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## COST-BENEFIT ANALYSIS TEMPLATE

### INTRODUCTION

A cost-benefit analysis (CBA) is a systematic process for calculating and comparing benefits and costs of a project or decision. A CBA helps predict whether the benefits of a project or decision outweigh its costs, and by how much relative to other alternatives. A CBA has two purposes:

1. To determine if the project or decision is a sound investment or decision (i.e., a justification of feasibility or advantage).
2. To provide a basis for comparing projects or decisions. It involves comparing the total expected cost of each option against the total expected benefits, to see whether the benefits outweigh the costs, and by how much.

Using the cost-benefit analysis template in this document will provide cost and benefit information that can be used to analyze and evaluate alternative approaches to projects or decisions. Since this CBA is tailored for IT, it is oriented around projects or decisions relating to new systems or processes (although it can be adapted for other purposes).

This CBA template includes two items: this document and a related spreadsheet that will help to calculate costs and benefits and to summarize them. The items in the spreadsheet are referred to in appropriate places in the document.

This document provides information for a basic CBA and also suggestions for a more complex, comprehensive and advanced CBA. You may use the basic type to develop a standard cost-benefit analysis, or the advanced type to develop a more detailed analysis. Throughout the document, there are notes as to which sections should be included for each type.

**NOTE:** *Highlighted, italicized text throughout this template is provided to assist you in creating your cost-benefit analysis. Please delete all such text, as well as the instructions in each section, prior to completing this document. Only your project-specific language and information should appear in the final version of this document.*

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# [PROJECT OR DECISION TITLE]

COST-BENEFIT ANALYSIS

[date]

DRAFT

[PROJECT NAME]

COST-BENEFIT ANALYSIS

[PROJECT OR DECISION]

INFORMATION SYSTEMS AND COMPUTING

UNIVERSITY OF PENNSYLVANIA

[DATE OF ANALYSIS]



[PROJECT OR DECISION TITLE]

COST-BENEFIT ANALYSIS

[date]

Version Tracking

Release No.	Date	Revision Owner

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### 1. EXECUTIVE SUMMARY

*[Note: All the information in this section should be included for both a basic and more advanced CBA. The executive Summary should be written last, when all other information has been compiled.]*

#### 1.1 PROJECT DESCRIPTION OVERVIEW

*[Include a one-paragraph description of the associated project/program. This can be obtained from other documents such as a project proposal or Request for Proposal (RFP).]*

#### 1.2 RECOMMENDATION

Based on the cost-benefit analysis presented below, the following is recommended *[for example:*

- *The outcome of the analyzed project or decision should be X.*
- *The project or decisions described below should/should not be pursued.]*

#### 1.3 SUPPORTING REASONS

The reasons for this recommendation are as follows *[for example:*

- *The financial costs of executing this project or decision outweigh the estimated return on investment.*
- *Although the financial costs and benefits are equal, the intangible benefits outweigh the financial costs, for the following reasons:]*

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### 2. GENERAL INFORMATION

*[Note: All the information in this section (except for Methodology, section 2.6) should be included in both a basic CBA and a more advanced version.]*

#### 2.1 PURPOSE

The purpose of this cost-benefit analysis is to determine whether [decision or project name] is the best option for [organization name] to pursue at this time.

#### 2.2 OVERVIEW

The following is a brief overview of the [decision or project] analyzed in this document.

- Responsible organization: [Organization name]
- Project title or decision question: [Project name or decision question]
- Project ID number: [if any]
- Description: [A short description of the project or decision]
- [If dealing with software or hardware] Operational status
  - In operation
  - Under development
  - Undergoing a major modification/upgrade
- Any special conditions

#### 2.3 REFERENCES

References [if any] that were used in preparation of this document include the following:

*Examples of references are:*

- *Previously developed documents relating to the project or decision, such as an RFP or project proposal*
- *Documentation concerning related projects or policies*
- *Standard procedures documents*

#### 2.4 ORGANIZATIONAL STRUCTURE

An organizational chart [or list of key stakeholders] for this [decision or project] is provided below:

- Project or decision sponsors
- Project or decision owners
- Project or decision managers
- Project or decision teams and team leads [if known]

#### 2.5 ASSUMPTIONS AND CONSTRAINTS [OPTIONAL FOR BASIC CBA]

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The following assumptions and constraints have been used while conducting this analysis [for example:

- *This project covers only X scope and not Y scope.*
- *Funding for this project will come from X source(s).*
- *This project must be completed by X date.*
- *The rate of inflation over the next five years is estimated as X.*
- *Labor costs are expected to increase at x% per year.]*

### 2.6 METHODOLOGY [OPTIONAL FOR BASIC CBA]

The following methods have been used in estimating the values included in this analysis [for example:

- *The first alternative analyzed is the base case, which is “do nothing.”*
- *Labor cost estimates reflect current fiscal year salaries of full-time employees/consultants for the following job categories: Senior Project Leader, IT Director . . .*
- *The value of intangibles is estimated based upon . . .]*

### 2.7 EVALUATION CRITERIA

The recommendation presented in this document is based upon the following criteria [for example:

- *Which project or decision offers reduced operating costs*
- *Which project or decision better meets organizational objectives*
- *Which project or decision leads to better operational efficiency]*



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### 3. DESCRIPTION OF ALTERNATIVES CONSIDERED

*[This section identifies the alternative approaches for the project or decision (for example, as determined in a feasibility study or scan of a particular market for products or services) and provides a brief description of each. In addition, it provides a description of the current situation, if relevant. Note: All the information in this section should be included in both a basic and more advanced CBA.]*

#### 3.1 CURRENT SITUATION/NO CHANGE (AS-IS)

The technical, functional and operational characteristics of the current system or process *(if applicable)* are described below:

- Purpose of the current system or process
- Summary of functionality
- Hardware used *if any*
- System inputs and output *if any*
- Other

*[This information can be drawn from existing documents, such as As-Is process flows or websites and wikis that describe the current system or process.]*

#### 3.2 PROPOSED SYSTEM OR PROCESS (TO-BE)

The technical, functional and operational characteristics of the proposed system or process are as follows:

- Purpose of the proposed system or process
- Summary of functionality
- Hardware used *if any*
- System inputs and output *if any*
- Other

*[This information can be drawn from existing documents, such as To-Be or Future State process flows or an RFP.]*

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3.3 – 3.N [ALTERNATIVE SYSTEM OR PROCESS NAME(S)]

*[Each alternative system or process in this section should be under a separate section header. Include new sections as necessary for each alternative system from 3.3 through 3.n.]*

The technical, functional and operational characteristics of the alternative system or process under consideration are as follows:

- Purpose of the proposed system or process
- Summary of functionality
- Hardware used *if any*
- System inputs and output *if any*
- Other

*[This information can be drawn from existing documents, such as vendor descriptions of products or services, or specifications constructed by ISC developers.]*

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### 4. COSTS (TAB 2 OF EXCEL WORKBOOK)



*[This section provides all costs to develop and operate each alternative described in sections 3.2 through 3.n, including both one-time and recurring costs. A template for calculating these costs is provided in the companion Excel workbook. This spreadsheet may be used or costs and benefits may be presented by listing out the specific category listed below for each alternative under the appropriate section headings. Language presented below pertains to a software project, but may be adapted for other projects or decisions.]*

**Note:** The sections below are examples of types of costs. **Only the known or appropriate ones should be included.** A more advanced CBA will include more detail whereas a basic CBA will include less.]

#### 4.1 DEVELOPMENT COSTS

For alternative X, below are listed estimated costs for the definition, design and building portions of the project. These estimates include the overall cost of development, costs for personnel, equipment, developer training, and development tools.

*[These costs apply to alternatives that are developed in-house. They should be listed for each alternative being considered. They can be drawn from estimates of resources and materials that will be needed if the alternative is developed.]*

#### 4.2 OPERATIONAL COSTS

For alternative X, below are listed estimated costs for the installation, operation, and maintenance costs. These estimates include costs for personnel, equipment, operational site upgrades or changes, and staff training.

*[These costs apply to both alternatives developed in-house and those purchased from vendors. They can be drawn from vendor's estimates or estimates constructed by developers. They should be listed for each alternative being considered.]*

#### 4.3 NON-RECURRING COSTS

For alternative X, below are listed estimated non-recurring costs of each alternative over the system life.

##### 4.3.1 CAPITAL INVESTMENT COSTS

*[These are one-time costs that need to be incurred to get the system or process running. They should be included in both a basic and a more advanced CBA.]* Below are costs for acquiring, developing and installing the system or process:

- Site and facility
- Hardware purchase
- Software purchase

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- Non-computing equipment *[includes items such as environmental conditioning equipment and laboratory equipment]*

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### 4.3.2 OTHER NON-RECURRING COSTS

*[These costs are optional for a basic CBA.]* Below are other non-recurring costs *[for example:*

- *Studies (requirement and design studies)*
- *Procurement planning and benchmarking*
- *Database preparation*
- *Software conversion*
- *Training, travel and other personnel-related costs of development and installation (except salaries and fringe benefits)*
- *Parallel system costs, if a legacy system will be maintained*
- *Potential disruption to existing business operations]*

### 4.4 RECURRING COSTS

Below are presented the recurring costs *[by month or quarter or year]* of operating and maintaining this alternative over the system life *[examples include:*

- *Hardware lease, rental and in-house maintenance*
- *Software lease, rental and in-house maintenance*
- *Personnel salaries and fringe benefits*
- *Direct support services*
- *Training*
- *Space occupancy rental*
- *Supplies and utilities*
- *Security and privacy*
- *Overhead including overhead expenses that represent additional or incremental expenses attributable to the alternative]*

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### 5. BENEFITS (TAB 3 OF EXCEL WORKBOOK)



[This section describes benefits that can be assigned dollar values for each alternative system described in sections 3.2 through 3.n. Like costs, this may be done in the companion spreadsheet or by listing out the specific category of benefits for each alternative under the appropriate section headings.]

**Note:** The sections below are examples of types of benefits. **Only the known or appropriate ones should be included.** A more advanced CBA will include more detail whereas a basic CBA will include less.]

#### 5.1 COST REDUCTION

Below are listed non-recurring cost reductions resulting from improved operations, [for example:

- one-time purchase of less expensive hardware
- lower one-time license fee]

##### 5.1.1 VALUE ENHANCEMENT

Below are listed benefits that enhance the value of an application or system, [for example:

- reduction of resource requirements
- improved storage and retrieval techniques; improved resource utilization
- reduced error rates]

##### 5.1.2 OTHER

[Other possible items include the value of any excess equipment.]

#### 5.2 RECURRING BENEFITS (NOT RELATED TO LABOR OR OVERHEAD)

Below are listed some of the recurring benefits of operating and maintaining the alternative system or process over its expected lifetime. [Examples include:

- Lower hardware lease, rentals and in-house maintenance
- Lower software lease, rental and in-house maintenance
- Lower cost of direct support services
- Lower training costs
- Lower cost of supplies and utilities
- Improved security and privacy]
- Cost avoidance [Describe avoidance of future costs that would be incurred if the best alternative were chosen from a set of alternatives, compared to maintaining current operations. Include, for example,

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*improvements in operational flexibility, information handling and response to anticipated requirements, as related to cost avoidance.]*

### 5.3 LABOR COST REDUCTION

Below are benefits that will accrue due to lower personnel costs. *[Examples include:*

- *Need for fewer resources*
- *Needed resources receive lower salaries and fringe benefits]*

### 5.4 DECREASED OVERHEAD COSTS

Below are benefits that will accrue due to lower overhead costs. *[Examples include:*

- *Lower cost of space occupancy (desk, computer, data, phone)*
- *Lower cost of utilities]*

### 5.5 INTANGIBLE BENEFITS *[OPTIONAL FOR BASIC CBA]*

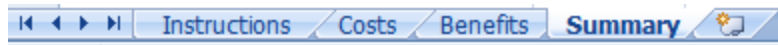
*[Some benefits cannot easily be quantified in direct dollar values (e.g., improved service, reduced risk of incorrect processing, improved information handling, enhanced organizational image). But sometimes intangible benefits can be assigned values in terms of estimates and tradeoffs. Include here whatever estimates of the value of intangible benefits are available.]*

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### 6. COMPARATIVE COST/BENEFIT SUMMARY (TAB 4 OF EXCEL WORKBOOK)



*[This is a summary of the cost and benefits identified in detail in the previous sections. Present the elements below in a manner that facilitates comparison.]*

*As with sections 4 and 5, this may be done in the companion spreadsheet or by listing out the specific category of benefits for each alternative under the appropriate section headings. Also as in these sections above, the sections listed here are provided as examples. **Only the known or appropriate ones should be included.** A more advanced CBA will include more detail whereas a basic CBA will include less.]*

#### 6.1 COST OF EACH ALTERNATIVE OVER ITS ESTIMATED LIFETIME

For each alternative described in sections 3.2 through 3.n, below are presented the costs in the period [year, quarter, month] in which they will be incurred.

##### 6.1.1 NON-RECURRING COSTS

Below is the total of non-recurring costs itemized above.

##### 6.1.2 RECURRING COSTS

Below is the total of the recurring costs itemized above.

##### 6.1.3 TOTAL ANNUAL COST

Below is a total of the non-recurring and recurring cost subtotals for each year of the system life.

##### 6.1.4 TOTAL COST OVER ESTIMATED LIFETIME

Below is a grand total cost over the estimated lifetime of the system or process. *[Obtain this by summing the total costs over the period of the expected lifetime of the system or process.]*

#### 6.2 EXPECTED BENEFITS OF EACH ALTERNATIVE OVER ITS ESTIMATED LIFETIME

The period during which the estimated benefits are expected to accrue is [X Years, Quarters, Months]. Below are totals of the quantifiable benefits for the period in which they are accrued.

##### 6.2.1 COST REDUCTION

Below is the total of the cost reductions itemized above.

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### 6.2.2 RECURRING BENEFITS

Below is the total of the recurring benefits itemized above.

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### 6.2.3 LABOR COST REDUCTION

Below is the total of the labor cost reductions itemized above.

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### 6.2.4 DECREASED OVERHEAD

Below is the total of the decreased overhead costs itemized above.

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### 6.2.5 TOTAL ANNUAL BENEFIT

Below is a total of the reduction subtotals for each year of the system life.

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### 6.2.6 TOTAL BENEFIT OVER ESTIMATED LIFETIME

Below is a grand total of benefits expected over the estimated lifetime of the system or process. *[Obtain this by summing the total benefits over the period of the expected lifetime of the system or process.]*

### 6.4 BENEFIT/COST RATIO *[OPTIONAL FOR BASIC CBA]*

*[Calculate the benefit/cost ratio by dividing the total value of benefits by the inflation-adjusted costs.]*

### 6.5 PAYBACK PERIOD *[OPTIONAL FOR BASIC CBA]*

*[Calculate the year or month in which the sum of benefits first exceeds the sum of the costs expressed in current dollars.]*

### 6.6 NET PRESENT VALUE *[OPTIONAL FOR BASIC CBA]*

*[Using the spreadsheet, calculate the net present value of the cashflows associated with each alternative.]*