

ANNEX XIII: CROP INPUTS AND FARM BUDGETS

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13.1 Crop Input Requirements

Present and projected unit input requirements are given in Table 13-1. Monthly labour requirements for each cropping pattern proposed under the project are given in Table 14-4. The estimated current levels of inputs are based on agro-economic surveys conducted during the feasibility study as well as on the information obtained from the thana administrations, the Ministry of Agriculture & Forestry and several other surveys in similar areas of Bangladesh. Future "with project" requirements are based on recommendations by the Directorate of Agricultural Extension and Management and on observed cultural practices of the progressive farmers of the area.

13.2 Model Sizes for the Farm Budget Analysis

Households in the project area can, somewhat arbitrarily, be classified into four groups according to their economic situation:

Landless Workers, most of whom earn their living as daily workers in construction or other odd jobs and, if lucky, as share croppers. They make up not less than 20% of the households in the area.

Sub-Marginal Farmers cultivate less than 2.5 ac of land. Usually the farm produce of these farmers has been insufficient to satisfy the subsistence requirements and they needed substantial outside income to supplement their farm income. Sub-marginal farmers who are thus operating more than 0.25 ac but less than 2.5 ac would represent some 45% of the area households. Below these are the marginal farmers owning more than 0.25 ac but less than 1.0 ac of land who can scarcely sustain themselves even by supplementing their farm income by working as share croppers or labourers, and can hardly be differentiated from landless workers in their net livelihood. They presumably represent 5% of the households in the area. Under the project, however, even a 1.5 ac farm is expected to bring farm income which would somehow be compatible with its owner's sustenance, mainly due to increased cropping intensity and use of intensive farming techniques.

In the farm budget analysis, therefore, a 1.5 ac farm has been chosen to represent some 45% of the households that operate between 0.25 ac and 2.5 ac.

Standard Farmers cultivate an area of 2.5 - 5.0 ac and typically have a per capita income close to the national average. About 20% of the households is supposed to belong to this category, which is represented in the farm budget analysis by a 4.0 ac farm. They would become main employers of the landless workers and marginal farmers under the project.

Large Farmers are defined as those owning 5 ac or more, presumably consisting of 10% of the households, and would provide more share cropping contracts with the marginal farmers and labour employment chances to landless workers, under the project. The medium holding size is roughly 8.0 ac and that has been chosen to represent this group in the farm budget analysis.

Farm budgets on an annual cash flow basis for the three representative farm models are given in Table 13-2. The analysis assumes the following:

Crop Yields and Input Requirements

- (a) Under the "with project" conditions crop yields and input requirements for the representative farms reflect those pertaining to cropping pattern B, which covers majority of the cultivable land in each of the three alternative project areas (63% in Phase I/Stage 1, 86% in Phase I, and 80% on Plan B area).

Prices

- (b) The prices used in the farm budgets are the "financial" farm gate prices based on elimination of all subsidies, taxes and duties.

Hired Labour

- (c) The estimated hired labour is costed at Tk 10/day while no value is put on family labour. Majority (3.0 ac) of the lands belonging to the standard farmers would be cultivated by the employed

labour recruitable from amongst the landless workers and marginal farmers. About two-third of the lands belonging to the large farmers would be cultivated by the croppers who share both material inputs and crops on 50:50 basis, and the remaining one-third, by the owner's family members with the help of employed labour.

Non-farm Income

- (d) Most of the farm families operating three kinds of farm models have some poultry, perhaps own a milk cow or draft animal, have some vegetable cultivation in their own home yards and live in their own houses. In addition, since a farm household is a production-cum-consumption unit, it bypasses several intermediate channels which would be normally involved in the marketing and distribution of food grains, etc.: their requirements to the farm family coming essentially at "farm gate" prices rather than at the "retail" market prices. Thus, even though the rural families may not have very much cash income outside the farm, the imputed value of the goods and services originating outside of the farm is likely to be quite substantial.

- (e) Although it is estimated that non-farm income as a percentage of the total family income decreases with the size of the farm, it is likely to be substantially higher for larger farmers in absolute terms. This assumption is endorsed by better educational background and larger political influences they are in a position to enjoy. The basic pattern of higher non-farm income for larger farmers is assumed to continue into the future "with" the project.

Incentive to Farmers

The following table summarized the estimated income level for the three farm models:

	Net Value of Production	"Non-Farm" Income	"Total Family Income	Family Size	Per capita Income
	(Tk)	(Tk)	(Tk)	(Tk)	(Tk)
1.5 ac farm					
P	2,822	2,000	4,822	5.5	861
W	11,260	3,500	14,760	7.0	2,109
% increase over present	399	75	306	27	245
4.0 ac farm					
P	7,023	2,500	9,523	6.8	1,400
W	27,534	4,000	31,534	8.5	3,710
% increase over present	392	60	331	25	265
8.0 ac farm					
P	9,652	4,000	13,652	8.5	1,606
W	37,637	6,000	43,637	10.6	4,117
% increase over present	390	50	320	25	256

Thus, it is estimated that the farm incomes would increase by about 245-265% over the present level while total family income would be about 306 more than that at present. It is projected that there would even be a significant improvement in per capita income levels. These increases are considered to be sufficient incentives for getting the cooperation and participation of the project area farmers.

Table 13-1 Crop Input Requirements

	Aus(local)		Aus(IV)		Aus(IV)		B. Aman		T. Aman(local)		T. Aman(IV)		Boro(local)		Boro(IV)		Jute		Sugar Cane		Wheat		Pulses		Oil Seed		Vegetables	
	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W
FERTILIZERS AND PESTICIDES																												
Urea(46% N)	0.13	0.30	0.13	0.30	0.5	1.3	0.25	0.4	0.25	0.5	0.25	0.5	0.3	-	1.0	1.8	0.7	1.0	-	1.0	1.8	2.0	0.5	0.4	0.5	0.4	2.3	3.0
TSP (46% P ₂ O ₅)	-	0.20	-	0.20	0.3	0.8	0.10	0.3	0.10	0.3	0.10	0.3	-	-	0.3	0.8	-	0.5	-	0.7	1.5	1.8	0.8	1.0	1.0	1.5	2.5	3.0
M P (60% N)	-	0.10	-	0.10	0.1	0.2	-	0.1	-	0.1	0.4	-	-	-	0.1	0.5	-	0.2	-	0.5	0.5	0.6	0.5	0.6	0.5	0.6	0.8	1.0
Diazinon	-	-	-	-	0.001	0.01	0.005	0.05	0.005	0.05	0.01	0.01	0.005	-	0.01	0.01	-	-	-	-	-	0.01	-	-	-	-	0.01	0.01
Sumithion	-	-	-	-	0.005	0.01	0.005	0.05	0.005	0.05	0.01	0.01	0.005	-	0.01	0.01	-	-	-	-	-	0.01	-	-	-	-	0.01	0.01
LABOR																												
Preparation	3.4	8.0	3.4	8.0	3.6	8.0	6.3	3.0	4.0	8.0	4.4	9.0	4.4	-	4.4	9.0	3.0	7.5	12.0	30.0	4.0	10.0	4.0	5.0	4.0	5.0	6.0	10.0
Planting and	0.4	2.0	0.4	2.0	0.4	2.0	0.4	1.0	3.6	10.0	1.6	10.0	1.6	-	3.6	10.0	0.2	0.2	6.0	20.0	1.0	2.0	2.0	5.0	2.0	5.0	4.0	10.0
Murging	2.0	7.5	2.0	7.5	2.0	8.0	0.6	1.0	2.0	6.5	2.2	6.5	2.0	-	2.8	8.0	3.6	9.0	6.0	15.0	4.0	8.0	2.0	5.0	2.0	5.0	8.0	20.0
Crop Management	4.4	14.0	4.4	14.0	4.4	14.0	4.0	17.5	4.4	13.0	4.4	13.0	4.6	-	5.6	16.0	10.0	25.0	24.0	60.0	5.0	12.5	4.0	10.0	4.0	10.0	14.0	30.0
Harvesting and																												
Threshing																												
Sub Total	10.2	31.5	10.2	31.5	10.4	32.0	7.0	21.0	14.0	37.5	15.2	38.5	14.6	-	16.4	41.0	16.8	41.7	50.0	125.0	14.0	32.5	12.0	35.0	12.0	35.0	32.0	90.0
OTHER INPUTS																												
Animal Power	15.0	18.0	15.0	18.0	17.0	20.0	18.0	15.0	17.0	20.0	17.0	20.0	17.0	-	17.0	20.0	16.0	16.0	10.0	10.0	8.0	10.0	8.0	9.0	8.0	10.0	7.0	10.0
Seed	0.4	0.1	0.4	0.1	0.4	0.1	0.4	0.3	1.0	1.0	0.4	0.3	0.4	-	0.4	0.3	0.3	0.1	-	-	1.5	1.5	0.3	0.3	0.1	0.1	1.0	1.0
Miscellaneous	10.0	15.0	10.0	15.0	10.0	40.0	10.0	10.0	10.0	15.0	10.0	40.0	10.0	-	30.0	30.0	10.0	10.0	30.0	40.0	15.0	20.0	15.0	20.0	15.0	20.0	30.0	40.0

P = present, W = future with project

Table 13-2 Farm Budgets by Size¹

	1.5 ac Farm		4 ac Farm ²		8 ac Farm			
	P	W	P	W	P		W	
					5 ac ³	3 ac ⁴	5 ac	3 ac
CROPPED AREA (ac)								
Rice	1.68	2.51	4.46	6.68	5.6	3.36	8.35	5.01
Wheat	0.008	0.06	0.02	0.16	0.03	0.02	0.2	0.12
Upland Crops	0.086	0.33	0.22	0.88	0.28	0.17	1.1	0.66
Jute	0.165	0.18	0.44	0.48	0.55	0.33	0.6	0.36
Total	1.94	3.08	5.14	8.20	6.45	3.88	10.25	6.15
Cropping In- tensity (%)	129	205	129	205	129	129	205	205
GROSS PRODUCTION VALUE (Tk)								
Rice	2,356	10,817	6,214	28,881	7,770	4,662	36,119	21,672
Wheat	7	242	14	622	18	11	756	453
Upland Crops	466	1,292	1,258	3,468	1,615	961	4,420	2,652
Jute	446	743	1,188	1,931	1,485	891	2,413	1,448
Total	3,275	13,094	8,674	34,902	10,888	6,533	43,708	26,225
						(+5,444) ⁵		(+21,854) ⁵
						11,979		48,079
FARM PRODUCTION COSTS (Tk)								
Crop Inputs	453	1,684	1,208	4,490		906		3,368
Hired Labour	-	-	443	2,478		295		1,652
Land Betterment ⁷ Charges	-	150	-	400	-	-	500	300
Total	453	1,834	1,651	7,368	2,248	1,201	10,244	5,320
						(+1,124) ⁶		(+5,122) ⁶
						2,325		10,442
Net Production Value (Tk)	2,822	11,260	7,023	27,534		9,652		37,637
Non-Farm Income (Tk)	2,000	3,500	2,500	4,000		4,000		6,000
Total Family Income (Tk)	4,822	14,760	9,523	31,534		13,652		43,637
Estimated Family Size	5.6	7.0	6.8	8.5		8.5		10.6
Per Capita Income (Tk)	861	2,109	1,400	3,710		1,606		4,117

- /1: P = Present, W = Future with Project
- /2: 4 ac is cultivated by the owner, but labourer will be hired for $\frac{3}{4}$ cultivation.
- /3: 5 ac out of 8 ac is under share cropping system on 50:50 basis in cash inputs and products.
- /4: 3 ac out of 8 ac is cultivated by the owner, but labourer will be hired for $\frac{2}{3}$ cultivation.
- /5: Return from share cropper, that is $\frac{1}{2}$ of total production from 5 ac.
- /6: Share cost which is $\frac{1}{2}$ of total production cost of 5 ac.
- /7: Land Betterment charges at Tk 100/ac would be levied on all the cultivated land under the project.

ANNEX XIV. FARM LABOR ANALYSIS

СЕРИЯ АННОУА ХОУА ХОУА ХОУА ХОУА

ANNEX XIV FARM LABOUR ANALYSIS

To show the project's potentials for expanding the farm labour employment opportunities, particularly on behalf of the landless workers and marginal farmers (owning less than 1.0 ac of land), three Tables are attached hereto:

- Table 14-1: Unit Labour Requirements per Month/Year Total;
- Table 14-2 Cropped Area, Present and Future with Project;
- Table 14-3 Crop-wise Requirements of Man and Animal Power (for Plan B area); and
- Table 14-4 Maximum and Minimum Labour Requirements Taking into Consideration the Five-Year Rotation in Each Project Area.

Table 14-1 Unit Labour Requirements (man-days)

*1 : HYV=High Yielding Variety
 *2 : L V=Local Variety
 *3 : LIV=Local Improved Variety

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Rice													
T. Aus	P		3	2	20	2	20	5					52
	W		5	3	20	5	21	10					64
T. Aus	P		3	2	20	2	20	4					51
	W		5	3	20	5	20	10					63
T. Aus	P		3	2	20	2	20	4					51
	W		5	3	20	5	20	10					63
B. Aman	P		2	3	14	1			1	4	4	16	41
	W		2	4	14	1			1	4	4	16	42
T. Aman	P	2				2	26	8	4	4	4	26	76
	W					2	26	8	4	4	28	5	77
T. Aman	P	2				2	24	7	3	3	4	25	70
	W					2	25	8	4	4	27	5	75
T. Aman	P	2				2	24	7	3	3	4	25	70
	W					2	25	8	4	4	27	5	75
Boro	P	4		5	31	4							82
	W	4		5	33	4							86
Boro	P	4		4	28	3							73
	W												
Wheat	P	3		30	2				2	30	3		70
	W	3		28	2				3	26	3		65
Jute	P		8	25	4	4	38	5					84
	W		8	25	4	4	38	5					84
Pulses	P	6		18	6					10	20		60
	W	6		16	5					8	15		50
Oil Seeds	P	6		18	6					10	20		60
	W	6		16	5					8	15		50
Vegetables (Winter)	P	60	12	50	14					4	20		160
	W	50	13	40	16					2	19		140
Vegetables (Summer)	P		24	60	60	16							160
	W		20	50	50	20							140
Sugar Cane	P	30	15	15	15	15	15	15		30	115		250
	W	30	15	15	15	15	15	15		30	115		250

Table 14-2 Cropped Area: Present and Future With Project (ac)

	Phase I / Stage I			Phase I			Plan B		
	P	W		P	W		P	W	
Rice									
T. Aus									
HYV	252	216		600	486		1,000	486	
L V	7,140	-		17,000	-		26,350	-	
LIV	-	786			1,791			4,356	
B. Aman									
L V	14,574	250		34,700	550		46,500	2,300	
T. Aman									
HYV	126	16,270		300	39,099		470	60,132	
L V	924	-		2,200	-		3,410	-	
LIV	-	4,102			9,872			13,843	
Boro									
AYV	4,998	17,072		11,900	41,029		18,500	64,298	
L V	546	-		1,300	-		2,020	-	
(Sub Total)	28,560	38,696		68,000	92,827		98,250	145,415	
Wheat	126	1,466		300	3,434		470	4,270	
Upland Crops									
Pulses	672	2,691		1,600	6,406		2,500	10,557	
Oilseeds	336	1,525		800	3,642		1,210	5,751	
Vegetables	126	1,239		300	2,956		470	4,000	
Sugarcone	252	325		600	764		930	1,100	
Jute	672	1,659		1,600	3,936		10,000	10,800	
Total	30,744	47,601		73,200	113,965		113,830	181,893	
(Net Cropped Area)	(23,800)	(23,800)		(57,000)	(57,000)		(88,200)	(88,200)	
Cropping Intensity	129	200		128	200		129	206	

Table 14-3 Crop-wise Requirements of Man Power and Animal Power (Plan B Area)

	Man Power (man-days)		Animal Power (animal-days)	
	P	W	P	W
Aus (HYV) (LV)	52,000 1,343,850	31,104 274,428	17,000 395,250	9,720 78,408
B. Aman (LV)	1,860,000	96,600	697,500	41,400
T. Aman (HYV) (LV)	35,720 238,700	4,630,164 1,038,225	7,990 57,970	1,202,640 276,860
Boro (HYV) (LV)	1,517,000 165,640	5,529,628 0	314,500 34,340	1,285,960 0
Wheat	32,900	277,550	3,760	85,400
Pulses	150,000	527,800	20,000	105,560
Oil Seeds	72,600	287,550	9,680	57,510
Vegetables	75,200	560,140	3,290	40,010
Jute	840,000	907,200	160,000	172,800
Sugar Cane	232,500	275,000	9,300	11,000
Total	6,616,110	14,435,389	1,730,580	3,367,268

Table 14-4 Maximum and Minimum Labour Requirements Taking into Consideration the Five-Year Rotation in Each Project Area

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Plan B Area (Total Cropped Area 88,200 ac)													
A 3.1 %	2,103.4	286.5	514.6	2,166.9	378.7	188.3	1,648.2	700.6	278.6	444.9	1,995.2	816.0	11,521.9
B 79.7 %													
C 14.6 %	323.4	116.1	334.5	458.8	150.9	78.7	447.8	93.4	108.8	54.9	372.4	252.2	2,791.9
D 2.6 %													
Phase I Area (Total Cropped Area 57,000 ac)													
A 4.7 %	1,345.0	186.7	345.7	1,380.5	211.0	124.4	1,059.9	453.2	170.2	298.1	1,292.3	538.1	7,405.1
B 86.7 %													
C 7.6 %	210.4	75.3	215.4	308.0	79.5	47.2	288.5	53.6	76.7	38.1	261.1	157.4	1,811.2
D 1.0 %													
Phase I / Stage I Area (Total Cropped Area 23,800 ac)													
A 5.0 %	555.3	77.2	144.1	570.6	88.4	51.7	438.6	187.3	70.6	122.7	533.7	223.5	3,063.7
B 85.9 %													
C 8.0 %	86.8	31.1	89.2	126.8	33.4	19.7	119.4	22.4	31.5	15.6	107.3	65.1	748.3
D 1.1 %													

ANNEX XV. ECONOMIC ANALYSIS

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ANNEX XV ECONOMIC ANALYSIS

The project's economic analysis has been made on the basis of Phase I. The assumptions used for the analysis are as follows:

Assumptions:

(a) Prices

The farm gate prices used in the economic analysis are derived from projected 1985 world market prices expressed in 1977 currency values. Appropriate adjustments have been made for freight, handling and processing. A shadow exchange rate of US\$1.00 = TK18.00 is used to reflect the scarcity of foreign exchange. The price assumptions are discussed in more detail under Annex XII: "Prices for Economic and Financial Analysis".

(b) Benefits

The direct benefits of the project would be: increased agricultural production; reduced transport costs through improved road network; reduced marketing costs due to improved markets; increased fish yields, and improvements in draft animal power supply. The project would also have substantial secondary income and employment effects in trade and transport. In this analysis, however, only increased agricultural production due to the project is counted as a project benefit.

(c) Crop Production Costs

Per acre input requirements are shown in Annex XIII: "Crop Inputs and Farm Budgets" and crop production costs are summarized in "Agricultural Production" in the Main Report.

(d) Pricing of Labour

Farm labour is evaluated at a seasonally adjusted opportunity cost. The average economic cost per man-day for incremental farm labour requirements is estimated at Tk 5, which is equivalent to 50% of the peak wage rate (for a detailed analysis, see Annex XIV:

"Farm Labour Analysis"). Unskilled construction labour has been valued at the market rate.

(e) Investment Costs

All investment costs except price contingencies (TK 157,278,000) are included in the economic analysis. On this basis the investment costs are estimated at TK753,486,000 of which TK394,717,000 are in foreign exchange. Shadow pricing the foreign exchange component results in an estimated "economic" cost of TK1,227,146,000. It is assumed that pumping facilities would be replaced every 20 years. The estimated replacement costs are included as investment costs in years 23, 26 and 43, 46.

(f) Operation and Maintenance

The O & M costs for the basic infrastructure would be TK17,189,000 for Pumping Station No. 1 and TK16,557,000 for Pumping Station No. 2. The annual O & M costs for rural works and thana facilities are estimated at TK1,924,000 about 4% of the initial investment costs. The annual costs of additional staff and the O & M of staff vehicles and equipment are estimated at TK4,050,000. These costs are used as a cost flow against the project benefits.

(g) Development Phasing

Implementation would be phased over eight to ten years according to project area (ten years in Phase I/Stage 1 area, nine years in Phase I/Stage 2 area, and eight years in Phase II area). It is assumed that the benefits originating from the project would rapidly follow a straight line pattern over five to seven years' agricultural development phase after three years' construction work.

Economic Internal Rates of Return

Resulting costs and benefit flows are shown in Tables 15-1, 2 and 3. Assuming a 50-year project life, the economic internal rates of return are estimated as follows:

Phase I/Stage 1 area	14.9
Phase I area	19.9
Plan B area	20.2

Sensitivity Analysis

Several tests were made to determine the sensitivity of the rate of return estimates to various alternative assumptions about costs and benefits. Such tests were made only with the case of Phase I. The assumptions and sensitivity test results are as follows:

	<u>Alternative</u>	<u>Rate of Return</u>
(a)	Basic case	19.9
(b)	A decrease of 20% in net benefits	16.0
(c)	An increase of 10% in construction costs	18.7
(d)	An increase of 10% in farm production costs	19.6
(e)	Combination of (b) and (d)	15.6
(f)	Combination of (b), (c), and (d)	14.6

Table 15-1 I.R.R., Plan B Area

YEAR	COST	BENEFIT	NET PRESENT V.	DISCOUNT		FACTOR		DISCOUNT		VALUE
				AT 20.00 %	AT 20.25 %	AT 20.00 %	AT 20.25 %	AT 20.00 %	AT 20.25 %	
1	180087.000	0.	-180087.000	0.83333	0.83160	0.83160	-150072.499	-150072.499	-149760.499	
2	195248.000	0.	-195248.000	0.69444	0.69156	0.69156	-135588.888	-135588.888	-135025.695	
3	107188.000	0.	-107188.000	0.57870	0.57510	0.57510	-62030.092	-62030.092	-61644.014	
4	172758.000	65235.000	-107523.000	0.48225	0.47826	0.47826	-51853.298	-51853.298	-51423.428	
5	166521.000	128089.000	-38432.000	0.40188	0.39772	0.39772	-15444.959	-15444.959	-15285.074	
6	162832.000	190962.000	28130.000	0.33490	0.33074	0.33074	9420.680	9420.680	9303.775	
7	232051.000	233209.000	1158.000	0.27908	0.27505	0.27505	323.177	323.177	318.503	
8	292126.000	290087.000	-2039.000	0.23257	0.22873	0.22873	-474.206	-474.206	-466.376	
9	208448.000	346965.000	138517.000	0.19381	0.19021	0.19021	26845.522	26845.522	26347.372	
10	127399.000	406962.000	279563.000	0.16151	0.15818	0.15818	45150.984	45150.984	44221.029	
11	136806.000	463840.000	327034.000	0.13459	0.13154	0.13154	44014.846	44014.846	43018.669	
12	146985.000	520717.000	373732.000	0.11216	0.10939	0.10939	41916.529	41916.529	40882.671	
13	156788.000	577595.000	420807.000	0.09346	0.09097	0.09097	39330.253	39330.253	38280.433	
14	166459.000	633847.000	467388.000	0.07789	0.07565	0.07565	36403.245	36403.245	35357.892	
15	167724.000	633847.000	466123.000	0.06491	0.06291	0.06291	30253.932	30253.932	29324.070	
16	167724.000	633847.000	466123.000	0.05409	0.05232	0.05232	25211.610	25211.610	24385.921	
17	167724.000	633847.000	466123.000	0.04507	0.04351	0.04351	21009.675	21009.675	20279.352	
18	167724.000	633847.000	466123.000	0.03756	0.03618	0.03618	17508.062	17508.062	16864.326	
19	167724.000	633847.000	466123.000	0.03130	0.03009	0.03009	14590.052	14590.052	14024.388	
20	167724.000	633847.000	466123.000	0.02608	0.02502	0.02502	12158.376	12158.376	11662.693	
21	167724.000	633847.000	466123.000	0.02174	0.02081	0.02081	10131.980	10131.980	9698.705	
22	167724.000	633847.000	466123.000	0.01811	0.01730	0.01730	8443.317	8443.317	-8065.451	
23	258080.000	633847.000	375767.000	0.01509	0.01439	0.01439	5672.179	5672.179	5407.066	
24	167724.000	633847.000	466123.000	0.01258	0.01197	0.01197	5863.414	5863.414	5577.743	
25	167724.000	633847.000	466123.000	0.01048	0.00995	0.00995	4886.179	4886.179	4638.456	
26	259960.000	633847.000	373887.000	0.00874	0.00828	0.00828	3266.088	3266.088	3094.056	
27	167724.000	633847.000	466123.000	0.00728	0.00688	0.00688	3393.180	3393.180	3207.770	
28	167724.000	633847.000	466123.000	0.00607	0.00572	0.00572	2827.650	2827.650	2667.584	
29	273136.000	633847.000	360711.000	0.00506	0.00476	0.00476	1823.489	1823.489	1716.690	
30	167724.000	633847.000	466123.000	0.00421	0.00396	0.00396	1963.646	1963.646	1844.794	

YEAR	COST	BENEFIT	NET PRESENT V.	DISCOUNT	FACTOR	DISCOUNT	VALUE
31	167724.000	633847.000	466123.000	0.00351	0.00329	1636.371	1534.133
32	167724.000	633847.000	466123.000	0.00293	0.00274	1363.643	1275.786
33	167724.000	633847.000	466123.000	0.00244	0.00228	1136.369	1060.945
34	167724.000	633847.000	466123.000	0.00203	0.00189	946.974	882.282
35	167724.000	633847.000	466123.000	0.00169	0.00157	789.145	733.707
36	167724.000	633847.000	466123.000	0.00141	0.00131	657.621	610.151
37	167724.000	633847.000	466123.000	0.00118	0.00109	548.017	507.402
38	167724.000	633847.000	466123.000	0.00098	0.00091	456.681	421.956
39	167724.000	633847.000	466123.000	0.00082	0.00075	380.568	350.899
40	167724.000	633847.000	466123.000	0.00068	0.00063	317.140	291.808
41	167724.000	633847.000	466123.000	0.00057	0.00052	264.283	242.668
42	167724.000	633847.000	466123.000	0.00047	0.00043	220.236	201.803
43	258080.000	633847.000	375767.000	0.00039	0.00036	147.953	135.288
44	167724.000	633847.000	466123.000	0.00033	0.00030	152.942	139.559
45	167724.000	633847.000	466123.000	0.00027	0.00025	127.451	116.057
46	259960.000	633847.000	373887.000	0.00023	0.00021	85.193	77.415
47	167724.000	633847.000	466123.000	0.00019	0.00017	88.508	80.260
48	167724.000	633847.000	466123.000	0.00016	0.00014	73.757	66.745
49	273136.000	633847.000	360711.000	0.00013	0.00012	47.564	42.953
50	167724.000	633847.000	466123.000	0.00011	0.00010	51.220	46.158

				TOTAL	6435.763	-4597.703	
				20.00 +	6435.763x(20.25-20.00)	(-4597.703)	=20.15%

Table 15-2 I.R.R., Phase-1 Area

YEAR	COST	BENEFIT	NET PRESENT V.	DISCOUNT		FACTOR	DISCOUNT		VALUE
				AT 19.75 %	AT 20.00 %		AT 19.75 %	AT 20.00 %	
1	180087.000	0.	-180087.000	0.83507	0.83333	0.40188	1062.108	1048.900	-150072.499
2	194981.000	0.	-194981.000	0.69735	0.69444	0.40188	38815.698	38253.163	-135403.471
3	106921.000	0.	-106921.000	0.58234	0.57870	0.40188	41559.601	40871.971	-61875.578
4	170561.000	54616.000	-115945.000	0.48629	0.48225	0.40188	42263.209	41477.346	-55914.834
5	161860.000	106852.000	-55008.000	0.40609	0.40188	0.40188	41604.930	40746.242	-22106.481
6	155974.000	159106.000	3132.000	0.33911	0.33490	0.33490	37945.154	37007.321	1048.900
7	71617.000	208685.000	137068.000	0.28319	0.27908	0.27908	31732.688	30883.923	38253.163
8	79202.000	254944.000	175742.000	0.23648	0.23257	0.23257	26499.113	25736.602	40871.971
9	87189.000	301203.000	214014.000	0.19748	0.19381	0.19381	22128.695	21447.168	41477.346
10	95171.000	347461.000	252290.000	0.16491	0.16151	0.16151	18479.077	17872.640	40746.242
11	102381.000	393720.000	291339.000	0.13771	0.13459	0.13459	15431.380	14893.867	39210.728
12	110435.000	440396.000	329961.000	0.11500	0.11216	0.11216	12886.330	12411.556	37007.321
13	19959.000	440396.000	330437.000	0.09603	0.09346	0.09346	10761.027	10342.963	30883.923
14	109959.000	440396.000	330437.000	0.08019	0.07789	0.07789	8986.244	8619.136	25736.602
15	109959.000	440396.000	330437.000	0.06697	0.06491	0.06491	7504.170	7182.613	21447.168
16	109959.000	440396.000	330437.000	0.05592	0.05409	0.05409	6266.530	5985.511	17872.640
17	109959.000	440396.000	330437.000	0.04670	0.04507	0.04507	5382.075	5156.008	14893.867
18	109959.000	440396.000	330437.000	0.03900	0.03756	0.03756	4626.075	4415.605	12411.556
19	109959.000	440396.000	330437.000	0.03257	0.03130	0.03130	3982.075	3824.008	10342.963
20	109959.000	440396.000	330437.000	0.02720	0.02608	0.02608	3369.946	3244.008	8619.136
21	109959.000	440396.000	330437.000	0.02271	0.02174	0.02174	2866.530	2766.530	7182.613
22	109959.000	440396.000	330437.000	0.01896	0.01811	0.01811	2466.530	2382.075	5985.511
23	200315.000	440396.000	240081.000	0.01584	0.01509	0.01509	2136.530	2062.075	4156.605
24	109959.000	440396.000	330437.000	0.01322	0.01258	0.01258	1866.530	1802.075	3624.008
25	109959.000	440396.000	330437.000	0.01104	0.01048	0.01048	1616.530	1562.075	3244.008
26	202195.000	440396.000	238201.000	0.00922	0.00874	0.00874	1416.530	1362.075	2866.530
27	109959.000	440396.000	330437.000	0.00770	0.00728	0.00728	1236.530	1192.075	2466.530
28	109959.000	440396.000	330437.000	0.00643	0.00607	0.00607	1086.530	1052.075	2062.075
29	109959.000	440396.000	330437.000	0.00537	0.00506	0.00506	946.530	915.075	1774.592
30	109959.000	440396.000	330437.000	0.00448	0.00421	0.00421	816.530	785.075	1481.914

YEAR	COST	BENEFIT	NET PRESENT V.	DISCOUNT	FACTOR	DISCOUNT	DISCOUNT	VALUE
31	109959.000	440396.000	330437.000	0.00375	0.00351	1237.506	1160.032	
32	109959.000	440396.000	330437.000	0.00313	0.00293	1033.408	966.693	
33	109959.000	440396.000	330437.000	0.00261	0.00244	862.971	805.578	
34	109959.000	440396.000	330437.000	0.00218	0.00203	720.644	671.315	
35	109959.000	440396.000	330437.000	0.00182	0.00169	601.790	559.429	
36	109959.000	440396.000	330437.000	0.00152	0.00141	502.539	466.191	
37	109959.000	440396.000	330437.000	0.00127	0.00118	419.657	388.492	
38	109959.000	440396.000	330437.000	0.00106	0.00098	350.444	323.744	
39	109959.000	440396.000	330437.000	0.00089	0.00082	292.646	269.786	
40	109959.000	440396.000	330437.000	0.00074	0.00068	244.381	224.822	
41	109959.000	440396.000	330437.000	0.00062	0.00057	204.076	187.352	
42	109959.000	440396.000	330437.000	0.00052	0.00047	170.418	156.126	
43	109959.000	440396.000	240081.000	0.00043	0.00039	103.398	94.529	
44	109959.000	440396.000	330437.000	0.00036	0.00033	118.831	108.421	
45	109959.000	440396.000	330437.000	0.00030	0.00027	99.241	90.351	
46	109959.000	440396.000	238201.000	0.00025	0.00023	59.741	54.276	
47	109959.000	440396.000	330437.000	0.00021	0.00019	69.205	62.744	
48	109959.000	440396.000	330437.000	0.00017	0.00016	57.791	52.286	
49	109959.000	440396.000	330437.000	0.00015	0.00013	48.260	43.572	
50	109959.000	440396.000	330437.000	0.00012	0.00011	40.301	36.310	

TOTAL						5887.632	-3861.445	
19.75 + 5887.632x(20.00-19.75)/(5887.632-(-3861.445))=19.90%								

Table 15-3 I.R.R., Stage 1 Area

YEAR	COST	BENEFIT	NET PRESENT V.	DISCOUNT		FACTOR	DISCOUNT		VALUE
				AT 14.75 %	AT 15.00 %		AT 14.75 %	AT 15.00 %	
1	180087.000	0.	-180087.000	0.87146	0.86957	-156938.560	975.411	11858.659	
2	195248.000	0.	-195248.000	0.75944	0.75614	-148279.529	11988.402	19886.636	
3	107188.000	0.	-107188.000	0.66182	0.65752	-70939.492	20148.012	25618.980	
4	24731.000	26437.000	1706.000	0.57675	0.57175	983.939	26012.246	29646.721	
5	29021.000	52873.000	23852.000	0.50262	0.49718	11988.402	30167.396	32075.316	
6	33311.000	79310.000	45999.000	0.43801	0.43233	11988.402	34060.917	33327.665	
7	37600.000	105747.000	68147.000	0.38171	0.37594	26012.246	29787.508	29082.891	
8	41494.000	132184.000	90690.000	0.33264	0.32690	22621.884	25958.612	25289.470	
9	45783.000	158620.000	112837.000	0.28988	0.28426	19714.060	21990.844	21990.844	
10	50043.000	184872.000	134829.000	0.25262	0.24718	17180.009	16628.237	16628.237	
11	49567.000	184872.000	135305.000	0.22015	0.21494	14971.685	14459.336	14459.336	
12	49567.000	184872.000	135305.000	0.19185	0.18691	13047.220	12573.336	12573.336	
13	49567.000	184872.000	135305.000	0.16719	0.16253	11370.126	10933.336	10933.336	
14	49567.000	184872.000	135305.000	0.14570	0.14133	9908.607	9507.248	9507.248	
15	49567.000	184872.000	135305.000	0.12697	0.12289	8634.951	8267.172	8267.172	
16	49567.000	184872.000	135305.000	0.11065	0.10686	7525.012	7188.845	7188.845	
17	49567.000	184872.000	135305.000	0.09643	0.09293	6557.745	6251.170	6251.170	
18	49567.000	184872.000	135305.000	0.08403	0.08081	5725.012	5459.336	5459.336	
19	49567.000	184872.000	135305.000	0.07323	0.07027	4980.227	4726.783	4726.783	
20	49567.000	184872.000	135305.000	0.06382	0.06110	4340.067	4110.246	4110.246	
21	49567.000	184872.000	135305.000	0.05562	0.05313	3782.193	3574.127	3574.127	
22	49567.000	184872.000	135305.000	0.04847	0.04620	3296.029	3107.936	3107.936	
23	139923.000	184872.000	44949.000	0.04224	0.04017	2872.356	2702.553	2702.553	
24	49567.000	184872.000	135305.000	0.03681	0.03493	2503.143	2350.046	2350.046	
25	49567.000	184872.000	135305.000	0.03208	0.03038	2181.388	2043.518	2043.518	
26	49567.000	184872.000	135305.000	0.02795	0.02642				
27	49567.000	184872.000	135305.000	0.02436	0.02297				
28	49567.000	184872.000	135305.000	0.02123	0.01997				
29	49567.000	184872.000	135305.000	0.01850	0.01737				
30	49567.000	184872.000	135305.000	0.01612	0.01510				

YEAR	COST	BENEFIT	NET PRESENT V.	DISCOUNT	FACTOR	DISCOUNT	VALUE
31	49567.000	184872.000	135305.000	0.01405	0.01313	1900.992	1776.973
32	49567.000	184872.000	135305.000	0.01224	0.01142	1656.638	1545.194
33	49567.000	184872.000	135305.000	0.01067	0.00993	1443.693	1343.647
34	49567.000	184872.000	135305.000	0.00930	0.00864	1258.120	1168.388
35	49567.000	184872.000	135305.000	0.00810	0.00751	1096.401	1015.990
36	49567.000	184872.000	135305.000	0.00706	0.00653	955.469	883.469
37	49567.000	184872.000	135305.000	0.00615	0.00568	832.653	768.234
38	49567.000	184872.000	135305.000	0.00536	0.00494	725.624	668.030
39	49567.000	184872.000	135305.000	0.00467	0.00429	632.352	580.895
40	49567.000	184872.000	135305.000	0.00407	0.00373	551.069	505.126
41	49567.000	184872.000	135305.000	0.00355	0.00325	480.234	439.240
42	49567.000	184872.000	135305.000	0.00309	0.00282	418.505	381.948
43	139923.000	184872.000	44949.000	0.00270	0.00245	121.159	110.335
44	49567.000	184872.000	135305.000	0.00235	0.00213	317.830	288.808
45	49567.000	184872.000	135305.000	0.00205	0.00186	276.976	251.137
46	49567.000	184872.000	135305.000	0.00178	0.00161	241.374	218.380
47	49567.000	184872.000	135305.000	0.00155	0.00140	210.347	189.896
48	49567.000	184872.000	135305.000	0.00135	0.00122	183.309	165.127
49	49567.000	184872.000	135305.000	0.00118	0.00106	159.747	143.588
50	49567.000	184872.000	135305.000	0.00103	0.00092	139.213	124.860

 TOTAL 6646.097 -3036.757
 14.75 + 6646.097*(15.00-14.75)/(6646.097-(-3036.757))=14.92%

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy auditing of the accounts.

2. The second section details the various methods used to collect and analyze financial data. It includes a breakdown of revenue streams, such as sales from different product lines and services. The analysis shows that while overall revenue has increased, there is a significant portion of the income that is currently unaccounted for, which needs to be investigated.

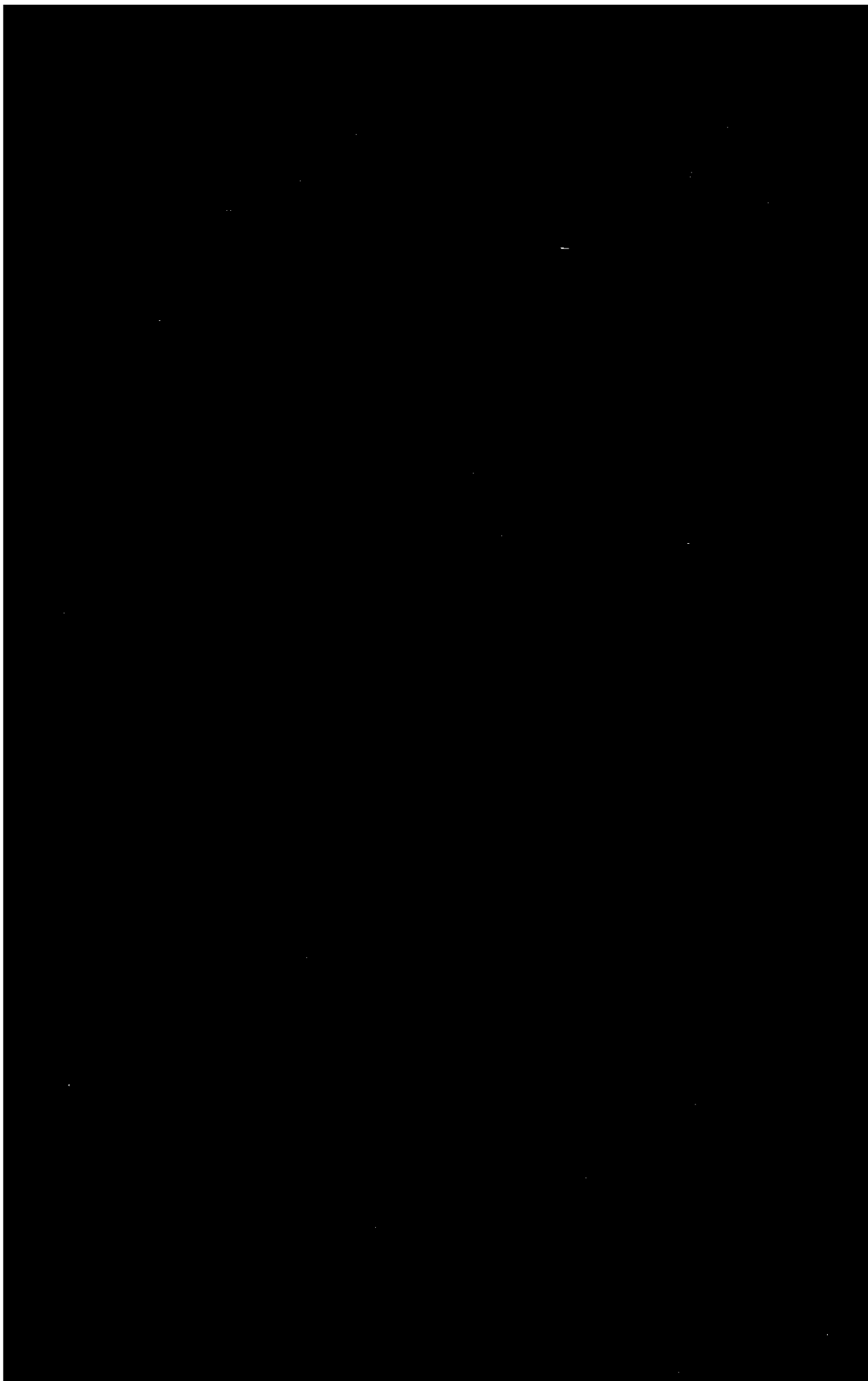
3. The third part of the report focuses on the management of expenses. It lists the major categories of spending, including salaries, rent, utilities, and marketing. A comparison is made between the budgeted amounts and the actual expenditures, highlighting areas where costs have exceeded expectations.

4. The final section provides a summary of the findings and offers recommendations for future actions. It suggests that the company should implement stricter controls over its spending and improve its record-keeping procedures. Additionally, it recommends a thorough review of the accounts receivable to ensure that all payments are properly recorded and received.

The following table provides a detailed overview of the financial data discussed in the report:

Category	Item	Amount	Status
Revenue	Sales - Product A	\$120,000	Recorded
	Sales - Product B	\$80,000	Recorded
	Service Revenue	\$50,000	Recorded
	Unaccounted Revenue	\$150,000	Investigate
Expenses	Salaries	\$30,000	Recorded
	Rent	\$15,000	Recorded
	Utilities	\$8,000	Recorded
	Marketing	\$12,000	Recorded
	Other	\$10,000	Recorded





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