OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

RESTRICTED

18473

DP/ID/SER.A/1370
12 July 1990
ORIGINAL: ENGLISH

JUTE RESEARCH AND DEVELOPMENT

DP/IND/86/037/11-10

INDIA

Technical report: Second mission*

Prepared for the Government of India

by the United Nations Industrial Development Organization,

acting as executing agency for the United Nations Development Programme

Based on the work of G.R. Haines
Industrial Engineer

Backstopping officer: J.P. Moll, Agro-based Industries Branch

United Nations Industrial Development Organization
Vienna

* This document has not been edited.

V.90-86458

ABSTRACT

Jute Research and Development (Development and promotion of diversified uses of jute), IJIRA, Calcutta. DP/IND/86/037/A/01/37 INDIA

Report on:- Second Industrial Engineering mission of above project.

The UNIDO Project designed to support the research and development work carried out by the Indian Jute Industries Research Association (IJIRA) and its industrial applications contains an industrial engineering contribution (Job Description number DP/IND/86/037/11-10/J13102). The first mission (9-10-89 to 23-11-89) was reported on in January 1990. This second mission, carried out between 23-04-90 and 23-05-90, assessed progress so far, modified some earlier recommendations and set an agreed programme of work for the next stage.

The programme agreed in November 1989 is slightly behind schedule but good progress has been made. Two mills have been surveyed and reported back; one mill has given the go-ahead for the next stage and agreement is expected from the second mill shortly. The third mill has now agreed to the survey stage 1.

The survey reports were re-structured and a standard format laid down for these and subsequent industrial engineering reports in order to facilitate comparisons and, with the aid of a word-processor, reduce the time taken to produce them.

An industrial engineering appreciation course was developed and presented at Birla Jute Mill as an introduction to the main work to be carried out there. With a little modification this will be used as a format for the introduction at mills where similar work is to be carried out. Further sets of documents covering Work Study Techniques and Management Control essentials were developed in order to give background information from which a selection can be made to suit a variety of needs and levels of course in this subject area.

The next stage of this part of the IJIRA/UNDP Project is to proceed with and complete (with reports) the work in the three selected mills by the end of this year. Additionally, the Electronic Data Processing work and extension of the Inter Firm Comparison into weaving which has been delayed by the withdrawal of the candidate appointed last November can now proceed following the appointment of a replacement manager; this will also provide information to facilitate selection of possible engineering projects in that section later in the Project.

KEY WORDS. Jute Manufacturing (India), Industrial Engineering and its applications, Personnel Development, Institution Building, Consultancy Services, Management Techniques, Operative and Management Training.

Contents

Introduction

The UNIDO Project designed to support the research and development work carried out by the Indian Jute Industries Research Association (IJIRA) and its industrial applications contains an industrial engineering mission (Job Description number DP/IND/86/037/11-10/J13102). The first mission (9-10-89 to 23-11-89) was reported on in January 1990. This second mission, carried out between 23-04-90 and 23-05-90, assessed the progress so far, determined modifications required to the original proposals in the light of experience, gave further advice on methodology and laid down agreed plans and timetable for the next part of the project.

The overall aim of the industrial engineering section of the UNDP Project is to assist in achieving processing cost reductions at little or no investment cost by showing how to improve existing processing methods and managerial systems. Additionally, a prime function of the project is to help with institution building of IJIRA by expanding their productivity information and consultancy services.

This second mission was carried out by the designated UN industrial engineering expert, G.R. Haines, with assistance from UNDP Project/IJIRA staff in Calcutta.

The purpose of this documentary output is to summarise progress so far and the activities of the second mission and to outline the proposed subsequent actions to further this section of the Project.

A. Review of progress since first mission

The report on the first mission contained a timetable (first mission report, Annexe 6a and 6b) of work projected subsequent to that mission. At the start of this second mission a great deal had been achieved even though this part of the project had fallen a little behind schedule. Two of the mill surveys had been carried out but the third had not yet been sanctioned by the mill concerned. The necessary reports on the two surveys had been written but were held back pending my arrival so that I could examine and comment on them and possibly recommend modifications. This also enabled further consideration to be given to the details of how the I.E. Appreciation course should be carried out, as a result of which the original plan was modified to deal with each mill on an individual basis rather than the collective (3 mill) basis originally proposed.

The Electronic Data Processing (E.D.P.) project had also suffered from the fact that the person appointed to take charge of this following interviews at the end of November 1989 had, after considerable delay, withdrawn from the offer; this meant that further advertisements had to be placed and interviews arranged to find a replacement.

B. Mill Survey Reports

The survey report written for the first mill was analysed in considerable detail and was finally re-structured into a standard format suitable for future I.E. reports. This will ensure that all necessary detail is included in such reports, make it easier to compare reports and, with the aid of the word processor, reduce the time taken to produce them. The opportunity was taken to review some omissions in the information given. In particular, discussions were held with an industrial accountant/consultant, Mr. M.K. Datta, on a satisfactory basis for cost/benefit analysis consistent with Indian conditions and the context of th project, and with its socio-economic background.

A document was prepared to indicate the essential requirements of an I.E. report. Each section was dealt with in detail, giving the reasoning behind each requirement, what should be included or not included, and why.

Using this as a guideline together with the example of the first survey report, the second survey report was successfully produced independently by Mr. K.M. Sahoo (the Project Industrial Engineer) in association with Mr. A. Chowdhury (the Project National Consultant).

C. Preparations for main operation at first mill

The first survey was accepted by the mill (Birla Jute Mills, Birlapur) and permission given by them to proceed with the next stage at that mill. This also involved the acceptance by them of payment of a nominal consultancy fee to IJIRA for the work to be undertaken; it was felt that this would give them a financial stake in the operation and perhaps lead to more rapid acceptance and implementation of subsequent recommendations.

A seminar was organised by myself, with full co-operation from IJIRA/UNDP staff and Birla Jute personnel, in order to outline to the middle and senior management of the mill the scope of Industrial Engineering and the potential application of its techniques to their mill. In particular, the application of the IJIRA/UNDP project at their mill was discussed and their co-operation called for; full backing for this was given by the mill management.

Annexe 1 shows the programme followed for this seminar, held on Sunday May 20th. It will be noted that two Birla Jute personnel were included in the list of speakers in an attempt to emphasise to the other Birla people that this project would not be an imposition by outsiders but would be a co-operative effort all round.

Lessons were learned from this seminar which will be incorporated by the Indian members of the Project into the similar presentations which they will make at the other mills at which work is to be carried out; these were

mainly concerned with the participants, timing and duration rather than the content. It was felt that lower levels of management should be included or given a separate short appreciation course (eg. for the Supervisor level), that asking for attendance on Sunday (their one day of rest in a working week) should be avoided if possible and that the duration of such seminars should be limited to about two hours even if it meant holding other shorter seminars later to cover specialist areas.

As part of this and to give a background of data to support such seminars I developed and left behind two documents, the contents lists of which are given in Annexe 2 and Annexe 3. The first is a basic outline of Production Planning and Control which deals generally with management requirements in the operation and control of industrial processing; the second is a fairly detailed course on Industrial Engineering/Work Study. The two documents together give an essential basis of information from which sections can be taken, with or without modification, to suit the specific needs in any particular area or at any particular level of management, either for brief appreciation seminars or for full training courses.

D. Next stages of Project and timetable

The aim of the next stage of the I.E. section of the IJIRA/UNDP project is to get detailed investigations going at all three trial mills in order to put forward recommendations for improvements and achieve their installation and confirmation of results as quickly as possible. In particular, one aim is to have at least one of the mills completed and reported on before the end of August so that the effect of the work can be demonstrated to the independent review meeting in September. One mill (Birla Jute) has already given the go-ahead to the full project and it is anticipated that the second mill will also have given consent before this report is issued; the third mill is a little further behind on the time scale but even so should be started fairly soon. This means that by the end of June or early in July, full-scale working should be established at three mills. Consideration was given to the projected load on the Indian Industrial Engineer and the National Consultant. The Project Budget has provision for

the employment of three N.C.'s on a part-time basis and for further local I.E. assistance; in view of this and the need to accelerate progress it is suggested that:-

a) From observation and analysis so far it is obvious that the mechanical condition of the machinery is leading to considerable excess costs so that substantial reductions in overall operating costs should be possible from concentration on this aspect. One more National Consultant should therefore be sought, to act on a part-time basis. He must be known to and compatible with Mr. A. Chowdhury (N.C.). Operation would be on the basis of Mr. Chowdhury looking after one mill while using his considerable experience in the field of practical maintenance engineering to develop Service Manuals covering Routine Maintenance and Preventive Maintenance for different machines, together with Operational Instruction Manuals for different levels of operative from the Maintenance Engineer to the Supervisor and the oiling/greasing operative. The second N.C. would supervise and report on operations in the other mills and liase with Mr. Chowdhury.

b) Part-time assistance is recommended for Mr. K.M. Sahoo on the industrial engineering operations in the project. Mr. Sahoo must be in a position to carry out a considerable amount of supervision of the detailed work in each mill, so it is suggested that assistance could take the form of a competent work study man rather than a fully-fledged industrial engineer, ie. one who can carry out time studies under the direction of Mr. Sahoo (along the lines of the classification of "Contract Work Study Man" in the UK).

While Mr. A. Chowdhury and Mr. K.M. Sahoo are confident that the actual work in the three mills could be completed by September this assumes no hold-ups, holiday periods, delays waiting for mill management decisions etc. From experience so far it is thought that it would be more realistic to expect this part of the project to be completed and three mill reports submitted and acted on by the end of the year. During this period there will be regular meetings at the mills to disseminate the findings and give a feedback to all levels.

E. Industrial Engineering Fellowship

As noted in the report on the first mission, Dr. Ranganathan offered the secondment (free of charge to the IJIRA/UNDP project) of two IJIRA personnel to assist with the work in the mills. The further thinking behind this was that the I.E. Fellowship should then go to one of these so that the expertise remained within IJIRA after completion of the Project. Two potential candidates are now known although they have not yet been seconded. The usual method of recruitment in the UK. (and, I believe, in the USA) of industrial engineers is that people from another discipline who show interest in the work are seconded to an industrial engineering department for a year (or to an I.E. Consultant to work under his supervision) to get to know the basis of the job and to determine whether they have the temperament and sense of urgency for this type of work. If they are found to be suitable after this period, then full and formal training is given in all aspects, firstly of work study and then of industrial engineering. It is suggested that this approach would lend itself to the present circumstances, as the two IJIRA personnel could assist immediately with data collection and investigations in mills under the tutelage and supervision of Mr. Sahoo and so aid the progress of the project, while giving the opportunity to determine suitability for the job before incurring the expense of a Fellowship or possibly two Fellowships if both candidates proved themselves.

F. Weaving and Electronic Data Processing (E.D.P.)

As mentioned earlier, due to the withdrawal of acceptance by the person originally appointed to organise the E.D.P. section and set up the computer procedures for the processing of weaving information along the lines of the Spinning Inter-Firm-Comparison, this part of the project has been delayed. However, further advertisements were placed and suitable applicants were interviewed on May 12th 1990. One outstanding candidate (both academically and in terms of commercial experience) has accepted the position and it is hoped that with her assistance some of the lost ground can be regained. This would mean that the I.F.C. for weaving could be instituted and its

results give a lead to potential industrial engineering projects in that sector following completion of the current three spinning projects.

G. Overall direction of I.E. section of Project

The general aims as now seen are:-

1. Current work.

1.1 To improve management techniques in order to improve utilisation of current resources and so reduce costs as quickly as possible. This is concentrating mainly on methods of operation, reduction of waste of materials, reduction of power, maintenance and similar costs, improvement of quality and removal of bottlenecks etc. rather than on the limited aspect of labour reduction which would lead to socio-economic problems at this stage. The work is not aimed at increasing the industry's output at this moment, there being problems associated with the sale of the current output; however, when other parts of the IJIRA/UNDP project come to fruition in the search for additional or alternative uses for jute products, the infra-structure should then be available for obtaining the extra production with only a limited increase in resources.

1.2 To develop the range of training manuals outlined in item (a) on page 8.

1.3 To encourage the adoption of new developments and practices by their demonstration in mills.

1.4 To extend the I.F.C. work into the weaving sector.

2. Longer term.

2.1 To improve the IJIRA/Industry links on a very practical basis, particularly as a potential means of spreading the work of IJIRA into industry.

2.2 To assist IJIRA with institution-building, enabling IJIRA to offer a greater range of services in Training, Management Development, and Consultancy. This will also increase the possibilities for inter-institutional links, as well as providing income for IJIRA.

2.3 To replace the Inter-Firm Comparison "norms" with accurate work studied data wherever possible as the investigations proceed.

2.4 To carry out industrial engineering projects in the weaving sector similar to those due to be carried out currently in the spinning sector.

2.5 To disseminate information on the effects of the application of industrial engineering techniques using the current work as a basis, "showing how" over as broad a section of the industry as possible. By means of seminars, lectures etc. to arouse productivity awareness in mill owners, managements, labour and labour unions, ie. at all levels down to the shop floor.

2.6 Using the current work as a basis, to develop training methods for use both at IJIRA and in-house, especially for the training of Trainers. Particularly for this aspect of training people on the shop floor who may be illiterate, consideration should be given to the purchase of suitable Video/Camcorder equipment to enable short video films to be made for instructional purposes rather than the ciné equipment initially envisaged in the IJIRA/UNDP project.

2.7 Once the initial phase of the shop floor studies has been completed then greater emphasis must be placed on Organisation and Management techniques.

2.8 All this work will give a solid basis for the adoption of electronic control and monitoring for productivity, quality and business/commercial aspects of industry.

Annexe 1

Birla Seminar Programme

PRODUCTIVITY IMPROVEMENTS AIMS AND METHODS

An appreciation course organised by

IJIRA/UNDP/BIRLA JUTE

Date: Sunday, 20.5.90
Time: 10.15 A.M.
Venue: Recreation Centre, Birlapur.

Programme

1.	Inauguration	Mr. G.D. Dadoo (Birla)
2.	Introduction	Mr. G.D. Dadoo (Birla) Mr. V.K. Sharma (Birla)
3.	What is productivity - Definition, AIMS, Effective use of resources, Setting standards, controls, Methods and training. Industrial Engineering - Can it help you?	Mr. G.R. Haines
4.	Mechanical factors - Problems, action examples, formalisation of method, operative training, supervision/ Supervisor's role. Quantification - Snap studies/IFC	Mr. A. Chowdhury
5.	Materials - Control including waste, Quality	Mr. G.R. Haines
6.	Industrial Engineering Techniques - Method Study, work measurement, charting analysis, SMH build ups, examples.	Mr. K.M. Sahu Mr. S. Paul (Birla)
7.	Control and Supervision - Comparison with standards, Indices, Action and Checks, Supervision and Training, General discussion.	Mr. G.R. Haines Mr. B.M. Ghosh (Birla)

Annexe 1 continued

8. IJIRA Involvement -

Background information, Future intentions, Example case study. Discussion/help needed	Mr. S. Palit Mr. B.N. Ghosh (Birla)

9. Summing up -

Views of BJM Views on the course Future programme	Mr. V.K. Sharma (Birla)

-.-.-.-.-.-.-.-.-.-.-.-

Annexe 2

Production Management Techniques

Contents page

Annexe 3

Work Study Course Contents

Contents page