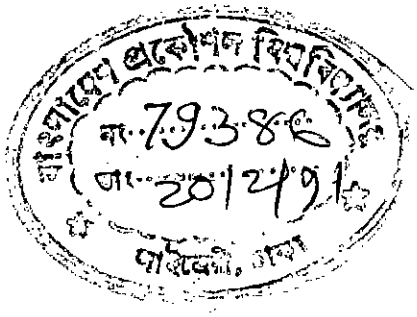
ECONOMIC STUDY OF THE MANUFACTURE OF FABRICS LOCALLY FOR THE EXPORT ORIENTED GARMENTS INDUSTRIES

BY

SALIM HYDER



A Project Report

Submitted to the department of Industrial & Production Engineering, Bangladesh University of Engineering and Technology, Dhaka in partial fulfilment of the requirements for the degree of POST GRADUATE DIPLOMA in Industrial and Production Engineering.

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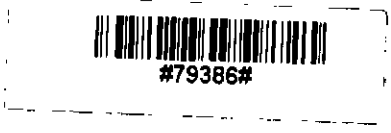

CERTIFICATE

This is to certify that this work has been done by me and it has not been submitted elsewhere for the award of any degree or diploma.

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CONTENT

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ABSTRACT

The garments industry of the country plays a very important role in the economy of the country. There are presently 752 units of garment manufacturing in the country. A major portion of national income comes from garments industry. In 1988-89 percentage of total expoet earnings is about 37% from garments sector alone. But the export performance of the country in the industrialized Western countries is negligible in the context of their total imports. Presently readymade garment manufacturing units of the country import the required fabrics against back-to-back L/C. The quality fabrics and other accessories as per specifications are provided by the foreign, buyers. Therefore, about 75% of the total L/C values are used for import of fabrics and other accessories. This means that the country can increase its level of export earnings from readymade garments almost 3 times the current level if the required fabrics and other accessories could be manufactured locally.

In the present work, effort has been given to assess the feasibility of installing composite textile units. Thus the objectives of the works were as follows:

i. To determine how many composite textile industries are required upto 1995 to fulfill the requirement of the export quality fabrics to feed the readymade garments as import substitute.

ii. To study the status of the textile sector of the country.

iii. To make a possible feasibility study (techno-economic) composite textile manufacturing unit.

To determine the number of composite textile units required to manufacture and meet up the demand of ready made garments upto 1995. At first the estimated amount of fabrics used by the garments industries were calculated.

To study textile sectors, capacities of spinning and weaving for domestic demand have been determined on the other hand estimated supply gap for textile spinning and the need for development for additional spindles by 1992-1993 has been shown. Annual requirement of yarn has also been calculated. To calculate annual requirment of yarn following aspects were considered:

a. Total requirement of fabrics has been estimated based on total projected population and eleven metres per capita consumption of fabrics was assumed.

b. Population projected @2.3% per annum.

c. Requirement of yarn has been estimated assuming 9 m/kg.

d. 100 kg. = 1 spindle (required) assumed.

Techno-economic feasibility study of a standard composite textile of 25000 spindles are shown .

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Chapter – I

I N T R O D U C T I O N

Bangladesh is a new entrant (entered the market only a few years ago) in the world market as a garment exporter. A report[ ] in this regard has indicated that the country has been able to make significant progress both in terms of increasing the number of garment manufacturing units and volume of export earnings. Some basic statistics are given in Table 1.1 below:

Table 1.1
Basic Statistics of the Garments Industries

Items	Year 1980-81	Year 1988-89	Remarks
No. of Production units	7[a]	752[b]	a : 1977 figure
Production capacity (million dozens)	-	51	b : 650 units in operation
No. of employees (in '000')	-	300[c]	c : 90% are women employees
Export earnings (million dollars)	3	465[d]	d : Export earnings rise of about 155 times.
% of total export earnings	0.46	37	

There has been abundant supply of cheaper labour and readily available technical know-how in this sector of manufacture.

1.1 Export Market of Bangladesh Garments

Export data suggest that the USA is the largest importer of Bangladesh garments. Earnings from exports of garments to the USA was worth $257 million in 1988-89 which contributed to about 56% of the total earnings from garments export. The major market of Bangladesh garments are the industrialized Western countries (mainly the USA, Canada and the EEC). The break-down of the export earnings countrywise is given in Table 1.2 and itemwise export break-down of garments to various countries is shown in Table 1.3.

Table 1.2
Countrywise Export of Garments from Bangladesh

Taka in '000'

Name of the country	1987-88		1988-89	
	Value of exports	%	Value of exports	%
USA	8,469,034	63.10	8,331,153	55.75
Canada	477,121	3.55	322,911	2.11
EEC	3,707,738	27.61	5,022,476	33.61
Others	767,369	5.74	1,266,283	8.48
Total	13,421,262	100.00	14,942,823	100.00

Table - 1.3

Item/Categorywise total Export of Garments from Bangladesh during 1988

Description of item	Quota		Non-quota	EEC	Others	Total
	U S A	Canada				
Shirts MB						
- CVC	14,60,680	-	-	27,98,094	5,00,000	47,58,774 (31%)
- TC	-	95,408	-	3,81,838	2,00,000	6,77,246 (2%)
Shirt WG						
- CVC	12,35,960	89,167	-	1,82,615	1,40,000	16,47,742 (11%)
- CVS	6,91,862	-	-	-	1,25,000	8,16,862 (5%)
Shorts & Trouser						
- CVC	11,12,364	79,156	15,652	1,95,521	95,000	14,97,693 (10%)
- CVS	6,74,160	-	-	-	-	6,74,160 (5%)
Jacket MB/WG	1,91,012	54,927	-	29,447	45,000	3,20,386 (2%)
Sweater	1,92,920	-	-	-	-	1,92,920 (1%)
Knit shirt/blouse	14,57,500	-	-	2,567	50,000	15,10,067 (10%)
Skirts CVC/CVS	2,09,880	-	-	9,446	75,000	2,94,326 (2%)
Others	6,31,230	1,25,751	19,03,481	1,54,668	64,915	28,80,045 (19%)
Total	78,57,568	4,44,409	19,19,133	37,54,196	12,94,915	1,52,70,221 (100%)

Note : Other means : Romper, Dressing Grown, Sleep wear, Bikini, Terry Towel, Mini-suit, Jurseys, Bath robes, Underwear, gloves and mittens etc.

Figures in Perrentheses indicate percentage of total export.

Source : EPB (Export Promotion Bureay, Compiled by BSB).

Note : CVC = Cheap valued cotton
CVS = Cheap valued synthetic
TC = Tetron / Cotton

In this regard the USSR, Japan and the Middle Eastern countries were also the major importers of readymade garments in the world market. But export of garments by Bangladesh to such countries is found to be quite negligible at the present time.

It may be possible for Bangladesh to increase its exports to such countries if co-ordinated efforts are made by the government in collaboration with the existing and potential garment manufacturers/exporters.

The export performance of Bangladesh in those industrialized western countries is negligible in the context of their total imports. The export scenario is given below:

i. Bangladesh exports only 36 categories (16 quota and 20 non-quota) of garments to the USA out of a total of 84 categories imported by that country. Again, of the 36 items, exports in 18 categories are very negligible.

ii. EEC countries import a total of 78 categories of which Bangladesh exports only 20 categories. It is seen that the country fails even to fullfill the exports of the quota categories fixed by the USA and Canada.

The above observations indicate that the country can easily increase its performance in terms of the exports in the world market, including the western countries, if appropriate measures are undertaken. With this view the present work is directed to achieve the objectives as given in the following section.

1.2 Objectives

Objectives of the thesis are -

i. To determine how many composite textile industries are required upto 1995 to fulfill the requirement of the export quality fabrics to feed the readymade garments as import substitute.

ii. To study the status of the textile sector of the country.

iii. To make a possible feasibility study (techno-economic) composite textile manufacturing unit.

To assess the need of fabrics in the country upto 1995 for readymade garments export.

1.3 METHODOLOGY

To determine the number of composite textile units required to manufacture and meet up the demand of ready made garments upto 1995. At first the estimated amount of fabrics used by the garments industries were calculated.

To study textile sectors, capacities of spinning and weaving for domestic demand have been determined on the other hand estimated supply gap for textile spinning and the need for development for additional spindles by 1992-1993 has been shown. Annual requirement of yarn has also been calculated. To calculate annual requirment of yarn following aspects were considered:

a. Total requirement of fabrics has been estimated based on total projected population and eleven metres per capita consumption of fabrics was assumed.

b. Population projected @2.3% per annum.

c. Requirement of yarn has been estimated assuming 9 m/kg.

d. 100 kg. = 1 spindle (required) assumed.

Techno-economic feasibility study of a standard composite textile of 25000 spindles are shown .

Chapter — II

IMPORT OF FABRICS IN BANGLADESH

The readymade garment manufacturing units of the country presently import the required fabrics and other accessories (button, plastic clip, zipper, labels, sticker, shoulder pad etc.) against back-to-back Letter of Credit (L/C). The quality fabrics and other accessories as per specifications provided by the foreign buyers are not available in the country. Therefore, about 75% of the total L/C values are used for import of fabrics and other accessories. This means that the country can increase its level of export earnings from readymade garments almost 3 times[EPB] the current level if the required fabrics and other accessories could be made available from local sources.

2.1 Trend in Import of Fabrics and Export of Garments

With a view to assess the actual requirement of fabrics of the country's readymade garments units, a survey has been undertaken by Bangladesh Shilpa Bank (BSB)[ ] of the 133 major garment manufacturing units currently in operation. A breakdown of type of fabrics with construction as used by the industry during 1985 to 1988 is shown in Table 2.1 and 2.2.

Table 2.1

Import of Fabrics by the Readymade Garments Units Surveyed by BSB

Type of fabrics with Construction	Figure in million metre 1985-86	1986-87	1987-88
100% Cotton			
a. 7 x 7 / 30 x 55 - 21 x 21 / 60 x 60	2.72(23)	6.60(33)	9.43(31)
b. 22 x 22 / 64 x 64 - 40 x 40 / 80 x 80	1.77(15)	1.17(5.8)	2.57(8.5)
c. 42 x 42 / 83 x 83 - 65 x 65 / 150 x 150	1.50(12.7)	2.43(12)	3.67(12.1)
d. Others	5.78(49)	9.78(50)	14.56(48.1)
Total	11.77	19.98	30.23
% of Grand total	(43%)	(44%)	(51%)
Blended Fabrics			
a. 7 x 7 / 30 x 55 - 21 x 21 / 60 x 60	2.38(18)	2.28(10)	3.22(13.5)
b. 22 x 22 / 64 x 64 - 40 x 40 / 80 x 80	0.32(2.5)	2.13(10)	2.31(9.7)
c. 42 x 42 / 83 x 83 - 65 x 65 / 150 x 150	9.12(70)	15.38(70)	16.11(68)
d. Others	1.27(9.5)	2.27(10)	2.14(9)
Total	13.09	22.06	23.78
% of Grand total	(48%)	(49%)	(40%)

Table 2.1 (Contd.)

Import of Fabrics by the Readymade Garments Units Surveyed by BSB

Type of fabrics with Construction	1985-86	1986-87	1987-88
100% synthetic			
a. 7 x 7 / 30 x 55 – 21 x 21 / 60 x 60	0.44	0.65	1.19
b. 22 x 22 / 64 x 64 – 40 x 40 / 80 x 80	0.11	0.46	0.93
c. 42 x 42 / 83 x 83 – 65 x 65 / 150 x 150	1.08	0.99	0.95
d. Others	0.57	1.19	1.83
Total	2.20	3.29	4.90
% of Grant total	(8%)	(7%)	(8%)
Grand Total	27.06	45.33	58.91
% increase		68%	30%

Note:

$$\frac{7 \times 7}{30 \times 55} = \frac{\text{Warp yarn count x weft yarn count}}{\text{Warp (ends) per inch x weft (pick) per in.}}$$

WEFT

WARP

Table - 2.2

Import of Fabrics by the Ready Made Garments Units Surveyed by Bangladesh Shilpa Bank

Type of fabrics with Construction	Figure in Million Metre 1985-86	1986-87	1987-88
a. 7 x 7 / 30 x 55 - 21 x 21 / 60 x 60			
100% Cotton	2.72	6.60	9.43
Blended	2.38	2.28	3.22
100% synthetic	0.44	0.65	1.19
Total	5.54(20)	9.53(21)	13.84(23)*
b. 22 x 22 / 64 x 64 - 40 x 40 / 80 x 80			
100% cotton	1.77	1.17	2.57
Blended	0.32	2.13	2.31
100% synthetic	0.11	0.46	0.93
Total	2.20(8)	3.76(8)	5.81(9)
c. 42 x 42 / 83 x 83 - 65 x 65 / 150 x 150			
100% Cotton	1.50	2.43	3.67
Blended	9.12	15.38	16.11
100% synthetics	1.08	0.99	0.95
Total	11.70(43)	18.80(42)	20.73(35)

Table - 2.2 (Contd.)

Import of Fabrics by the Ready Made Garments Units Surveyed by Bangladesh Shilpa Bank

Type of fabrics with Construction	1985-86	1986-87	1987-88
d. Others			
100% Cotton	5.78	9.78	14.56
Blended	1.27	2.27	2.14
100% synthetics	0.57	1.19	1.83
Total	7.62(28)	13.24(29)	18.53(31)
Grand Ttoal	27.06	45.33	58.91
Increases	-	68%	30%
Total Cotton	11.77(43)	19.98(44)	30.23(51)
Total Blended	13.09(8)	22.06(49)	23.78(40)
Total synthetic	2.20(8)	3.29(7)	4.90(8)

** Figures in parentheses indicates % of grand total*

Out of these units, data on 73 units could be collected and processed. A total production capacity of these 73 units is 9.07 million dozens and this capacity constitutes about 18% of the country's total potential capacity. Findings of the survey are given below:

i) All the units meet their total requirements of fabrics and other accessories from import against back-to-back L/C. Import of fabrics and export of garments by these units in years 1985-86 and 1987-88 are shown below:

	1985-86	1986-87
Import of fabrics (million-metres)	27.06	58.91
Export of garments (million dozens)	1.71	3.18

ii. Requirement of fabrics per dozen of garments was found to be 18.23 meters on average.

iii. Found that almost one hundred percent of cotton fabrics are imported and this constitutes the major part of the total import of fabrics by these units. The volume of import of cotton fabrics is also found to be increasing. The import of cotton fabrics % wise of total imports during the last three year periods are shown below:

Year	% Import of fabrics out of Total	
	Cotton	Blended
1985-86	43	48
1986-87	44	49
1987-88	51	40

iv. The import of blended fabrics, particularly TC (Tery-Cotton like 65%-35%) fabrics, constituted the next major category of fabrics after cotton. The percentwise import of this type of fabrics of total import is also shown above.

v. Import of pure synthetic fabrics ranged between 3% to 4% only.

vi. Use of fabrics of comparatively coarser counts/deniers (particularly, 100% cotton of 20's) has been increasing. The import of courser count 100% cotton fabrics increased from 2.72 million metres in 1985-86 to 9.43 million metres in 1987-88 with corresponding percent increase being 20% and 23%.

vii. Medium counts/denier yarns made fabrics is found to have remained constant at about 8% during the period 1985-86 and 1987-88. But the use of 100% cotton of these medium counts fabrics showed an increasing trend. The overall use of fine fabrics is found to be decreasing from 43% to 35% over the survey period. This is due to a dramatic fall in the use of synthetic fabrics. The comparative use of cotton fabrics was found to have increased slightly while that of blended fabrics increased singificantly during the study period.

viii. Use of other category such as specialised type of fabrics is found to constitute a major item of use of 28% in 1985-86 and 31% in 1987-88. From the survey, the present position of imports of different types of fabrics by the 73 units are shown in Tables 2.1 and 2.2 and also the position of garment exports during the period 1988-89 is shown in Table 2.3.

From the above analysis the country's import position in terms of fabrics of various types has been depicted. Should the country go for fabric manufacturing, it would be appropriate to study how the fabric manufacturing industry is currently equipped with basic infrastructure and required facilities.

Table 2.3

Country/Categorywise Export of Readymade Garments
by 73 Units Surveyed by BSB During Year 1988

Description of item	USE	Canada	EEC	Other countries	T o t a l	Percentage
Shirts MB:						
CVC	3,09,445	8,500	4,39,636	1,269	7,58,850(59%)	24%
TC	4,83,756	6,997	4,171	14,977	5,09,901(39%)	16%
CVS	22,668	-	-	-	22,668(2%)	1%
				Sub-total :	12,91,419	41%
Shirts WG:						
CVC	2,76,196	5,000	89,639	-	3,70,835(67%)	12%
CVS	1,05,723	-	-	-	1,05,723(19%)	3%
TC	69,764	-	4,000	-	73,764(14%)	2%
				Sub-total :	5,50,322	17%
Shorts and trouser:						
CVC	3,18,198	14,230	9,336	20,195	3,60,959(79%)	11%
CVS	85,052	11,700	1,535	-	98,287(21%)	3%
				Sub-total :	4,59,246	14%
Jacket MB/WG	7,800	-	24,232	-	32,032	1%
Sweater	19,915	-	-	-	19,915	1%

Knit shirt/blouse						
CVC	1,05,201	750	34,905	-	1,40,656(58%)	4%
CVS	1,03,643	-	-	-	1,03,643(42%)	3%
				Sub-total :	2,44,299	7%
Skirts						
CVC	27,294	-	7,552	-	34,846(58%)	1%
CVS	24,899	-	-	-	24,899(42%)	1%
				Sub-total :	59,745	2%
Others	1,24,045	26,000	50,000	3,26,265	5,26,310	17%
GRAND TOTAL	20,03,299	73,177	6,64,106	3,62,706	31,03,288	100%
Percentage of total exports	*65%*	*2%*	*22%*	*11%*	*100%*	*100%*

Source : BSB

2.2 Requirement of Fabrics upto the Year 1995

It is assumed that the composition of the fabrics as imported by the country's garment industry as a whole, would be more or less same of the 73 units under survey. A percentagewise distribution of different types of imported fabrics are already listed in Table 2.1 and 2.2.

From the data collected from the Export Promotion Bureau (EPB) it was found that the country exported 15.27 million dozens of garments to different countries in the year 1988-89 (Table 1.3).

Thus estimated amount of fabric used by the industry was found to be 278.372 million metres calculated as follows:

Estimated amount used = 15.27 x 18.23 million metres

Where, Average per dozen requirement of fabrics

= 18.23 metres.

Similary estimated quantities of various types of fabrics used were calculated from the data as given in Table 2.1. These are given below for the year 1988.

Types of fabrics	Quantity (million metres)	Percentage
Cotton	141	51
Blended	114	41
Synthetic	24	8
Total	278	100

Woolen 1.7 million lbs.

2.3 Forecasting of requirement of fabrics upto year 1995

From the survey (as discussed earlier) it appears that both the export of garments and import of fabrics by the 73 units increased by about 86% over the period from year 1985-86 to 1987-1988 with about 43% per annum. This indicates that there exists substantial scope for the country to push its exports if sufficient amount of quality fabrics are produced locally from modern composite textiles. From conservative

estimation it may be assumed that Bangladesh would be able to increase its exports at least 10% per year by 1995. Thus the following picture of requirement of fabrics would appear in Table 2.4.

Table - 2.4

Requirement of Fabrics upto 1995 for export market

Year	Type of Fabrics				Total
	Cotton	Blended	Synthetic	Woven	Woolen (m.lbs.)
1988	141	114	23	278	1.70
1989	155	125	25	305	1.88
1990	171	138	28	337	2.07
1991	188	152	31	371	2.28
1992	200	167	34	404	2.50
1993	220	184	37	444	2.75
1994	242	202	41	488	3.00
1995	266	222	45	536.3	3.30

** Figures in million metres*

2.4 Study of Fabric Manufacturing Facilities in the Country:

At present (as of 30th June, 1989) there are 971 textile units in the country both in the public and private sectors. These units have a total of 27,385 looms and 130 knitting machines. The total attainable production capacity of these

units has been estimated at about 470 million meters of fabrics per annum. Out of these 971 textile units, eight units with a production capacity of about 36 million metres of fabrics are capable of producing fabrics of export/import substitute quality. The existing mills are reported to meet about 2.5% to 3% of the current requirement of the garments industry.

There are some textile finishing units which can process export quality fabrics by importing gray fabrics. But none of these units have computerized system of quality control to ensure proper colour shading.

The problem in producing export quality fabrics is the shortage of quality cotton and blended yarns. Most of the spinning mills are of 1950s model whose machinery are not suitable to produce continuous smooth yarns required for production of export quality fabrics.

The problem of manufacture of required quality of yarn is expected to be reduced singificantly with the commissioning of some spinning mills which would be installed shortly. It would further be reduced through the current modernization process undertaken with the existing units under the second textile BMR programme.

It may, therefore, be concluded that there exists great opportunities for potential increase of the country's earnings from readymade garments export. This could he achieved in two ways:

i. Concentrating on horizontal growth, spreading over other items through diversification, this diversification could be made both in categories and various product-mix. Additionally a constant search and exploration should be maintained for new export markets possibly in the USSR, Japan and Middle-Eastern countries.

ii. Substituting imports of fabrics and other accessories through back-to-back L/C.

The normal export delivery period of 120 days limit is set by importers of the country's garments. Thus to enable the garment manufacturers to adhere to the 120 days target for export orders the probable and highly successful integrated textile mills could be suggested to set up in the country.

2.5 Requirement of Composite Units

As per estimates the requirement of fabrics upto the year 1995 there would be required a dramatic development break through of composite textile industries in the country. From the knowledge of textile technology the required hardware interms of various mills are given in the Table 2.5 given below:

Table 2.5
Required Textile Hardwares (mills)
in Various Target Years

	1988	1992	1995
a. Spinning (million kg.)	30	44	58
i. No. of spindles (million)	0.38	0.57	0.73
b. Weaving (million metres)	271	397	536
i. No. Rapier type	1581	2302	3048
ii. No. Airjet type	378	550	729
c. Finishing (million metres)	271	397	536
d. Total no. of units required *(Based on 25000 spindles each)*	15	22	29

Careful consideration needs to be given to the product-mix requirement of the garment unit to ensure quality output. The garment units are observed to be importing a large quantity of knitted fabrics and yarn - dyed fabrics. The proposed integrated textile mills would be capable to produce such fabrics in terms of quality and quantity as they are equipped with the required facilities.

CALCULATION OF NO. OF COMPOSITE TEXTILE UNITS

Capacity of spinning
80 kgs/spindle [From Textile technology knowledge]

80 kg require 1 spindle

∴ 30 million kg. require = 0.38 mill spindle

Now, if one unit is based on 25000 spindle

$$\therefore \text{No. of unit require} = \frac{0.38 \times 10,00,000}{25,000}$$

$$= 15 \text{ units.}$$

Weaving:

Capacity of Rapier and Airjet loom

1000 - 1500 yards/hr.

Chapter — III

STUDY OF THE PRESENT STATUS OF THE TEXTILE SECTOR IN BANGLADESH

The textile industry has been historically occupied a predominant and crucial position of a country in order to reach the take-off stage in development. The newly industrialized countries (NICS) of the South East Asia and the Far East have also used the textile sector as the cutting edge of development. But improvements in living standards and subsequent diversification into other sectors have resulted in the NICS also reducing their thrust in the textile sector. Bangladesh, with its real and much publicised source of labour force has now made significant strides in the development of the textile sector. The other economies have now moved into other non textile sectors (since their labour costs have gone up). Therefore, Bangladesh with its garments manufacturing industry has moved into fill the gap existing in the World market.

Bangladesh has a long history in the fields of weaving and spinning. At the time of partition of India in 1947, the then East Pakistan, now Bangladesh had 110 thousand spindles, 2700 automatic power looms and about 100 thousand handlooms. During the Pakistan period (1947-71), Bangladesh was used as a market of the vast developing textile industry in Pakistan and no attempt, as such, was made to develop the textile industry of Bangladesh. The position of textile industries at the time of independence is given in Appendix-I.

After 1971, development of textile industry again, suffered a further set-back by the nationalization policy of the post liberation government. The situation, however, changed by the second half of 70's and a large number of textile projects have been set-up with institutional finance and other incentives provided by the government. The country has now as many as 69 spinning mills with 1.43 million spindles and 1,800 rotors having a total annual production capacity of 106.94 million kg of yarn. Besides, there are 19 spinning mills (including one continuous filament yarn manufacturing plant) with 0.30 million spindles and 1,800 rotors having a production capacity of 21.21 million kg. per annum, which are at different stages of development. The total potential spinning capacity in the country thus, comes to 1.73 million spindles and 3600 rotors having a production capacity of 128.15 million kg. per annum. As regards country's weaving capacity, there are now 971 weaving mills with 27,385 power looms and 130 knitting machines having a total production capacity of manufacturing 469.58 million metres of fabrics per annum. There are also 250 textile finishing units (71 mechanised and 170 semi-mechanised) with a capacity of processing 622 (505 + 117) million metres of fabrics and 0.14 million kg. of yarn per annum.

Detailed position of textile industries in Bangladesh are given in appendices I, II, III, IV and V.

3.1 Domestic Demand of Fabrics:

The Third Five Year Plan envisages to raise the per capita availability of cloth to 11 meter by the end of the plan period i.e. 1989-90 and increase domestic production to 1,215 million metres of this, 62 percent is targetted for production in the handloom sector. To produce the rest 38% (462 million metres), targets for increasing the number of powerlooms to 25000 numbers and the number of spindles to 1.83 million with an annual production capacity of 95 million kg. by 1989-90 were set in the plan.

Based on the above, the supply gaps of spinning and weaving have been worked out as follows:

Mill kg./looms

	Requirement (as set by the Planning Commission)		Potential capacity (Installed + Under development)		Supply gap	
	Spindle/ looms	Production capacity (kg/metres)	Spindle/ looms	Production capacity (Kg/metres)	Spindle/ looms	Production capacity (Kg/metres)
Spinning	1.830	95.000	1.730	128.150	0.100	(-)33.150
Weaving	0.025	462.000	0.027	469.580	(-)0.002	(-) 7.580

It may appear from the above table that there is at present sufficient capacity both in spinning and weaving so far as domestic demand is concerned. But for overall development plan and programme in this sector and any rational decision being taken regarding increasing the existing capacity following aspects are to be considered:

i. Country's total demand for fabrics based on the totnl population in the country in 1989-90 comes to 1,229 million metres.

ii. Currently huge quantity of second hand clothing are imported in the country. Under the present socio-economic condition of the country it is not expected that import of such clothing would be reduced to zero in near future. However, consequent upon the Government policy to attain self-sufficiency in textile by providing various incentives to textiles manufacturers, production capacity and availability of fabrics through domestic production have increased substantially in the recent years. This has resulted in a decline in the import of second hand clothing in the country. From the import statistics it appears that import of second hand clothing declined from about 300 million metres, in FY 1984-85 to about 116 million metres in FY 1987-88. Assuming the same rate of decline in the coming years, import of such clothing may come down to about 50 million metres by 1992-93.

iii. From study it has been found that about 20% of installed spindles in the BTMC mills are kept out of operation for regular maintenance. The percentage of spindles of the newly set-up spinning mills, however, reportedly ranges around 10%.

iv. The gestation period of about 2 to 3 years is taken for a textile spinning project to be put into operation from its date of sanctioning. This has to be considered while planning in establishing new installations.

Taking all these factors into account, the estimated supply gap for textile spinning and the need for development for additional spindles by 1992-1993 are given in Table 3.1. Detailed calculations are given in Table 3.2, 3.3 and 3.4.

Table 3.1

Estimated potential gap between supply and requirement of spinning in various years

Year	Estimated requirement of yarn (in million kg.)	Potential attainable production capacity of yarn (in m.kg.)	Supply gap	
			Production capacity (million kg)	No. of spindles in '000'
1989 - 90	126.0	125.0	1.0	10
1990 - 91	131.0	125.0	6.0	60
1991 - 92	136.0	125.	11.0	110
1992 - 93	141.0	125.	16.0	160

At appears from the above that the present potential spinning capacity is just sufficient to meet the present requirement of yarn in the country. There is, however, a need for development of additional 160,000 spindles to meet the country's requirement of yarn by FY 1992-93. Moreover, it is gathered that there is good potential for export of yarn from Bangladesh. Some of the newly set-up spinning units are reportedly receiving export orders for their products. Some of the units under development are also designed for production of export quality yarn.

Considering all these, it may be suggested that steps should be taken to develop at least about 160,000 to 200,000 spindles at the moment to meet domestic demand for yarn by 1992-93.

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Table 3.2
Detailed calculation

PRESENT CAPACITY FOR MANUFACTURING YARN IN THE COUNTRY

Description	No. of units	No. of installed spindles	No. of operating spindles	Attainabble production capacity (in mil.kg)
A. Private Sector				
i. In operation				
a. Disinvested	28	505,544	404,435	32.355
b. Newly Set-up	5	182,724	164,452	16.445
ii. Under development (Sanctioned and under sanctioned)	17*	247,769	222,992	22.869
Sub-total	50	936,037	791,879	71.669
B. Public Sector (BTMC)				
i. In operation	36	749,608	599,696	47.975
ii. Underdevelopment	2	50,112	45,101	4.510
Sub-total	38	799,720	644,787	52.485
GRAND TOTAL	88	1,735,757	1,436,666	125.164

Assumptions:

For calculating attainable production capacity of yarn following are the assumptions:

a. 80% of installed spindles have been assumed as operating spindles under BTMC and disinvested units.

b. 90% of installed spindles have been assumed as operating under newly set-up and underdevelopment units.

c. Capacity per spindle in three shifts of 300 days is

assumed 80 kgs in BTMC and disinvested units and 100 kgs in newly set-up units.

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* *includes one continuous filament (polyester) yarn manufacturing plant sanctioned by BSB. Production capacity of open-end spinning (rotors) has also been taken into account.*

Table 3.3

ANNUAL REQUIREMENT OF YARN

Million metre/Million Kg

Year	Population in min.	Total requirement of fabrics	Provision for second hand fabrics	Demand for new fabrics	Requirement of yarn	Potential capacity	Supply gap	
							Production capacity	No. of spindles
1989-90	112	1229	93	1136	126	125	01	10,000
1990-91	114	1254	75	1179	131	125	06	60,000
1991-92	117	1286	60	1226	136	125	11	110,000
1992-93	119	1316	50	1266	141	125	160	160,000

Assumption:

For annual requirement of yarn:

a. Total requirement of fabrics has been estimated based on total projected population and 11 metres per capita consumption of fabrics.

b. Population projected @ 2.3% per annum.

c. Requirement of yarn has been estimated assuming 9 m/kg.

d. 100 kg = 1 spindle (Required).

SAMPLE CALCULATION FOR YARN REQUIREMENT

YEAR 1990 - 91

Population in 1990-91 = 112 + 112 x 0.023

= 114 (Round fig.)

Total requirement of fabrics = 114 x 11 m/capita

= 1254 mill meter.

Provision for 2nd hand cloth in 1990-91 = 75 mill metre

∴ Demand for new fabrics = 1254 - 75 = 1179 mil. metre

∴ Required yarn = $\frac{1179 \text{ Mil. metre}}{9 \text{ metre/kg.}}$ = 131 Mil. kg.

Chapter – IV

AVAILABLE TECHNICAL KNOW–HOW FOR COMPOSITE TEXTILE INDUSTRY

4.1 Historical Technical Skills in Textile Sector in the Country

Since the country has nearly half a century of recorded experience in staple spinning in mechanised unit, there is no shortage of qualified and experienced textile technologists who are educated and trained with sufficient practical experience in other spinning mills operating in the country. Over the past two decades the machine technology of spinning improved dramatically in favour of automation and evolution of very high speed machines has been resulted. Except the highly sophisticated automatic equipments involving high tech electronics, the required level of know-how and skills are available in the textile sector for the proposed composite textile project.

In addition to technical know-how required, an efficient technical management would be required to accomodate and manage the skilled workers and technicians working with high speed modern machines. This would help to achieve a quick and effective transfer and adaption of technology.

4.2 Skills of Available Technical Manpower in Spinning Sector

The open end spinning is an innovated technology. The textile technologists, engineers and skilled labours are not acquianted even though the theoretical principles of rotor operation are known to the qualified technologists. Adequate technical support from the supplier would, thus, be needed to erect, install, commission the plant as well as provide training to the engineers and technicians. Rotor spinning although in a limited scale has already been introduced in the country. The skilled workers of the country are capable of operating these and adapting to the technology.

However, on the ring spinning side, supervising services for erection installation, commission and trial operation would be available from the supplier under the commercial contract.

4.3 Skills of Available Technical Manpower in Weaving Sector

The textile technologists graduated upto year 1989 were not well conversant with the technological complexities and practical experience of high speed shuttlelessss loom like jet loom (600 - 650 rpm) and Rapier loom (250-350 rpm). Thus due to updating the relevant course content the current graduates would be familiar with the above high speed looms. This situation would put the

country in a position at this initial time to hire technical services from technical experts in introducing, installing and commissioning the new technology. These expartriate technicians would be provided by the suppliers of the plant and machinery.

4.4 Skills of Available Technical Manpower in Finishing and Dyeing Sector

In the fields of cloth dyeing, printing and finishing, the country's technicians and engineer are not adequately familiar with the latest technology. This sector would require development through training of qualified personnels.

4.5 Management Skills Requirement for Integrated Textile Industry

Integrated Complex of the type proposed would require large capital and massive management effort relating to production planning, inventory control, production control, quality control, cost control, maintenance, marketing and distribution and on top of everything highly efficient co-ordination net work to achieve harmonious and coherent operational performance.

Large capital resources and highly efficient management and technical personnels are difficult to obtain. Thus would require the investors to be highly selective. For the

desired level of efficiency could be achieved, an integrated complex of the type proposed is expected to deliver final fabrics of high quality at lower unit cost due primarily to economy of scales.

The other measures to feed the domestic readymade garments industry is through -

i. modernising spinning sector

ii. upgrading of the dyeing

iii. Organising new modern weaving sector with high speed quality machines and carefully controlled working environment (control of humidity, temperature, dust through air conditioning etc.) of weaving shop floors. Some of the countries thriving in fabrics experts like India, Pakistan, china and Egypt have their own agriculture base for growing cotton staple and they have also invested in best practice looms and acquired technology and skill. The other newly industrialised countries of Asia, have compensated their deficiency of natural endowment by superior human resources, as well as through investment in modern machines and environment control.

Bangladesh hardly meets any one of the aforesaid requirements and as such expert of fabrics from the country should be viewed at present with some degree of pesimism particularly because of highly restrictive and protectionist measures adopted by importing countries. the country is thus better poised to succeed in the indirect export of fabrics through RMG (Ready Made Garments). This has since made its place the world market.

Chapter – V

MARKET STANDING OF THE RMG INDUSTRY USING COMPOSITE TEXTILE UNITS FABRICS

5.1 Product-mix for an Integrated Spinning Weaving and Finishing Unit

From the analysis in the present work and from the findings of BIDS sample survey, a current level of requirement of fabrics by the readymade garment industry and emerging pattern of fabric requirement with restructuring and production diversification of the industry would be known. Current emphasis is given on CVC, CVS, Polyster cotton blended and knit wear composition. Their apparel wise concentration on shirts, Blouses, Trousers, Jackets, Shorts are quite evident. There is a clear indication of a shift towards higher value and finer variety products.

The product mix of the proposed integrated complex, therefore might be chosen for coarse, medium and finer varieties fabrics and 65:35 percent blended shirtings having following construction.

Types of fabrics	Construction
1. Coarse 100% cotton	(7 x 7)/(30 x 35) to $\frac{(21 \times 21)}{(60 \times 60)}$
2. Medium 100% cotton	(22 x 22)/(64 x 64) to (40 x 40)/(80 x 80)
3. Finer 100% cotton	(42 x 42)/(83 x 83) to (65 x 65)/(150 x 150)
4. Shirtings (65 : 35/80 : 20 P/C blended)	(45 x 45)/(110 x 76)

5.2 Aggregated Export Value and Duration of Export:

The export of RMG from the country from 1980-81 through 1987-88 are available in value terms and not in terms of quantity a type of fabrics. The data are available from two sources namely the

i. Bangladesh Bank

ii. Export Promotion Bureau.

The two sets of data from these two sources are quoted in Table 5.2 and 5.3 respectively.

Table 5.2

Aggregated Export Value of RMG from Bangladesh

Year	Value of Export in Mill Taka	% increase
1980-81	52.980	430
1981-82	140.140	165
1982-83	255.210	82
1983-84	774.780	204
1984-85	3003.850	288
1985-86	3902.200	30
1986-87	9076.698	133
1987-88	13421.262	48

Source:

BIDS Report Vol. II, Bangladesh Textiles Economy and World Market a mid evolving trade regulation.

Table 5.3

Export Statistics of RMG from Bangladesh
by Destination

(Value in '000' Tk.)

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
USA	3247	53409	113430	376972	2083728	3638967	5977243
Canada	261	-	419	20486	11406	192692	336826
EEC	23977	62661	97819	253174	306913	334777	1004409
Scandinavian countries	5936	44991	33544	45199	46549	101636	393802
All other European countries	286	132	416	1760	10660	4579	23008
All others	6514	4558	23461	143203	192566	166107	175111
TOTAL	40221	165751	269089	840794	2756824	4438758	7910399

Source:

Bangladesh Export Statistics publised by Export Promotion Bureau, Govt. of Bangladesh.

Export value of RMG from the country by destination obtained from EPB sources to show the direction of export is shown in table 5.4. While their growth of export in taka are given in Table 5.5.

Table 5.4

Export quantities of Ready-made Garments by destination

Tk. in million

Sl. No.	Name of Country	Year					
		1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
1.	France	55.57	82.48	81.83	28.96	100.410	548.092(4.1%)
2.	UK	13.28	50.82	66.44	63.63	92.295	569.036(4.2%)
3.	USA	109.75	452.27	2414.88	3186.44	7107.280	8469.034(63%)
4.	Sweden	16.81	33.99	30.10	104.55	242.457	461.883(3.4%)
5.	Italy	15.89	14.29	22.49	45.81	362.399	373.823(5.0%)
6.	FRG	21.84	77.29	144.33	159.50	661.395	136.180(1.0%)
7.	Netherlands	0.79	3.36	8.59	4.72	39.038	412.884(3.1%)
8.	Belgium	11.26	11.74	13.61	0.59	4.601	77.011(0.5%)
9.	UAE	3.84	6.10	3.49	4.71	9.915	-
10.	Denmark	1.78	3.74	-	0.87	4.906	53.047(0.4%)
11.	Norway	-	0.20	-	11.01	67.631	92.068(0.7%)
12.	Switzerland	1.30	0.36	20.51	7.32	5.226	115.543(0.9%)
13.	Singapore	-	12.88	52.86	27.27	9.881	13.738(0.1%)
14.	Canada	0.07	12.44	136.56	219.41	304.806	477.121(3.5%)
15.	Others	4.03	5.82	8.16	37.32	64.458	1125.355(9.1%)
	TOTAL	255.21	774.78	3003.85	3902.20	9076.698	13421.262(100%)

* % breakdown is shown in the last column

Source:
Bangladesh Export Statistics, published by Export Promotion Bureau.

Table - 5.5

Growth of Export of R.M.G. by destination

Country Growth of Countries	Value of Export (Tk. in million)			Rates of Growth of Exports (%)		
	1984-85	1985-86	1986-87	1984-85	1985-86	1986-87
U.S.A.	2083 (75.58)	3638.97 (81.98)	5977.24 (75.57)	452.75	74.64	64.26
Canada	116.40 (4.22)	192.69 (4.34)	336.83 (4.26)	468.22	65.54	74.80
EEC	306.91 (11.13)	334.78 (7.54)	1004.41 (12.08)	21.23	9.08	200.00
Scandinavian countries	46.55 (1.69)	101.63 (2.29)	393.80 (4.98)	2.99	118.32	287.48
All other European countries	10.66 (0.39)	4.58 (0.11)	23.01 (0.29)	505.68	57.04	402.40
All other countries	192.57 (6.99)	166.11 (3.74)	175.11 (2.20)	34.47	13.74	5.42
TOTAL	2756.82	4438.76	7910.40	227.88	61.00	78.21

5.3 Price Comparison of Imported and Locally Manufactured Fabrics:

From the cost analysis of the proposed fabrics from a study of project appraisal of a proposed composite textile of 25000 spindles sanctioned by BSB shows the following unit prices of locally produced fabrics. From the table 5.6 a price comparison between imported fabrics and locally produced fabrics could be shown:

Table - 5.6

Price Comparison between Imported & Locally Manufactured Fabrics

	Fabrics imported under back to back L/C from different ofigins		Fabrics considered for the study	
Sl. No.	Sort/Construction	Average C&F price in Tk. per metre	Proposed selling price in Tk. per metre	Proposed Sort/ Construction
1.	P/C Shirting (65:35) 45x45/11x76=49"	30.75	40.00	45x45/110x76=65"
2.	Cotton Poplin 40x40/88x72=49"	42.73	44.00	40x40/90x75=49"
3.	Cotton Cambric 40x40/110x58=47"	51.47	51.00	40x40/110x72=47"
4.	Cotton twill 20x20/108x58=47"	45.64	45.00	20x20/108x58=47"
5.	Cotton chambry 20x20/68x54=50"	43.70	43.00	20x20/70x48=50"
6.	Cotton shuting 16x16/60x60=47"	43.70	44.00	16x16/60x60=47"

The selling price of the dyed and finished fabrics were considered on a conservative basis on a higher side. In the case of import of fabrics under back to back L/C, the importer has to pay for some additional charge on account of clearing, forwarding, bank commission and two-way transportation from port to RMG factory. Moreover, the importer of fabrics runs the risk of stock lot, short supply, damage, delayed clearance, partly piferage of the consignment. But increase of local fabrics these uncertainties and risk elements could be avoided. In addition the exporter of RMG will also be encouraged for use of local fabrics which will entitle them to enjoy XPB facilities @100%. In view of these the local expoet - oriented fabrics will definitely command higher selling prices over the C&F prices of the imported fabrics considered for appraisal of the project.

Table 5.7

Comparative unit prices from different sources under back to back L/C

Sl. No.	Sort/Construction of fabrics	C&F Prices of Fabrics (U.S. per metre)								Eqv. Tk./ metre
		Korean				Chinese	Thai	Hong Kong	Ave-rage	
		Haru-beni	Hit-sui	Dae-woo	Ave-rage					
1.	P/C Shirting 45x45/110x76=49"	0.84	1.10	1.17	1.04	0.97	0.84	-	0.95	30.75
2.	Cotton Poplin 40x40/82x72=49"	-	1.44	1.50	1.47	-	1.16	-	1.32	42.73
3.	Cotton Casbric 40x40/110x72=47"	-	1.52	-	1.52	1.25	-	2.00	1.59	51.47
4.	Cotton Twill 20x20/108x58=47"	-	1.80	1.45	1.62	1.20	-	-	1.41	45.64
5.	Cotton Chambry 20x20/70x40=50"	-	1.35	-	1.35	-	-	-	1.35	43.70
6.	Cotton Shuting 16x16/60x60=47"	-	1.35	-	1.35	-	-	-	1.35	43.70

Comparative unit price (C&F) of different grades of fabrics imported by the RMG industry under back to back L/C from different sources are given above in Table 5.7.

An economic analysis is made of the proposed project and presented in Chapter 6.

Chapter – VI

ECONOMIC EVALUATION OF COMPOSITE TEXTILE UNITS

The analysis is made to assess the economic viability of the proposed composite textile units for the country. In this respect employment generation factor is considered as predominant and influencial in deciding the above project.

6.1 Economic Analysis

An economic analysis has been made to consider the following aspects, namely,

1. Economic Rate of Return (ERR)
2. Internal Rate of Return (IRR)
3. Employment Generation.
4. Value added

6.1.1 Economic Rate of Return:

The economic rate of return of the project has been calculated on the basis of the methodology followed by the planning commission of the Government of Bangladesh. The items or components are described below:

i. *Fixed Cost Calculation*:

Land and land development, construction of the building and other assets have been valued at their accounting prices by applying the relevant conversion factors. The cost of local machinery has been valued at their market prices net of transfer payment while the CIF value of imported machinery taken at inflated rate equivalent of un-official rate of foreign currency in the free market.

iii. *Recurring Cost Calculation:*

In the recurring cost side CIF value of imported raw materials considered at inflated equivalent of unofficial rate of foreign currency in the free market. Shadow wage rate of un-skilled labour has been taken applying the conversion factor of 0.71 while the cost of skilled personnel valued at conversion factor of 0.82.

Accounting values of other current inputs have been obtained by multiplying their market prices with the general conversion factor 0.82.

iii. *Price of Outputs:*

The finished outputs (dyed and finished fabrics) have been valued at its shadowed CIF prices.

The salvage value of the project has been accounted for with the net benefit in the year following the termination of the project. The useful operative life of the project has been taken at 15 years.

Calculated on the above mentioned basis the ERR comes to about 31.83%. The details of calculation are shown in Tables 6. and 6.2.

Internal Economic Rate of Return of the Project has been calculated based on the following:

i. Construction period of the project considered as 2 years and operative life taken at 15 years.

ii. Net economic benefit (net cash flow before tax) of the project has been estimated as given in Table 6.1.

Table 6.1

Net cash flow before tax

Year (1)	Cost of the Project excluding interest (2)	Production cost excluding interest and depreciation (3)	Gross benefit (Revenue before tax) (4)	Net cash cash before tax (5)
0	(-) 108.135	-	-	(4)-(2)-(3)=(5) 108.135
1	(-) 1441.807	-	-	1441.807
2	64.818	212.956	619.649	341.114
3	12.035	234.074	769.223	423.114
4	8.726	254.888	831.520	567.906
5	0.488	254.888	831.520	576.144
6 - 16	-	254.888	831.520	576.632
17 (Salvage value)	-	-	-	334.741

Table - 6.2

Economic Rate of Return

Year	Net cash flow before tax (mill. taka)	Discount Net Present Value (Tk. in million) @ 30%	@ 35%
0	(-) 108.135	(-) 108.135	(-) 108.135
1	(-)1441.807	(-)1108.749	(-)1068.379
3	341.875	202.390	187.689
4	567.906	198.767	170.940
5	576.144	154.983	128.480
6 - 16	576.632*	488.984	353.475
17	334.741	4.016	2.008
	Net present value =	(+) 70.273	(-) 121.538

** per year from year 6 through year 16 of project life.*

So, Economic Rate of REturn comes out to be 31.83% by linear interpolation as follows

= 30% + { 70.273 (35 - 30)/191.811}

= 31.83%

6.1.2 Employment Generations:

The project generates new and direct employment opportunity for 1320 persons (from appraisal report of an equivalent sanctioned project of 25000 spindles and 360 rotors).

From the economic analysis it is found that the proposed project would be a highly profitable unit. The financial plan and financial evaluation are given in the following chapter.

6.1.3 Value Added

Es = O - (MI + D) > W

Es = Absolute efficiency test of the project in terms of value added surplus over the wages on the basis of data for a normal year.

O = Expected value of normal ouptut per year (Annual Sales Revenue)

MI = Material input + services from outside project

D = Expected depreciation on fixed capital in a normal year.

For Third Year

O = 789.265 millon Taka

MI = Material input + services from outside project (Power & gas, fuel & lubricant, stores & spares)

= 222.224 + 8.585 + 0.426 + 12.365)

= 243.6 million Taka.

D = Expected deprecciation on fixed capital in a normal year

= 165.545 million taka.

Es = 789.265 - 243.6 = 380.12 million taka.

W = 34.600 million taka

. . Es = O - (MI + D) > W.

Chapter – VII

FINANCING PLAN AND FINANCING EVALUATION FOR PROPOSED COMPOSITE TEXTILE UNITS

In the previous chapter, an economic analysis was made to assess the viability of the proposed composite textile units in the country. The ERR value of 31.83%, was forecasted from the project. This ERR is highly acceptable in the prevailing economic condition of the country. In the present chapter a complete financial plan of total investment capital requirement and cash flows in the project in terms of revenues, outlays, working capital etc. is given.

7.1 Fixed Cost of the Project

A composite textile unit is designed as an integrated complex and as such all financial data relating to the project will be primarily presented at aggregate level. The fixed cost of the project was estimated on the basis of technical considerations and sequence and is as summarised in Table 7.1.

Table 7.1

Fixed cost components of the composite unit

Description of fixed components	Cost (Tk. in million)
Land	36.00
Building & Civil works (10% contingency included)	131.055
Machinery and Equipments	1469.596
Transport Vehicles, office equipments, furnitures & fixtures	3.675
Preliminary and pre-operative expenses including expert service charges	8.085
Interest charges during construction period	162.470
TOTAL ESTIMATED FIXED COST	1810.884

The estimated itemwise fixed costs are broken down and shown against the components such as spinning, wearing, finishing, power generation. These are shown in Table 7.2.

Table 7.2

Breakdown of fixed costs

Tk. in million

	Spinning	Weaving	Finishing	Power Generation	Total Taka
Land	12.00	12.00	10.00	2.00	36.06
Building & Civil works	49.50	29.81	50.26	1.48	131.05
Machinery & equipment	458.60	606.75	326.50	77.75	1469.60
Transport office equipment, furniture & fixtures	1.23	1.22	1.23	-	3.68
Pre-operation expenses	2.70	2.70	2.69	-	8.09
Interest charges during construction	52.00	65.00	39.00	6.47	162.42
Total fixed cost	576.03	717.48	429.68	87.70	1810.89

7.2 Net Initial Working Capital

Net initial working capital of the integrated complex has been estimated on the assumptions outlined at Table 7.6. Finished goods of the spinning unit and weaving unit in transit towards down stream operational unit have been added to the work-in-process of these two sections while 15 days stock of finished cloth in the dyeing, printing and finishing section is treated as finished goods inventory. The work-in-process for each section has thus been calculated as follows:

	Actual work-in-process, days	Stock of finished goods, days	Total days
Spinning	5	2	7
Weaving	5	2	7
Finishing	4	-	4
			18

The gross current asset built up required in the initial year is estimated at Tk.106.04 million.

The gross current asset built up for the subsequent years of operation has also been estimated. The financing of the incremental gross current asset (or gross working capital) will be raised of internal cash generation. Part of the initial current asset has to be built up at the end of the construction period in order to avoid any loss effect during trial run.

The total capital outlya will be as follows:

	Foreign currency	Local currency	Total Tk. (in million)
Fixed cost	1249.78	561.104	1801.884
Net working capital	-	24.856	24.856
Total capital outlay	1249.78	885.960	1835.740

The aforesaid capital outley is proposed to be financed as shown Table 7.3

Table 7.3

Financing plan of working Tk. in million

EQUITY	
Promoters	110.00
Associates and partners	106.00
Institutional Take up/public issue	206.00
Total Equity	423.00
Interest free loan from Directors	0.490
TERM LOAN	
DFI/Institutional Loan (E/C)	1249.78
Deferred interest during construction	162.47
Total Financing	1835.74

Debt/Equity ratio:

The aforesaid financing plan yields a debt/equity ratio 77:23.

23/-

7.3 Financial Evaluation

Profitability Projection:

The profitability potential of the project is estimated on an aggregate basis for four years of projected operation. This is based on the assumptions of revenues and costs shown at table 7.7. In order to ensure a most pragmatic and realistic financial outcome from the project. The projected costs and revenues have been carefully estimated from experience in similar operating units in the country. The summarised results of the profitability projection (consolidated) for a period of initial 4 years of operation are given in Table 7.4 and the various profitability ratios are given in Table 7.5.

Table 7.4

Profitability projection

Items	Operating years			
	Year-1	Year-2	Year-3	Year-4
Sales Revenue	588.514	730.087	789.265	795.350
Less Cost of goods sold	330.213	387.451	414.362	418.365
Gross profit	258.301	342.636	374.903	376.985
Less Administrative expenses	39.042	39.225	39.383	39.541
Operating Profit	219.259	303.411	335.520	337.444
Less Financial Expenses	190.061	179.072	157.102	139.343
Profit before tax	29.198	124.339	178.418	198.01
Add Other incomes				
Profit before tax	32.003	127.549	181.823	210.506
Corporate tax	T a x	H o l i d a y		
Net profit after tax	32.003	127.549	181.823	201.506
Less Purchase of Govt. bond @ 15% of net profit	4.800	19.132	27.273	30.226
Return on bond @ 12.5%	-	0.600	2.991	6.400
Profit after return on bond	27.203	101.017	157.541	177.680
Less Workers participation fund	1.60	6.377	9.091	10.075
Less Dividend payment (Percentage paid)	-	84.600 (20%)	105.750 (25%)	126.900 (30%)
Retained Earnings	25.603	18.040	42.700	40.705

Table 7.5

Profitability ratios

Items	Operating years			
	Year-1	Year-2	Year-3	Year-4
Gross profit	44.00	47.00	47.50	47.00
Operating profit to sales	37.00	42.00	42.50	42.00
Net profit after tax to sales	5.00	17.50	23.00	25.00
Profit after tax to equity (paid up capital)	7.60	30.00	43.00	48.00
Operating profit to initial capital	11.9	17.00	18.00	18.00

The major assumptions based on which the profitability forecast has been made are as follows:

i. *Operating time:*

Operating days of 300 per year assumed can be attained normally. In fact the spinning unit can be operated even upto 330 days in a year. Three shift to operation per day of all the component units of the complex is assumed.

ii. *Capacity utilisation*:

capacity utilisntion in the spinning unit has been assumed at 70%, 80%, and 85% in the 1st, 2nd, 3rd years and onwards. Although the (1987-8) industry average in respect of capacity utilisation is low being 60% in public sector mills and 80% in private sector mills, the newer mills installed during the post liberation period exhibit fair utilisation rate of installed capacity being 80% and ahove. The proposed unit, is designed with high quality and high production machinery and equipment, whose performances, both in qualitative and quantitative terms are expected to be much better than the existing operating units. Furthermore, know-how and skill for staple fibre spinning, exist in the country, the work force is required only to adapt themselves with relatively higher speed machines. Considering all these, assumed capacity utilisation can he regard as realistic.

Capacity utilisation of the weaving unit in the initial year of operation has been assumed at level lower than what one should expect from latest sophisticated machines like shuttleless Airjet and Rapier looms. Since machine technology in shuttleless loom is new in this country, higher capacity utilisation can not be expected until such time the local technicians and skilled labours are fully trained to upgrade their skill to the desired level. Even to achieve the capacity utilisation as assumed in the initial year, direct involvement of expatriate technician and engineer would be required. In addition, provision for overseas training of local technicians and engineers has been made prior to execution of the project, and it is expected that the foreign trained technicians and engineers will be available to act as counter parts of expatriate erection and commissioning years and receive on the job training

during trial operation and atleast six months in the initial years. These trained set of people should be able to obtain optimal output from the weaving unit in the subsequent years inorder to fully balance the output from the spinning unit, which has been the rationale of drawing production planning for the complex.

Similar situation exists with the finishing unit 60% utilisation of capacity in the first years, would more or less balance the output from the weaving unit with little surplus to offer servicing to outside customers. The proposed capacity utilisation should, therefore, be possible under the supervision of ex-patriate production technologists/engineers provision for which has been made in the project.

iii. *Product-mix:*

The product-mix for the project has been selected analysis of the pattern of present trend of consumption of fabrics by the RMG industries in the country in terms of type, quality, construction and finish. The product-mix chosen for testing the validity of the project reflects the present emphasis generally laid by the garment industry based on their export, although the production facilities have been designed to give the project adequate flexibility to produce any type, varieties, construction and quality of fabrics, the RMG Industry may need in future as a result of product diversification.

iv. *Work-in-Process*:

The rationale of the assumptions on the tiedup period/the production cycle in the complex, designated at work in process (WIP) has been explained under the discussion of working capital requirement.

v. *Selling Prices of Finished Fabrics:*

The selling prices of finished fabrics have been taken based on the average C&F prices of fabrics of specification and construction covered in the production plan which are now being imported from different countries namely Hong Kong, China, Korea, and Thailand under back-to-back L/C by the export-oriented RMG industry. For this purpose prices of aforesaid types of fabrics have been collected from the trading houses of Japan and Korea and checked with the existing garment industries.

The importer of fabrics in most of the cases run the risk of stock-lot short supply, damage, delayed clearance partial pilferage of the consignment etc. Additionally the importer has to pay for clearing, forwarding, bank commission, and transportation charges on the fabrics imported under back to back L/C. The exporter of RMG will also be encouraged for use of local fabrics which will entitle them to enjoy XPB facilities @100%.

The XPB benefit has not been taken as a revenue but used as a cushon to compensate the un foreseen increase in production cost or reduction in the selling price.

vi. *Prices of Raw Materials:*

The C&F prices of raw cotton of different staple length and man-made fibre of different origins have been estimated on the basis of analysis of weekly prices quoted in the cotton outlook for the full one year period of 1988-89. The cost of sizing materials required for weaving unit has been taken based on the current priors in the local market.

A rigorous exercise on the assessment of different items of dyes and chemicals and collection of their current import prices has been under taken to estimate the cost of dyes & chemicals.

vii. Costs of other inputs have been taken at their market prices.

viii. Costs of inputs and outputs have been assumed to remain constant and that any increase input cost will give rise to consequenctial increase in the output prices.

ix. Inflation and currency fluctuation have not been taken into account.

x. Preliminary and pre-operating expenses as well as interest charges during construction have been written off/amortined over a period of five years from the date of commencement of production.

xi. Period of term loan has been assumed to be 14 years inclusive of a grace period of 1 years.

xii. The interest on term loan has been assumed at 13% pa.a and on cash credit for financing working capital interest rate has been considered at 14% p.a.

Table 7.6

Estimates of Working Capital

A.

(in million Taka)

Current assets	Tied up period	Year 1	Year 2	Year 3	Year 4
a. Raw material (Improved)	90 days	52.357	60.000	63.782	63.782
b. Raw materials (local)	60 days	1.595	1.805	1.923	1.923
c. Work-in-process	18 days	22.187	24.923	26.539	26.718
d. Stock of finished goods	15 days	17.380	20.392	21.809	22.019
e. Receivables	7 days	7.705	9.041	9.668	9.762
f. Stores & spares	90 days	0.772	0.772	3.710	3.710
i. Other expenses	30 days	4.411	4.152	4.296	4.409
TOTAL		106.407	121.085	131.727	132.323

B. CURRENT LIABILITIES

a. Commercial Bank borrowing		61.288	
b. Accounts Payable			
Natural Gas	1 month	0.700	
Rent, Tax, Ins.	1 month	0.564	
Wages, Salaries	15 days	1.820	
Local materials	15 days	0.399	
			3.483
TOTAL			64.771

Estimated working capital (A - B)	41.636
Less	
Depreciation included in the value of work-in-process finishing goods and receivables	16.780
Net working capital	24.856

Table 7.7
Profitability Forecast

Tk. in million

Items	Year 1	2	3	4
1. Value of output sold	588.514	730.037	789.265	795.350
2. Cost of goods sold	330.213	387.451	414.362	418.365
3. Gross profit (1-2)	258.301	342.636	374.903	376.985
4. Administrative expense and write off	39.042	39.225	39.383	39.541
5. Operating profit (3-4)	219.259	303.411	335.520	337.444
6. Financial expense	190.061	179.072	157.102	139.343
7. Profit before tax & other incomes (5-6)	29.198	124.339	178.418	198.101
8. Other incomes	2.805	3.210	3.405	3.405
9. Net profit before bond purchase (7+8)	32.003	127.549	181.823	201.506
10. Income tax	TAX HOLIDY			
11. Govt. bond purchase @15%	4.800	19.132	27.273	30.226
12. Net profit after bond purchase (9-11)	27.203	108.417	154.550	171.280
13. Return on bond @12.5%	-	0.600	2.991	6.400

Contd.

Items	Year 1	2	3	4
14. Net profit after return on bond (12+13)	27.203	109.017	157.541	177.680
15. Workers participation fund	1.600	6.372	9.091	10.075
16. Dividend	-	84.600	105.750	126.900
17. Retained earning (14-15-16)	25.603	18.040	42.700	40.705
18. Cumulative retained earning	25.603	43.643	86.348	127.048

Items	Year 1	2	3	4
Ratios (in %)				
Gross profit to Sales	44.00	47.00	47.50	47.00
Operating profit to Sales	37.00	42.00	42.50	42.00
Net profit after tax to Sales	5.00	17.50	23.00	25.00
Profit after tax to Equity	7.60	30.00	43.00	48.00
Operating profit to Initial Capital	11.90	17.00	18.00	18.00

Table 7.8

Estimated Sales Revenue

Items of revenue	Year 1	2	3	4
Gross value of output	659.030	745.073	795.880	795.880
Add				
Opening stock of WIP for 18 days	-	39.542	47.077	50.577
Less				
Closing stock of WIP for 18 days	39.542	47.077	50.577	50.787
Value of output available for Sale	619.488	737.538	792.380	795.670
Add				
Opening stock of finished goods for 15 days	-	30.974	38.425	41.540
Less				
Closing stock of finished goods for 15 days	30.974	38.425	41.540	41.860
Value of output Sold	588.514	730.087	789.265	795.350

7.4 Break-Even Analysis

The break-even analysis has been carried out on the basis of production cost data and estimated sales revenue of the 3rd year of operation. The project is expected to break-even at 54% of the rated capacity. The cash break-even point shows the capacity utilisation at 30%.

The margin of safety, defined as the deviation of the break-even sales from sales revenue per unit sales revenue is found to be 32% utilisation required to earn 15% return on initial capital employed, necessiates 50% utilisation of production capacity, which according to the projection made can be achieved in the 2nd yr. of operation.

To make a break even analysis the components neeced are,

i. Sales revenue
ii. Fixed cost
iii. Variable cost.

The sales revenue during the 3rd year of operation was Taka 798.265 and the total cost of production during the same period was Tk.613.880 million. The cost components are given in Table.

Table 7.9

Analysis of Cost	Total cost	Fixed cost	Variable cost
Raw materials	222.224	-	222.224
Wages & Salaries	34.600	29.410	5.190
Power & gas	8.585	5.566	3.019
Fuel and lubricants	0.426	0.085	0.341
Rent, Rates, Taxes & Insurance	6.131	6.131	-
Depreciation & write off	165.545	165.545	-
Administrative & General Expenses	5.097	5.097	-
Repair & Maintenance	1.330	1.330	-
Stores & spares	12.365	-	12.365
Financial Expenses	157.102	157.102	-
Misc. Overheads	0.475	-	0.475
TOTAL	613.880	370.266	243.514

$$\text{P/V ratio} = \frac{\text{(Sales - Variable cost)}}{\text{Sales}}$$

$$= \frac{789.256 - 243.614}{789.265}$$

$$= 0.69$$

$$\text{Break Even Point} = \frac{\text{Fixed Cost}}{\text{PV}}$$

$$= \frac{370.266}{0.69}$$

= Tk.536.617 million.

= 68% of operation

= 54% of rated capacity.

Cash Break Even : (CBE)

$$\text{CBE Sales} = \frac{\text{(Fixed cost - Depreciation \& write off)}}{\text{P/V ratio}}$$

= Tk. 296.697 million

CBE capacity = 37.60% of capacity operation

= 30% of rated capacity

Margin of Safety

$$\frac{\text{(Sales - BE Sales)}}{\text{Sales}} = \frac{(789.265 - 536.617)}{789.265 \times 100}$$

= 32%

Sales required to earn 15% return.

Initial Capital employed

Initial Capital outlay = Tk. 1835.740 million

Desired profit @15% = Tk. 275.361 million

$$\frac{\text{Fixed cost - Interest on term loan and desired profit}}{\text{P/V ratio}}$$

$$= \frac{(370.266 - 152.722 + 275.361)}{0.69}$$

= Tk.492.905 million/Tk. 789.265 million

= 62% x 0.8

= 50% of rated capacity.

Chapter – VIII

CONCLUSION, RECOMMENDATION AND SCOPE OF FUTURE WORK

8.1 Conclusions and Recommendations

The objective of the present work was to make an economic study of the garments industry using locally produced fabrics. In this regards types of fabrics for export quality were identified. This was obtained from the findings of a survey of garment manufacturing units of the country. In this regard the survey was carried out on seventy three garment manufacturing units. It was assumed that construction of the fabrics used by these units are same. But there may be some variations in the construction of fabrics used today as imported fabrics may have different constructions keeping pace with continuous improvement of fabrics quality.

The main purpose of the economic study was to calculate number of composite textile units required upto the year 1995.

If these composite textile units can produce quality fabrics and substitute, the imported fabrics as per demand and requirement a large amount of foreign currency 75% of the total L/C value will be saved.

A very critical and vitally important point must always be borne in mind that fabric quality and construction in the world market are too very highly variable factors. A very close monitoring must be maintained to watch any change taking place.

The study on the status of the textile sector shows the requirement of yarn upto the year 1993 in terms of its overall domestic demand could be met.

A Techno-economic study was carried out to find whether a standard composite unit of 25000 spindles is feasible or not.

In calculating number of composite units upto year 1995 a conservative estimation was used that there would be an increase of 10% per annum of fabrics.

8.2 Scope of Future Work

For future work, feasibility interms of techno & economic may be made on vital and important accessories along with fabrics to manufacture them locally. These accessories are such items as button, plastic linning, clip, jipper, shoulder pad, labels, stickers etc.

Development of fabrics and their quality and construction are few important factors where research may be carried in future. This would require research centre and establishment in the country.

APPENDIX - I

HISTORICAL POSITION OF TEXTILE INDUSTRIES IN BANGLADESH

Year	No. of units	No. of installed spindle
Spinning		
1947	8	110,000
1972	N.A.	750,000
Weaving		
a. Powerloom		
	No. of units	No. of looms
1947	N.A.	2,700
1972	44	7,430
b. Handloom		
1947	-	100,000
1972	-	300,000
Finishing		
	No. of units	Processing capacity (in million metres)
1947	N.A.	N.A.

APPENDIX - II

PRESENT POSITION OF TEXTILE INDUSTRIES IN BANGLADESH
(As of September, 1989)

Sub-Sector	No. of units	No. of Spindles/ Looms
Spinning (Existing and under development)	88 (38)	1,729,757 (799,720)
Weaving		
a. Power loom	791 (15)	27,385 (3,580)
b. Knitting m/c	2 (1)	130 (14)
c. Hand loom	-	260,000

Finishing (Existing)		Processing capacity (in million) Fabrics	Yarn
Mechanised	71	505	0.14
Semi-mechanised	179	117	-
	250	622	0.14

Figures in parentheses indicate capacity in the public sectors.

APPENDIX - III

POTENTIAL SPINNING CAPACITY IN BANGLADESH
(Existing + Under Development)

Description	No. of units	No. of spindles	Production Capacity (in mill.kg)	No. of rotor	Production capacity (in mill.kg)	Total capacity (in mill.kg)
A. Private Sector						
a. In operation	33	685,268	43.61	1,800	0.12	43.73
b. Under development (sanction & under construction)	17*	247,769	20.75	1,800	0.12	20.87
Sub-Total	50	930,037	64.36	3,600	0.24	64.60
B. Public Sector						
a. In operation	36	749,608	63.21	-	-	63.21
b. Under development	2	50,112	0.34	-	-	0.34
Sub-Total	38	799,720	63.55	-	-	63.55
GRAND TOTAL	88	1,729,757	127.91	3600	0.24	128.15

* *Includes one continuous filament (polyester) yarn manufacturing plant sanctioned by BSB with a capacity of 0.33 million kg. per annum.*

APPENDIX - IV

EXISTING WEAVING CAPACITY IN BANGLADESH

Sector	No. of units	Looms		Knitting m/c		Total	
		No. of loom	Capacity	No. of m/c	Capacity	No. of looms knitting	Capacity
A. Private Sector	956	23,805	372.52	116	5.27	23.921	377.97
B. Public Sector							
a. BTMC	14	3,536	90.15	14	0.64	3,550	90.79
b. Seri-culture board	1	44	1.00	-	-	44	1.00
TOTAL	971	27,385	463.67	130	5.91	27,515	469.58

Source : Department of Textile and BTMC

APPENDIX - V

SPINNING PROJECTS UNDER DEVELOPMENT
(Private Sector)

Sl. No.	Name and location of the Project	No. of spindles	No. of rotors	Remarks
1	M/S. Sonargaon Textiles Ltd., Barisal	14,400	-	Under construction
2	M/s. Shah Fatullah Textile Mills Ltd., Narayangonj	14,680	-	- do -
3	M/s. Dula Mia Cotton Spinning Mills Ltd., Feni	14,400	-	- do -
4	M/s. Fakir Cotton Mills Ltd., Taraboo, Narayangonk	12,000	-	- do -
5	M/s. Faridpur Spinning Mills Ltd., Faridpur	12,000	-	- do -
6	M/s. Naj Fine Cotton Mills, Rupgonj, N.Gonj	7,600	-	- do -
7	M/s. Padma Textile Mills Ltd., Rupgonj, N.Gonj	25,449	-	- do -
8	M/s. Prime Textile Spinning Mills Ltd. Narayangonj	24,960	-	Sanctioned
9	M/s. Sreepur Textile Mills Ltd., Sreepur	16,320	-	- do -
10	M/s. Mita Textiles Ltd. Mohorigonj, Feni	14,400	-	- do -
11	M/s. Sahco Textile Mills Ltd., Sreepur	14,400	-	- do -
12	M/s. Coxes Bazar Textile Mills Ltd., Coxes Bazar	14,688	-	- do -
13	M/s. Gonoshasthaya Textile Mills Ltd., Sirajgonj	24,960	-	- do -
14	M/s. Naheed Cotton Mills Ltd., Joydevpur	-	1,400	- do -
15	M/s. Kader Synthetic Fibres Ltd., BSCIC I/E, Joydevpur	Continuous filament yarn making plant		Sanctioned
	Sub-Total	210,337	1,400	

Sl. No.	Name and location of the Project	No. of spindles	No. of rotors	Remarks
16	M/s. Howladar Textile Mills Ltd., Pirojpur	24,960	-	BOI aproval awaited
17	M/s. Dynamic Textile Industries Ltd.,Bhaluka, Mymensingh	14,400	400	Joint venture with SABINCO & ADB, BSB Board has agreed in principle
18	M/s. Rustam Cotton Mills Ltd., Sreepur	24,960	-	BOI approval awaited
	Sub-Total	64,320	400	
	TOTAL	274,657	1,800	

Source : Department of Textiles and BSB.

REFERENCES

1. Garments Directory : Export Fig. in Tk. or Dollar for last few years.

2. Export Statistics: : Published by EPB. Countrywise export, categorywise export (official source). Data collected from EPB.

3. Import Policy : Requirement of fabrics in dozens (comparison with our calculation)

4. BSB Source : Garments survey (73 units)

5. Local raw materials for garments - BSB source.

6. Prospects for Development of Textile Industries in Bangladesh

   - BSB source.

7. Department of Textile and BTMC