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TECHNICAL ASPECTS IN AN INDUSTRIAL MANAGEMENT CLINIC 1/

by

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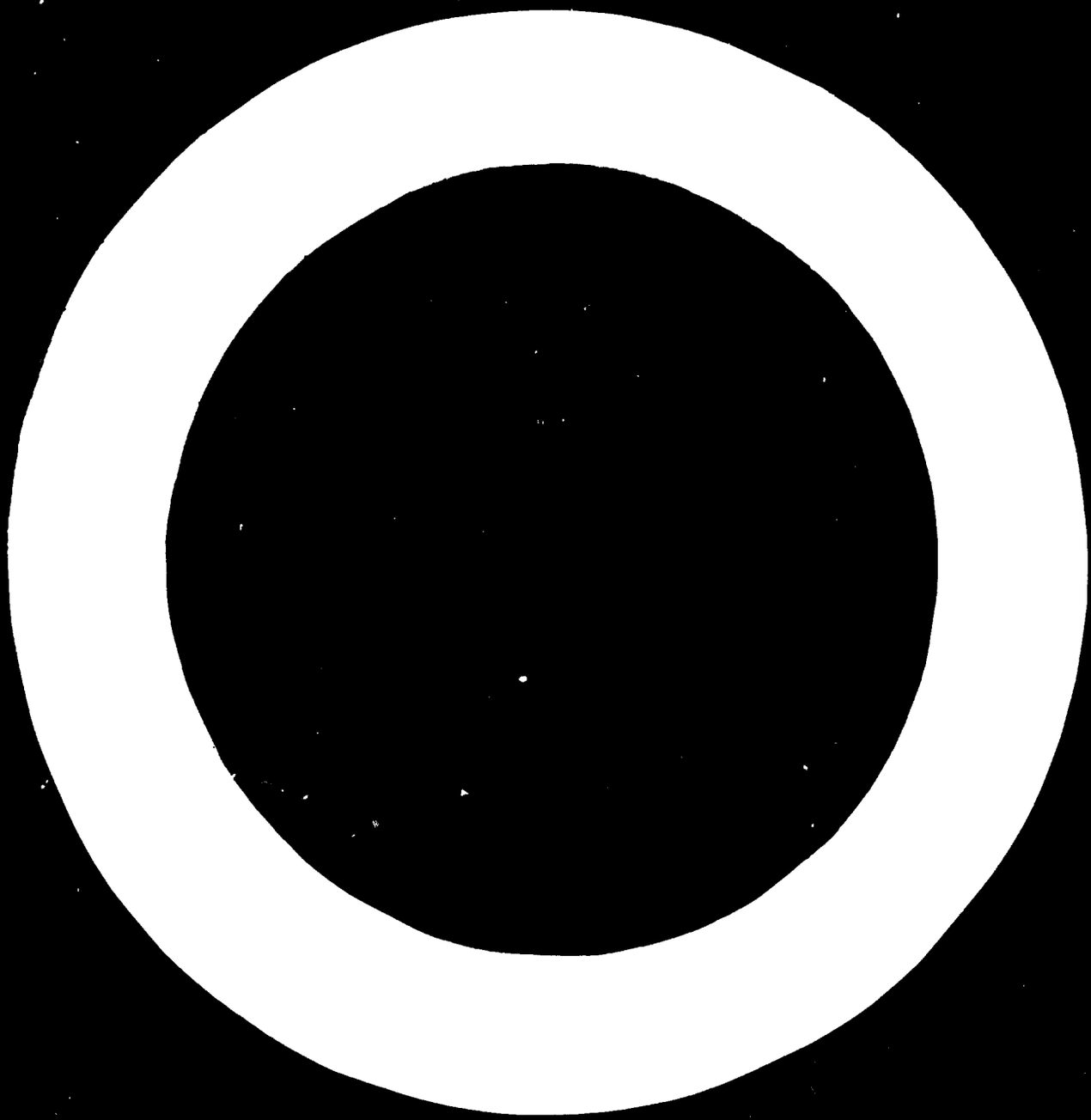

The views expressed here on "Technical Aspects in Industrial Management Clinics" sum up my industrial experience gained over many years, quite a wide knowledge of industrial problems in developing countries acquired from active cooperation with UNIDO and the participation as a technical expert in "Management Clinic for the Textile Industry, September/October 1969, Pakistan".

All the experience concerns my speciality, i.e. the textile industry. However, I think that being able to present only very general basic technical problems which appear during the practical realization of the clinic program, they may also be applied when carrying out similar operations for other branches of industry.

Position and duties of a technician in a group of experts

The necessity for many-sided, interrelated operations aimed at identifying the whole situation in a given branch of industry is evident from the general line of action in all its aspects of advisory and problem solving missions for analyzing, estimating and proposing solutions for improvement. These operations must especially cover the following fields:

A. Business and industrial management
B. Procurement and sales
C. Trends of costs and ways of lowering them
D. Technical and technological aspects

These fields which overlap on each other, as can be seen from fig. 1, after the analysis stage, enable the joint estimation of the situation and also the determination of future procedures

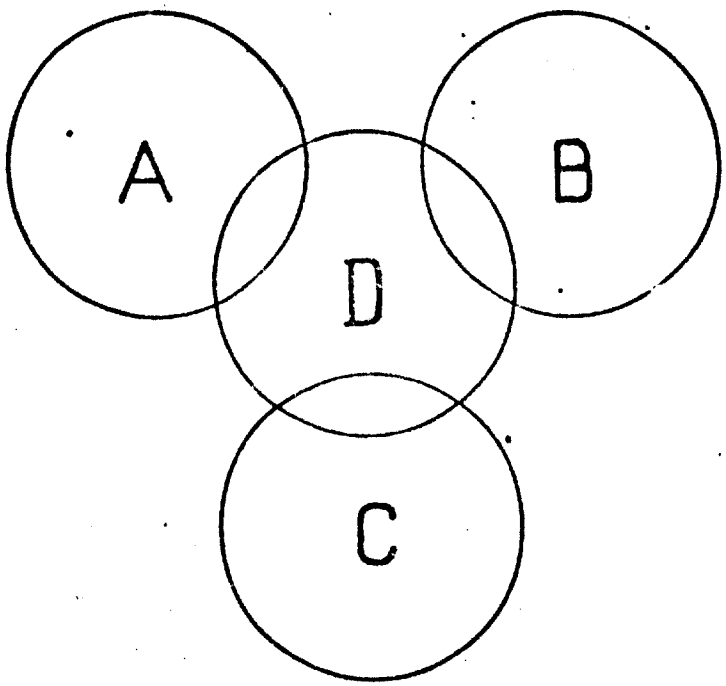

Fig. 1 The overlapping of problems: A - Business and industrial management, B - Procurement and sales, C - Trends of costs and ways of lowering them, D - Technical and technological aspects.

The infiltration of problems from each of the given fields show that the members of a group representing separate specialities must have a knowledge of the basic problems of the other specialities. In other words, an expert in the technical field must be acquainted with the problems of management, costs and sales and vice versa, experts from those specialities must have a knowledge of the technical problems of a given branch of industry.

Only in this way is the correct cooperation of a group of experts possible. They have only the very limited time of a

short visit in a factory, a meeting with the management of the industry, official talks, in which to get to know the problems, determine the main issues and make estimates.

The technical problems occur in various degrees in different stages of the duration of the mission. Moreover, the scale of the technical issues discussed in the factory, in a research institute, in a training institute, in a manufacturer's association or at a meeting with the management of the industry, is different in each case.

It is obvious and understandable that technical issues occur in each stage of the work of the group of experts analyzing the problems of a given branch of industry and that the other side expects the views of the experts in this field to be presented.

The technical problems discussed with the management of the industry and with government representatives are of a crucial character, e.g. the size of firms, the degree of automation in the production stages, new techniques and technological processes.

Technical discussions in factories have a different character. The Pakistan mission based its identification of the textile industry there on visiting factories, while not neglecting the other forms of the analysis of the situation. Many large and small factories were visited, both very modern and old, state-owned and privately-owned, in many regions of the textile industry.

Technical discussions, organized in the production departments or in the factory laboratories themselves, provided a lot of first hand information but they also required the immediate impartation of technical advice.

Especially in the factory itself, a technical expert must

be prepared for a very detailed, substantial discussion and in advice, considering the real conditions of the country and factory, should lead to practical solutions of technical problems.

In the Pakistan mission, the discussion in Kohinoor Textile Mills in Lyallpur was very valuable. There, after touring the factory, there was ax a meeting of the groups of UNIDO experts with the managers of all the departments and the higher technical staff, 22 persons in all. The meeting transformed into a brain storm.

The separation of individual technical sessions in the program of the clinic and the guaranteeing the participation of distinguished national specialists in the technical and technological field allowed the discussion of general technical problems of the textile industry in Pakistan.

Main technical problems appearing during the realization of the clinic program

During their realization, the technical problems of industrial clinics are very actively analyzed. This is a result of the sudden development of technical progress in the world in the last few years. In the field of the textile industry these changes are especially deep. They concern the introduction of new raw material base, new techniques and technologies and also new refining processes giving textile products new properties

Considering the fact that the textile industry in these countries is not only developing but in some cases the speed in its origination may even be called an explosion of the

textile industry, remembering at the same time the necessity of coming to extremely important, daring investment decisions requiring a lot of capital, the special interest of the economic workers of all grades should be directed to the optimal technical solutions for given conditions.

In the field of the textile industry development problems, the following should be considered as the main issues which require analysis, estimation and taking a standpoint for the duration of the industrial clinics:

A. Raw material base

Today, the correct application of fibres guaranteeing the optimal use of their properties in the ready-made article is an exceptionally difficult problem.

This results from the sudden rise of the development of the man-made fibre industry which supplies newer and newer types of fibres with very various properties.

Developing countries building their own textile industry base it mainly on home raw materials, especially natural ones. This is the correct tendency which guarantees the development of not only the industrial activities but also appropriate agricultural fields.

Many developing countries would like to produce as many assortments of textile goods as possible from the sources of raw materials accessible to them, using very expensive raw materials for the wrong assortments. This pillar should be systematically solved by a correctly realized policy of selective development of production assortments in such a way that the properties of the raw materials are made full

use of in full compliance with the future use value of the ready-made article.

The properties of many assortments may be improved by the application of blends of synthetic and natural fibres.

In this field the developing countries are taking their first steps and much is to be done at this stage so that the processing of these blends is realized correctly both from the technical and economical points of view.

B. Waste and its re-use

Waste arising in production processes constitutes, after suitable preparation, a valuable raw material for certain assortments of goods and for certain technological processes. The basic problem in this field is the disrespect given in developing countries to making use of waste. It is possible, that waste of an easily accessible raw material at home is not valued so highly in countries which import natural raw materials or that the assortments of goods which can be produced from this kind of raw material are atypical for everyday use in countries with a hot climate.

The correct utilization of raw material waste contains great economic and technical potentials for the developing countries.

C. Mill level

This is one of the most important technical and even economical problems which requires very serious and very basic decisions. The level of a firm in the very basic indices can be substantially determined both by means of technical and economical indices. Manufacturers of machines and equipment given and guarantee

the technical and production characteristics - the output of the unit is known, the output per employee, the energy and production area required for the manufacturing of one product unit are also known. An economical analysis considering the local conditions makes the decision easier. In the textile industry field in some branches of production, e.g. in weaving, pre-industrial manufacturing techniques exist side by side - manual looms, and among the industrial solutions mechanical, automatic and the most effective shuttle-less looms are in operation. A fundamental problem when coming to a decision on the choice of the most suitable level of a firm apart from technical and economical indices is the problem of local social conditions. The problem of employing the local manpower should especially be one of the decisive factors in this the choice of the level of production.

D. Plant size

Answering the question on the optimal size of an industrial plant in the textile industry is a very important problem which determines to a very great extent the economic indices achieved by the firm. For the textile industry for its various branches and production departments, these indices are very various.

The fundamental problem in this field is the irresistible tendency to begin operations in too small, economically ineffective units. The typical three department company in the textile industry, i.e. spinning mill, weaving mill and finishing mill, contains units with different "sensitivities" to size. The weaving department, for example, is much less "sensitive" than the spinning department and especially the

the finishing department. Small, medium and large weaving mills do not differ very much in their indices. However, only large finishing mills achieving full production output of the highly effective expensive machines installed in them have appropriate economical characteristics in the textile industry field. The conception of renouncement of the traditional model of an integrated three department company, which should exist in large-scale companies only, and the development of medium-sized spinning mills whose product - yarn - may be made into fabrics in medium-sized and even small weaving mills, requires deep thought. However, the finishing of coarse fabrics should take place in large finishing mills only.

E. Mill balance

The balance of technological loading both in departments and also between departments is closely connected with the solution of other technical problems and especially of the size of plants and departments and the standardization of production. Small textile factories are not able to balance the loading even in the departments and especially between the finishing mill and the mechanical technological departments.

Standardization /classification/ of production into yarn assortments and types of ready-made goods is a basic condition for the balancing of production loading of departments, sections and even groups of machines.

F. Specialization

The specialization of production factories in certain assortments of goods and connected with it the optimalization of technological processes, the chance of achieving high

productivity of machines and high qualifications of the production personal - the basic problem of the earning capacity of a factory - is (in developing countries) far from the degree of specialization of textile factories in developed countries. This state is conditioned by objective causes such as the lack of stability in the assortments of raw materials supplied and the current market and export orders but the habitual customs of adapting production to temporary situations on the raw material supply market and on the sales market accompany this situation. The specialization of production, apart from the completely technical aspects is closely connected with the stabilizing of a long-term production policy both on the national scale and on the firm scale.

G. Equipment and machinery, spare parts and maintenance

The outfitting of factories with machinery and equipment in the field of their productivity, conditions and technological parameters does not cause technical problems on a large scale. These aspects are agreed on by the companies and manufacturers of the machines concerned. However other aspects indirectly technical are created in connection with the high speed of the building of the textile industry in the developing countries. Among these is the special problem of the occurrence within one branch and even one factory, of machinery manufactured by various firms from all the continents of the world. This phenomenon may be explained by such considerations as the agreement on the time of supply, the chance of obtaining credit and other non-technical conditions.

This is a typical phenomenon and exists on a large scale

causing great difficulties in the solution of technical problems as regards supplying spare parts and the correct repairs administration.

The problem of starting a textile machine industry at the same time as the erection of the textile industry in these countries requires deep consideration.

In the first phase, this industry should start the production of machines which occur in great numbers, e.g. ring spinning frames and looms, on the basis of purchased licenses.

H. Quality control

The problems of the quality of goods and the organization of quality control in textile factories in the developing countries are very various. Beside factories producing high quality goods with a well organized quality control service there are other factories where the problem of the quality of goods and quality control systems practically does not exist. This state will be tolerated as long as on the local market there will be a demand for low quality goods and the production of them will be still be profitable. Quality control - an important and very special technical and organizational issue is clearing the way, with difficulty, to the procedure of the textile industry in developing countries. In this field appeals of the responsible elements in the developing countries for help are directed to international organizations, to UNIDO included. The quality control problem in industrial clinics should constitute one of the more important fields for operation in all the stages of their realization. Without solving this problem or by waiting with its solution, the organization of correct local market

supplying will not be possible and the examination of the possibilities of exporting textile goods from developing countries is not practical.

I. Recent technological developments

Just as in every branch of engineering, recent technological developments are diligently followed. However, in the developing countries, the scope of their application is incomparably small in relation to the potential possibilities and real necessities. The habits of local customers change slower than in developed countries limiting the interest of manufacturers to the production of classical textile goods. Even not very new techniques, such as knitting developing intensively in industrialized countries and forcing out of many assortments the traditional weaving technique, are developing inproportionally slowly because the attention of industrialists is directed to the conventional, traditional assortments of goods.

The state of the main fields of technical progress of the textile industry in the production structure of developing countries may be illustrated in the following way:

The changes in the raw material base have been discussed. The acceleration of changes in this issue by the wider use of man-made fibres should be expected.

The intensification of technological processes has the widest application. More and more often highly efficient machines are used in newly built factories, they are also being introduced into the older factories within the modernization of processes.

Processes refining textile goods giving them new sought for properties are not used in the wide practice of the textile industry in developing countries.

Quite new techniques such as the production of textured yarns, nonwoven fabrics are not ax manufactured.

K. Outside technical assistence

The possibilities of obtaining outside technical assistance in developing countries are very various depending on the general technical level. In textiles, in many countries there are research centres some of world renown /India, Egipt/. Technical higher educational systems are preparing technical staff for this industry and are carrying out research work of their own. Technical organizations are displaying typical activities. The technical service of individual firms of the world especially of the manufacturers of dyes and auxiliary agents is being felt more and more.

However, in relation to developed countries a considerable distance divides them from the developing countries in the standardization of raw materials, intermediate products and ready-made products. Technical information reaches production factories only in an incomplete form. Up to now, companies have not taken action for furnishing technical consultations.

In this situation, managing and technical staff suffer from a lack of independent technical information, help from specialized units which could carry out technical and organizational modernization of a company.

The technical problems both of the rank and of the direction of modernization, technology and the choice of the optimal machinery and also of a slight nature should be solved by the company on its own.

Conclusions

1. Industrial clincs for each branch of industry organized by UNIDO facilitates the obtaining of a full objective picture of the situation in a given branch both for the authorities of the country and for UNIDO.

2. The technical problems exist very strongly in all the stages of the realization of the clinic. Therefore, a technician who knows the basic technical problems and the situation of the industry in developing countries should be included in the group of experts.

3. The results of techniques in justifiable cases should be developed in the long-term stage of the UNIDO attendance for the solving of the most fundamental problems together with the country concerned.

4. The forms of educating technical staff, applied at the present by UNIDO should be strengthened and developed and the possibility of an international attendance when organizing model centres for the education of technical staff with a secondary education and even qualified factory-hands should be given consideration.

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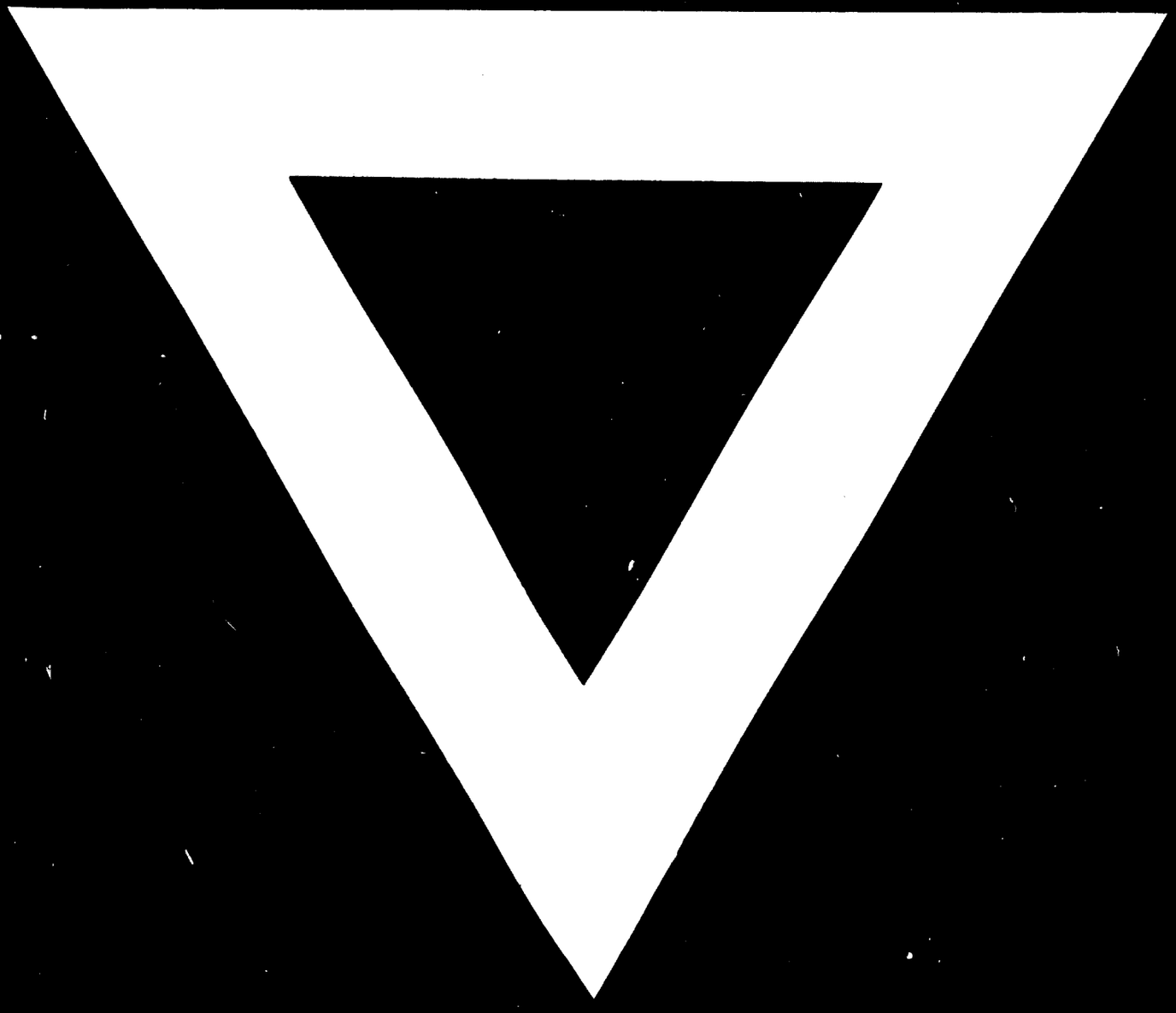
Contents



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