VENTURE ANALYSIS WORKBOOK

ANALYSIS SECTION

VERSION 1.2

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PREFACE

This workbook is a part of a larger venture planning development program. Its primary objective is to assist in the development of new business without large development staffs.

The tools consist of a series of workbooks which provide check lists of key issues during the development of most business concepts. We believe that the process of venture development is an active one. We believe, that most activities should be dedicated to "hands on work" with the product, the process, and the potential customers. We hope that these tools will act to focus activities on "what must be done".

We intend that this workbook and all others in the series will be "evergreen". New versions of the workbooks are expected to be published periodically, reflecting constructive comments by users. This workbook reflects the efforts of many individuals who have provided ideas and comments. The philosophy expressed in this workbook reflects that of the authors and not of the organizations or corporations involved. This workbook is designed to assist in preparing financial analysis of venture concepts.

INTRODUCTION

This is a *Venture Analysis Workbook*. It is one of the tools for defining Venture Ideas as legitimate Business Venture Candidates. Proper definition and analysis of an idea in business terms are essential. This workbook is compatible with the *Business Planning Guide*.

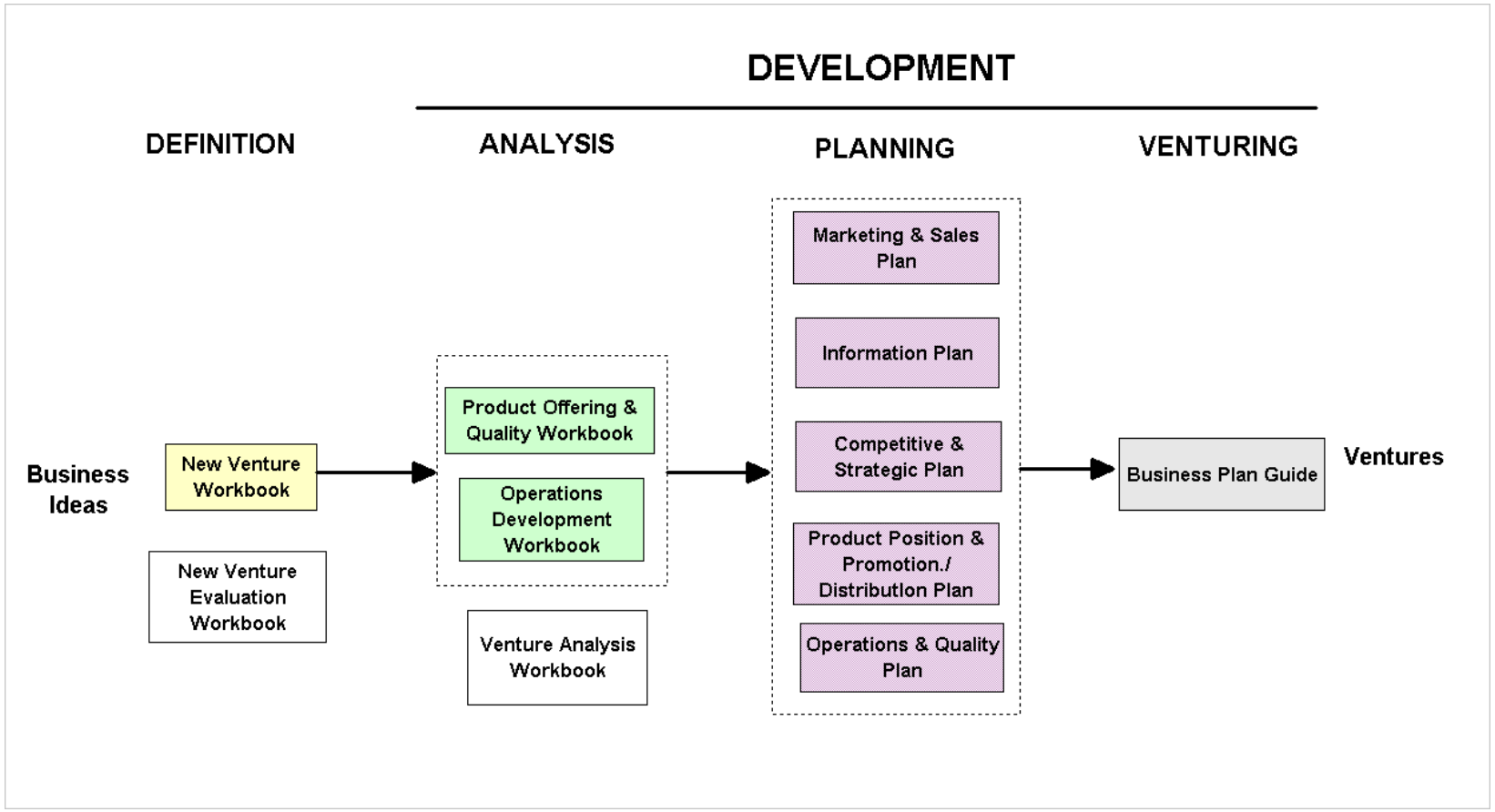
We have come to recognize that many good Ideas, which might have become successful ventures, have gone undefined and undeveloped. There has been a perception that only big ticket "Ideas to Ventures", controlled by large organizations, would be of interest. In addition, "user-friendly" systems have not been available to individuals with candidate ideas.

This *Venture Analysis Development Workbook* represents a third of the Analysis Section, or Step Two of a detailed four-step process for taking an Idea to a Venture. The major steps are Definition, Analysis, Planning, Venturing. The other two thirds of the Analysis Section are the *Product Offering and Quality* and the *Operations Development Workbook*s. The *Venture Analysis Workbook* is the evaluation guide for venture analysis. It functions in two roles: (1) as a planning aid and (2) as an evaluation tool.

Evaluation for this workbook is defined as financial projection and analysis. The focus of this workbook is the preparation of trial proforma for the proposed business derived from the venture development program. It is assumed that the *Product Offering and Quality* and the *Operations Development Workbooks* have been completed before attempting this workbook. References to sections in those workbooks are provided where appropriate. Summary sheets are provided in this workbook.

It is not expected that you will have immediate answers to all the questions in this workbook. Developing adequate information is part of the analysis.

Good luck. It is not supposed to be easy.


DEVELOPMENT
DEFINITION
ANALYSIS
PLANNING
VENTURING
Business Ideas
New Venture Workbook
New Venture Evaluation Workbook
Product Offering & Quality Workbook
Operations Development Workbook
Venture Analysis Workbook
Marketing & Sales Plan
Information Plan
Competitive & Strategic Plan
Product Position & Promotion./ Distribution Plan
Operations & Quality Plan
Business Plan Guide
Ventures

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I. BUSINESS DEFINITION

We assume before you start this section, that you completed the *New Venture Workbook* and have reviewed you entries. In that workbook the business concept should have been defined. Much information is likely to have accumulated since that definition was formulated. Business concepts evolve. Do not feel constrained by the previous definitions.

This section asks you to define your Venture Candidate as a refined Business Definition. There are five sub-sections, covering Products, Markets, Manufacturing, Business Needs, and Marketing & Distribution.

If you can clearly outline each of these sub-sections, you will have formed a Venture Candidate Concept into a Business Definition.

If you can not clearly outline some or all of the sub-sections, you have an Undefined Business Idea. You either need additional information or another idea.

Well-outlined and reasoned Business Concepts translate into useful Business Definitions.

A. Products

What products and services do you intend to sell?

This description should be as specific or as possible at this stage of development. The product definition limits the range of the business that will be considered. The more specific the product is, the easier it is to define the means of production. Recognize that the character of the products may change as the business in redefined during the development process.

At a minimum, specify the use of the product and service to the customer and user.

B. Markets

To whom will you sell the products and services and who will use them?

The identities of buyers, specifiers and users the products and services are critical for defining the business. It should be noted that the buyers, specifiers and users may be different individuals with widely different needs; however, all are considered to be customers.

If the product will be purchased more than once, either through a distributor or through subsequent processing where the identity of the product is maintained, i.e. a Dacron Shirt, all customers should be identified. If the product loses its identity, i.e. sulfuric acid in a metal pickling process, subsequent elements of the use channel need not be identified.

If feasible, key perceived customer benefits should be identified along with the customers.

II. TRIAL PROFORMA

The proforma is a standard accounting format which allows the calculation of various measures of financial performance. The elements are lay-out in this section to assist in computation. an companion spreadsheet is available which merges this information.

We recommend an accounting model be used to compute the accounts. For example, raw material inventories are taken as a fraction of the annual material costs. This will greatly facilitate the risk analysis used later in the venture analysis process. A standard model acceptable for most new ventures is given in the appendix. The Sensitivity and Risk Analysis section relies heavily on the use of an accounting model.

If detailed information on operations are available, such as sales contracts, specific information should be used.

A. Sales

1. Sales Volume Projection

What is the sales forecast for this business?[1]

Indicate the expected sales volume and the upper and lower bounds for the first 10 years. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range and the units of sales. The sales projection may be based on a model such as the General Sales Growth Curve. If a model is used, indicate what model is being used.[2] If a separate forecast is available from the sales force or from an outside source, indicate it.

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Expected Value										
Lower Range										
Sale Force Forecast										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[1] Forecasts of Sales is covered the *Operations Development Workbook*.

[2] Much sales volume uncertainty for new ventures is usually associated with timing rather than eventual level of sales. Upper and low bounds can be estimated by assuming errors in the time required for commericalization.

A. Sales

2. Average Expected Price

What is the targeted price for the products?[3]

Indicate the expected average price and the upper and lower bounds for the first 10 years. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. The price projections may be based on a model such as the Learning or Price/Volume Curves. If a model is used, indicate what model is being used. If a separate forecast is available from the sales force or from an outside source, indicate it.

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Expected Value										
Lower Range										
Sale Force Forecast										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[3] Sales forecasts are covered the *Operations Development Workbook*.

A. Sales

3. Revenue

What the expected revenue from this venture?

The revenue is defined as the average price times the volume. The expected value is obtained by multiplying the expected figures from the previous elements. However, the bounds may have to be adjusted. High prices usually are associated with lower volume. Therefore, it may not be appropriate to estimate the upper and lower bounds by multiplying their corresponding prices and volumes. Again the bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

B. Costs

1. Yield

What is the expected operational yield this product over the next 10 years?[4]

Yield is the fraction of the production that is fit for sale as quality product. Indicate the expected yield and the upper and lower bounds for the first 10 years. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. If a model is used for the projections, indicate the model and the underlying assumptions.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[4] Forecast of yield is covered the *Operations Development Workbook*.

B. Costs

2. Production

How much production should be planned to meet sales given yield and inventory requirements?[5]

Production is a function of sales and yield. In general, the required production is taken as the expected sales divided by the expected yield. Some allowance is usually provided to allow build up of inventory and to handle uncertainty regarding actual yield and sales. Indicate also a range of possible required production. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range and the units of production.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[5] Production requirements are covered the *Operations Development Workbook*. No provision is made, in this Workbook, to build inventories. Production is set against expected sales.

B. Costs

3. Materials & Power

What are the expected material and power costs?[6]

Material and power costs are specific to the process. Generally the material and power costs are considered variable costs and are set proportionally to the production. Leeway has to be given for low production conditions. Indicate also a range of possible costs due to material and power price changes. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. If a model is used to relate material prices and product price, indicate it.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[6] Material and power requirements are covered the *Operations Development Workbook* in terms of quantity. Total costs are estimated using projections for the price of material and power.

B. Costs

4. Direct Labor

What are the expected direct labor costs?[7]

Direct labor expense is those costs charged directly to production. These costs are considered variable costs and a set proportionally to the production. Leeway has to be given for low production conditions. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[7] Labor costs are discussed in *Operations Development Workbook* in terms of man-years. These have to be converted into a dollar value using a standard man power charge.

B. Costs

5. Maintenance & Support

How much will maintenance and support cost?[8]

Maintenance and support costs are those associated with the total production. While these costs are often fixed, they have been considered as variable costs and are set proportionally to production. Either technique can be used for estimating costs. Leeway has to be given for low production conditions. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[8] Maintanence and support requirements are discussed in *Operations Development Workbook* in terms of man-years. Include also in this estimate process technical support handled separately. These must be converted into a dollar value using a standard man power charge.

B. Costs

6. Direct Selling Expense

How much will selling expenses be?[9]

Direct selling expenses are those associated with the sales effort. While these costs are often fixed, they have been considered as variable costs and a set proportionally to sales. Either technique can be used for estimating costs. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[9] Direct sales expense is discussed in *Operations Development Workbook* in terms of man-years. These have to be converted into a dollar value using a standard sale person charge.

B. Costs

7. Customer Support

How much will customer support cost?[10]

Customer technical support costs are those associated with the support effort. These costs are usually considered as variable and a set proportionally to sales. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[10] Customer technical support is discussed in *Operations Development Workbook* in terms of man-years. These have to be converted into a dollar value using a standard sale/technical support person charge.

B. Costs

8. Promotion & Advertising

How much will promotion and advertising effort cost?[11]

Promotional and advertising program expenses are those associated with the sales effort. While these costs are often fixed, they have been considered as variable costs and a set proportionally to sales. Either technique can be used for estimating costs. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[11] Individual programs for promotion and advertising are discussed in *Operations Development Workbook*. These costs have to be compiled and projected over ten years.

B. Costs

9. Other Marketing

How much will other marketing cost?

Other marketing expenses not covered in either direct selling expenses or promotional and advertising programs should be identified here. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

a) Total Marketing Expenses

What is the total expected marketing expense?

Total marketing expenses of the sum of all costs associated with sales and marketing of the product and is a subtotal of the total costs. Risk bounds on costs are usually additive, with higher costs associated with lower yields. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

B. Costs

10. Distribution/Transportation Costs

How much will it to cost the firm to distribute and deliver the product?[12]

Included in the distribution costs are packaging costs (that are not included in production), transportation, holding fees, and warehousing costs. These costs are usually considered as variable costs and a set proportionally to the sales. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[12] Packaging, transportation and packaging costs are discussed in *Operations Development Workbook*. These costs have to compiled and projected over ten years.

B. Costs

11. R&D and other Technical Support

How much will technical support cost this business?[13]

R&D and other technical support charges include all charges not covered by customer or plant support otherwise noted. These costs are usually considered fixed costs but can be handled as a variable charge and a set proportionally to the sales based on a standard rate. Either method can be used. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[13] R&D and Technical Support are discussed in *Operations Development Workbook* in terms of man-years. These have to be converted into a dollar value using a standard R&D or technical person charge. These charges usually consist of a technical person and support staff.

B. Costs

12. Administration & Burden

How much will management cost this business?[14]

Administration and burden charges include all management expenses not covered by plant and sales expenses. Usually this includes all Business and Departmental management as well as any charges for Corporate overhead and staff. Indicate charge rates for management personnel since the type of organization may influence these costs. Burden charges are often set proportional to sales.

Years	1	2	3	4	5	6	7	8	9	10
MGMT People										
Charge Rate										
MGMT Cost										
Burden										
Total MGMT + Burden										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[14] Management charges are are discussed in *Operations Development Workbook* in terms of man-years. These have to be converted into a dollar value using a standard management person charge rate. Burden is generally an allocated charge.

C. Permanent Investment

1. Equipment

What is the expected cost for equipment for manufacture?[15]

Indicate what equipment is necessary for manufacture, testing, and packaging of the product. Most equipment investments are incurred before commercialization as a one time investment. If a incremental program is being undertaken the investment can be staged. Indicate the estimated costs of equipment and timing.

The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[15] The Engineering Department can be of assistance in estimating equipment and costs.

C. Investments

2. Plant

How much will the total plant cost?[16]

Plant costs include land, buildings and installation of the equipment. In general installation is taken as a fraction of the cost of the equipment. It is not unusual for costs of installation to be higher than the cost of equipment as delivered. That fraction will depend on the type of equipment and the services required. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[16] The Engineering Department can be of assistance in estimating costs for plant and installation of equipment.

C. Investments

3. Warehouse

What warehouse facilities will be necessary?

Indicate what facilities for storing products are necessary and the requirements on them. Identify the total area and volume required. Note that the required storage space will depend on the inventory held.

	1	2	3	4	5	6	7	8	9	10
Years										
Storage Area										

How much will those facilities cost?

Indicate if those warehousing facilities will be owned by the firm and the total investment required. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

C. Investments

4. Office & Rolling Stock

What additional facilities and equipment will be necessary?

Indicate office facilities, equipment, vehicles that will be purchased for this business. Note that the facilities will depend on the number of staff required.

How much will they cost?

Indicate the total costs for that equipment if it is to be owned by the firm and not covered by other investment or cost accounts. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

a) Total Facilities Investment

What is the total expected new investment in plant and equipment assigned to this venture?

The total investment is the sum of the components. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. It should be noted, however, that reduced sales should also reduce the need for further investment.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

D. Investment Related Costs

1. Depreciation

What is the depreciation on the permanent investment?

Depreciation represents a reduction in the useful value of an existing resource. Tax laws allow us to depreciate the permanent investment at standard rates. In general, we use a linear depreciation schedule over 10 years for major capital equipment and over 25 years for buildings. Shorter schedules can be used for rapidly depreciating equipment and devices.[17] The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[17] A different depreciation schedule may be actually used for tax purposes. However, that is a decision for the firm and beyond the scope of this venture analysis.

D. Investment Related Costs

2. Rentals

What rental fees are required for this business?

An alternative to purchasing permanent resources is to rent or lease their use. In this regard rents and fees for use of resource should be viewed as the counter-part to depreciation plus any services that comes with the rental. Indicate all rent fees and expenses. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

D. Investment Related Costs

3. Fees

What fees are due to joint ventures, licenses or other agreements?

Indicate all joint venture and licensing fees that are required for this business. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

D. Investment Related Costs

4. Other Costs

What other costs must be included?

Indicate all other out-of-pocket fees and costs associated with the venture. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

E. Adjustments

1. Returns

How much allowance will be assigned for potential return and warranty costs?

The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

E. Adjustments

2. Payments

What is the extent of payments to customers for start up or additional marketing expenses?

The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

E. Adjustments

3. Bad Debts

How much adjustment should allocated to non-payment of invoices?[18]

The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[18] For new ventures targeted to industrial customers, bad debts is usually not a major problem and therefore, this account is usually neglected.

F. Total Costs

1. Mill Costs

What are the expected mill costs?

Total mill costs consist of the sum of all costs associated with production: including depreciation, rentals, and fees. Risk bounds on costs are usually additive, with higher costs associated with lower yields. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

F. Total Costs

2. Cost of Sales

What is the cost of sales?

The cost of sales reflect all costs related to production, marketing, and distribution of the product. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

G. Working Capital

1. Raw Material Inventory

How much raw material must be stocked for production?

Raw material and feed stock inventory is usually set as a percent of annual requirements. Requirements will vary with assurance of supply. "Just-in-Time" operations are typical for power and water supplies. Indicate the number of months supply needed for key materials.[19]

How much will that cost?

Include both material costs and any holding expenses beyond the investment on warehouse space. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.[20]

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[19] 30 days supplies are typical if delivery is tightly controlled.

[20] For relatively new ventures the technique of inventory evaluation, (FIFO, LIFO, or Market Value), has little effect.

G. Working Capital

2. In-process Inventory

How much in-process inventory must be carried to assure efficient process operations?

In-process inventory requirements will depend on the nature of the process and on the expected product mix. Indicate the general size of the in-process inventory in terms of fraction of a year supply.

How much will that cost?

Include both material costs and any holding expenses beyond the investment on warehouse space. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

G. Working Capital

3. Finished Products Inventory

How much finished product will be kept in hand and under the firm's control.

How much will that cost?

Include both material costs and any holding expenses beyond the investment on warehouse space. Finished products inventory are usually valued at mill cost. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.[21]

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[21] For relatively new ventures the technique of inventory evaluation, (FIFO, LIFO, or Market Value), has little effect.

G. Working Capital

4. Accounts Receivable

What allocation will be needed to cover as yet unpaid invoices?

Bills are usually delayed in payment. Term of 10, 30, 60 and even 90 days are not unusual. This amounts to funds tied up in the business and therefore is an investment. Estimate the accounts receivables based on revenues. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. Indicate the assumptions regarding the calculation of accounts receivable in terms of a percent of annual revenues.[22] Expected bad debts are not included in the accounts receivable. That is used as a charge directly against revenues.

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[22] For most industrial businesses, a 30 day period is usually adequate.

G. Working Capital

5. Cash Account

How much cash must be on-hand to cover operating expenses?

Cash is used to cover immediate and potential expenses. These include salaries and wages as well as operating expenses. Cash reserves are usually taken as a fraction of either annual total labor expenses or cost of sales. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. Indicate the assumptions.[23]

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[23] For most start-up businesses, a 60 day cash cover for all costs is usually adequate.

G. Working Capital

6. Accounts Payable

What are the expected payment policies to this venture's suppliers?

The terms of payment for vendors and suppliers are usually similar to those of our customers with the exception of labor agreements. Labor costs are handled in the cash reserves. Accounts payable covers the other purchases. Terms are usually 10, or 30 days. Since discounts are often obtained by early payment, use the earliest payment for which advantage is obtained.

How much will be owed to the suppliers?

Calculate the debt based on time frame for payment and all non-labor costs.[24] The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[24] For most start-up businesses, accounts payable can be considered extremely small and neglected.

III. FINANCIAL ANALYSIS

In this section financial indices are generated. Both traditional measure financial performance and some unique to high risk analysis are discussed. While we have tried to be complete, there may be other appropriate indices for some business situations that re not covered. Do not feel constrined by these analytical tool, if you require more.

Availabel in conjunction with this workbook is a LOTUS 1-2-3(R) spreadsheet to assist in the computation.

A. Earnings

1. Before Tax

What are the projected earnings for this business?

Earnings is the difference between revenues and the cost of sales. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. The bounds should not be merely calculated as the difference between corresponding values of revenue and costs since these represent different assumptions.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

A. Earnings

2. Tax

What is the projected tax on earnings for this business?

The tax is usually proportional to before tax earnings (typically 37% in the United States). There are many conditions that can act to reduce the tax for the business or supplemental taxes specific to the business. Indicate the tax that is expected on this business. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

A. Earnings

3. After Tax

What are the projected after tax earnings for this business?

After tax earnings is the difference between before tax earnings and the allocated tax. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. The bounds should not be merely calculate as the difference between corresponding values of revenue and costs since these represent different assumptions.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

B. Investment

1. Total Working Capital

What is the total working capital that must be on hand to operate this business?

Working capital consist of all non- permanent plant investments, including inventories, funding of accounts receivables, cash less accounts payable.[1] Rental fees are excluded since the choice of rent or buy is an investment decision and should not influence the operating costs of the new venture. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[1] Prepaid exenses and current income taxes payable as well as other accrued liabilities are usually not included for small new ventures, except under unique conditions.

B. Investment

2. Total Investment

What are the total funds tied up in this business?

Total investment includes working capital and permanent plant investments. Previous years operating losses and development costs are not included as investments. However, they are handled as such in the cash flow analysis. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

B. Investment

3. Risk Liability

How much will it cost, out-of-pocket, to terminate this business?

Risk liability is the out-of-pocket costs required to terminate the business minus capital resources. It is a measure of financial exposure of the business. In general we approximate those required resources as including: Accounts Payable, Cash, In-process Inventory, Finished Products Inventory, but minus the Accounts Receivable. We consider cash to represent debts for wages, fees and closing expenses along with Accounts Payable. Receivables are assumed recoverable. Raw Material Inventories are considered recoverable.

The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

B. Investment

4. Capital at Risk

How much capital funds will be lost upon termination of this business?

Capital at risk consists of all write-off value and payments of all debts upon termination of the business. It includes the Liability at Risk along with all dedicated plant and equipment. Land and building investment are not included in that they are recoverable. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

B. Investment

5. Funds at Risk

How much funds will be sunk into this business if it is terminated?

Funds at risk consist of the capital at risk plus any operating loss less tax, but minus any after-tax earnings. It represents the total funds that could be lost over the history of the business upon termination. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

C. Cash Flow

What is the annual cash flow?

Cash flow consists of all sources and uses of cash through the business. Earnings and depreciation are the major sources of funds for most businesses while investments, including working capital are uses. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. Note, however, that the bounds should not be merely calculated as the combinations of corresponding sources and uses of cash since these represent different assumptions.

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

D. After-Tax Operating Income (ATOI)

What is the annual After-Tax Operating Income?

The ATOI consists of the earnings after a charge for working capital has been imposed. The working capital charge is based on an interest rate on the use of that capital (usually 12% in the United States).

The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. Note, however, that the bounds should not be merely calculated as the combinations of corresponding sources and uses of cash since these represent different assumptions.

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

E. Margin

What is the expected profit margin?

Profit margin represents the fraction of the product value, its price, that returns to the firm as earnings. It is the ratio of earnings to revenues. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. It is important that these bound not be merely calculated as the ratio of corresponding values.[2]

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[2] Division of uncertain values can produce extreme results which do not represent the actual situation.

F. Contribution

What is the earnings contribution to the firm?

Administrative costs and capital structures can distort the financial situation of a new business. The earnings contribution is based on only direct costs. The contribution is the difference of the revenue and the direct costs. The earnings contribution or "contribution margin" is the ratio of the contribution to the revenue. Indicate the earnings contribution from this business.

The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. It is important that these bound not be merely calculated as the ratio of corresponding values.[3]

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[3] Because earnings contribution or contribution margin does not include depreciation, burden, and administrative costs, it is always larger than the corresponding margin figures.

G. Return

1. Return on Investment (ROI)

What is the annual return on investment?

The return on investment is a traditional measure of profitability. It is the ratio of the earnings to the total investment. The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. It is important that these bound not be merely calculated as the ratio of corresponding values.[4]

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[4] Division of uncertain values can produce extreme results which do not represent the actual situation.

G. Return on Investment

2. Cash Return on Investment (CROI)

What is the annual cash return on total investment?

The cash return on investment is a relatively new measure of profitability. It is the ratio of the cash inflow to the total investment. It is somewhat insensitive to capital budget decision regarding ownership versus leasing of capital resource. The cash inflow consists of all sources of cash usually consisting of earnings and depreciation. It should be noted, that CROI can distort the earnings situation when earnings are low as at the start of a new venture.

The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. It is important that these bound not be merely calculate as the ratio of corresponding values.[5]

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[5] Division of uncertain values can produce extreme results which do not represent the actual situation. A target of at least 20% CROI is generally accepted in many firms for most acceptable new ventures.

G. Return on Investment

3. Cash Return on Risk Liability

What is the annual cash return on risk liability?

The cash return on risk liability is a measure of the development strategy of the business. It is the ratio of the earnings plus depreciation (cash inflow) to out-of-pocket funds that will be lost if the business were terminated. As the new venture is a part of a portfolio of risky opportunities, it indicates a window of vulnerability in funding. It is the return for financial exposure.

The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. It is important that these bound not be merely calculated as the ratio of corresponding values.[6]

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[6] Division of uncertain values can produce extreme results which do not represent the actual situation.

G. Return on Investment

4. Cash Return on Capital at Risk

What is the annual return on the capital at risk?

Capital at risk is a measure of the investment of the organization in the business development. The return on capital at risk is then a measure of the efficiency of the development process. It is the ratio of the earnings plus depreciation to capital that could be lost if the business were terminated.

The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. It is important that these bound not be merely calculated as the ratio of corresponding values.[7]

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[7] Division of uncertain values can produce extreme results which do not represent the actual situation.

G. Return on Investment

5. Cash Return on Funds at Risk

What is the annual return on the funds at risk?

Funds at risk is a measure of the investment of the organization in the business development. The return on those funds takes the exposure of the business through the development process. It is the ratio of the earnings plus depreciation to funds that would be lost if the business were terminated.

The bounds can be either a range or represent the upper and lower 25% levels. Indicate the meaning of the range. It is important that these bound not be merely calculated as the ratio of corresponding values.[8]

	1	2	3	4	5	6	7	8	9	10
Years										
Upper Range										
Expected Value										
Lower Range										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

[8] Division of uncertain values can produce extreme results which do not represent the actual situation.

H. Discounted Cash Flow

1. Table

What is the discounted cash flow from this venture?

The discounted cash flow represents constant dollar value of the cash flow. The discounting is to acknowledge the time value of money. Funds obtained further in time are worth less than more recent transactions. A standard "cost of capital" is used for the discounting, usually 12% in the United States. However, it is useful to examine a range of discount rates. Indicate the discounted cash flow at each of the identified rates.

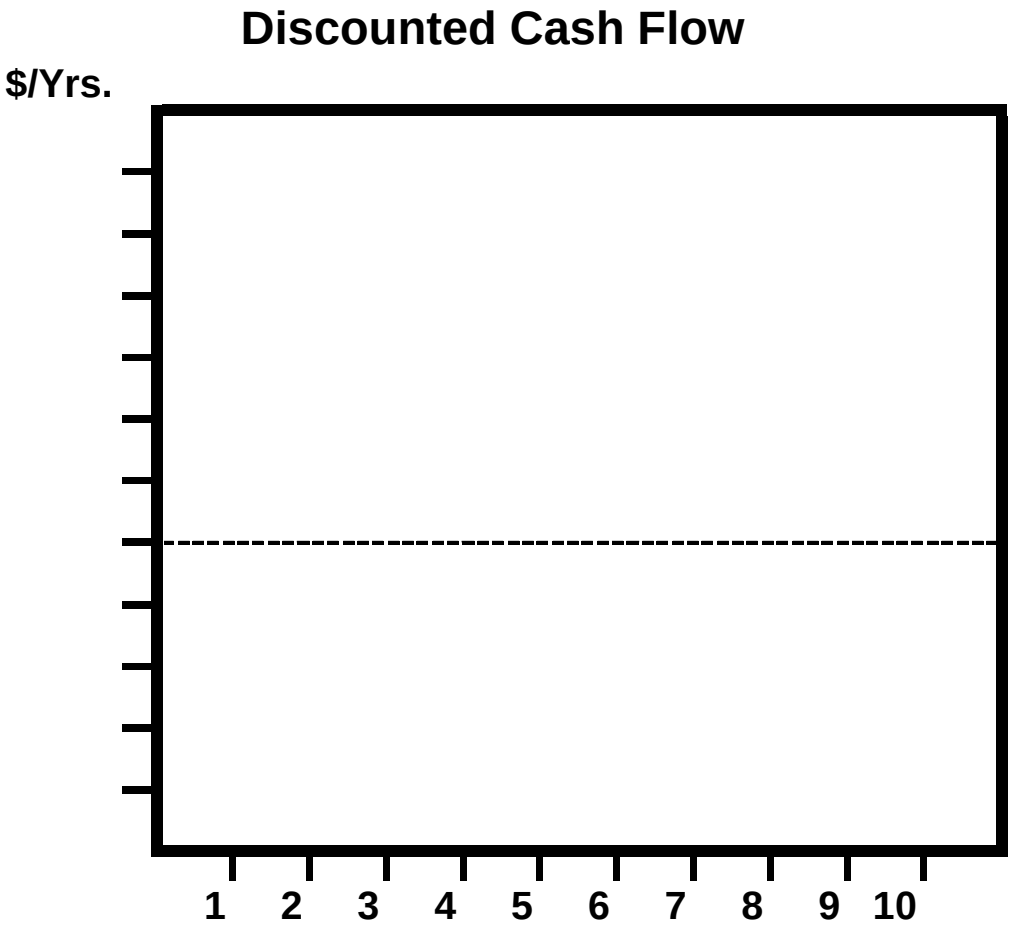
Years	1	2	3	4	5	6	7	8	9	10
Rate: 8%										
12%										
16%										
20%										
24%										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

H. Discounted Cash Flow

a) Chart



H. Discounted Cash Flow

2. Accumulated Cash Flow

What is the discounted cash flow from this venture?

The discounted cash flow represents constant dollar value of the cash flow. The discounting is to acknowledge the time value of money. Funds obtain further in time are worth less than more recent transactions. A standard "cost of capital" is used for the discounting, usually 12% in the United States. However, it is useful to examine a range of discount rates. Indicate the discounted cash flow at each of the identified rates.

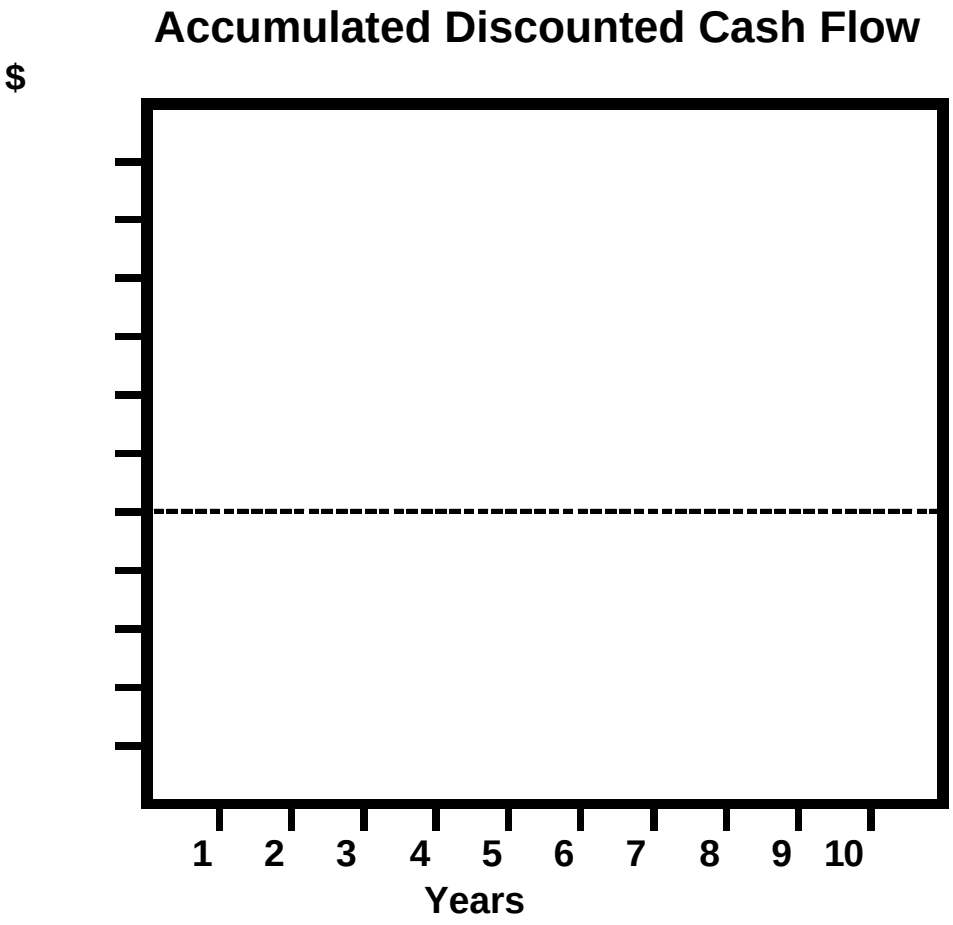
Years	1	2	3	4	5	6	7	8	9	10
Rate: 8%										
12%										
16%										
20%										
24%										

ABSTRACT

Years	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Expected Value										

H. Discounted Cash Flow

a) Chart



I. Net Present Value

What is the ten year net present value?

The net present value represents the cumulative discounted financial value of the business based on the earnings and costs. It is the sum of the discounted cash flow and corresponds to the 10th year accumulated discounted cash flow. Business calculators and electronic spreadsheets have functions programmed to generate net present values.

Rate	Net Present Value
8%	
12%	
16%	
20%	
24%	

ABSTRACT

Expected Value- 12%

J. Internal Rate of Return

What is the ten year internal rate of return?

The internal rate of return, IRR, represents return on investment and on lost sales. It is the cost of capital that would make the net present value zero. Business calculators and electronic spreadsheets have functions programmed to generate internal rate of return.[9]

ABSTRACT

[9] Internal Rate of Return calculations can give more than one value under specific conditions. This takes place if there is more than one period where the cash flow goes from negative to positive such as with multiple reinvestments. If there are multiple values, most programs for computed Internal Rate of Return give the lowest.

K. Pay-back Period

When is this venture expected to pay back its investment?

The pay-back period is the number of years required to pay back the total investment.[10] The pay back represents the time frame for which the business must operate to be profitable. It has impact on estimates of the product life cycle, in that the pay back period must be shorter than the expected life of the product. It should be noted that the pay-back period assumes additional reinvestment. Large ventures generally consist of a number of reinvestments which can extend the pay back period for the venture as a whole.

ABSTRACT

Yrs

[10] The inverse of the pay-back period is referred to as the Cash Contribution Rate and is defined as the Cash Flow/ Average Investment.

IV. SENSITIVITY AND RISK ANALYSIS

Sensitivity and risk analysis involves measuring the response of the financial measures to changes in our assumptions. Some sense of the importance and confidence in the values should be captured by the ranges of values indicated with the proforma information. Those should be viewed as overall confidence values rather than measures of sensitivity. If a detailed accounting model has been used to develop previous analysis, than sensitivity and risk estimates can be directly compuated.

The companion electronic spreadsheets are in LOTUS 1-2-3 version 2.01 and uses an add-in package @RISK to perform the risk analysis. We recommend that this package be used to simplify the computations.

A. Breakeven

How much sales are necessary for the venture to have positive earnings?

Scale is a critical to make a business profitable. The breakeven point is defined as the sales volume required for the business to make a profit. The breakeven point can be estimated by introducing sales as a variable into the model, setting Cost of Sales equal to revenues and solving for the required volume. Alternatively, Revenue and Cost of Sales can be plotted as a function of volume and the intersection noted. Indicate either the breakeven point or show the graph of Cost of Sales versus Revenue.

ABSTRACT

B. Target Price

What is the necessary price to obtain the targeted return on investment?

The target price is that price which is required to meet the targeted return on investment. Use a 5 and 10 year expected sales for computation and a 20 and 30% after tax return as targets.

The estimate of the target price can be obtained from the model either by iterating based on guess or by direct computation.

	20%	30%
5 Yrs.		
10 Yrs.		

ABSTRACT

5 year
20% Return

C. Sensitivity

1. Volume

What is the impact on earnings and Net Present Value with reasonable variation in sales volume?

Indicate the expected charges in business performance over the upper and lower range of changes in sales volumes. The accounting model should allow the tracking of these changes. Indicate the percent change for the 10th year.

Earnings

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Lower Range										

Net Present Value

Upper Range										
Lower Range										

ABSTRACT

	Upper	**Lower**
Earnings		
NPV		

C. Sensitivity

2. Price

What is the impact on earnings and Net Present Value with reasonable variation in price?

Indicate the expected charges in business performance over the upper and lower range of changes in price. The accounting model should allow the tracking of these changes. Indicate the percent change for the 10th year.

Earnings

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Lower Range										

Net Present Value

Upper Range										
Lower Range										

ABSTRACT

	Upper	Lower
Earnings		
NPV		

C. Sensitivity

3. Support

What is the impact on earnings and Net Present Value with reasonable variation in customer support?

Indicate the expected charges in business performance over the upper and lower range of changes in customer support. The accounting model should allow the tracking of these changes. Indicate the percent change for the 10th year.

Earnings

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Lower Range										

Net Present Value

Upper Range										
Lower Range										

ABSTRACT

	Upper	**Lower**
Earnings		
NPV		

C. Sensitivity

4. Materials

What is the impact on earnings and Net Present Value with reasonable variation in materials and power costs?

Indicate the expected charges in business performance over the upper and lower range of changes in materials and power costs. The accounting model should allow the tracking of these changes. Indicate the percent change for the 10th year.

Earnings

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Lower Range										

Net Present Value

Upper Range										
Lower Range										

ABSTRACT

	Upper	**Lower**
Earnings		
NPV		

C. Sensitivity

5. Yield

What is the impact on earnings and Net Present Value with reasonable variation in manufacturing yield?

Indicate the expected charges in business performance over the upper and lower range of changes in yield. The accounting model should allow the tracking of these changes. Indicate the percent change for the 10th year.

Earnings

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Lower Range										

Net Present Value

Upper Range										
Lower Range										

ABSTRACT

	Upper	**Lower**
Earnings		
NPV		

C. Sensitivity

6. Quality

What is the impact on earnings and Net Present Value with variation in return rates and warranty costs?

Indicate the expected charges in business performance over the upper and lower range of changes in return and warranty costs. The accounting model should allow the tracking of these changes. Indicate the percent change for the 10th year.

Earnings

Years	1	2	3	4	5	6	7	8	9	10
Upper Range										
Lower Range										

Net Present Value

Upper Range										
Lower Range										

ABSTRACT

	Upper	**Lower**
Earnings		
NPV		

C. Sensitivity

7. Timing

What is the impact on earnings and Net Present Value with a delay of one and two years in sales with investment and fixed cost remaining the same?

Indicate the expected charges in business performance over the upper and lower range of changes in timing volumes. The accounting model should allow the tracking of these changes. Indicate the percent change for the 10th year.

Earnings

Years	1	2	3	4	5	6	7	8	9	10
1 year										
2 years										

Net Present Value

1 year										
2 years										

ABSTRACT

	1 Year	**2 years**
Earnings		
NPV		

D. Risk

Risk analysis consists of examining the impact of events and random changes on the business performance. Not all events and changes are equally likely. Using modeling with sampling techniques allows for such analysis. Special programs can be developed to do this analysis. Alternatively, the add-in package @RISK in LOTUS 1-2-3 can do most simple models. The accompanying electronic spreadsheet contains the standard model set up for risk analysis.

An alternative approach is to use "Risk and Decision" analysis. This involves identifying potential issues that could effect the business and simulate their impact. Both methods have value.

D. Risk

1. Uncertainties

What are key potential events that could impact the business beyond those covered with uncertainty in volume, price, timing and manufacturing costs?[1]

What is the likelihood of them happening?

Indicate the major events or problems that are likely to occur.

Event	Impact Sales	Impact Earnings	Likelihood

[1] The potential events are identified in the *Operations Development Workbook*.

D. Risk

2. Overall Risk

What is the distribution of 10th year investment and earnings given all the uncertainties?

Risk analysis of the accounting model and/or across the uncertain events allows for the estimate of possible outcomes. Display the results either as bar charts for 10th year earnings and investments.[2]

[2] Sales estimates as well as any of the financial measures can also be generated and displayed.

Two-way density maps can also be generated. Though more revealing, they tend to be difficult to interprete.

D. Risk

3. Venture Dynamics

What is impact of inaccurate sales forecasts?

Another major problem in new venture is inaccurate sales forecasts. This leads to incorrect scale for facilities and inventories. This can be simulated using the accounting model by setting capacity and inventory values against a forecast that is different from sales.

E. Critical Issues

What are the most likely critical issues for further development of this venture?

Based on the sensitivity and risk analysis, what are the critical elements that have to be investigated to determine feasibility. Indicate which of these are to be monitored as external factors and which are development issues.

Issues	Type (Monitor or Develop)	Priority

V. DEVELOPMENT BUDGET PROPOSAL

A. Internal Man-power

How much will the man-power cost for successfully complete through prove-out commercialization of this venture?[1]

ABSTRACT

[1] Covered in the *Operations Development Workbook*.

B. Out-of-Pocket

What out-of-pocket costs will be necessary to develop this venture through prove-out?[2]

ABSTRACT

[2] Covered in the *Operations Development Workbook*.

C. Investment

What investment is needed during the development of the venture[3]?

ABSTRACT

[3] Covered in the *Operations Development Workbook*.

D. Development Exposure

How much resources will be expended during the development phase which are not recoverable?

ABSTRACT

VI. STANDARD MODEL

The following are relationship used in the standard new venture financial model.

Sales *General Sales Growth Curve*

$$Sales = [Potential]*\{1.08\}^{(t-t_0)}*\{0.009\}^{.77^{(t-t_0)}}, \; t_0 = \text{reference time}$$

Price

$$Price = [First\ Year\ Price]*\{1+Inflation\text{-}Correction\}^{(t-t'')}, \; t'' = \text{reference time}$$

Revenue

$$Revenue = Price * Sales$$

Yield *Logistics Curve*

$$Yield = [Ultimate\ Yield]/\{1 + \exp(A*[t-t']), \; t' = \text{reference time}$$

Production

$$Production = Sales/Yield$$

Materials & Power

$$M\&P = \{Base\ Costs\}*\{Production\}$$

Direct Labor Costs

$$Labor = \{Labor\ Rate\}*\{Production\}^{a} + \{Base\ Labor\ Cost\}, \; a < 1$$

Mill Costs

$$MCost = \{M\&P\} + \{Labor\}$$

Sales & Customer Support

$$S\&CS = b * \{Revenues\}^{c} + \{Base\ S\&CS\}, \quad c < 1$$

Advertising & Promotion

$$A\&P = d * \{Revenues\}^{e} + \{Base\ A\&P\}, \quad e < 1$$

Distribution & Transportation

$$D\&T = f * \{Revenues\} + \{Base\ D\&T\}$$

R&D/Technical Support

$$R\&D = g * \{Revenues\}^{h} + \{Base\ R\&D\}, \quad h < 1$$

Administration & Burden

$$A\&B = j * \{Revenues\}^{k} + \{Base\ A\&B\}$$

Equipment

$$EQ = m * [7th\ Year\ Production]^{0.6}$$

Permanent Investment

$$PI = n * EQ1 + \{Plant\ Site\ Costs\} + \{Land\ Costs\}$$

Depreciation

$$DEP = (n * EQ1)/10 + \{Plant\ Site\ Costs\}/25$$

Cumulative Depreciation

$$CDEP(I) = CDEP(I-1) + DEP(I)$$

Rents

$$RENT = r * \{1+Inflation\}^{(t-t'')}$$

Adjustments Fees/Returns/Bad Debts

$$FEES = s * \{Revenues\}$$

Cost of Sales

$$COS = MCost + S\&CS + A\&P + D\&T + R\&D + A\&B + DEP + RENT + FEES$$

Before Tax Earnings

$$BTE = \{Revenue\} - COS$$

Tax

TAX = [tax rate] * BTE, [tax rate] ~ 37%

After Tax Earnings

Earnings = BTE - TAX

Raw Materials Inventory

RMI = z * {M&P}

In-Process Inventory

IPI = u * {MCost}

Finished Products Inventory

FPI = v * {COS}

Accounts Receivable

AR = w * {Revenue}

Accounts Payable

AP = A * {M&P}

Cash

Cash = B * {COS}

Working Capital

WC = RMI + IPI + FPI + AR + Cash - AP

After Tax Operating Income

ATOI = Earnings - [Charge] * WC, [Charge] ~ 12%

Total Investment

Investment = PI + WC - CDEP

New Investment

NInvest(i) = Investment(i)-Investment(i-1)

Risk Liability

RLiab = AP + CASH + IPI + FPI - AR

Capital at Risk

CRisk = RLiab + PI - LAND - CDEP

Funds at Risk

FRisk = CRisk - Earnings - DEP

Margin

Margin = (Revenue - Earnings)/Revenue

Contribution

Contrib = (Revenue - COS + DEP + A&B)/Revenue

Cash Flow

Cash = Revenues - COS - NInvest

Discounted Cash Flow

DCash = Cash/(1 + {Cost of Capital})$^{(t-t'')}$, Cost of Capital ~ 12%

Return on Investment

ROI = Earnings/Investment

Cash Return on Investment

CROI = {Earnings + DEP}/Investment

Cash Return on Risk Liability

RRL = (Earnings + DEP)/RLiab

Cash Return on Capital at Risk

RCR = (Earnings + DEP)/CRisk

Cash Return on Funds at Risk

RCR = (Earnings + DEP)/FRisk

Analyses

Net Present Value

Internal Rate of Return

Target Price

Breakeven Sales

VII. PROFORMA SUMMARY

Years	1	2	3	4	5	6	7	8	9	10
Sales Volume										
Expected Price										
Expected Revenue										
Yield										
Production										

Costs

Materials & Power										
Direct Labor										
Maintenance & Support										
Direct Selling Expense										
Customer Support										
Promotion & Advertising										
Other Marketing										
Total Marketing										
Distribution Costs										
R&D/Technical Expense										

PROFORMA SUMMARY, Continued

Years	1	2	3	4	5	6	7	8	9	10
Administration & Burden										
Equipment										
Plant										
Warehouse										
Office										
Permanent Investment										
Deprecation										
Rentals										
Fees										
Other Costs										
Returns										
Payments										
Bad Debts										

Total Costs

Mill Costs										
Cost of Sales										

PROFORMA SUMMARY, Continued

Working Capital

Years	1	2	3	4	5	6	7	8	9	10
Raw Material Inventory										
In-Process Inventory										
Finished Goods										
Accounts Receivable										
Cash										
Accounts Payable										

Earnings

Before Tax										
Tax										
After Tax										

Investments

Working Capital										
Total Investment										
Risk Liability										
Capital at Risk										
Funds at Risk										

PROFORMA SUMMARY, Continued

Returns

Years	1	2	3	4	5	6	7	8	9	10
Cash Flow										
ATOI										
Margin										
Contribution										
ROI										
CROI										
Return on Risk Liability										
Return on Capital @ Risk										
Return on Funds @ Risk										
Discounted Cash Flow										
Accumlated Cash Flow										

Analysis

NPV 12%
IRR
Pay-Back

SUMMARY

I. BUSINESS DEFINITION

A. PRODUCTS
B. MARKETS

II. TRIAL PROFORMA

A. SALES
- *1. Sales Volume Projection*
- *2. Average Expected Price*
- *3. Revenue*

B. COSTS
- *1. Yield*
- *2. Production*
- *3. Materials & Power*
- *4. Direct Labor*
- *5. Maintenance & Support*
- *6. Direct Selling Expense*
- *7. Customer Support*
- *8. Promotion & Advertising*
- *9. Other Marketing*
  - a) Total Marketing Expenses
- *10. Distribution/Transportation Costs*
- *11. R&D and other Technical Support*
- *12. Administration & Burden*

C. PERMANENT INVESTMENTS
- *1. Equipment*
- *2. Plant*
- *3. Warehouse*
- *4. Office & Rolling Stock*
  - a) Total Facilities Investment

D. INVESTMENT RELATED COSTS
- *1. Depreciation*
- *2. Rentals*
- *3. Fees*
- *4. Other Costs*

E. ADJUSTMENTS
- *1. Returns*
- *2. Payments*
- *3. Bad Debts*

F. TOTAL COSTS
- *1. Mill Costs*

2. Cost of Sales

SUMMARY, Continued

G. WORKING CAPITAL
- *1. Raw Material Inventory*
- *2. In-process Inventory*
- *3. Finished Products Inventory*
- *4. Accounts Receivable*
- *5. Cash*
- *6. Accounts Payable*

III. FINANCIAL ANALYSIS

A. EARNINGS
- *1. Before Tax*
- *2. Tax*
- *3. After Tax*

B. INVESTMENT
- *1. Total Working Capital*
- *2. Total Investment*
- *3. Risk Liability*
- *4. Capital at Risk*
- *5. Funds at Risk*

C. CASH FLOW

D. AFTER-TAX OPERATING INCOME (ATOI)

E. MARGIN

F. CONTRIBUTION

G. RETURN
- *1. Return on Investment (ROI)*
- *2. Cash Return on Investment (CROI)*
- *3. Cash Return on Risk Liability*
- *4. Cash Return on Capital at Risk*
- *5. Cash Return on Funds at Risk*

H. DISCOUNTED CASH FLOW
- *1. Table*
  - a) Chart
- *2. Accumulated Cash Flow*
  - a) Chart

I. NET PRESENT VALUE

J. INTERNAL RATE OF RETURN

K. PAY-BACK PERIOD

IV. SENSITIVITY AND RISK ANALYSIS

A. BREAKEVEN
B. TARGET PRICE

SUMMARY, Continued

C. SENSITIVITY
   1. Volume
   2. Price
   3. Support
   4. Materials
   5. Yield
   6. Quality
   7. Timing
D. RISK
   1. Uncertainties
   2. Overall Risk
   3. Venture Dynamics
E. CRITICAL ISSUES

V. DEVELOPMENT BUDGET PROPOSAL

A. INTERNAL MAN-POWER
B. OUT-OF-POCKET
C. INVESTMENT
D. DEVELOPMENT EXPOSURE

GLOSSARY

Many of the terms used in this workbook have broader definitions than are intended here. The following definitions refer to this *Venture Analysis Workbook*.

Accounts Payable Accounts payable consist of all bills received, but not yet due except for salaries and wages. Labor costs are general handled through the Cash Account. In general accounts payable include materials, power, and services for manufacturing the products.

Accounts Receivable Accounts receivable consists of all invoices sent but not paid. It consists of both invoice not yet due and those over due. A separate account for Bad Debts covers an allocation of those over-due invoices that will never be paid.

ATOI After-Tax Operating Income is a working capital-adjusted earnings estimate. The adjustment is based upon considering working capital as having been obtained by a loan.

Breakeven Breakeven is the point where revenues balance sales and represents the stage in a firm where it begins to make money. The Breakeven sales is the estimated sales volume needed to reach the breakeven point and is used as an initial sales target.

Capital at Risk The Capital at Risk is the permanent investment that will be lost and liabilities that will be incurred if the business is terminated. It is the portion of the funds lost that could be "written off".

Cash Account The Cash Account consists of cash resources on hand to cover current expenses. These current expenses include wages and salaries and out-of-pocket expenses.

Cash Flow The Cash Flow consists of all funds that enter and leave the business. It is a tracking of all moneys that are received and spent.

Cash In-flow Cash In-flow consists of all after-tax sources of cash to the business. It consists of earnings, depreciation and any other charges that due not result in cash flow out of the firm, such as an oil depletion allowance.

Cash Return Cash Return is any financial return estimate based on Cash In-flow rather than earnings.

Contribution Contribution represents the marginal funds returned to the Corporation by this business. It is the earnings plus the fixed expenses typically not under the control of the current management. These expenses include capital charges, burden and certain fixed expenses.

Customer Support Customer Support consists of any direct interaction between the firm and the customer not covered by direct

selling expense. Typically, contract support is covered separately as part of the delivered product.

Depreciation

Depreciation is a charge against the permanent investment, theoretically placed against it to assure that it can be replaced in a timely fashion. The depreciation rate is set by the expected life span of the investment. Standard expected life times are used based on the tax codes. Depreciation for analysis may differ from that allowed by the tax codes and used. Typically, a linear depreciation schedule is used for venture analysis, while accelerated depreciation techniques are allowed for tax purposes.

Direct Labor Expense

Direct Labor consists of all labor expenses directly associated with the manufacture of the products.

Discounted Cash Flow

The Discounted Cash Flow is the Cash Flow from the business based on constant valued money. Fund received in the future will have less value than funds received earlier. Earlier received funds can be reinvested to obtain further funds. In order to compensate for the time value of money, future cash flows are discounted at a standard rate.

Equipment

The Equipment consist of all devices and machines necessary to manufacture the product. The Equipment Account consists of the delivered costs for that equipment. The Plant Costs include the equipment costs, costs of installation, as well as the costs of the physical facilities and land.

Finished Products Inventory

The Finished Products Inventory consist of all products on hand ready for sale which are still owned by the business. These include finished product,s plant inventories, warehoused and agency held product, and customer consignment product. Potential returns are not considered part of the finished products inventory since they are presently not owned by the firm.

Funds at Risk

The Funds at Risk consist of all moneys, both accumulated discounted historical costs and as liabilities, that will be lost or incurred upon termination of the business. Funds at Risk are decreased by the accumulated cash that the business generates.

In-Process Inventory

In-process Inventories consist of all materials that have started to be converted to products, but are not yet in salable form.

Investments

Investments consists of all capitalizable equipment, plants, land, and working capital that are required to run the business.

IRR

Internal Rate of Return is an overall estimate of the long term return on funds committed to the business. These

funds include operating losses as well as standard investment. The Internal Rate of Return can be considered the discount rate needed to make the Net Present Value zero.

Joint Ventures Joint Ventures consist of any business arrangement where earnings and risks are shared between the firm and any other business entity. Generally, joint ventures are restricted to manufacture of products. Distribution and sales arrangements are typically not considered joint ventures.

Materials Materials consists of all expendables during the manufacturing process. Power as well as materials are considered. Direct labor is considered under a separate account.

Net Present Value The Net Present Value consists of a sum of the discounted cash flow. It can be either a life time estimate or over a fixed time period. Since the cash flow is usually discounted, the impact of future earnings has decreasing impact on the Net Present Value. The Net Present Value is dependent on the chosen discount rate (Cost of Capital).

Out-of-Pocket Costs The Out-of-Pocket Costs consist of all expenses which requires cash outlays.

Payments Payments consists of all funds transferred to customers or end-users. These typically consists of promotional arrangements, such as cooperative advertisements or rebates.

Plant Investment Plant Investment consists of the historical value of all physical resources needed to manufacture the product. Land costs may be handled separately, but is part of the total permanent investment.

Products Products consists of all deliverables to the customer and end-user. Customer support and relations are usually considered separately.

Proforma The Proforma is the standard table of financial forecasts and accounts designed to determine the profitability of a business.

Quality The Cost of Quality for this workbook focuses on the necessary response to keep customers satisfied regarding non-performance of the product. In this case, it concentrates on return and warranty costs.

Raw Materials The Raw Materials Inventory consists of all feed stock and support materials that are on-hand to assure

Inventory adequate produce supply.

Return on Investment Return on Investment calculations are a set of ratios of earnings to various definitions of investment. They track the profitability of the business.

Returns Returns consist of product that are either not sold to the end-user or did not perform in a function expected by the customer.

Risk Risk in this workbook refers to the potential for loss with this business. It consist of the variation of possible profitability.

Risk Liability Risk Liability is the additional exposure for the firm beyond sunk costs upon the termination of the business. It is the liability that the business will incur if operations are terminated.

Selling Expense The Selling Expense consist of all sales and marketing costs. Payments, discounts, and return costs are generally handled as separate costs elements.

Target Price The Target Price is the price of the product that is required to provide make a given return on investment. It is function of the return required, the sales volume, and the operating conditions of the business.

Tax Tax requirements follow local, regional, and national regulations. While there are often local regulations setting tax on property or production, most tax regulations are on income. For calculation purposes average rates are used, based on earnings.

Warranty Warranty accounts are allocations of funds to meet implicit or explicit commitments to reimburse customers or end-users for the non-performance of the product.

Working Capital Working Capital is the cash resources or credit necessary to cover all expenses in the business during operations. Usually this requires funds to cover accounts receivable, cash, and inventories.

Yield Yield is the ratio of acceptable product to that which could have been produced with the raw materials used.