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**FINAL REPORT ON THE
IMPLEMENTATION OF A MANAGEMENT
SERVICES DIVISION AT THE TEXTILE
TRAINING & SERVICES CENTER (TT & SC)**

DP/SRL/87/012

Prepared by: TEXTILE MANAGEMENT SERVICES INC.

FEBRUARY 1991

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I. EXECUTIVE SUMMARY

A INTRODUCTION

The textile Training and Service Center (TT & SC) was created by the project DP/SRL/79/054. The first phase mainly focused on the training of instructors for machine operators and technicians in the fields of spinning, weaving, knitting, processing, quality control and mechanical and electrical workshops. It was basically limited to train machine operators in the use of proper working methods and to teach technicians the theory of technical operation of each individual process and equipment involved in each of the manufacturing fields mentioned. This project DP/SRL/87/012 was designed to establish a Management Services Division which function is to assure an effective use of human, machine, material and financial resources. The Management Services Division has created four new functions namely : Marketing Specialist, Human Resources Development Specialist, Industrial Engineer and Technical Economist.

As these four functions cover a variety of manufacturing stages namely, spinning, weaving, knitting, processing, quality control and mechanical and electrical maintenance services it was necessary to create a link between management and each technical divisions.

Therefore, this project not only deals with programmes for the new created functions but also with programmes of specialised nature to each individual technical divisions.

The outputs generated by this project are not only related to the management services division but also includes those of the six technical divisions. Management programmes introduced in the technical divisions have created the necessity of modifying their original structure and type of services offered.

Consequently the evaluation of the project becomes an evaluation of TT & SC as a whole of which the Management Services Division is only a component.

B. PROJECT'S TARGETS AND ACHIEVEMENTS

This project DP/SRL/87/012 originally contemplated the implementation of 33 programmes in the field of textile industrial management.

These 33 programmes were spread between the four newly created functions and were as follows :

7 in the marketing area, 6 in the Human Resources Development field, 13 in Industrial Engineering Science and 7 in Technical Economics branch.

As mentioned in the introduction some programmes had to be channelled directly to the technical divisions due to specialization, meanwhile some programmes such as diagnostic study were shared by both management and technical divisions due to multi disciplinary nature of such programmes.

Early at the beginning of the project a survey was conducted in order to find the needs and interest of the textile industry for the 33 programmes offered. Amongst the 33 programmes offered only 21 were selected as being needed. However, as time went on the industry has indicated need for three programmes not listed in the original 33 and has reconsidered 5 out of the 12 deleted programmes by the original survey.

Therefore, the industry has a need for 29 programmes.

Twenty five programmes have been initiated of which 19 were totally completed amongst which 18 have had know-how successfully transmitted.

The degree of accomplishment in transferring know-how of only 18 programmes out of the 29 required is the consequence of innumerable interruptions that occurred during the course of implementation and this was especially due to political unrest that prevailed in the second half of 1988 and first half of 1989.

It resulted that some programmes have taken more time to be implemented than originally scheduled. Also 21 weeks were directed to the preparation of a 5 year strategic plan and assistance in marketing TT & SC Service.

Of the 18 programmes successfully transmitted 17 are considered as being demanded service by the local textile industry.

The following Table I summarizes the degree of accomplishment of the total project, comparing time spent on each programme against original target as well as showing which were successful and the potential of each in generating consulting man days.

TABLE I

DEGREE OF ACCOMPLISHMENT OF PROJECT

MANAGEMENT AREA	PROGRAMMES	SCHEDULED WEEKS	ACTUAL WEEKS	SUCCESSFUL YES OR NO	POTENTIAL IN CONSULTING MAN DAYS PER YEAR
HUMAN RESOURCES DEVELOPMENT	o Management and Supervisory skills	12	2.0	incompleted	180
	o Training Methods	12	6.0	incompleted	400
	o Trainability Tests	4	4.8	yes	25
	o Health & Safety at Work	2	0.0	deleted but required	25
	o Problem Solving	12	18.2	no	50
	o Personnel & Welfare	2	0.0	deleted but required	25
INDUSTRIAL ENGINEERING	o Methods and work study measurement systems	12	26.0	yes	120
	o Job Evaluation and Wage Structure	4	5.0	yes	60
	o Labour & Production Standards	16	28.2	yes	170

TABLE I
DEGREE OF ACCOMPLISHMENT OF PROJECT

MANAGEMENT AREA	PROGRAMMES	SCHEDULED WEEKS	ACTUAL WEEKS	SUCCESSFUL YES OR NO	POTENTIAL IN CONSULTING MAN DAYS PER YEAR
INDUSTRIAL ENGINEERING	o Incentive Schemes	4	12.0	yes	50
	o Production Planning and Control Systems	6	2.0	incompleted	60
	o Spare Part Inventory Control System	6	5.0	yes	50
	o Quality Control Systems	12	2.4	incompleted	60
	o Preventive Maintenance Audit System	8	15.0	yes	200
	o Waste Control System	10	0.0	deleted	none
	o Material Handling	4	0.0	deleted but required	40
	o Energy Measurement	8	0.0	deleted	none
	o Water Consumption	4	0.0	yes	none
	o Diagnostic Study	8	10.0	yes	245

TABLE I
DEGREE OF ACCOMPLISHMENT OF PROJECT

MANAGEMENT AREA	PROGRAMMES	SCHEDULED WEEKS	ACTUAL WEEKS	SUCCESSFUL YES OR NO	POTENTIAL IN CONSULTING MAN DAYS PER YEAR
TECHNICAL ECONOMICS	o Production Process Costing	4	7.0	yes	40
	o Cost Benefit Analysis	4	2.0	yes	40
	o Feasibility Studies	2	1.6	yes	100
	o Investment Appraisal	2	0.0	deleted	none
	o Budgetary Control	6	4.0	yes	40
	o Effective Use of chemicals	4	4.0	yes	insignificant
	o Production & Inventory Control	4	0.0	deleted but required	40

TABLE I
DEGREE OF ACCOMPLISHMENT OF PROJECT

MANAGEMENT AREA	PROGRAMMES	SCHEDULED WEEKS	ACTUAL WEEKS	SUCCESSFUL YES OR NO	POTENTIAL IN CONSULTING MAN DAYS PER YEAR
MARKETING	o Production/Consumption Statistics	2.0	2.0	yes	40
	o Production Supply and Demand	4	3.8	yes	40
	o Market Shares, Trend and Projections	2	2.0	yes	20
	o Distribution of domestic/export markets	6	3.0	deleted	none
	o Aspect of Market Development	4	1.0	deleted	none
	o Distribution and advertising of products	2	0.0	deleted	none
	o Quality Assurance	6	0.0	deleted but but required	60

TABLE I
DEGREE OF ACCOMPLISHMENT OF PROJECT

MANAGEMENT AREA	PROGRAMMES	SCHEDULED WEEKS	ACTUAL WEEKS	SUCCESSFUL YES OR NO	POTENTIAL IN CONSULTING MAN DAYS PER YEAR
FIELD PROJECT MANAGEMENT	o Selling project reports, meetings	6	10.0	yes	non applicable
	o Strategic Plan	0	17.0	yes	non applicable
	o Marketing of TT & SC Services	0	4.0	no	non applicable
NEW PROGRAMMES REQUIRED BY INDUSTRY NOT LISTED IN THE ORIGINAL 33 ONES	Corporate Plan	0	6.0	yes	40
	Cost of Infra-structures	0	0.0	yes	40
	Quality Circles	0	0.0	not done	100
TOTAL		204	204		2360
	Man days generated by successful programmes				1320

During the course of whole project, the implemented programmes have generated directly 700 chargeable man days out of a potential of 1020, this latter corresponding to TMS experts man days input (204 weeks x 5 days/weeks).

The non chargeable portion that is 320 days were dedicated to the following activities.

Field project management	50
Strategic Plan	85
Marketing of TT & SC Services	20
Programmes overrun	165
	<hr/>
TOTAL	320 days

The 18 programmes successfully implemented are expected to generate for TT & SC 1320 chargeable man days per year.

Considering that each consultant would charge approximately 60 percent of his time which is 200 days a year, this represent the equivalent employment of eleven persons.

However, this is not the end of the story.

Projected chargeable time could be increased by a further 1040 man days provided that TT & SC completes it's expertise in the areas not covered during the project which programmes are :

* Management and Supervisory Skills	180
* Training methods	400
* Health and Safety at Work	25
* Personal and Welfare	25
* Problem Solving	50
* Production Planning and Control Systems	60
* Quality Control Systems	60
* Material handling	40
* Production and Inventory Control	40
* Quality Assurance	60
* Quality Circles	<u>100</u>

1040

By implementing the above programmes TT & SC would provide additional work for another 9 persons.

A last word on 'TT & SC global achievement indicates that the total chargeable man days has almost doubled during the duration of the project. In fact, from 2255 chargeable man days achieved in 1987, TT & SC has reached a level of 4387 chargeable man days in 1990.

This increase in productivity is not only due to the introduced management programmes but also due to an increase in testing services and to the creation of a one year TEXTILE TECHNOLOGY CERTIFICATE Course.

C. TT & SC OPPORTUNITIES

Based on Sri Lankan Government Textile Development Plan for the period 1990-1994, The Textile Industry is to restructure itself to expand the handloom sector and to modernize the power loom sector.

It's main objective is to supply the domestic market with handloom products while the power loom sector should orientate it's production mainly towards export.

This process is already underway with foreign investment taking over government owned textile plants and others contemplating the construction of new facilities. Several local entrepreneurs are in process of modernizing their equipment to be able to cater the increasing demand from the Export Garment Industry.

The impact of this growth and modernization of the textile industry is already being felt by TT & SC.

The demand for TT & SC's service is already growing in many sectors. The demand for service in Human Resource Development, Industrial Engineering and Technical Economist actually surpass supply capacity.

In the technology sector the demand for technical and physical testing is superior to the supply capacity.

The demand for better technical technologist, supervisors and middle managers is growing quickly and is expected to saturate TT & SC's supply capacity by 1992.

By 1994 TT & SC is expected to increase its output from 4387 chargeable man days achieved in 1990 up to 7400 per year.

This increase in chargeable man days will come from :

* Expansion of Textile Technology Certificate to two years	+ 200 days
* Expansion due to Management Services' demand	+ 620 days
* Increase in number of services of the Management Service Division	+ 1040 days
* Increase in testing services demand	+ 570 days
* Increase due to Technical Division services demand	+ 580 days
Total	+ 3010 days

With 46 employees at TT & SC that could supply chargeable time, the average productivity in 1990 has been 95 chargeable days per year per employee or 47% of available chargeable time.

Productivity of these 46 employees is expected to reach a level of at least 120 chargeable days per year per employee, an increase of 26 percent over and above results achieved in 1990.

Report of the evaluation mission by Messrs. R. Kitchell and E Pararajasingham recommends that the center in the collaborations with the Board, proposes a proposal for increasing and retention of income received from services provided, by doing so it will reduce the annual Government grant.

Assuming that the center should auto finance itself without any grant, the cost per man days to break even should be Rs 3000 provided that there are 53 persons available for charging fees and each of them charging 120 days a year.

As the present level of activity is only 95 days a year for 46 persons, the daily cost to reach the breakeven point should be Rs 4400.

In order to be able to maintain competitive pricing, it is the center's interest to gear itself to increase the number of services and to organise activities such that each chargeable person works at an average of at least 120 chargeable days per year.

D. TI & SC STRENGTHS AND WEAKNESSES

- STRENGTHS :
- o Qualified experts in Human Resources Development, Industrial Engineering and Technical Economy in 18 programmes (3 persons)

 - o Qualified personal in technical divisions spinning, weaving, knitting processing, quality control and workshop engineering (40 persons)

 - o Well equipped physical testing laboratory

 - o Representative equipment for ring spinning, twisting, weaving and knitting used for trials and operator and technician training programmes.

 - o A wide range of services offered
 - 18 Management programmes
 - 5 Training of operator programmes
 - 13 Training of instructor programme
 - 46 Module courses
 - 32 Physical tests
 - 11 Chemical tests
 - One year Textile Technology Certificate course
 - Trouble shooting in 20 textile processes
 - Trials in spinning, twisting, weaving and knitting

WEAKNESSES: o

Lack of planning and control of consulting activities.

Average chargeable days per employee is only 95 days per year, while it should be at least 120 days. There are 200 available chargeable days per year per employee. Also, although full days are charged to clients, employees work barely half of the charged time which affects quality of service. This is mainly true for management services programmes.

Many delays occur in delivering results of physical and chemical testing to clients.

Better supervision, direction and coordination is required, which should be exercised by the function of Deputy Director which position is still vacant.

- o Lack of planning and control of the growth and development of TT & Sc's staff.

Many fellowships have been attributed without regard to industry's necessity and moreover to past historical development of each employee. There has been repetitions in many cases of same course given to

same person. Fellowships are being considered actually as a remunerated leave of absence for mostly futile purposes. A personal manager would be required in order to better plan for employees' career growth.

- o Lack of financial management systems on TT & SC activities. There is a lack of control over cost of services offered, as well as a lack of proper invoicing procedures and ageing of accounts. The position of administrator is vacant, it should be filled. It would also require assistance of outside expertise.

- o Incomplete marketing intelligence on demand and supply of consulting services. TT & SC present marketing specialist is not qualified to carry this functions in an effective manner. This responsibility should be given to someone who can easily interact with the textile community. The selected person should be one who has a broad knowledge of textile operations. At the beginning of his mandate he should be guided by outside expert.

- o Human Resources Development Programmes are incompleated. This responsibility should be assumed by the recommended personal manager.
- o Insufficient qualified staff in the area of industrial engineering especially for work method improvement and time measurement. It is recommended that three time study technicians be hired.
- o Need to improve feasibility study programmes. This is tied closely by the need of supervision of people in these studies which is to be exercised by deputy director.
- o Need to introduce industrial engineering programmes such as Production Plan and Control Systems, Quality control systems and material handling in order to cater industry's demand. For this TT & SC needs further technical expertise assistance.

- o Lack of continuity, especially in the management services division. There is no one to take over in the eventuality that one expert leaves the center for any reason. In the technical divisions, no one is being trained for eventual replacement of key personnel. This should be coordinated by personnel manager's functions.

- o Insufficient report typing capacity in staff and facilities. It is recommended that two PC be purchased and that two additional secretaries be hired and trained in the use of word processor.

- o Very low productivity of TT & SC staff this weakness is across the board, tighter supervision is required by Director, Deputy Director, Personnel Manager. Actually Director is present in average only two days a week. Deputy Director and Personnel are two functions to be filled in.

- o Poor pricing structures of TT & SC services, internal studies are required. This could be solved by having EXPERT assisting TT & SC management.

- o As the main functions are still not yet fully filled, it will require outside expertise for a period of two years to guide TT & SC management.

- o Inadequate Remunerating System for TT & SC staff. Actually means of remunerating personal causes a lot of frictions between MSD and the technical Divisions. TT & SC needs outside assistance to solve this problem.

From the above analysis of strengths and weaknesses it could be easily concluded that TT & SC needs to : structure its organisations, train its staff in the planning and control of activities, strengthen it's administrations systems, update consulting services in Human Resources Development, complete its range of services in the Industrial Engineering and Technical Economics areas.

In order to strengthen the marketing of services of TT & SC a retainer memberships fee is proposed along with the introduction of the use of the diagnostic study as main selling tool.

E. ACHIEVING FULL GPOWTH

In order to be able to respond to the local textile needs, TT & SC has to :

- Complete its range of programmes as discussed previously;
- Improve the quality of its training programmes for operators, instructors, supervisors and middle management;
- Improve its education system, that is modify the structure of module classes in such a way that a certificate is issued only after attending a certain number of lecturing hours and laboratory exercises followed by an exam, this mode of education would address itself to people already working;
Improve the one year Textile Technology certificate to supply young competent technicians and managers, for this it is projected to expand this course to a two year programme. this programme would supply new blood to the industry, which could absorb 10 - 15 graduates per year.

Upon fulfilling the above requirement then TT&SC would reach its full growth potential, in terms of services offered to the Textile Industry.

To be able to reach full growth potential TT&SC must reshuffle its internal structure in order to develop its personnel instructors, technicians, engineers and consultant in their respective disciplines to constantly adapt them to the evolution of technology or to permit them to acquire new discipline to be able to cater industry's demand. It must also revise the remuneration system of its personal, the actual system being awkward and not oriented to assure the viability of the Center. The TT&SC must as well revise the pricing of its services to become eventually self-financed and be able to sustain machine replacement or acquire new equipment that would economically respond to industry's needs.

To complete the range of consulting services needed by the industry, TT&SC would need the assistance of some 72 additional expert weeks.

Besides outside expertise to complete the recommended programmes, TT&SC would need to strengthen their inside administrative systems especially in planning and control which is missing across the board, namely:

- Planning and control of all consulting services;
- Planning and control of career development programmes such as fellowships and others;
- Planning and control of financial activities;
- Planning and control of marketing of services.

This could be accomplished provided competent leaders in key positions could be found. If promotion from inside is advocated then a two year management assistance is compulsory. There is no use in thinking of providing additional assistance if TT&SC does not provide proper staffing. Actually functions such as Deputy Director is still not fulfilled and additions of 3 times study technicians, one personnel manger, one assistant in human resources, two secretaries, one additional weaving technologist, one quality control technologist, one laboratory technician, two statisticians and one office manager are the minimum human resources required over and above actual staff force.

In terms of facilities TT&SC must equip itself with additional telephone lines and at least 2 additional word processors. These are the immediate minimum requirements.

F. REQUIRED INPUTS

If TT & SC is to survive it should grasp the immediate opportunity offered by the growing demand of services by the Textile Industry.

The required inputs are of immediate nature to be able to continue catering consultancy services.

These required inputs are :

- Staffing

Actually TT & SC has a staff of 72 persons of which 46 are able to render chargeable services. The staffing must be increased by 14 persons of which 7 could be dedicated towards increasing chargeable time. The list of functions to be fulfilled has been giving above.

- Consulting Programmes :

A minimum of 72 expert weeks is required to complete the range of services required by the local industry.

- Restructuration :

The center must restructure itself to improve productivity of its consulting staff and be able to become financially self supported while maintaining competitive pricing of services and be able to retain and motivate its staff. For this, a two year assistance programme in managing the center is required.

II. SRI LANKA TEXTILE INDUSTRY'S DEVELOPMENT AND NEEDS

The Sri Lanka Textile Industry is relatively small. There is barely 40 textile organisations employing more than 500 employees. Of these 40 organisations only half really concentrate in basic textiles that is in spinning, weaving, knitting and processing. Others are a mixture between basic textiles and garment manufacturing.

Most of these textile mills are operating with equipment of ancient technology and narrow width weaving and processing machines. Narrow width machines restrict somewhat the access to several markets especially the markets oriented towards export.

The process of privatization of the government own textile plants is leading the way towards modernization of equipment. It is expected that some of the smaller private textile mills will embark in such a modernization program, especially those who have access to the export market through the garment manufacturing.

View the arrival of foreign investors into the Sri Lankan manufacturing of textile, it is most likely that these foreign investors will bring along with them all their own management systems.

What will be required by local management will be to learn how to interpret these systems to be able to use them effectively.

Demand for service in the marketing field will mostly be coming from new entrepreneurs desiring to enter the textile industry and from government institutions in search of statistics or in search of improving their statistical systems. A good statistical system requires a thorough knowledge of textile product's classification. The demand from new entrepreneurs and government institutions will tend to limit itself to the following marketing programmes :

- Production and consumption statistics
- Production supply and demand
- Market shares, trends and projections.

Demand for marketing programmes such as product development is likely to be limited only to the handloom industry, and if so it will be more under the technical aspect in order to match product specifications against industrialized ones.

This is in order for the handloom product to be able to substitute industrialized products in some of the available market niche.

Needs for marketing programmes such as :

Distribution of domestic and export markets.

Aspect of market development.

Distribution and advertising of products, and
quality assurance.

are not likely to be demanded by medium and small organizations or those strictly orientated to the domestic market.

For those supplying the garment export trade, these services will most likely be provided by organizations promoting exports, most of these organizations being international trading companies.

Consultancy in the field of Human Resources Development is highly demanded by the Textile Industry, and this demand is across the Board. Sri Lanka's language, customs and traditions give local human development institutions a competitive edge in this field. One of the major requirements in this field of human resources development is the necessity to change people's attitude towards productivity concepts. There is already a strong demand for programmes such as motivation, employees' attitude and quality circle all of which require to be supported by improved operators and instructors training programmes as well as a programmes for professional training of supervisors and middle managers.

Large textile organizations will mostly require assistance in professional training of supervisors and middle managers.

Medium and small concerns will demand mostly operator and instructor training programmes.

As the demand of better trained personnel is increasing, so does the demand for production management systems or programmes related to industrial engineering.

The demand in this area will be mixed. Large textile concerns operated by foreign organizations will expect the supervisors and middle managers to be thoroughly familiar with their production management systems. They are most likely to rely on competent local consultant to carry diagnostic studies of their systems whenever there is a need for it. Other local concerns are likely to demand a full implementation of production management systems. The production management systems required will be obtained from following programmes:

- o Methods and Work Study Measurement Systems
- o Job Evaluation and Wage Structure
- o Labour and Production Standards
- o Incentive Schemes
- o Production Plan and Control Systems
- o Stores and Inventory Control Systems
- o Preventive Maintenance Control Systems

- o Material Handling
- o Diagnostic Studies

In the field of technical economics there is already a strong demand for Feasibility Studies and Investment Appraisal. These two programmes are a natural reflection of the desire of the textile industry to modernize its operations and to expand production capacity in certain areas.

The demand for such studies mostly will come from government and financial institutions and also from new entrepreneurs of medium and small textile organisations.

In order to be able to competently execute such studies it is necessary to have a full comprehension of budgeting programmes as well as process and product costing. Qualified accountants are very difficult to find and retain in the textile industry. The common complaint is that certified accountants do not understand the intricacies of the textile production chain and therefore the difficulty for them to elaborate a proper costing or management accounting systems. Demand for process costing will be mostly demanded by medium and small textile concerns.

III. APPRAISAL OF PROJECT'S PROGRAMMES

This project DP/SRL/87/012 was designed to establish a Management Service Division extending the range of TT&SC service beyond the technological level introduced by project DP/SRL/79/054.

This project was contemplating the implementation of a total of 33 programmes in the management field 6 in Human Resources Development, 13 in Industrial Engineering, 7 in Technical Economics and 7 in the marketing area.

Early in the implementation stage of the project, another programme namely the preparation of a corporate plan was added to the original list and was part of Technical Economics.

The degree of success both in terms of know-how transfer and viability of each programme is discussed for each individual management area.

A. HUMAN RESOURCES DEVELOPMENT PROGRAMME

The 6 programmes contemplated in the area of human resources developments were as follows :

- o Management and supervisory skills
- o Training methods
- o Health and safety at work
- o Personal and welfare
- o Problem solving

At the start of the project Mr. Ranjith Gunatilleke was responsible for human resources development. No project were initiated under his direction due to lack of interest.

Mr. Gunatilleke was later replaced by Mr. Padmasiri Goonewardena. Under his direction four programs were initiated. Out of the four programmes only one was sold to the industry "Problem Solving Techniques in Weaving". However, Weaving Division techniques have shown very little interest in this programme, as a result know-how has not been absorbed by any one and is a non viable programme. The total man days sold for this programme which implementing in amounted to 80 consulting man days.

The Management and Supervisory Skills Programme has been practically developed by Mr. P. Goonewardena himself. TMS input has been very limited. This programme is in very high demand by the industry. This programme has a potential market of at least

20 customers and could be repeated every year. Theoretically this programme could generate 180 consulting man days a year. This programme needs to be revised in order to complete its content and improve the methodology and pedagogy aspects of it.

The Training Method Programme was initiated with the introduction of audio visual aids. It was not completed and therefore will not contribute in generating output services. TT&SC do have a training method programme developed by Fielden House. However, this programme needs to be revised in order to strengthen its methodically and pedagogy aspect.

The training method programme is highly demanded and could generate at least 400 consulting man days a year spread amongst a potential of at least 20 customers.

The Trainability Tests Programme has only been introduced on a theoretical base. It is to be used as an evaluation tool for training candidates. It's viability solely depends on the selling of selection of training candidates.

The number of potential customers for the programme is less than ten and could generate at the most 25 consulting man days a year.

The other two programmes Health and Safety at work and Personal and Welfare programmes should have a good client base. If developed it would eventually generate some 50 consulting man days a year.

In summary actually the Human Resources Development programme could generate approximately 600 consultancy man days a year. However to maintain viability they need to be completed and revised. Potential consulting man days could be increased to 650 a year by adding Health and Safety at work and personal and welfare programme.

These programmes are directly under the purview of Mr. P. Goonewardena.

If demand for these programmes grows to expected levels then Mr. P. Goonewardena will need to be assisted by one additional Human Resources Development specialist.

The following table resumes man power requirements to supply demand for the above programmes.

Programmes	Potential number of customers	Required yearly man days	Executed by
Management & Supervisory	20	180	P. Goonewardena + Assistant
Training Method	20	400	Technology of Spinning Weaving, Knitting and quality control divisions
Trainability Tests	10	25	P. Goonewardena + Assistant
Health and Safety + Personal and Welfare	20	50	P. Goonewardena + Assistant

Mr. P. Goonewardena is also contemplating the introduction of a WORKER'S ATTITUDE programme which would be closely related to QUALITY CIRCLE PROGRAMS or similar popular programmes orientated towards the improvement of attitude and moral and could lead to important productivity dividend.

B. INDUSTRIAL ENGINEERING PROGRAMMES

Thirteen programmes were intended to be implemented in this area these are :

Methods and work study Measurement Systems

Job Evaluation and Wage Structure

Labour and Production Standards

Incentives Schemes

Production Plan and Control Systems

Stores and Inventory Control Systems

Quality Control Systems

Productive Maintenance Systems

Waste Control Systems

Material Handling

Energy Management

Water Consumption

Diagnostic Studies

Of the above 13 programmes 7 have been fully implemented.

The first 4 programmes of the above list have been undertaken by Mr. Kirthi Rasaputra. MR Omar Maulana have been participating also in the job evaluation and wage structure programmes.

There is a pool of 20 customers for these programmes. These four programmes if spread throughout the industry has a potential of generating 400 consulting man days over the next five years. After that period the maintenance of these programmes is expected to require close to 250 man days a year. To supply the demand TT&SC would need to hire at least 3 additional time study technicians.

Upto now these 4 programmes have been implemented at VEYTEX, TOOTAL THREAD of COLOMBO, UNITED SPINNING and DEVCO SHOWA PVT LTD.,

Since their implementation, these four programmes have generated close to 300 chargeable consulting man days.

The fifth programme that was implemented was the PREVENTIVE MAINTENANCE AUDIT PROCEDURE. This programme has been implemented only for spinning and weaving processes. With a potential pool of 20 companies this programme would generate approximately 200 consulting man days a year.

This programme has already been implemented at MATTEGAMA SPINNING MILLS, UNITED SPINNING MILLS AND PUGODA TEXTILE MILLS, totalizing 60 consulting man-days. The audit could be repeated at least twice a year in each mill. It has the potential of generating additional consulting man days to review preventive maintenance programmes.

The stores and Inventory control systems implemented is expected to have a potential client base of approximately 10 customers. It could generate approximately 300 consulting man days during its initial implementation phase. Afterwards 50 consulting man days a year.

DIAGNOSTIC STUDIES PROGRAMME has been implemented at THULHIRIYA and MATTEGCDA TEXTILE MILLS.

It has necessitated approximately 160 consulting man days. It covered all manufacturing aspects. The client base for full diagnostic study is barely 10 customers. On the other hand partial diagnostic, that is diagnostic in any one of the management areas has a client base over and above 20 customers TT&SC is contemplating the institution of a membership which will offer in return one partial diagnostic study in any one of the management area mainly marketing productions, human resources and finance.

Based on an estimated membership of 19 companies and each partial diagnostic study requiring 15 man days in average, it is expected that this programme will provide approximately 285 consulting man days per year.

INDUSTRIAL ENGINEERING should consider adding at least 2 more programmes to it's consulting services that is PRODUCTION PLAN AND CONTROL SYSTEMS AND MATERIAL HANDLING.

The existing quality control programme would need to be revised. These last three programmes have a limited viability but could easily generate over and above 200 consulting man days during the next five years.

The following table resumes main power requirement to supply demand for the above programmes :

PROGRAMMES	POTENTIAL NUMBER OF CUSTOMERS	REQUIRED YEARLY MAN DAYS	EXECUTED BY
Method and work study	20	120	K. Rasaputra + 3 time study Technicians
Job Evaluation and wage structure	20	60	K. Rasaputra
Labour and production standards	20	170	K. Rasaputra & 3 T.S.I
Incentive scheme	20	50	K. Rasaputra

Preventive Maintenance Audit	20	200	Spinning and Weaving Division.
Store and Inventory Control Systems	10	50	Spinning, Weaving and Engineering Division
Diagnostic Studies	20	245	Any Consultant or Technologist

C. TECHNICAL ECONOMICS PROGRAMMES

Seven Programmes were scheduled to be implemented in this areas. At the early stage of the project an additional programme was added. These programmes are as follows :

- Production and Process costing
- Cost benefit analysis
- Feasibility studies
- Investment appraisal
- Budgetary control
- Effective use of chemicals
- Production and Inventory control
- Corporate plan.

At this point in time five out of the 8 programmes have been implemented.

With relatively little information the centre has delivered four feasibility studies to the following organisations. Export Development Bank, Esquire Pvt Ltd., Setco Pvt Ltd. and Nagindas Industries. As there is a strong demand for feasibility studies it is essential that TT and SC upgrade the quality of this service. Budgetary control and Production and process costing are

two programmes which will improve the quality of the feasibility studies. In order words these two programmes are pre-requisite to feasibility studies.

The centre must also build a good data bank on machine suppliers. It is necessary to gather technical data, price and delivery dates on each type of textile machines. One month was spend on building up data on infra-structure cost.

Data on marketing intelligence is also very limited, especially in regard to foreign markets.

Budgetary control and Production and process consisting programmes have not yet been sold to the industry. Potential output for these programmes is not yet clear. It is suggested to a survey be offered across the board the industry to determine its demand. Based on the present demand for the feasibility study, it is expected that the demand level will be in the neighbourhood of 150 consulting man days a year.

D. MARKETING PROGRAMMES

Seven programmes were contemplated to be implemented during the project.

Of these 7 programmes only three have been implemented and this within feasibility studies.

The seven programmes are :

Production consumption statistics

Production supply and demand

Market share, trends and projection

Distribution of domestic an export market

Aspect of market development

Distribution an advertising of products

Quality assurance.

The first three programmes in the above list were implemented on theoretical basis. These have been afterwards used in three feasibility studies. The industry in general is not keen in demanding marketing programmes. Most likely TT&SC will be asked to monitor a good data bank on local demand and consumption of material by the export garment industry. The main outputs will be through feasibility studies and information requested by government institution as now the case is for market study

required by the ministry Handloom Industry. The amount of direct saleable consulting man days in any of the above programmes is not expected to be higher than 50 per year. The amount of work required to build and maintain the data work will in the other hand be high. At least 150 man days will required to maintain such data bank, therefore the necessity of having one or even two statisticians.

VI. CONCLUSIONS AND RECOMMENDATIONS

Considering the political environmental situation that prevailed in 1988 - 89 which has seriously affected the progress of this project, the increase chargeable consulting man days achieved is considered as a success. In fact the number of chargeable man days in 1990 is almost doubled the one of 1987. Also, considering TT&SC has not been able to supply the demand for industrial engineering and Human Resources Development programmes is another indication that TT&SC has gained credibility. There is a strong demand for applied management programmes as well as for education of technicians, supervisors and middle management cadres.

Demand for module courses is expected to decrease and to be substituted by the extended two year textile technology certificate course.

Traditional training of operators and instructors is expected to maintain the same level of demand. However, training qualifications requirement will be much higher than by the past.

Testing is another service which demand is expected to doubled within the next two years.

As the centre has a potential to grow it must gear itself to sustain its viability. This mean that internal administration needs to be strengthened in areas such as:

- Creating profit centres
- Provide and support planned career development for its staff
- Finance institutional growth planning and control to increase productivity of TT&SC man power.
- Create a bank of information in area such as
 - o Supply and demand textile products and services
 - o Sourcing of textile know-how such as university programs, seminar and textile machinery exhibitions.
 - o Machinery suppliers with machine with characteristics technical specifications, prices and delivery time, and
 - o Infrastructure's cost of land, buildings, energy, water, transportation etc.,

The next phase to be undertaken is to be oriented towards the consolidation of TT&SC potential growth and strengths. This means that the following inputs are required :

- Complete TT SC's staffing by filling in the following functions.
 - o One Deputy Director
 - o One Personnel Manager
 - o One Human Resource Development Assistant
 - o Three Time Study Technicians
 - o One additional Weaving Technologist
 - o One additional Quality Control Technologist
 - o One Additional Quality Control Laboratory Technician
 - o Two Statisticians
 - o One Office Manager
 - o Two additional Secretaries

- Modify structure in structure in such a way that statisticians are independent of the marketing specialist. Also create one training specialist function, to manage all operations and instructors training programmes.

- Present marketing specialist should be limited to promoting activities at the center such as monthly news bulletin and other small clerical work.

The present staffing of 72 persons including the director will be increased to 86 persons. The budget covers for 90, but needs to be revised to permit competitive remunerations with the industry.

- Two year management assistance programme to assist TT&SC in implementing project growth and internal restructuration.

- Seventy two weeks of expert assistance to revise or implement the following programmes:
 - o Revise Management and supervisory skills programmes
12 weeks

 - o Revise Training methods programmes 26 weeks

 - o Introduce health and safety at work programme
4 weeks

 - o Introduce production planning and control systems
6 weeks

 - o Revise quality control systems 10 weeks

 - o Introduce material handling programme 4 weeks

 - o Revise feasibility study programme 6 weeks

 - o Introduce production and inventory programme 4 weeks

Add two personal computers with word processor.

Before recommending additional equipment for the centre. It is advisable that a feasibility study be conducted. This would be done during the two year management assistance programme.