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SUBJECT: INVESTMENT APPRAISAL

IDENTIFIED PROJECT: MUZAHUURA EDIBLE OIL PROJECT

TASK: Determine how the project will be financed, derive its cash flows using techniques of analysis to determine whether it is viable or not and by subjecting the results to analysis of risk, demonstrate how you will incorporate the risk.

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Introduction

The project to be undertaken is Muzahuura Edible Oil Processing LTD, hereinafter referred to as "Muzahuura Project" situated 16 kilometres East of Kitgum Town, in Northern Uganda. The project will involve processing edible oil and as a result, seed cake for animal feeds. The project is intended to run for fifteen (15) years after which it will wind up. There is need to understand the nature of investment decisions that have to be taken in the implementation of Muzahuura project.

There are three known levels of decision-making that have to be put into consideration namely operating, investment decision, administrative and financing decision strategy. These will have to be factored in the project implementation. At the operating capital budgeting decision level, there will be required minor office equipment (Chandra, 2002, p. 9), but will also be budgeting for the heavy capital equipment to be used in the establishment of the plant. At this level, according to Alfred Rappaport, the important value drivers are the rate of sales growth, operating profit margin and income tax rates.

At the level of investment decision and administrative capital budgeting decision, the project will have to deal with balancing equipment. The important value drivers are investment in working capital and long-term assets. However, the most critical decision in this case will be the financing decision, which "deals with the firm's optimal capital structure in terms of debt and equity". (Dayananda, et al 2002, P.1). Once again the important value driver is the cost of capital. Given that there are a number of shareholders in the project, dividend decisions relating to the forms in which returns generated by the project are passed on to equity holders will have to be done. The position taken in this project is that the goal of the investment is what (Dayananda, et al 2002, P.1) refers to as "to maximise the market value of the firm to its shareholders".

The project management will have to put into consideration the capital budgeting decision that refers to the firm's decision to invest its current financial resources in the most efficient manner in the long-term assets in anticipation of an expected flow of benefits over a given period of time. In the case of Muzahuura Project, the decision will have to entail acquisition, expansion, modernization and the replacement of the long-term assets. At the point of winding up, the management will also have to determine the salvage value of the plant and machinery.

Incorporation of risk will be factored in the project at its inception to ensure that even with the possible risks occurring, the project will still generate profits.

Investment Decisions:

Types Of Investment Decisions:

Pandey, (1995, P. 355) gives various investment decisions. For example, "expansion and diversification" where a company adds to its existing production lines to expand existing operations. "Expansion of a new business requires investment in new products and a new kind of production activity within the firm".

Initial investment: Muzahuura Edible Oil project is intended to run for 15 years after which it will wind up. Based on preliminary survey, the project will require an initial capital outlay of ₤ 724,242, which is by any standards a lot of money. This calls for optimal financing decision in terms of both short-term viz a viz long-term and internal viz a viz external sources. Known sources of financing include the following**:**

Equity: this "represents ownership capital as equity shareholders collectively own the company. They enjoy the rewards and bear the risks of ownership". (Chandra 2002, p. 530). In other words, equity refers to the owners' contribution in terms of shares to the running of the firm. However, equity also bears a cost. According to Pandey, (1995, p. 452) although some school of thought holds that equity capital is free of cost, it may not be fully true.

This position, according to Pandey (1995) is based on the fact that it is not legally binding for firms to pay dividends to ordinary shareholders. On the other hand, the dividend rate on equity is not fixed. But, "Equity capital involves an opportunity cost". (Pandey 1995, p. 452).

Borrowing: Borrowing takes a number of forms. It may be long-term loans from the bank to finance long-term business ventures. They may also be short term to finance short-term costs of the firm. The cost of borrowed finances is in the form of interest. In most cases, the debt in terms of loan has to be secured.

Debentures: Debentures on the other hand are a form of loans but with slightly different terms of repayment. 'Collins English dictionary and thesaurus' defines a debenture as "a long-term bond, bearing fixed interest and usually unsecured, issued by a company or governmental agency". Also according to Van Horne, (2002, p. 593) "the term debenture usually applies to the unsecured bonds of a corporation. Investors look to the earning power of the corporation as their security. " "Akin to promissory notes, debentures are instruments of raising debt finance. Debenture holders are the creditors of a company. The obligation of a company towards its debenture holders is similar to that of a borrower who promises to pay interest and principal at specified times". (Chandra, 2002, p. 545).

However, although in principle debentures would be good as a source of financing for Muzahuura Project, they are not a common feature in Uganda of late. Hence, Muzahuura Project will be financed through other forms of debt other than debentures, which include business credit, bonds, bank loans and overdrafts. The management of Muzahuura Project have understood that whichever source of financing one chooses, maximisation of shareholders' wealth is the ultimate objective of the firm.

Expansion and diversification: As Muzahuura Project progresses, there will be need to think of the areas in which some diversification can be done to expand the business and increase its market share because a new business requires investment in new products and a new kind of production activity with a new niche.

Replacement and modernization: According to Pandey (1995, P. 355), the main objective of modernisation and replacement is to improve operating efficiency and reduce costs. … Assets become outdated and obsolete with technological changes and passage of time. The firm must decide to replace those assets with new assets that operate more economically". Muzahuura Project Management will have the task of improving the project's operating efficiency and ensuring minimization of the costs of production.

Cost saving will be reflected in increased profits although Muzahuura Project's revenues may not necessarily increase. The management of the firm will also have to decide time after time how to replace outdated and obsolete assets and equipment with new ones. (Kakuru, 1998, p. 5; Van Horne, 2002, p. 5)

Importance of Investment Decision:

According to the available literature, "the investment decision is the most important when it comes to the creation of value". (Van Horne, 2002, P. 6). Pandey, (1995), gives reasons why investment decisions require special attention. "They have long term implication for the firm and can influence its risk complexion. They involve commitment of large amount of funds. They are irreversible decisions. They are among the most difficult decisions to make". (Pandey, 1995, p. 254).

Pandey (1995) also correctly asserts "investment decisions generally involve large amount of funds which make it imperative for the firm to plan its investment programmes very carefully and make advance arrangements for procuring finances internally or externally." (p. 254)

Therefore, Muzahuura Project will only be able to meet what is expected of it if the management realizes and concentrates on its operation since the investment decision once made is irreversible. Since most investment decisions are irreversible, it is difficult to get market for such capital items once they have been acquired. The firm will incur heavy losses if such assets are scrapped. Hence, any failure on the part of management to put the equipment to optimum use will render the reversal of the trend difficult. For instance, disposing of the items and equipment in the Muzahuura Project will not yield reasonable benefits to the company because not many organisations are involved in that kind of business. This shall be one of the guiding principles in making all the decisions in regard to this project.

Management will keep in mind the fact that they have a duty to increase the wealth of the company and therefore must work towards that goal. As Van Horne, (2002, P. 6) asserts, "Because the future benefits are not known, with certainty, investment proposals necessarily involve risk. Consequently, they should be evaluated in relation to their expected return and risk …".

Muzahuura Project Management shall also take into account the fact that investment decisions extend into the future and the period must be realised. It is therefore imperative that management concentrates on proper running of the firm as the firm's decision to invest in long-term assets has a decisive influence on the rate and direction of its growth. For that matter, as a principle, decisions taken must be as optimal as possible.

Why Edible Oil?

Seed oil in Uganda has been known to do quite well especially in the Northern part of the country where the environmental conditions and the soils are favourable. Groundnuts are another source of seed oil produced in the country. However, it is not very wise to think of using groundnut as a source of edible oil production because people would like to directly consume it as a source of protein and hence not readily available.

It is therefore plausible to think of using sim sim since it is available in abundance in the region of Lira, Apac, Gulu, Kitgum and Pader districts. These districts constitute an area with a very high production level of the crop. Cotton, Soya bean and sunflower also do very well in the region and can generate a lot of edible oil if well handled. Some studies conducted in the area indicate that the production levels of these crops are high.

Currently the country imports oil products worth $60 million. Uganda's national edible oil production is about 25,000 per year, but the country consumes about 150,000 and spends over $60 million annually on imports to bridge the shortfall. The Mukwano Group of Companies currently produces about 75 per cent of the oil manufactured locally. Other producers are Madhvani, Rafiki and numerous small mills mostly based in northern Uganda. (Nakkazi, 2005). From Nakkazi's presentation one can be sure that edible oil has market both in and outside the country.

It ought to be made clear from the onset that since the 1930s when extraction mills were introduced, cottonseed has been the major raw material for edible oil as well as soap production. According to available information, between 1960 and 1975, more than 100,000 tons of cottonseed was crushed each year in the region in question. Very little of sim sim has been utilised for this purpose; yet, it is known to generate high yield of oil. The statistics in table 1 below show how stable the source of the raw material, which can be taken advantage of is. (Working paper, No. 2)

Table 1: The total production (tons) of the some edible oil seed crops in the years in question stood as follows:

Year	1992	1993	1994	1995	1996
Crop	'000	'000	'000	'000	'000
Sim Sim	147,000	153,000	142,000	143,002	145,002
Groundnuts	71,550	74,998	70,000	70,998	74,000
Soya Bean	54,761	67,000	75,002	78,003	84,999
Sunflower	31,140	34,847	38,993	43,633	48,825

Source: Republic of Uganda Vegetable oil development project Working paper 2:

The current producers of edible oil in the country are mostly using cottonseed and sunflower. For that reason, sim sim is available and not very expensive. It is therefore more plausible to employ sim sim than cottonseed or sunflower.

Market Potential:

In order to be sure that the project we intend to commence will generate value, market analysis ought to be carried out. This analysis must generate answers to questions such as "what would be the aggregate demand of the processed product/service in the future? What would be the market share of the project under appraisal?" (Chandra, 2002, p. 10).

These questions may only be satisfactorily answered after generation of sufficient information. This information should be in relation to for example, consumption trends in the past and the present level. Past and present supply position and production needs to be established too. Possibilities and constraints, imports and exports, structure of competition should be found out. Information relating to cost structure, elasticity of demand and consumer behaviour should be sought. Consumer intentions, motivations, attitudes, preferences, and requirements need to be studied. Distribution channels and marketing policies in use, administrative, technical and legal constraints should be known too. Chandra, (2002, P.10).

In the case of Muzahuura Project, most of this information is available. We have for example established that most of the edible oil requirements are currently met by imports from the neighbouring Kenya and even as far as the USA. Some is also produced in Kampala, more than 500 kilometres away. At the same time the population appreciates the consumption of edible oil and therefore, there is high demand for it both in the districts of Gulu, Lira, Apac, Kitgum, Pader and the West Nile region.

It is understood that there is a shortage of supply of edible oil in the country generally. This shortage is attributable to inadequacy or inefficiency of the oil processing facility but not the lack of seed for production. Although Uganda generally suffered a lot of inadequacies during the Idi Amin era and the aftermath, production of seed oil did not declined so much. The population of the country has gone up since then and therefore there is a high potential to purchase the product. There is a high market potential in the country.

It is also worthy noting that if the oil produced if of high integrity, it can attract market in the neighbouring countries such as the Sudan, Ethiopia and the Democratic Republic of Congo (DRC) which are in the immediate neighbourhood of the processing plant. It is notable that most of the parts of the DRC have no communication links with the capital Kinshasa and rely so much on Uganda for industrially manufactured goods. The southern Sudan on the other hand has been suffering a civil war in Daffur. Therefore, they have no source of basic necessity supplies. Hence, this provides a potential market for the oil to be produced.

MUZAHUURA PROJECT PROPOSAL:

The investment will require an outlay of ₤ 304,545 for land and buildings. Plant and machinery will cost ₤ 303,030. Insurance and freight charges will cost ₤ 6,061 ₤ 2,273; for plant and machinery respectively while, installation costs will cost ₤ 2,273. Initial working capital requirements will be ₤ 106,061. There is an expected investment incentive from government of 106,061. The raw materials in form of sim sim will be purchased from the local population who produce it in abundance.

Computation Of Initial Investment:

Initial investment can be referred to as the net cash outlay in the period the asset is purchased. The major element in the initial investment is the gross outlay of the asset, which comprises its cost, freight, and installation costs. Other costs will include capital expenditure, change in net working capital, plant set up, and taxation.

The cost of land will be one thousand five hundred fifteen ₤ (1,515) since the land in the area in question is not very expensive. When the land is acquired, we shall put up buildings whose total cost of construction is estimated at three hundred thousand thirty (₤ 303,030). The total initial outlay will be ₤ 724,242**.**

Table 2 below is a tabular representation of the initial costs.

Table 2 Establishment costs

	₤	₤.
Land and buildings		304,545
Cost of plant and machinery	303,030	
Freight charges	6,061	
Insurance	2,273	
Installation cost	2,273	313636
Initial working capital (Note 1)		106,061
Total initial outlay		**724,242**

Note 1: It is assumed that Muzahuura Project will be consuming 14,000,000 kilograms (kgs) of sim sim seed in the first year. The amount of required sim sim

is expected to rise at a rate of 4% and increase to 5% up to 6% and decline in growth gradually up to 2% over **the 15 years period. Each Kilogram costs £ 0.045, which is expected to rise up to a maximum rate of 6% per annum and then decline. The estimated yields of edible oil per Kilogram of sim sim will be 0.2 litres. On the other hand, the seed cake yields are estimated at 0.6 per year.**

Other Costs Of Production:

The costs of production including all overhead such as labour, insurance, maintenance, marketing, advertising, administration etc is estimated to be as follows: year 1, £ 363,637. This estimated to increase by 4% raising the cost to £ 378,182 in year 2. This also estimated to rise by 4% raising the cost to £ 393,309 in year 3. In year 4, the cost is expected to rise by 4% again to raise the cost to £ 409,041.

In year 5, the rise is projected to be 5% leading to the cost to be £ 429,493. In year 6, the rise of 5% is expected to raise the annual cost to 450,968. From year 7 to year 15, the growth rate is expected to rise to 6% raising the annual cost to £ 478,026, £ 506,708, £ 537,110, £ 569,337, £ 603,497, £ 639,707, £ 678,089, £ 718,775, and £ 761,901 respectively as indicated in the tabulations in table 3 below.

Table 3: Other overhead costs of the project

Year	Other production overheads in £	Anticipated %rise in overheads	Anticipated annual increments in £
1	363,637		
2	378,182	4	14,545
3	393,309	4	15,127
4	409,041	4	15,732
5	429,493	5	20,452
6	450,968	5	21,475

7	478,026	6	27,058
8	506,708	6	28,682
9	537,110	6	30,402
10	569,337	6	32,227
11	603,497	6	34,160
12	639,707	6	36,210
13	678,089	6	38,382
14	718,775	6	40,685
15	761,901	6	43,126

Anticipated Raw Material (Sim Sim) Consumption

The material consumption in year 1 is projected to be at 14 million kgs. In year 2, the consumption is expected to rise by 4 percent making an annual increment of 560,000 kgs raising it to 14,560,000 kgs. In year 3, the growth is projected to be by 4 percent generating an annual increase of 582,400 kgs raising the total consumption of the year to 15,142,400 kgs. In year 4, the anticipated growth rate is 4 percent as well generating an annual increase of 605,696 kgs raising the annual total consumption level to 15,748,096 kgs. In year 5, the consumption is projected to grow at 5 percent giving rise to an annual increment of 787,404 raising the total annual consumption to 16,535,500 kgs.

In year 6, the rate is projected to rise by 5 percent giving rise to 826,775 kgs, which gives the total annual consumption to 17,362,275 kgs. In year 7, the growth rate is projected to increase to 6 percent giving rise to 1,041,736 kgs thereby generating 18,404,012 kgs in the year. In year 8 the growth rate is projected to be at the same level of 6 percent thereby generating annual increment of 1,104,240 kgs thereby giving rise to 19,508,253 kgs in the year. In year 9, the total consumption is projected to rise to 20,678,748 kgs arising from the 6 percent increase and 1,170,495 kgs anticipated annual increment.

During year 10, the consumption growth rate is expected to begin declining due to a number of changes in the production process, market structures, competition and the socio-economic conditions. Hence, in that year, the projection is that the growth rate will be 4 percent leading to the annual increment to 827,149 generating 21,505,898 kgs in the year.

In year 11, it is anticipated that the consumption growth rates will continue to decline to 3 percent. This will lead to an annual increment of 645,176 making the total annual consumption to 22,151,075 kgs. In year 12, the growth rate is projected to remain at 3 percent. This will generate an annual increment of 664,532 kgs leading to 22,815,607 kgs in the year. In year 13, the growth rate in the seed consumption is expected to continue to decline to 2 percent generating 456,312 kgs annual increments that leads to 23,271,919 kgs consumed in that year. In year 14 of production, the rate is projected to rise by 2 percent generating 465,438 as annual increment and consequently raising 23,737,358 kgs in the year.

Finally, in year 15, the consumption growth rate will continue to stagnate at 2 percent generating an annual increment of 474,747 leading to 24,212,105 kgs in the year. That year, the project will be wound up as projected. The increase in the anticipated growth in year 5 up to year 9 will be boosted by awareness through advertising and confidence of the market. The decline thereafter may be due to aging machinery. Here below in table 4 is a tabular form of the estimates alluded to above:

Table 4: Anticipated growth rates seed material consumption:

Year	Raw material consumption	Anticipated %growth rates	Anticipated annual increments
1	14,000,000		
2	14,560,000	4	560,000
3	15,142,400	4	582,400
4	15,748,096	4	605,696
5	16,535,500	5	787,405
6	17,362,276	5	826,775
7	18,404,012	6	1,041,737
8	19,508,253	6	1,104,241
9	20,678,748	6	1,170,495
10	21,505,898	4	827,150
11	22,151,075	3	645,177
12	22,815,607	3	664,532
13	23,271,920	2	456,312
14	23,737,358	2	465,438
15	24,212,105	2	474,747

Anticipated Growth Of Edible Oil And Seed Cake:

It is estimated that the current price of edible oil of 0.61 will rise in year 2 by 4 percent generating an annual increase of 0.024 leading to 0.63 per litre that year. In year 3, the rise in price is expected to continue to grow at 4 percent; leading to an annual increment of 0.025 giving rise to the price to be 0.66 per litre. In year 4, the percentage growth rate is anticipated at 4 percent once again giving rise to the annual increment of 0.03 leading to the price of the year to be 0.68 per litre. In year 5, the growth rate is expected to rise to 5 percent generating an annual increment of 0.03 giving rise to the new price of 0.72.

In year 6, the rate of growth is expected to be 5 percent, which will generate annual increment of 0.04 leading to the price rise to 0.75 per litre. In year 7, the anticipated growth rates will rise to 6 percent, leading to 0.05 generating the price of the year of 0.80. The same growth rate of 6 percent is expected to persist even in year 8, generating an annual increment of 0.05 leading to 0.84 in the year. The same rate of growth of 6 percent is yet expected to remain in year 9 leading to the new price to be 0.90 per litre. In year 10, the growth rate is anticipated to begin to fall to 4 percent, leading to an annual increment of 0.04 raising the price to 0.93 per litre.

In year 11, the rate of growth is expected to fall even further to 3 percent generating an annual increment of 0.03 leading to a new price of 0.96. In year 12, the rate is anticipated to remain at 3 percent giving rise to an annual increment of 0.03 leading to the new price of 0.99 per litre. In year 13, the rise rate will fall furthest to 2 percent leading to an annual increment of 0.02 hence generating the price of 1.01. The rise rate is expected to remain at 2 percent in year 14 generating an annual increment of 0.02 leading to the price of 1.03. In the terminal year, the growth rate is expected to remain the same at 2 percent leading to the annual increment to be 0.02 raising the new price at 1.05.

This decline in the anticipated growth rates is expected to emanate from the prevailing socio-economic trends in the market. These may include: competition, rise in the prices of raw materials, rises in taxation and possible unforeseeable circumstance. Table 5 below is a statistical presentation of the discussion above.

Table 5: Anticipated growth rates of oil and cake price increases

Year	Price per litre	Anticipated % growth rates	Anticipated Annual Increments
1	0.61		
2	0.63	4	0.02
3	0.66	4	0.03
4	0.68	4	0.03
5	0.72	5	0.03
6	0.75	5	0.04
7	0.80	6	0.05
8	0.84	6	0.05
9	0.90	6	0.05
10	0.93	4	0.04
11	0.96	3	0.03
12	0.99	3	0.03
13	1.01	2	0.02
14	1.03	2	0.02
15	1.05	2	0.02

Anticipated Seed Cake Price Rises In The 15 Years Of The Project:

The current price of seed cake on the market is 0.02. However, in year 2 of operation, the price is expected to grow by 4 percent generating an increment of two leading to the price to be 0.02. The trend is expected to rise steadily up to 6% and begin to decline. By year 15 the rate will have declined tremendously to 2 percent leading to a new price of 0.03 as indicated in table 6 below.

We need to note that seed cake is marketable among dairy, piggery and chicken farmers around the country. So, there is in essence market for the cake in the country and even beyond. The current market rate of 0.015 therefore is likely to continue to appreciate through the years as indicated in table 6 below.

Table 6: Anticipated cake price rise

Year	Unit Price of cake	Anticipated % growth rates	Anticipated annual increments
1	0.02		
2	0.02	0.4	0.01
3	0.02	0.4	0.01
4	0.02	0.4	0.01
5	0.02	0.5	0.01
6	0.02	0.5	0.01
7	0.02	0.6	0.01
8	0.02	0.6	0.01
9	0.02	0.6	0.01
10	0.02	0.4	0.01
11	0.02	0.3	0.01
12	0.02	0.3	0.01
13	0.03	0.2	0.01
14	0.03	0.2	0.01
15	0.03	0.2	0.01

Anticipated Revenues (£) From Edible Oil:

The price of edible oil in Uganda at the moment is 0.61 per litre. The yield of oil per kilogram of seed is projected to be 20%. The projected price rise is tabulated in table 7 below. Amounts of raw material consumed are projected in table 4 above. We recall that in the initial year, 14 million kgs of sim sim will be consumed. This consumption will generate 2.8 million litres of oil in year 1, at the price of 0.61 will be generated 5,600,000,000. The trend is expected to continue up to when in the final year, the oil yields will have risen to 4,842,421 at the price of 1.05 leading to revenue of 5,075,547. For completeness the details are tabulated and presented hereunder in table 7.

Table 7: Revenues generated from Edible oil

Year	Price per litre	Oil yield in litres	Revenue from oil
1	0.61	2,800,000	1,696,970
2	0.63	2,912,000	1,835,442
3	0.66	3,028,480	1,985,215
4	0.68	3,149,619	2,147,210
5	0.72	3,307,100	2,367,292
6	0.75	3,472,455	2,609,950
7	0.80	3,680,802	2,932,529
8	0.84	3,901,651	3,294,991
9	0.90	4,135,750	3,702,260
10	0.93	4,301,180	4,004,359
11	0.96	4,430,215	4,248,227
12	0.99	4,563,121	4,506,940
13	1.01	4,654,384	4,689,024
14	1.03	4,747,472	4,878,459
15	1.05	4,842,421	5,075,547

Anticipated Revenues (Pound) From Seed Cake:

Cake is also expected to generate very serious returns. As indicated in table 8 below, in year 1, the revenues generated from cake will be £ 127,273. In year 2, £ 137,658 will be earned. In year 3, revenues will be £ 148,891 while in year 4, 161,041 will be earned. In year 5, £ 177,547 will be earned, while in year 6, £ 195,746 will be earned. In year 7, £ 219,940 will be earned. In year 8 and 9 revenues will be, £ 247125 and £ 277,669 respectively.

In year 10, £ 300,327 will be earned while in year 11, 318,617 will be generated. In year 12, £ 338,021 will be earned and, in year 13, £ 351,677. In year 14, £ 365,884 will be earned and in year 15, £ 380,666 will be earned as tabulated in table 8 below.

Table 8:Anticipated revenues from seed cake:

Year	Unit Price of cake	Cake Yield 60% of material	Revenue from cake
1	0.02	8,400,000	127,273
2	0.02	8,736,000	137,658
3	0.02	9,085,440	148,891
4	0.02	9,448,858	161,031
5	0.02	9,921,300	177,561
6	0.02	10,417,366	195,753
7	0.02	11,042,407	219,945
8	0.02	11,704,952	247,116
9	0.02	12,407,249	277,659
10	0.02	12,903,539	300,340
11	0.02	13,290,645	318,613
12	0.02	13,689,364	338,003
13	0.03	13,963,152	351,660
14	0.03	14,242,414	365,901
15	0.03	14,527,263	380,658

Costing (in ₤) Of Oil Seed Material

As stated earlier, the cost of sim sim in the area is 0.045 per kilogram. The amount of sim sim required in the first year is 14,000,000 kgs. This will grow at a constant rate of 10% in the fifteen years. On that basis, in year 1 the cost of seed will be, 636,364. In year 2, the cost will rise to 688,291. In year 3, the cost will rise to 744,455 while in year 4, the cost will rise to 805,204. In years 5, 6 and 7, the cost will be 887,736, 978,729 1,099,700 respectively. In year 8, the cost is projected at 1,235,641 while in year 9; it is projected at 1,388,358.

In year 10, it will rise to 1,530,503 while in year 11, 1,670,997. In year 12, the cost will rise to 1,824,419 and in year 13, it will be at 1,972,542. In year 14, it will rise to 2,132,694 and in year 15, 2,305,873 since the marginal rate of return will be very low. This rising cost of materials will contribute to the reason to wind the project at the end of the 15th year. The scenario above is tabulated for ease of interpretation in table 9 below.

Table 9. Costing of materials

Year	Cost Unit per kg of sim sim	Quantity of Sim sim (kgs)	Annual cost of sim sim
1	0.05	14,000,000	636,364
2	0.05	14,560,000.00	688,291
3	0.05	15,142,400	744,455
4	0.05	15,748,096	805,205
5	0.05	16,535,501	887,756
6	0.06	17,362,276	978,706
7	0.06	18,404,012	1,099,723
8	0.06	19,508,253	1,235,641
9	0.07	20,678,748	1,388,359
10	0.07	21,505,898	1,530,503
11	0.08	22,151,075	1,670,997
12	0.08	22,815,607	1,824,419
13	0.08	23,271,920	1,972,542
14	0.09	23,737,358	2,132,694
15	0.10	24,212,105	2,305,873

Total Computation Of The Cash Flows

As stated before, the price of edible oil in Uganda currently is ₤ 0.61 per litre. However, considering that there may be some considerable inflation, rise in the cost of materials and commodities and other factors, the price is expected to rise at an increasing rate up to six percent (6%) per annum and there after, the increase is expected to decline to 2% over the fifteen year period.

Other factors in the profit equation are predicted to behave in a similar manner. The price of seed cake currently is ₤ 0.015. This price is expected to rise at an increasing rate up to six percent (6%) per annum and there after, the increase is expected to decline to 2% over the fifteen-year period. The other production overheads per year have been estimated at ₤ 363,636. This is expected to rise initially at 4% but eventually settle at 6% per annum over the fifteen years. In the computation, total annual revenue throughout the fifteen years is projected to grow very steadily from ₤ 1824242 in the first year of operation to ₤ 5,456,216 in the fifteenth year. These details are shown in the computation of the flows in table 10 below. We have assumed the salvage value to be £1,515 by the end of the project.

Table 10: Total computations (In GB Pounds)

Year	Total Revenue	Total cost	Depreciation	Cash flow after depreciation	Plus depreciation on tax shield	Net cash flows	Discounting factor	Discounted cash flows
1	1,824,242	1,000,000	48,182	776,061	14,455	790,515	0.83	658,499
2	1,973,101	1,066,473	48,182	858,446	14,455	872,901	0.69	605,793
3	2,134,106	1,137,765	48,182	948,159	14,455	962,614	0.58	557,353
4	2,308,249	1,214,244	48,182	1,045,822	14,455	1,060,277	0.48	511,053
5	2,544,844	1,317,230	48,182	1,179,432	14,455	1,193,887	0.40	479,943
6	2,805,691	1,429,698	48,182	1,327,811	14,455	1,342,266	0.34	449,659
7	3,152,474	1,577,727	48,182	1,526,566	14,455	1,541,020	0.28	429,945
8	3,542,120	1,742,331	48,182	1,751,607	14,455	1,766,061	0.23	411,492
9	3,979,926	1,925,457	48,182	2,006,287	14,455	2,020,742	0.19	392,024
10	4,304,688	2,099,850	48,182	2,156,656	14,455	2,171,111	0.16	351,720
11	4,566,843	2,274,511	48,182	2,244,150	14,455	2,258,605	0.14	304,912
12	4,844,964	2,464,120	48,182	2,332,662	14,455	2,347,117	0.11	262,878
13	5,040,701	2,650,645	48,182	2,341,874	14,455	2,356,328	0.09	219,139
14	5,244,345	2,851,502	48,182	2,344,661	14,455	2,359,116	0.08	184,011
15	5,456,216	3,067,806	48,182	2,340,229	14,455	2,354,684	0.07	153,054

Computation Of Net Annual Cash Flows:

Net Annual Cash flows have been calculated from the first to the last years of operation of the project. The project is expected to generate annual cash flows from operations after the initial outlay has been made. The cash flows are always estimated on an after-tax basis.

However, in order to determine the net cash flows, there is need to note that:

i) Cash flows emanate from operations. The result of operations is derived from the income statement. One of the cash inflows should be an increase in sales, which is offset with cost of sales.

ii) Saving in operational costs as a result of undertaking a project with a better means of production such as a computer. This will increase revenues and minimize costs.

Cash out flows will basically be expenses in relation to the cost of labour, capital expenditure, change in net working capital, plant set up, and taxation and other miscellaneous expenses.

Net Cash flow = Revenues - Expenses - Taxes.

Depreciation is not a tax-deductible expense but the project will get capital allowances at a corporation tax rate hence the addition of the depreciation tax shield. Additionally since it is not a direct expense on the part of the investment, it is added back after computation.

Free cash flows that are cash flows meant for maintaining its revenue - generating ability during its life. The net cash flow will be reduced by cash out flows for additional capital expenditures.

NCF = EBIT (I - T) + Dep - NWC - CAPEX, where EBIT = Earnings before interest and tax, T Tax rate, NWC = net working capital and CAPEX = Additional capital expenditures. (Pandey, I. M. 1995, p.341)

The cash flows have to be evaluated using various techniques to assess the viability of the project. These include Net present value (NPV), Internal Rate of Return (IRR) and Profitability index (PI)

Acceptance rule under NPV:

The project should be accepted only if the Net Present Value is positive [NPV > 0] If the NPV<0, then the project should be rejected. The project may be accepted if the NPV is zero [NPV=0] only if profit is not necessarily the immediate goal. (Kakuru 1998, P. 39)

The internal Rate of Return [IRR] is yet another method of establishing cash flows. IRR is the discounting rate, which equates the present value of cash inflows with the present value of the cash outflows of the investment. It can also be defined as the discount rate which gives NPV=0

$$C0 = \frac{C1}{[1+r]} + \frac{C2}{[1+r]^2} + \frac{C3}{[1+r]^3} + \ldots + \frac{Cn}{[1+r]^n}$$

$$C0 = \sum_{t=1}^{n} \frac{Ct}{[1+r]t}$$

$$\sum_{t=1}^{n} \frac{Ct}{[1+r]\ t} - C0 = 0$$

The acceptance rule under IRR:

If r > κ where κ = the required rate of return, reject it if r < κ. One may also accept the project if r =κ.

According to Dayananda, et al (2002, p.98) there are numerous conceptual and computational problems with using IRR method. The problems include: IRR assumes that cash earned can be reinvested at the calculated IRR. At the same time, "there may be one or many solutions for the IRR". In some cases, "the IRR decision can conflict with the NPV decision for certain projects". According to Pandey (1995, p. 363), the IRR rule can give misleading and inconsistent results when the NPV of a project does not decline with discount rates. This is because the IRR gives accurate results only if NPV declines with discount rates. The method also falls short of the capacity to indicate a correct choice between mutually exclusive projects under certain situations. It does not take into account the time value of money.

Profitability index (PI) is yet another method discounting technique. It is defined as the ratio of the present value of cash flows at the required rate of return [k] to the initial cash flow of the investment.

$$PI = \frac{\sum_{t=1}^{n} \frac{ct}{[1+k]t}}{C0}$$ Where κ = Required rate of return and C0 = initial outlay

Acceptance rule:

- Accept the project if PI > 1
- Reject the project if PI < 1
- May accept the project if PI = 1

When the PI >1, the project has a positive net present value. When PI < 1, the project has negative net present value, and if PI=1, the project has NPV = 0. If the purpose of the project is not necessarily to increase the wealth of the project in the short run, then it can take on a project whose NPV=0. (Kakuru 1998 p. 43). In the case of Muzahuura Project, the goal is to increase the wealth of the shareholders. Hence, if NPV = 0 the project would not be undertaken.

Capital Structure And Cash Flows

For the purpose of Muzahuura Project, the method that has been used to determine its viability is that of Net Present Value (NPV). NPV method is one of calculating value of the project's cash flows, using the opportunity cost of capital as the discount rate, and establishing the net present value by subtracting the initial investment from the present value of cash flows, which include the present value of the terminal (salvage) value.

NPV method was employed because it gives real values that show the real situation and hence supersedes the other two. For this reason, it is preferred. The NVP in this case is positive and therefore the project is viable.

Terminal Cash Flows:

The salvage values constitute terminal cash flows and are an additional cash flow. Generally, the effects of the salvage values of existing and new assets may be summarized as follows:

a) Salvage value of a new asset, will increase cash inflow in the terminal year.

b) Salvage value of existing assets now, will reduce the initial cash outlay of the new asset.

c) Salvage value of the existing asset at the end of its normal life, will reduce the cash flow of the new investment of the terminal period.

Generally, the net cash flow will be impacted by the kind of capital structure adopted. For example from the flows aforementioned, two scenarios can be considered. One where there is debt financing and another where there is 100% equity financing.

- **Debt**

When debt financing is incorporated in the financing decision, the cost of debt is the interest. Debt can be obtained at an interest rate of sixteen percent (16 %).

When debt financing is incorporated in the financing decision, the net flow is 3,266,241.

- **Equity:**

If Muzahuura Project were financed 100% by equity, the cash flow would be as shown in table 12 below:

Table 12: Assuming 100% Equity Financing

YEAR	EBT in £	TAX in £	EAT in pound	£ **724,242.** DISCOUNTING FACTOR	DISCOUNTED CASHFLOWS £ 724,242
0				20% 15 years	
1	790,515	237,155	553,361		460,949
2	872,901	261,870	611,030	0.83	424,055
3	962,614	288,784	673,830	0.69	390,147
4	1,060,277	318,083	742,194	0.58	357,737
5	1,193,887	358,166	835,721	0.48	335,960
6	1,342,266	402,680	939,586	0.40	314,761
7	1,541,020	462,306	1,078,714	0.34	300,961
8	1,766,061	529,818	1,236,243	0.28	288,045
9	2,020,742	606,223	1,414,520	0.23	274,417
10	2,171,111	651,333	1,519,777	0.19	246,204
11	2,258,605	677,581	1,581,023	0.16	213,438
12	2,347,117	704,135	1,642,982	0.14	184,014
13	2,356,328	706,899	1,649,430	0.11	153,397
14	2,359,116	707,735	1,651,38	0.09	128,808
15	2,354,684	706,405	1,648,279	0.08	107,138
				0.07	
	Salvage value		1,515	0.07	98

Totals			3455,888
Discounted cash flows		3,455,888	
Number of shares	7,242,424 at 100 each		

The firm has a number of financing decision options at its disposal. These in the prevailing circumstances in Uganda are: Debt or equity financing or combining both sources depending on the most appropriate. “The mix of debt and equity is known as the firm’s capital structure. The financial manager must strive to obtain the best mix or the optimum capital structure for his firm”. (Pandey, 1995 p. 7).

In determining whether we shall choose one hundred percent equity financing or the percentage of debt financing to equity, we have considered the conditions on the ground. In Uganda like in many other countries, the maximum ratio of debt financing allowed by law is 50%.

Advantages And Disadvantages Of Both Debt And Equity:

There are advantages and disadvantages of the various mixes that literature provides. We have considered these as well. For example, we have studied the advantages and disadvantages of debt financing which are highlighted. The advantages of debt financing include the following:

- “Interest on debt is a tax-deductible expense, whereas equity and preference dividend are paid out of profit after tax.
- Debt financing does not result in dilution of control because debt holders … are not entitled to vote.
- Debt holders do not partake in the value created by the company as payments to them are limited to interest and principal.
- If there is a precipitous decline in the value of the firm, shareholders have the option of defaulting on debt obligations and turning over the firm to debt holders.
- Issue costs of debt are significantly lower than those on equity and preference capital.
- The burden of servicing debt is generally fixed in normal terms. Hence, debt provides protection against high-unanticipated inflation. ” (Chandra, 2002, p. 549-550).

At the same time, we note that the shareholders may not have the financial capacity to raise the amount required for the investment.

Disadvantages Of Debt Financing:

Whereas debt financing has so many advantages, it also has some disadvantages. Chandra (2002, p. 550) gives a number of disadvantages of debt financing. These include the following:

- Debt financing entails fixed interest and principal repayment obligations. Failure to meet these commitments can cause a great deal of financial embarrassment and even lead to bankruptcy.
- Debt financing increases financial leverage, which … raises the cost of equity to the firm.
- Debt contracts impose restrictions that limit borrowing firm's financial and operating flexibility. These restrictions may impair the borrowing firm's ability to resort to value maximisation behaviour.
- If the rate of inflation turns out to be unexpectedly low, the real cost of debt will be greater, than expected.

Advantages Of Equity Financing:

Equity financing 100 percent is the other option. However, it also has a number of advantages and disadvantages. We begin with advantages.

Advantages Of Equity Financing:

Chandra, (2002, P. 536) offers a number of advantages that relate to equity financing: They are as follows:

- There is no compulsion to pay dividends. If the firm has insufficiency, of cash, it can skip equity dividend without suffering any legal consequences.
- Equity capital has no maturity date and hence the firm has no obligation to redeem.
- Because equity capital provides a cushion to lenders, it enhances the creditworthiness of the company. In general, other things being equal, the

larger the equity base, the greater, then ability of the firm to raise debt finance on favourable terms.

- Presently, equity dividends are tax-exempt in the hands of investors up to a certain extent.

Disadvantages Of Equity:

Equity does not only have rosy advantages without disadvantages. Disadvantages of equity financing include the following:

- Sale of equity shares to outsiders dilutes the control of existing owners.
- The cost of equity capital is high, usually the highest. The rate of return required by equity shareholders is generally higher than the rate of return required by other investors
- Equity dividends are paid out of profit after tax, whereas interest payments are tax-deductible expenses. This makes the relative cost of equity more. Partially offsetting this disadvantage is the fact that equity dividends are tax-exempt up to a certain extent, whereas interest income is taxable in the hands of the investors.
- The cost of issuing equity shares is generally higher than the cost of issuing other types of securities. Underwriting commission, brokerage costs, and other issue expenses are high for equity issues. (Chandra, 2002, p. 536)

Looking the various disadvantages of equity and those of debt, and also the financing condition given by commercial banks in Uganda of debt not exceeding 50%, it is only prudent to mix debt and equity by 50% each. This financing mix is incorporated in the cash flows generated for the project. Therefore, the 100% equity is neither possible nor desirable for this project given the explanation given above. Hence, the decision taken is to mix debt and equity in equal proportions as indicated in the computation below.

Below is the computation of Net annual cash flows for the proposed Muzahuura Project assuming fifty percent (50%) of capital is debt attracting sixteen percent (16 %):

Table 13: Assuming mix of 50% debt and 50% equity financing:

YEAR	EBIT (£)	INTEREST	EBT (£)	TAX	EAT	DISCOUNTING FACTOR	DISCOUNTED CASHFLOWS
		£		£		20% 15 years	
0							-724242
1	790,515	57,939	732,576	219,773	512,803	0.83	427165
2	872,901	57,939	814,961	244,488	570,473	0.70	395908
3	962,614	57,939	904,674	271,402	633,272	0.58	366665
4	1,060,277	57,939	1,002,337	300,701	701,636	0.48	338189
5	1,193,887	57,939	1,135,948	340,784	795,163	0.40	319656
6	1,342,266	57,939	1,284,326	385,298	899,029	0.34	301175
7	1,541,020	57,939	1,483,081	444,924	1,038,157	0.28	289646
8	1,766,061	57,939	1,708,122	512,437	1,195,685	0.23	278595
9	2,020,742	57,939	1,962,803	588,841	1,373,962	0.19	266549
10	2,171,111	57,939	2,113,171.3	633,951	1,479,220	0.16	239634
11	2,258,605	57,939	2,200,665	660,200	1,540,466	0.14	207963
12	2,347,117	57,939	2,289,177	686,753	1,602,424	0.11	179471

13	2,356,328	57,939	2,298,389	689,517	1,608,872	0.09	149625
14	2,359,116	57,939	2,301,177	690,352.95	1,610,823.55	0.08	125644
15	2,354,684	57,939	2,296,744	689,023	1,607,720.89	0.07	104502
					1,515	0.07	98
							3266241
	Discounted Cash flows						3,266,241
	Number of shares 36,212,12 at 100 each						

The net present value (NPV) calculated is greater than zero indicating that the project is viable and should be accepted.

Incorporating The Risks:

By definition, "the term 'risk' is generally used to mean exposure to the chance of an injury or loss. In finance, the term is used in general to refer to the chance of receiving less than was expected." (Danayanda, p. 115). It is in the general sense that it is used in this paper. In business projects, there are two most discussed principal sources of risk. According to (2002, p. 526) the two are business risk and financial risk. Business risk relates to the variability of profit before interest and taxes. The factors that influence this kind of risk include:

- Demand variability: Other factors being equal, the higher the variability of demand for the products, the higher its business risk.
- Price variability: A firm which is exposed to a higher degree of volatility for the process of its products is, in general, characterised by a higher degree of business risk in comparison with similar firms which are exposed to a lesser degree of volatility for the prices of its products.
- Proportion of fixed costs, if fixed costs represent a substantial proportion of total costs, other factors being equal, business risk is likely to be high because when fixed costs are high, profit before interest and tax (PBIT) is more sensitive to variations in demand.

On the other hand, there is the financial risk, which represents the risk emanating from financial leverage. "When a firm employs a high proportion of debt in its capital structure, … it carries a high burden of fixed financial commitment. Equity shareholders, who have a residual interest in the income and wealth of the firm, are naturally exposed to the risk arising from such fixed commitments." (Chandra 2002, p. 26).

Hence, in determining the cash flows and decision that the project will generate profits, both the financial and business risks must be incorporated.

In the case of Muzahuura Project, the following are the likely causes of business risk: Drought, Excessive rainfall, power germination rates, insufficient labour, low seed quality all of which can affect the oil yield. Exogenous interferences such as pests eg birds, diseases, inappropriate soil type, interference by rain, which may also affect the supply. At the same time, conversion of stocks to personal use, spillage, contaminations, off speck product (Chemical standard may be below the expected level), transport problems, below expected yield level (yield variance) can affect levels of production.

In order to be certain that the project in question is actually viable, these risks must be incorporated when calculating the cash flows. It is imperative that the risks are adjusted and in-built within the project to ensure that whatever the case, there is certainty that the project will not fail. Hence, it is worthwhile establishing how to incorporate the risk.

There are three major ways of incorporating risks. These include; the Certainty Equivalent Technique (CE). "This technique incorporates risk in cash flows by adjusting them to a minimum level which is regarded as certain and hence risk free. The certainty equivalent factor is determined for each cash flow with the factor ranging from 0 to 1" *(*Kakuru, 1998, p. 56.)

The three steps used in determining the certainty equivalent involve the following:

a) Determining the certainty equivalent factor associated with each possible risky cash flow.

b) Multiplying the certainty equivalent factor into the possible risky cash flow to determine the risk free cash flow.

c) Discounting the risk free cash flow using the risk-free rate of return to obtain the present value of the cash flow and later summing them to obtain the net present value. (Ibid, p. 57.)

The other methods of incorporating risk in cash flow computation include the following:

a) The risk-adjusted discount rate technique; which adjusts the rate of return at which cash flows are discounted to their present worth. This technique "calls for adjusting the discount rate to reflect project risk". The risk discounted rate is given as:

r_k = I+n+d_k where r_k = risk adjusted discount rate for project k

i = risk free rate of interest

n = adjustment for the firm's normal risk

d_k = adjustment for the differential risk of project k

According to literature, this is a popular method of adjusting risk because it is simple to employ and convenient. However, it has deficiencies which include, but are not limited to the following: i) it is difficult to estimate $\mathbf{d_k}$ consistently and as a result, it is often estimated in ad hoc and arbitrary ways; ii) it assumes that risk increases with time at a constant rate which may not be the case in the real world. These two conditions render it unreliable.

b) Sensitivity analysis, which puts into consideration the fact that several variables ultimately affect the final cash flows realized from an investment.

It is worthy noting that the incorporation of risk depends on subjective factors and therefore depends on the attitude of the person computing it. If a person is a risk seeker, he will tend to over estimate. On the other hand, if the individual is a risk averse, he will underestimate, hence causing the investment to appear as if it is not viable. It is therefore necessary to study the situation under which the individual computed the risk and what factors were put under consideration.

Sensitivity analysis has three major strengths which are: compelling the decision maker to identify the variables which affect the cash flow forecasts which helps one understand the project investment in totality. Secondly, it indicates the critical variables for which additional information may be obtained leading to actions, which may help in strengthening the weak area. And, it helps in exposing inappropriate forecasts hence guides the decision maker to concentrate on relevant variables.

However, it also has serious limitations which include: failure to provide clear cut results as it relies on optimism and pessimism which could mean different things to different people in the same organisation. The range of values suggested may be inconsistent. It also fails to focus on the interrelationship between variables such as sale volume, which may be related to price, and cost. In such a case, a price cut may lead to high sales and low operating cost. (Pandy, P. 526)

It is these weaknesses inherent in the risk-adjusted discount rate technique and Sensitivity analysis that gave rise to the employment of the Certainty Equivalent technique. According to Chandra, (2002, P. 322) the certainty equivalent method is conceptually superior to the risk adjusted discount rate method because it does not assume that risk increase with time at a consistent rate. Each year's certainty equivalent coefficient is based on the level of risk characterising its cash flow…"

Table 14: Cash flows before adjusting risk:

Year	EBIT	INTEREST	EBT	**TAX**	EAT	**DISCOUNTING FACTOR**	DISCOUNTED CASH FLOWS
0							-724242
1	790,515	57,939	732,576	219,773	512,803	0.83	427164
2	872,901	57,939	814,961	244,488	570,473	0.69	395908
3	962,614	57,939	904,674	271,402	633,272	0.58	366665
4	1,060,277	57,939	1,002,338	300,701	701,636	0.48	338189
5	1,193,887	57,939	1,135,948	340,784	795,163	0.4	319656
6	1,342,266	57,939	1,284,326	385,298	899,029	0.34	301175
7	1,541,020	57,939	1,483,081	444,924	1,038,157	0.279	289646
8	1,766,061	57,939	1,708,122	512,437	1,195,685	0.23	278595
9	2,020,742	57,939	1,962,803	588,841	1,373,962	0.19	266549
10	2,171,111	57,939	2,113,171	633,951	1,479,220	0.16	239634
11	2,258,605	57,939	2,200,665	660,200	1,540,466	0.14	207963
12	2,347,117	57,939	2,289,177	686,753	1,602,424	0.11	179471
13	2,356,328	57,939	2,298,389	689,517	1,608,872	0.09	149625
14	2,359,116	57,939	2,301,177	690,353	1,610,824	0.08	125644
15	2,354,684	57,939	2,296,744	689,023	1,607,721	0.07	104502
	Salvage value				1,515	0.07	98
	Discounted cash flows						3,266,241.00

Cash Flows After Incorporation Of Risk:

Even after risk incorporation, the cash flows remained so good that the project continued to appear viable. Certainty equivalent coefficient in this case was estimated to be between 0.85 and 1. This estimation was based on the guidance given by Dayananda et al (2002, p. 127) to the effect that “The certainty equivalent coefficient … ranges from 0 to 1”. Chandra (2002, p. 322) asserts that, “the value of the certainty equivalent coefficient usually ranges between 0.5 and 1”. The tabulated cash flows after risk incorporation are presented hereunder in table 15.

Table 15: Cash flows NPV after incorporating risk: (**Risk Adjusted Cash Flows)**

YEAR	EAT (£)	Certainty equivalent coefficient	Risk adjusted cash flows	DISCOUNTING FACTOR 20% 15 years	Discounted cash flows (NPV)
0					
1	553,361	1	553,361	0.83	460,949
2	611,030	0.99	604,920	0.69	419,815
3	673,830	0.98	660,354	0.58	382,344
4	742,194	0.97	719,928	0.48	347,005
5	835,721	0.96	802,292	0.40	322,521
6	939,586	0.95	892,607	0.34	299,023
7	1,078,714	0.94	1,013,991	0.28	282,904
8	1,236,243	0.93	1,149,706	0.23	267,882
9	1,414,519	0.92	1,301,358	0.19	252,463
10	1,519,777	0.91	1,382,997	0.16	224,046
11	1,581,023	0.9	1,422,921	0.14	192,094
12	1,642,982	0.89	1,462,254	0.11	163,772
13	1,649,430	0.88	1,451,498	0.09	134,989
14	1,651,381	0.87	1,436,702	0.08	112,063
15	1,649,794	0.85	1,402,325	0.07	91,151

In incorporating risk, we employed the Certainty Equivalent (CE) method, which according to Dayananda et al, (2002) p. 126, "certainty equivalent is an alternative approach to incorporating risk into project analysis incorporates risk into the analysis by adjusting the expected cash flows rather than the discount rate.

In the case of Muzahuura Project, whereas the NPV before incorporation of risk as calculated was 3,266. The NPV after incorporation of risk has reduced to 2,607,555. Therefore, the cash flows as indicated in the computation above even after incorporation of risk indicate that the project is actually viable since NPV>0 and therefore positive.

Environmental Impact Assessment

In recent times, environmental concerns have assumed a great significance in the analysis and development of projects. It is therefore important for me to make the environmental impact assessment of the project in question especially that it has a likelihood of generating some possible pollutants. According to Chandra (2002) p. 12, questions relating to environmental impact must be answered such as: "what is the likely damage caused by the project to the environment?" What is the cost of restoration measures required to ensure that the damage to the environment is contained within acceptable limits?"

We also note that in Uganda, there is no option but to carry out environmental impact assessment before putting any industrial establishment as a legal requirement. These conditions are highlighted in detail in the "Statutory instruments supplement No. 8: The Environmental impact assessment regulations, 1998". In making the environmental impact assessment report, one must include the following:

1) Ecological consideration: the following must be properly considered:

a) Biological consideration; which include: Effect of proposal on number, diversity, breeding habits … of wild animals and vegetation; Gene pool of domesticated plants and animals such as monoculture as opposed to wild types.

b) Sustainable use, which involves highlighting: Effects of proposal on soil fertility, Breeding population of fish and game, Natural generation of woodland and sustainable yield and Wetland resource degeneration or wise use of wetlands

c) Ecosystem maintenance including: Effect of proposal on food chains, Nutrient cycles; Aquifer recharge, water run-off rates; Areal extent of habitats and fragile ecosystems.

2. Social consideration including:

Effects of proposal on generation or reduction of employment in the area; Social cohesion or disruption; Effect on human health; Immigration or emigration; Communication – roads opened up, closed, re-routed; Local economy; Effects on culture and objects on cultural value.

3. Landscape including: Views opened up or close, Visual impacts; Compatibility with surrounding area, and Amenity opened up or closed.

4. Effects of proposal on current land uses and land use potential in the project area possibility of multiple use effects of proposal on surrounding land uses and land use potentials.

Conclusion:

Muzahuura, Project, is proposed project based in Kitgum District in Northern Uganda. Its cash flows were derived from imagined situations and indicated that it is indeed viable.

The method employed in determining its cash flows was the NPV method. The reason for the preference of NPV is its characteristic of being a true measure of an investment's profitability. It provides the most acceptable investment rule. It makes a net contribution to the firm in absolute terms. (Van Horn, 2002, p. 152)
Using the acceptance criteria, it can be concluded that since the NPV of the project is positive, it should be accepted. Hence, the project is viable and can be undertaken.

The computation of cash flows indicated that Muzahuura project is viable. Hence, by the end of the projected period, it will have generated returns to the shareholders. The financing of the project will be by both equity and debt in equal amounts.

The financing of Muzahuura Project will be by mixing debt and equity in equal proportions of 50% each. The decision of the mix was reached at by looking at the prevailing funding conditions in Uganda and the inability of the shareholders to raise all the required initial capital.

The incorporation of risk on the other hand was done using certainty equivalent, a technique which incorporates risk in cash flows by adjusting them to a minimum level which is regarded as certain and hence risk free. The certainty equivalent factor is determined for each cash flow with the factor ranging from 0 to 1.

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