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Determining the Viability of Programs, or Strategic Planning for the Rest of Us

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You can find this presentation at:
<http://seaquist.us/papers.html>

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Audience

Faculty, administrators, and staff who:

- Want to initiate new programs
- Currently manage programs and want/need to justify them
- Need to evaluate programs in times of scarce resources

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Topic

Viability of programs is in one sense an economic matter

- Viability \approx Profitability
 - How should costs be measured?
 - Remember that many departments are designed to be "cost centers," others revenue-generating

Basics of cost accounting should be in the toolbox of every academic & administrator

- Cost measurements are not always objective

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Caveat

I WON'T argue that the only measure of value in higher education is profitability.

- See Appendix 1.

Evaluating the financial viability of programs is complex.

- I can't present all I'd like to in an hour.
- I can introduce you to the key problems and solutions, so you see how to approach it.

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NOT My Focus

I cannot NOT help you:

- Judge the intellectual value of a program
 - You know that better than I do.
- Interpret SACS rules and regulations, or tell you how SACS will assess programs

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Practicalities

Colleges/Universities often use simple (and bad) rules in making resource allocation decisions

- e.g., You can start a program if it will pay for itself

General Advice

- Learn (& follow) the rules that your college uses
- Also think about the underlying economics
 - Rules can change quickly
 - This helps you develop more persuasive arguments

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Outline

Intro: Audience, Focus, Assumptions

Background: Areas of Accounting, General Advice

→ **Some Terminology**

→ **Analysis for Planning, mostly Financial**

Appendices, most of which I won't get to

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Feel free to ask questions, especially asking for clarification.

For anything that departs from my outline, I'll probably ask you to hold your question until afterwards.

Feel free to contact me after this session if you'd like someone to run ideas by. I mean it.

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Some Terminology

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Overview of Terms

Breakeven

Direct/Indirect Costs

Fixed/Variable Costs

Contribution Margin

- Most Likely v. Expected Profit

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Breakeven

Breakeven point occurs when total revenues equal total costs.

- If a program doesn't break even, then another program(s) must subsidize the work of the first program.

It's probably not advisable for all programs to breakeven. Who should break even ought to be determined by the institution's mission.

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Direct and Indirect Costs

Possibly the most commonly missed distinction

Direct Cost: cost that can be efficiently traced to a particular product ("cost object")

Indirect Cost: cost that cannot be efficiently traced to a particular product

"Product": anything for which a measurement of cost is desired

- So value of direct costs depends on what you're measuring

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Examples of Products (Cost Objects)

Instruction

- FTE
- Course
- Student Graduations

Research

- Publication
- Patent

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Example: Academic Program

Product: Course Enrollments

Direct Costs

- Faculty
- Support for Graduate Students
- Facilities (faculty offices, seminar room)

Indirect Costs

- Work of shared administrators and staff
- Library Resources
- Administration Building, Classroom Buildings

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Direct Costs

In principle easy, but in practice it may be hard to identify ALL direct costs.

One heuristic is to think about constraints: institutional, regulatory, pedagogical.

- Example: how many faculty will be required? Consider course load, course sequencing, requirements for instructors . . .

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Indirect Costs

It's hard to know which indirect costs to include in analyses of profitability.

- Focus on material, and measurable, costs.
 - Material: capable of influencing a decision
 - Of course, individually immaterial costs can add up.
- Generally colleges have rules for allocation of costs for supporting departments. You can use these.
- There's so much more I'd like to say about this, but I won't for now.

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Fixed and Variable Costs

Fixed Costs: Costs that don't vary as a function of levels of production

- Within a given range of production, that is

Variable Costs: Costs that vary as a function of levels of production

Full Cost: Sum of all variable and fixed costs

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Examples

Fixed Costs

- Standing faculty
- Owned facilities
- At-will staff (I hope!)
- IT infrastructure

Variable Costs

- Adjuncts
- Leased facilities (depends on contract)
- Laptop programs

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In the Long Term

As examples demonstrate, whether a cost is fixed depends on how long out you're looking

Important rule: in the long term, all costs are variable

- This has implications for capital budgeting (see Appendix 2)

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Contribution Margin

Contribution Margin = Revenue – Variable Costs

This is a measure of the extent to which a given product, program, etc. "contributes" to departmental and/or institutional fixed costs.

- General rule: any revenue-producing project should at least have positive contribution margin.

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Analysis

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What Constitutes a Proper Financial Analysis of a Program?

1) Assumptions

2) Estimates of Revenue and Expenses

- Revenue: market research
- Expenses: analysis of costs

3) Sensitivity Analysis

(Ideally, do this in Excel & follow good practices.)

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Importance of Assumptions

Assumptions determine the outcome of any analysis.

- An analysis that a project will result in net profit demonstrates nothing unless the assumptions are reasonable.

Be clear what your assumptions are, and document the reasons you chose them.

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Sensitivity Analysis

Analogy: science classes. No measurement results in a number. Proper form is always:
 $X \pm Y$

No estimate of profit/loss is complete without a range of likely outcomes.

- Identify your key assumptions or cost/revenue drivers, and ask what would happen if they were lower/higher than expected. What would that do to the result?

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Expected Profit

May substitute for most likely profit in a report, but not for a sensitivity analysis.

- You probably would want to report both expected and most likely profits, and maybe breakeven.

Method: estimate likelihood of several possible outcomes, and calculate weighted average of these.

- Possible outcomes are derived from assumptions that drive sensitivity analysis.

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Expected Profit: Example

Most likely outcome: \$25,000 profit at 40 students enrolled; 50% chance of this result.

Sensitivity analysis gives equal chances to high and low outcomes, as follows:

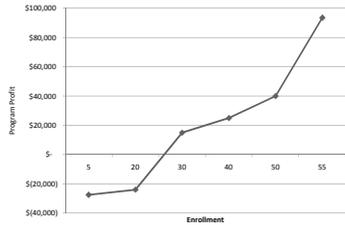
- 20 students, \$24,000 loss (5% chance), -\$1,200/student
- 30 students, \$15,000 profit (20% chance), \$500/student
- 50 students, \$40,000 profit (20% chance), \$800/student
- 55 students, \$93,500 profit (5% chance), \$1,700/student

Then the expected profit is \$26,975.

- If expected profit not given, sensitivity analysis would report 30, 40, and 50 student outcomes only.

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Notice that profit isn't a linear function of enrollment in this case. That's generally true, because fixed costs are a lower portion of total costs as enrollments rise, within a band.



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Good Practices in Excel

Hard code as few numbers as possible

- Link to numbers whenever possible

Be explicit, label all numbers, identify data sources, distinguish assumptions and calculated numbers, learn to use a variety of formulas, date versions

A great resource: Jonathan Swan, *Practical Financial Analysis: A Guide to Current Practice*, Elsevier 2008

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Market Research (1)

Financial analysis begins with assumptions. How good are revenue assumptions? Market research answers this.

- Don't confuse this with marketing. Marketing helps an institution meet the production goals it has already set.
- Market research determines what goals are reasonable, and sets upper and lower bounds on these estimates.

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Market Research (2)

There are analytical methods for using market research data, which I won't address here.

Collecting data is an art.

- Associations and other groups sometimes collect data you can use.

Any competent administrator will query your revenue assumptions, so good (and documented) market research is vital.

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Appendices

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Appendix 1: College Value Functions

This fulfills promise in Caveat (slide 4) above.

Optimality condition (optimal level of production) for for-profit firms:

$$\text{marginal cost} = \text{marginal revenue}$$

Compare higher ed optimality condition (David Hopkins and William Massy, 1981, p. 91):

$$\text{marginal cost} = \text{marginal revenue} + \text{normalized intrinsic value}$$

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Logic of Marginal Costs

Marginal cost (revenue) is defined as the cost (revenue) of one more unit of production.

- Breakeven: total costs and revenue are equal.

If your marginal cost is less than your marginal revenue, you'll want to increase production because that'll increase your unit profit.

- If marginal cost is greater than marginal revenue, then you've increased production too much.

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Appendix 2: Physical Capital

Colleges generally don't consider the replacement cost of physical capital when calculating indirect costs.

- The assumption is that charitable giving will pay for capital replacement.
- If colleges did consider replacement cost, achieving breakeven would generally be much harder. FYI

Gordon Winston has argued persuasively that this approach is misguided. He's probably right.

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Appendix 3: Main Divisions of Accounting

Financial Accounting

- Provides means of reporting financial information for use by EXTERNAL investors, creditors, government, regulators
- Follows generally accepted principles (GAAP) and rules set by agencies (FASB, GASB)

→ Managerial Accounting

- Determines how to report financial information for use by INTERNAL managers
- No generally accepted rules; rather a variety of methods may be used, and I'll address some of them

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