order point" (ROP), which is the quantity that is likely to be used before the new supply is available plus a safety or buffer stock to avoid being left without parts when the normal stock runs out.

Thus,

$$ROP = (\text{Reasonable usage rate} \times \text{manufacturing lead time}) + \text{buffer.}$$

Reasonable Usage Rate

For zinc cans of this type the average annual usage is around 9,000,000 units, i.e. 30,000 units per day. However, this figure could not be used as the reasonable usage rate since sales vary from year to year. Past sales records had to be studied to help find a more practical figure.

The sales record was plotted (Figure 4) showing the weekly volume of sales and the frequency of each particular sales total over a period of nearly two years. Here, the most frequent sales volume was 200,000 units, which occurred

every 39 weeks. This indicated that sales exceeding 200,000 units per week were rare. After allowances were made for sales conditions and other factors a point was selected as the reasonable usage rate. In this case, 210,000 units per week of six working days, or 35,000 units per day, were estimated.

Manufacturing Lead Time

This is the time required to manufacture the amount indicated by the EOQ including the machine set-up time. In this case, the EOQ was 230,230 units and the manufacturing capacity of the can line was 60,000 per day giving a Machine set-up time of 4 hours or 0.5 working day.

$$\text{Therefore, manufacturing lead time} = \frac{230,230}{60,000} + 0.5 \\ = 4.3 \text{ days (approx.)}$$

Safety Stock or Buffer

This is the minimum quantity in stock to take care of uncertainties in production and sales and other unforeseen factors. The quantity of buffer stock is determined as follows:

$$\text{Buffer Stock} = \text{max. sales rate} - \text{reasonable usage rate} \\ \times \text{lead time}$$

From the curve in Figure 4 the maximum sales rate is seen to be 270,000 units per week or 45,000 units per day.

$$\text{Therefore, buffer stock} = (45,000 - 35,000) \times 4.3 \\ = 43,000 \text{ units.}$$

The ROP can now be found:

$$ROP = (35,000 \times 4.3) + 43,000 \\ = 193,500 \text{ units.}$$

The Complete Picture

The figures obtained were plotted as shown in Figure 5. From this the following data was procured for the control of type "X" battery zinc can inventory:

Economic Order Quantity	= 230,230 units
Maximum Inventory Level	= 273,230 units
Re-Order Point	= 193,500 units
Minimum Inventory Level	= 43,000 units

Benefits

Here are the benefits derived from this practical project, apart from the knowledge directly gained by the participant:

1. A sufficient quantity of type "X" zinc cans are now stocked at minimum cost.
2. Set-up cost has been reduced, giving a reduction in manufacturing cost.
3. The precise number of component parts for which types are to be manufactured, when to manufacture them and in what quantity are now known precisely.
4. A continuous supply of components affords uninterrupted operation of the assembly plant.
5. Finished products are now promptly delivered since the necessary stock is always available.

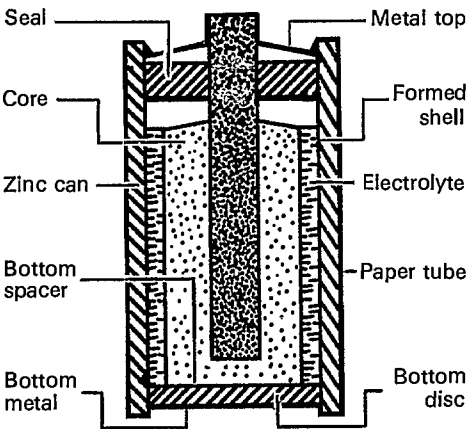


Fig.1. Cross-section of a typical dry cell battery showing the various components

Typical practical project

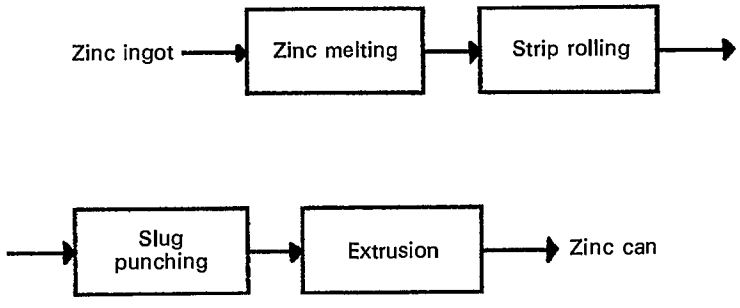


Fig. 2. Flow diagram showing the manufacture of a zinc can

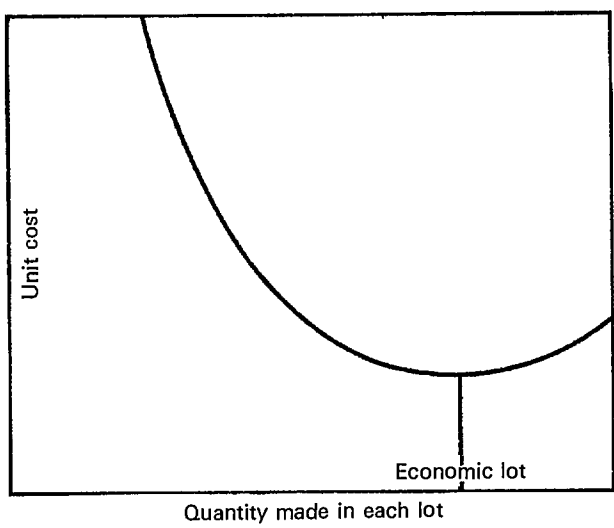


Fig. 3. The economic order quantity

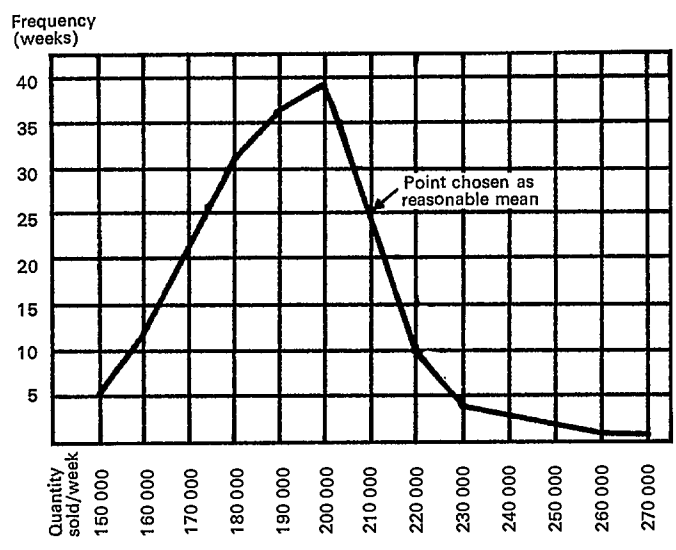


Fig. 4. Sales record of type «X» battery

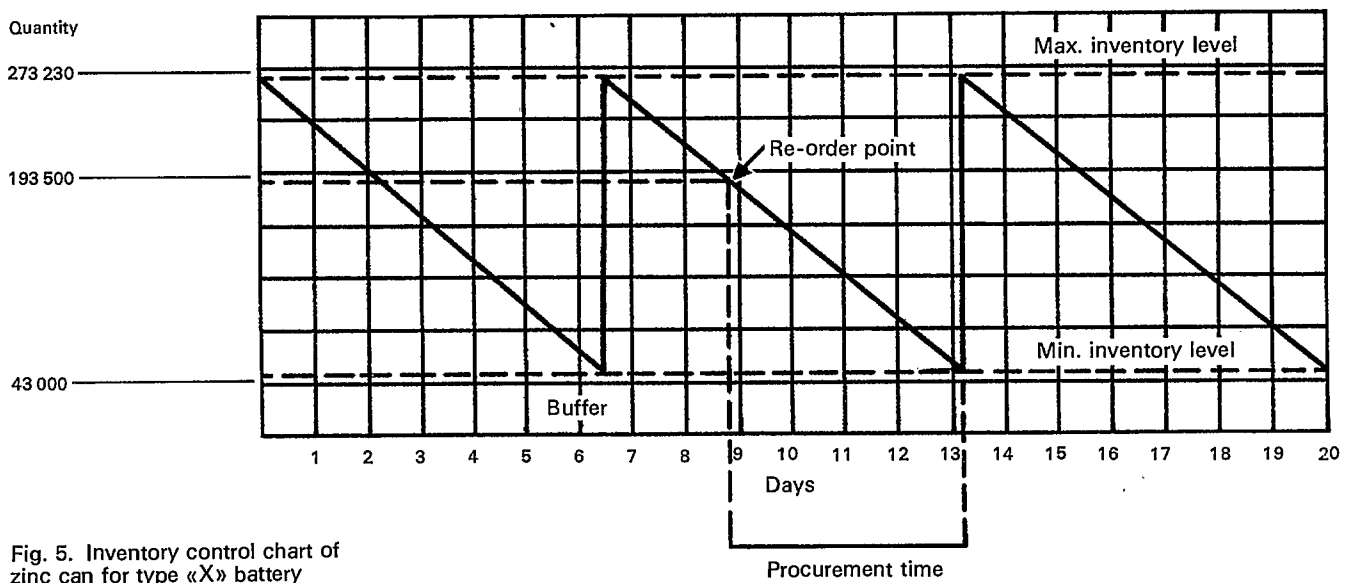


Fig. 5. Inventory control chart of zinc can for type «X» battery

APPENDIX K

Report on 1965 Survey of Market for Centre Activities

1. INTRODUCTION

- 1.1 In February 1965, it was decided to undertake a market survey to determine the probable future demand for the activities of the Thailand Management Development and Productivity Centre. This report describes the survey and attempts to interpret its results.
- 1.2 Based upon the already-existing content and time-table of Centre programmes, the survey aimed at ascertaining the type of courses that would be most in demand and the potential market for them. Steps would then be taken to provide the most appropriate training. The starting point, therefore, was a knowledge of what had already been accomplished and this is summarised in the following tables:

ANALYSIS OF PAST COURSES	No. of Courses Run			Total No. of Courses	Totals	
	1962	1963	1964		Partici- pants	Organi- sations
<i>General Management</i>						
Efficient Company Organisation	—	2	—	2	25	
<i>Management Accounting</i>						
Cost Accounting and Budgeting	—	3	1	4	56	
Introduction to Cost Accounting	—	7	6	13	160	
Financial Analysis and Investment Policy	—	1	2	3	42	
Inventory Control	—	—	4	4	65	
<i>Marketing</i>						
Sales Management	—	2	1	3	42	
Marketing Research	—	2	—	2	29	
Advertising, Sales Promotion and Public Relations	—	—	1	1	14	
<i>Personnel Management</i>						
Advanced Supervisory Training	—	2	5	7	112	
Basic Supervisory Training	11	33	23	67	615	
<i>Industrial Engineering</i>						
Office Management	—	—	3	3	41	
Work Study	3	3	1	7	101	
Production Planning and Control	—	—	2	2	31	
	14	55	49	118	1333	247

1.4 ANALYSIS OF PARTICIPANTS HAVING ATTENDED THE CENTRE

<i>By Rank or Seniority</i>	<i>%</i>	<i>By Type of Employment</i>	<i>%</i>
Top Management	10	Government employees	57
Senior Executive	23	Private employees	43
Middle Management	39		
Supervisor, Foreman	28		
	<hr/> 100		<hr/> 100

1.5 ANALYSIS OF ORGANISATIONS THAT HAD SENT PARTICIPANTS

<i>By Nature of Business</i>	<i>%</i>	<i>By Type of Ownership</i>	<i>%</i>
Manufacturing	50	Government enterprise	35
Merchandising	26	Private enterprise	65
Transport	5		
Government	10		
Banking and Insurance	1		
Education	4		
Others	4		
	<hr/> 100		<hr/> 100

- 1.6 A total of 260 practical projects had been completed by participants and technical officers to demonstrate in practical terms the theoretical training given at the Centre. These were made up as follows:

	Number of Projects
Industrial Engineering	83
Marketing	53
Office Management	41
Supervisory Training	21
Management Accounting	62
	<hr/> 260

2. NATURE OF THE SURVEY

- 2.1 A questionnaire was prepared and circulated to 723 business executives with a covering letter from the Director of the Centre requesting them to complete the questionnaire and return it to the Centre. Both Thai and English versions were used, the numbers being 656 Thai and 67 English. A copy of the English version of both the covering letter and the questionnaire is appended. As will be seen, the questionnaire lists 32 courses considered to be potentially interesting to respondents, who were asked to indicate whether they or members of their staff would attend the courses. The basis of this list is the general curriculum for a Management Training Centre prepared by ILO headquarters in Geneva.
- 2.2 Questions were also asked about the preferred duration of courses and about the status or seniority level of the proposed participants.
- 2.3 Finally, a question was inserted to determine the use likely to be made of a consultancy service if one were provided. Such a service would help satisfy the need for the extensive introduction of better methods that was being created by the training courses and demonstration projects. This need often remained unsatisfied because the existing staff of the Centre had enough time only to demonstrate improved methods but not actually to apply them throughout a client's organisation. The client likewise frequently lacked the staff and time to extend the use of methods that had been shown to be economic and profitable. It was thought that a consultancy service would help overcome this problem.

The detailed requests, which this table summarises, are incorporated in the copy of the questionnaire annexed to this report:

3.4 The "Total Requests" from the above table were received as follows:

From government organisations	1,140
From private organisations	2,542
Total Requests	<u>3,682</u>
From previous clients	2,270
From prospective clients	1,412
Total Requests	<u>3,682</u>

3.5 DURATION OF COURSES

The following results show the preference of respondents for full-time or part-time courses for both themselves and members of their staff:

REQUESTS FOR:	NUMBER OF REQUESTS	
	EMPLOYER	STAFF
FULL-TIME COURSES (Mornings <i>and</i> afternoons)		
2-3 days	16	9
1 week	11	16
2 weeks	2	16
2 to 4 weeks	2	13
4 to 6 weeks	1	5
PART-TIME COURSES (Mornings <i>or</i> afternoons)		
1 week	34	28
2 weeks	34	39
2 to 4 weeks	17	57
4 to 6 weeks	16	39

3.6 STATUS OR SENIORITY OF PARTICIPANTS

In response to the question: "Which of the following categories of participants will you send to our courses?", the following replies were received:

TITLE	AFFIRMATIVE REPLIES
Managing Director or General Manager	73
Senior Executive, e.g. Works Manager, Marketing Manager, Advertising Manager, Public Relations Manager, Chief Accountant, etc.	111
Junior Executive	73
Staff for training as Specialists, e.g. Methods Engineers, Production Controllers, Budget Officers, Market Researchers, etc.	74
Supervisors, e.g. Foremen, Chief Clerks, Sales Supervisors, etc.	88

3.7 COUNSELLING SERVICE

The question concerning the probability of using technical officers for consulting assignments gave rise to the following responses:

BY TYPE OF ORGANISATION	PRIVATE	GOVT.
Would use the service frequently	7	3
Would use the service occasionally	57	24
Would never use the service	42	14

BY PREVIOUS CONTACT	PREVIOUS CLIENT	PROSPECTIVE CLIENT
Would use the service frequently	8	2
Would use the service occasionally	51	30
Would never use the service	29	27

4. INTERPRETATION OF RESULTS

- 4.1 **GENERAL OBSERVATION.** The information so far recorded has been of a purely factual nature concerning the objectives, nature and results of the survey. No opinions regarding the validity and significance of the results have been expressed. In this section it is proposed to examine the results, and, as far as possible, interpret them. From this point on, therefore, a degree of subjectivity will be present which should be recognised when considering the conclusions, which are based on this section.
- 4.2 **STRUCTURE OF THE SAMPLE.** It is relevant to consider first whether the sample was of sufficient size to cover a representative selection of clients and whether the response was large enough to justify a high degree of confidence in the results. There are, according to the 1963 census, around 20,000 factories in Thailand where wage-earners are employed, apart from the owner's family. The majority of these are in the Bangkok area and employ only a handful of people. This majority, therefore, although accessible to the Centre, would not find its courses of direct use. No published statistics are known that grade factories by size and therefore it is not possible to quote the number employing, say, twenty or more workers that could be considered to be prospective clients. However, by making necessary adjustments to the figures that are available, such as eliminating the large number of small rice mills and saw mills, it is probable that there are about 5,000 factories, offices, government institutions and other organisations in and around Bangkok that could possibly benefit from the work of the Centre.
- 4.3 Based upon this assessment, therefore, the 723 questionnaires distributed represent 14 ½ per cent of the relevant population. The 173 questionnaires returned represent 3 ½ per cent of the same population and 24 per cent of those distributed. This would appear to be an adequate sample mainly because of the quite remarkable similarity between the pattern of requests from the first batch of 87 replies and the second batch of 86 replies received as a result of the first and second applications respectively. (See paragraph 3.1). This similarity in the pattern of requests from each batch of replies can be seen from the actual number of requests received for each course in each batch. The sample was chosen on a random basis as far as the 516 (71 per cent) prospective clients were concerned. The balance of 207 (29 per cent) previous clients represented 82 per cent of all previous clients.
- 4.4 **ANALYSIS OF THE RESPONSE.** There was about the same response ratio from both Thai and foreign respondents, the figures being 23 per cent and 28 per cent respectively. On the other hand there was a much greater response from government organisations, (80 per cent) than from private respondents (19 per cent). Also, on an average, 20 per cent more courses were requested from each government respondent than from each private respondent. This high response from government organisations is of special interest and several explanations have been suggested.
- 4.5 There was no large difference between the average number of courses requested by each previous client (23) as compared with each prospective client (20). However, more questionnaires were returned by previous clients (48 per cent) than by prospective clients (14 per cent). This difference is particularly interesting since the majority of previous clients (65 per cent) are from the private sector. Notwithstanding this, however, they only accounted for 43 per cent of all previous participants whereas the 35 per cent previous government clients provided 57 per cent of all previous participants. In other words, there were substantially more participants sent by each government client than by each private client and, as mentioned above, it appeared from the survey that this pattern would be likely to continue in the future.
- 4.6 Former clients appeared to be more sympathetic to training than those who had not previously used the Centre. Their past association appears to have prompted a large proportion of them to reply. This suggests that past clients received benefits from the Centre which prompted them to collaborate in the survey.
- 4.7 **RANKING OF COURSES.** Perhaps the most remarkable aspect of the survey is the clarity with which the various courses have been ranked. The table in section 3.2 reveals an unmistakable preference for "General Management" courses followed by "Accounting", "Marketing", "Personnel Management" and "Industrial Engineering" courses. Interest was clearly orientated towards the "board room" and away from the "shop floor". On an average, there were 50 per cent more requests for "General Management" courses than for "Industrial Engineering". (Refer Table 3.3 Col. 5).
- 4.8 There may, of course, be a number of spurious causes of this skew and these need to be considered. The most obvious is that the respondents were ill-informed as to which courses would be likely to suit them most. The patient is not always the right person to determine the best medicine. An understanding of the real value of industrial engineering techniques, for example, may have been absent. An attempt was made however to inform respondents regarding the potential value of particular courses by including in the questionnaire a brief outline of each course's objective. It would therefore seem, for example, that the 118 requests for "Office Management" (How to organise and improve office methods) compared with only 92 requests for "Plant Layout" (How to improve plant layout and speed up material and work flow) represented the respondents' real evaluation of the relative desirability of these courses based on their respective objectives.

- 4.9 There are other indications that the results reflected a knowledgeable understanding of course objectives by the respondents. It is suggested that the explanation of the course "Financial Analysis and Investment Policy" (How to plan the acquisition and control the employment of capital), is if anything, less likely to be understood by ill-informed respondents than, say, the description of the course on "Quality Control" (How to specify, measure and control product quality to the most economic level). This difference, however, did not prevent the "Finance" course from being graded seventh and the "Quality" course seventeenth, which implies that the respondents held a clear opinion regarding the respective value of the two courses.
- 4.10 The relegation of "Process Planning and Tool Design" to the lowest grade (27th) is known to be logical from actual observation of factories and their production problems. This lack of interest was reported during the project, and it is interesting to note that this lack should have been also confirmed by the survey. Arising from the analysis upon which that report was based, additional expert time was requested in the fields of general management (18 months), management accounting (12 months), marketing (12 months) and personnel management (18 months). No further expert time in the field of industrial engineering was recommended. This assessment of local requirements has been confirmed by the survey, which resulted in average request gradings as follows: general management (152), management accounting (131), marketing (112), personnel management (107) and industrial engineering (100). These various considerations suggest that the importance given by the respondents to the various courses proposed was based upon a proper understanding of both the objectives of the courses and the respondents' views of their own best interests.
- 4.11 Another spurious factor that might have influenced respondents could have been the conscious or subconscious seeking for greater personal status and thus the choice of "General Management" training as the road to quick promotion. Personal ambitions might thus have obscured the best interests of organisations. This possibility can, however, be discounted because the questionnaires were addressed to senior executives and thus the respondents were, in the main, mature men already in senior positions. Furthermore, considerably more "General Management" courses were requested for "staff" than for "self" — a further indication that self-aggrandisement did not influence the respondent.
- 4.12 Possibly the order in which the subject areas were presented in the questionnaire influenced the result. Is it, for example, only a coincidence that the order of group preference follows exactly the order of group presentation? Is there here a "cause and effect" relationship? Did the respondents start off enthusiastically by asking for everything and then, as they progressed through the questionnaire, recognise their excesses and progressively reduce their demands? This possibility appears inconsistent with the high ranking given to particular courses towards the end of the questionnaire. Mention has been made already of the relatively high grading given to "Office Management", although this appeared late in the questionnaire. Furthermore, the top four courses in the last section of the questionnaire (industrial engineering) all attain higher ranking than the lower four courses in the preceding section (personnel management). This suggests that where courses were considered desirable they were requested notwithstanding their position in the questionnaire. Further evidence of this is that the upper quartile of the personnel management group attracted fractionally more requests than the upper quartile of the marketing group, although the latter was presented earlier in the questionnaire.
- 4.13 Column 7 indicates the courses already given alongside the pattern of requests. This will help determine the type of additional courses that would appear to be of interest to Thai industrialists in the future.
- 4.14 The number of courses given previously by the Centre does not appear to have conditioned the response. In the management accounting group, 20 courses had been presented previously and the group average ranking was 131. The personnel management group ranking was only 107, however, although 74 courses had been given.
- 4.15 **DURATION OF COURSES.** The reply to the question regarding the preferred duration of courses given in section 3.5 was fortunately not only fairly clear-cut but also almost identical with the established practice of the Centre. First, there was an overwhelming preference for half-day courses, i.e. part-time, either mornings or afternoons. Secondly, where employers themselves proposed to participate, a course of one or two weeks' duration was desired. "One-week" and "two-week" courses attracted equal votes. Where, however, staff were to be sent, two to four weeks' duration was clearly the most popular. In practice, all the main courses comprise two to four weeks of half-day sessions at the Centre. It appears, therefore, that no change was called for in the established pattern of the Centre's presentation.
- 4.16 **STATUS OF PARTICIPANTS.** The status of participants seeking courses coincides reasonably closely with the actual experience of the Centre over its first three years. The comparison is as follows:

	<i>Previous Participants at Centre</i>	<i>Response to Questionnaire</i>
Top Management	10 %	18 %
Senior Executives	23 %	27 %
Middle Management	39 %	34 %
Supervisors, Foremen	28 %	21 %

The substantial difference between the 10 per cent top managers who actually attended courses and the 18 per cent who apparently desired to come is of interest. This may be due to the usual desire of senior men to attend courses, despite their inability to do so on account of other important calls upon their time. With this in mind, courses for senior executives should, perhaps, be limited to one week's duration notwithstanding the equal preference for a "two-week" course noted in paragraph 4.15.

- 4.17 **CONSULTANCY SERVICE.** A surprisingly high interest was shown by respondents in the proposed consultancy service. Of the 173 replies received 91, or 52 per cent, said they would use the service either "frequently" or "occasionally". However, of the 147 responses to this particular question, the 91 replies represent a 62 per cent affirmative response. This is considered to be high relative to the probable response to the same question that would be received in a developed country.

5. SUMMARY AND CONCLUSIONS

- 5.1 In this section the bare facts revealed by the survey are summarised together with the conclusions which appear to emerge.

5.2 RANKING OF COURSES — (relevant table 3.3)

Average number of requests for courses in each group:

General Management	152
Management Accounting	131
Marketing	112
Personnel Management	107
Industrial Engineering	100

5.3 REQUESTS FOR COURSES — (relevant paragraphs 2.1, 3.3, 3.4, 4.4)

Average number of courses requested per respondent:

Government organisations	24
Government organisations	24
Private organisations	20
Previous clients	23
Prospective clients	20

Of the total requests, 27 per cent were for self and 73 per cent were for staff.

5.4 REQUESTS FOR CONSULTANCY SERVICE — (relevant paragraphs 2.3, 3.7, 4.17)

Of all replies received	62 % would use service
Of replies from government organisations	66 % would use service
Of replies from private organisations	60 % would use service
Of replies from previous clients	67 % would use service
Of replies from prospective clients	54 % would use service

5.5 QUESTIONNAIRES ISSUED — (relevant paragraphs 3.1, 4.3)

Comprising	14 ½ % of probable market
	29 % of previous clients
	71 % of prospective clients
	8 % of government organisations
	92 % of private organisations

5.6 QUESTIONNAIRES RETURNED — (relevant paragraphs 3.1, 4.3)

Comprising	3 ½ % of probable market
	24 % of total number issued
	23 % of those issued to Thai respondents
	28 % of those issued to respondents in English
	80 % of those issued to government organisations
	19 % of those issued to private organisations
	48 % of those issued to previous clients
	14 % of those issued to prospective clients

- 5.7 The main conclusion emerging from the survey is the preference for "board-room" type courses compared to "shop-floor" type courses. This confirms plans already made to develop such courses with the assistance of additional expert help (refer to paragraph 4.7 et seq.) This does not imply that any less effort should be devoted to industrial engineering courses. It does imply, however, that relatively more effort might usefully be made to develop those courses appearing at the higher end of the ranking scale. In so far as general management courses and seminars will include reference to the benefits of techniques, including industrial engineering, further stimulation for such courses will be provided.

- 5.8 The second conclusion is that more effort to increase the number and proportion of "private" clients and participants using the Centre might be appropriate. It seems probable that a continuing and increasing demand for courses will be experienced. The fact that there has been a constant demand for courses in "Basic Supervisory Training", which has been repeated 67 times and yet which only ranks 21st in the order of preference, suggests that there will be no lack of support for courses of even greater popularity.
- 5.9 It appears that the present course duration and pattern is well conceived and requires no change. Courses also appear to be aimed at about the right level of the participants expected. (Refer paragraphs 4.15 and 4.16.)
- 5.10 Finally it seems evident that there is some need for an Industrial Counselling service and that, if this were provided, at the necessary level of competence, it would find a ready market among both government and private users and among both past and prospective clients (refer paragraph 4.17).
- 5.11 If a similar survey is undertaken in the future, an additional question might, with advantage, be included to determine the number of employees in the organisation or department to which the return relates. This might enable a quantitative assessment of future demand to be made. Further refinements might include mixing the list of questions on a random basis and soliciting information concerning the nature of the respondents' business. A more extensive analysis would then be possible.

6. ACKNOWLEDGEMENT

- 6.1 It is appropriate to acknowledge the assistance that has been received from the many people that have reviewed and improved this report at the draft stage and also from those members of the administration staff that prepared and circulated the questionnaire and analysed the results upon which this report is based. The help and advice of all these people has been most valuable.

Covering letter sent with questionnaire (English Version)

THAILAND MANAGEMENT DEVELOPMENT AND PRODUCTIVITY CENTRE,
DEPARTMENT OF INDUSTRIAL WORKS,
BANGKOK, THAILAND.

March 1965

To:

Attached: Questionnaire

I am writing to you personally to invite your help in the future planning of the Thailand Management Development and Productivity Centre. As you may know, this Centre has been presenting courses for management people for over three years during which time some 120 courses have been run and more than 1,200 participants from 250 organisations trained in various subjects, including marketing, production, human relations, office management, general management, etc.

Our present purpose is to find out from industrial and business people what additional courses they would like us to offer, the subjects required, and whether full-time or part-time courses are most attractive.

In the main, our courses are arranged in three stages. Stage one comprises two or three weeks of lectures and exercises conducted at the Centre by United Nations/ILO experts and by the technical officers of the Centre. Stage two usually takes from four to six weeks during which participants are invited to undertake practical projects with the help of the technical officers mentioned above. This takes place in the office, plant or organisation of the participant and is aimed to work out practical solutions to his and his company's most pressing problems. Experience has shown that these projects are often economically rewarding to a very high degree. Stage three consists of a further week at the Centre to evaluate and compare the project results.

In order to assist us to plan our future programme to the best advantage, your answers to the questions on the following pages are invited. Your reply will, of course, be treated in the strictest confidence.

When you have completed the questionnaire, will you kindly return it by the end of March to the address shown and I thank you in anticipation of your valuable co-operation.

Yours sincerely,

Director.

QUESTIONNAIRE

GENERAL MANAGEMENT

Please place "X" in the bracket opposite those courses which you, or members of your staff, will attend.

	FOR YOURSELF		FOR YOUR STAFF	
"General Management"	()		()	
The determination of top management policy in the fields of marketing, production, finance and staffing.	F. 47	S. 45	F. 42	S. 32
The decision-making process. Leadership and management. Planning the use of resources. The establishment of goals and objectives. The nature and use of management techniques.	P. 71	G. 21	P. 46	G. 28
	C. 55	N. 37	C. 52	N. 22
 "Executive Development"	()		()	
The development of executive ability. How to manage people and equipment to achieve desired objectives. Understanding human motivations and channelling endeavour. Preparing for promotion.	F. 30	S. 32	F. 46	S. 31
	P. 46	G. 16	P. 51	G. 26
	C. 33	N. 29	C. 54	N. 23
 "Management Techniques"	()		()	
How to use the more important management techniques; work study, incentives, direct costing; production planning etc. to raise production, productivity and profits.	F. 33	S. 33	F. 46	S. 37
	P. 44	G. 33	P. 53	G. 30
	C. 34	N. 32	C. 56	N. 27
 "Management Controls"	()		()	
How to design, install and operate systems to control labour costs, material costs and overhead expenses, production rates, waste or scrap and sales.	F. 28	S. 30	F. 52	S. 43
	P. 43	G. 15	P. 63	G. 32
	C. 33	N. 25	C. 63	N. 32

MARKETING

Please place "X" in the bracket opposite those courses which you, or members of your staff, will attend.

"Sales Management"	()		()	
How to organise and manage the sales force of an enterprise	F. 15	S. 18	F. 52	S. 48
	P. 30	G. 3	P. 71	G. 29
	C. 14	N. 19	C. 62	N. 38
 "Sales Training"	()		()	
How to plan and direct the training of your sales personnel	F. 7	S. 12	F. 49	S. 45
	P. 17	G. 2	P. 71	G. 23
	C. 7	N. 12	C. 59	N. 35
 "Marketing Management"	()		()	
How to organise and direct a modern marketing department	F. 10	S. 19	F. 45	S. 35
	P. 25	G. 4	P. 55	G. 25
	C. 12	N. 17	C. 51	N. 29
 "Marketing Research"	()		()	
How to initiate, plan, direct and evaluate a complete marketing research programme for your total marketing and sales effort including research of market, products and own promotion	F. 11	S. 19	F. 49	S. 40
	P. 26	G. 4	P. 59	G. 30
	C. 13	N. 17	C. 58	N. 31

Note: F = Number of requests from first response
 S = Number of requests from second response
 P = Number of requests from private respondents
 G = Number of requests from government respondents
 C = Number of requests from previous clients
 N = Number of requests from non clients

This note and the figures did not, of course, appear on the questionnaire as circulated. They are shown here merely to record the actual response received.

	FOR YOURSELF		FOR YOUR STAFF	
"Advertising, Sales Promotion and Public Relations"	()		()	
How to organise and direct an integrated advertising, sales promotion and public relations department within the framework of marketing and sales	F. 11 P. 26 C. 10	S. 18 G. 3 N. 19	F. 45 P. 63 C. 56	S. 46 G. 28 N. 35
"Salesmanship"	()		()	
How to behave when facing the customer and how to make a sale, when the customer "says no"	F. 6 P. 16 C. 3	S. 11 G. 1 N. 14	F. 49 P. 70 C. 56	S. 46 G. 25 N. 39
"Distribution"	()		()	
How to organise the distribution activities of an organisation	F. 7 P. 17 C. 5	S. 11 G. 1 N. 13	F. 43 P. 55 C. 49	S. 38 G. 26 N. 32
"Product Management"	()		()	
How to organise systematic product development, establish product policy, undertake product research, design, develop and introduce a new product and create a product image	F. 9 P. 21 C. 10	S. 15 G. 3 N. 14	F. 36 P. 46 C. 51	S. 34 G. 24 N. 19

MANAGEMENT ACCOUNTING

Please place "X" in the bracket opposite those courses which you, or members of your staff, will attend.

"Financial Analysis and Investment Policy"	()		()	
How to plan the acquisition and control the employment of capital	F. 22 P. 39 C. 24	S. 24 G. 7 N. 22	F. 41 P. 52 C. 50	S. 44 G. 33 N. 35
"Budgetary Cost Control"	()		()	
How to control the costs, expenses and profits of a business on a monthly basis	F. 20 P. 39 C. 19	S. 25 G. 6 N. 26	F. 54 P. 60 C. 67	S. 44 G. 38 N. 31
"Organisation of an Accounts Department"	()		()	
How to organise an integrated financial and cost accounting department based upon the concept of integrated direct standard budgetary cost control	F. 6 P. 15 C. 7	S. 13 G. 4 N. 12	F. 55 P. 71 C. 69	S. 52 G. 36 N. 38
"Costing for Supervisors"	()		()	
How foremen and supervisors can use cost information to achieve better efficiency in their work	F. 10 P. 15 C. 5	S. 13 G. 8 N. 18	F. 52 P. 66 C. 69	S. 48 G. 34 N. 31

PERSONNEL MANAGEMENT

Please place "X" in the bracket opposite those courses which you, or members of your staff, will attend:

"Manpower Planning and Development"	()		()	
How to assess future employment needs and plan a recruitment and training programme	F. 14 P. 22 C. 16	S. 15 G. 7 N. 13	F. 41 P. 45 C. 46	S. 29 G. 25 N. 24
"The Personnel Department"	()		()	
How to organise a Personnel Department to improve operator efficiency and raise morale by good welfare arrangements	F. 12 P. 22 C. 15	S. 17 G. 7 N. 14	F. 49 P. 61 C. 64	S. 45 G. 33 N. 30
"Selection and Recruitment"	()		()	
How to select and recruit work people and management personnel	F. 12 P. 24 C. 13	S. 17 G. 5 N. 16	F. 45 P. 47 C. 51	S. 33 G. 31 N. 27

	FOR YOURSELF		FOR YOUR STAFF	
"Industrial Relations"	()		()	
How to improve industrial relations as between workers and employers	F. 7 P. 20 C. 7	S. 16 G. 3 N. 16	F. 40 P. 43 C. 52	S. 31 G. 28 N. 19
"Wages and Incentives"	()		()	
How to determine appropriate wage and incentive payment systems to increase productivity and production	F. 12 P. 29 C. 17	S. 22 G. 5 N. 17	F. 45 P. 52 C. 50	S. 34 G. 27 N. 29
"Safety and Health"	()		()	
How to improve safety and health aspects of working conditions	F. 8 P. 12 C. 8	S. 10 G. 6 N. 10	F. 44 P. 54 C. 55	S. 41 G. 31 N. 30
"Advanced Supervisory Training"	()		()	
How supervisors can best deal with work people to avoid disputes and achieve high rates of production and productivity	F. 15 P. 25 C. 16	S. 18 G. 8 N. 17	F. 43 P. 54 C. 58	S. 41 G. 30 N. 26
"Basic Supervisory Training – TWI"	()		()	
How supervisors can improve their ability with job instructions, job relations and job methods	F. 11 P. 18 C. 9	S. 11 G. 4 N. 13	F. 44 P. 47 C. 55	S. 33 G. 30 N. 22

INDUSTRIAL ENGINEERING

Please place "X" in the bracket opposite those courses which you, or members of your staff, will attend:

"Work Study"	()		()	
How to measure work and develop better production methods	F. 8 P. 21 C. 9	S. 17 G. 4 N. 16	F. 40 P. 51 C. 56	S. 40 G. 29 N. 24
"Office Management – O and M"	()		()	
How to organise and improve office methods	F. 14 P. 27 C. 16	S. 46 G. 5 N. 16	F. 46 P. 53 C. 59	S. 40 G. 33 N. 27
"Process Planning and Tool Design"	()		()	
How to plan and install new production processes and design improved tooling arrangements	F. 2 P. 8 C. 5	S. 8 G. 2 N. 5	F. 27 P. 26 C. 44	S. 32 G. 33 N. 15
"Material and Inventory Control"	()		()	
How to organise efficient material utilisation and control, improve inventory control and reduce material waste	F. 4 P. 14 C. 5	S. 11 G. 1 N. 10	F. 49 P. 62 C. 65	S. 46 G. 33 N. 30
"Plant Layout"	()		()	
How to improve plant layout and speed up material and work flow	F. 10 P. 18 C. 13	S. 14 G. 6 N. 11	F. 37 P. 41 C. 50	S. 31 G. 27 N. 18
"Preventive Maintenance"	()		()	
How to increase production "up time" by planned machine maintenance	F. 5 P. 8 C. 5	S. 7 G. 4 N. 7	F. 46 P. 55 C. 62	S. 39 G. 30 N. 23
"Production Planning and Control"	()		()	
How to eliminate bottlenecks in production and smooth out holds-ups in work flow	F. 8 P. 17 C. 12	S. 13 G. 4 N. 9	F. 40 P. 51 C. 54	S. 37 G. 26 N. 23

	FOR YOURSELF		FOR YOUR STAFF	
"Quality Control"	()		()	
How to specify, measure and control product quality to the most economic level.	F. 11	S. 15	F. 42	S. 41
	P. 21	G. 5	P. 52	G. 31
	C. 12	N. 14	C. 59	N. 24

DURATION OF COURSES

Depending on the intensity of training desired, each course could occupy a longer or a shorter period of time. Please indicate by "X" the approximate length of course which would best fit your needs and commitments. Remember, training takes time, so the shorter the course, the more limited its intensity.

1. Full-time courses (mornings *and* afternoons)

2 to 3 days	()	()
1 week	()	()
2 weeks	()	()
2 to 4 weeks	()	()
4 to 6 weeks	()	()

2. Part-time courses (mornings *or* afternoons)

1 week	()	()
2 weeks	()	()
2 to 4 weeks	()	()
4 to 6 weeks	()	()

PARTICIPANTS

Which of the following categories of participants will you send to our courses (please place "X" in the bracket)?

1. Managing Director or General Manager. ()
2. Senior executives, e.g. Work Manager, Marketing Manager, Advertising Manager, Sales Promotion Manager, Public Relations Manager, Chief Accountant, etc. ()
3. Junior executive. ()
4. Staff for training as specialists: e.g. as methods engineers, production controllers, budget officer, market research officer, sales trainer, etc. ()
5. Supervisors, e.g. foremen, chief clerks, sales supervisors, etc. ()

CONSULTANCY SERVICE

We are considering developing technical officers who could be made available to work full time in organisations for a period of one or two months as consultants to implement improved methods and procedures and to train staff in their operation. The charges for this service would be sufficient only to cover actual costs and would be in the region of 3,000 baht per month.

Would you be likely to use this type of service if it were available in the fields of marketing, production, accounting, training or other fields? Please place "X" in the bracket.

() Frequently () Occasionally () Never

Response *

7	Private	57	42
3	Government	24	14
8	Previous clients	51	29
2	Prospective clients	30	27

* Note: This response was not, of course, part of the questionnaire as circulated.

ACKNOWLEDGEMENT

Thank you again for completing the foregoing questions and for making your time and help available to us in this way. If you care to supply the following information we will arrange to inform you of future programmes that may be of particular interest to you.

Name of your Organisation _____

Address _____

Your name or name of executive to contact _____

Telephone number and extension _____

Please return the seven sheets marked "Questionnaire" to:

The Director,
Thailand Management Development and Productivity Centre,
Ministry of Industry,
Rama VI Road,
Bangkok.