The University of Georgia

Center for Agribusiness and Economic Development

College of Agricultural and Environmental Sciences

Estimating a Business Opportunity's Economic Vitality

DRAFT

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Estimating a Business Opportunity's Economic Viability

Evaluating a new business opportunity can be an overwhelming task. There are many things to consider but the most important is to determine whether the business can generate a level of sale sufficient to generate a profit. If the business is not able to generate a sales revenue that are equal to or exceed expenses, it is most like not an economically viable business proposition.

Before spending time and resources on developing a feasibility study and/or business plan, there prepare a break-even analysis which will provide an estimate of the sales required to cover total costs. If the break-even analysis reveals that estimated sales revenue significantly exceed the estimated cost of doing business, it is worthwhile investing more time and resources to conduct a comprehensive feasibility study.

This check-list will introduce you to break-even analysis and provide an example presenting the basic tools required to perform a coursery business opportunity evaluation. However, it is important to remember the more detailed the information that is collected regarding the business proposition, the better the analysis and resulting conclusions regarding the proposition's economic viability.

Estimating Start-up Costs

Estimating start-up costs is a critical part of evaluating a business. These costs will include one-time costs like purchasing land or constructing a building while other expenses will be ongoing like payroll, insurance, facility lease, and utilities. It is important to make a list of these start-up or one time expenses and then assign a corresponding dollar figure to each. Startup costs should then be evaluated to determine if they are essential or optional. Only the essential costs should be included in the startup budget.

The essential costs need to be classified as either fixed (overhead) costs and variable (related to business sales) costs. Fixed expenses will include figures like the monthly rent, utilities, and administrative and insurance costs. Variable expenses will include inventory, shipping and packaging costs, sales commissions, and other costs associated with the direct sale of a product or service.

When starting a new business, it is important to estimate the costs of operating the business for the first several months it is in existence. The following is an example of the types of costs that need to be considered[1].

[1](Source: SCORE, Fort Worth, TX, 4/97)

Start-up Budget Sample (Source: SCORE, Fort Worth, TX, 4/97)

1.	Real Estate, furniture, fixtures, machinery, equipment: (Record either purchase price f paid in full with cash or cash down payment if purchased on contract)	Dollar Cost
	a) Equipment	$ _____
	b) Fixtures and fittings	$ _____
	c) Transportation & installation costs	$ _____
	d) Specialized computer software	$ _____
	e) Security system	$ _____
2.	Starting Inventory (1 to 3 months)	$ _____
3.	Decorating, refurbishing, & remodeling costs	$ _____
4.	Deposits Required:	
	a) Utilities	$ _____
	b) Rent	$ _____
	c) Insurance	$ _____
	d) Other (identify)	$ _____
5.	Fees Required:	
	a) Legal, accounting, others	$ _____
	b) Licenses, permits, etc.	$ _____
	c) Bank/checking account	
	d) Other (identify)	$ _____
6.	Initial Advertising & Marketing Costs (ie., flyers, sales letters and calls, signs, brochures, etc.)	$ _____
7.	Accounts Receivable (_____ days of sales)	$ _____
8.	Salaries for employees and owner until business opens or positive cash flow is positive	$ _____
9.	Other miscellaneous expenses:	
	a) Trade shows	$ _____
	b) Office supplies	$ _____
	c) Travel expenses	$ _____
	d) Signs	$ _____
	e) Cleaning service	$ _____
	f) Profession Association fees	$ _____
	g) Other supplies, etc.	$ _____
10.	Payments on other fixed obligations	$ _____
Total Start-Up Costs		**$ _____**

Start-up Cost Budget Example
The following are examples of start=up costs associated with a mobile poultry processing facility.

Expense		**Cost**
Variable Cost		
Docking Station rental per batch	$	49
Water	$	327
Electricity	$	56
Fixed Costs		
Trailer	$	70,000
Processing equipment	$	4,975
Insurance	$	3,500
Tags and Licenses	$	300
Total Start-up Costs	**$**	**79,207**

These start-up costs will be used later in developing the break-even analysis.

Preparing a Break-Even Analysis

A break-even analysis can be used to calculate the number of units that need to be sold to break even or the price per unit needed for the business to break even. A break-even analysis allows you to run "what if" scenarios. For example, if an additional shift or production line is added to the business, how many extra units will have to be produced to cover these costs. If you have a variable rate loan, what will the impact of interest rate changes impact the level of sales needed to cover these changes in costs.

The formula for preparing a break-even analysis is as follows:

Break-Even in Units *= Fixed Cost / (Unit Price - Average Variable Cost)*

Break-Even Price *= (Fixed Costs/Estimated Sales(Units)+ Average Variable Costs*

Preparing a break-even analysis requires a basic understanding of simple financial analysis terms.

To prepare a break- even analysis four variables are needed.

1. Variable costs
2. Fixed costs
3. Price
4. Estimated sales

A brief explanation of each of these terms is provided to ensure a basic understanding of the financial terms utilized in preparing a break-even analysis. Remember, the start-up costs outlined earlier need to be included in your break-even analysis.

Variable costs - These are costs that are correlated or change with a businesses level of production and/or sales. An example of variable costs would be the fuel needed to run a tractor for a corn maze hay ride. As the number of visitors increase so does the number of hay rides and fuel needed to run the tractor. The purchase of additional fuel would be considered a variable cost. The following provides a list of potential variable costs.

- Wages (how many and what are you paying employees)
- Raw material costs (inputs)
- Utilities (electricity, natural gas, water, sewer)
- Cost of maintaining inventory (cold storage, warehouse space)
- Shipping or distribution costs (trucking costs, broker costs)

The following are variable cost estimates for a mobile processing facility. Remember, a number of these variables costs were included in the start-up cost budget.

Variable Costs	**Cost**
Mileage - driving to 3 docking stations locations)	$ 1,100
LP gas	$ 514
Labor (4 workers, 1,000 hrs, @7.15/hr)	$ 28,600
Maintenance and Repair on Trailer	$ 316
Maintenance and Repair on Equipment	$ 256
Docking Station rental per batch	$ 49
Water	$ 327
Electricity	$ 56
Total Variable Costs	**$ 31,219**

Fixed Cost- These are costs that a business incurs regardless of its level of production or sales. Fixed costs ***do not*** fluctuate with sales volume and are sometimes referred to as overhead costs. An example of a fixed cost would be the monthly mortgage payment on a mobile poultry processing facility. Regardless if the business is processing birds, the business has to pay for the facility. The following are examples of fixed costs.

- Mortgage/rent
- Interest on debt
- Insurance
- Plant and equipment expenses
- Business licenses
- Salary of administrative personnel
- Utilities
- Taxes
- Supplies
- Sales and Marketing

The following are the fixed costs associated with a mobile processing facility.

Fixed Costs	
Trailer	$ 70,000
Processing equipment	$ 4,975
Insurance	$ 3,500
Tags and Licenses	$ 300
Total Fixed Costs	**$ 78,775**

Total Variable Costs- The sum of the variable costs for the specified level of production or output. For example, a mobile poultry processing trailer is capable of processing up to 80,000 birds annually. However, a producer is currently only producing 26,500 birds annually. The total variable costs is the sum of all the variable costs to process 26,500 birds.

Variable Costs		**Cost**
Mileage - driving to 3 docking stations locations)	$	1,100
LP gas	$	514
Labor (4 workers, 1,000 hrs, @7.15/hr)	$	28,600
Maintenance and Repair on Trailer	$	316
Maintenance and Repair on Equipment	$	256
Docking Station rental per batch	$	49
Water	$	327
Electricity	$	56
Total Variable Costs	**$**	**31,219**

Average Variable Costs- These costs are the variable costs per unit of output or of total variable costs divided by units of output for a specific period of time. Using the total variable expenses from above, it is possible to determine the average variable costs for the mobile processing facility producing 26,500 birds annually. This is done by dividing the total variable costs by the number of birds being processed.

Average Variable Costs = $31,219/26,500
Average Variable Costs = $1.18

Revenue Estimation
In addition to having detailed cost information, it is important to estimate potential sales in both units and revenue. However, to gain a clear picture of the viability of a business it is essential to have both cost and sales information. Therefore, it is important to estimate sales potential and drive a price estimate.

Estimated Sales- refers to estimated sales during a specific period of time. A company's estimated sales are derived from estimating market potential and anticipated market share. It is advisable to estimate sales using two or three different market share figures to provide an estimated sales range.

Example: Overall, per capita meat consumption in the United States grew 8.7 percent from 1980 to 2005, from 180 to 220 pounds of meat per person, on average. From 1980 to 2005 per capita consumption of poultry grew 68 percent to 85 pounds annually. We can use this figure to estimate the total amount of chicken consumed on a per capita basis for affluent people residing in 30, 60 and 100 miles of Hancock County. Calculating the total market potential for these areas for affluent people, household incomes over $75,000 annually, it is possible to determine whether the market is sufficient enough to support the number of chickens proposed being processed on an annual basis.

Estimated Market Potential for Affluent Consumers in Identified Market Areas

		Miles	
Income Group (households)	**30**	**60**	**100**
$75,000 to $99,999	8,412	101,373	645,868
$100,000 to $124,999	3,859	44,716	336,487
$125,000 to $149,999	1,541	20,169	167,624
$150,000 to $199,999	1,361	14,765	148,905
$200,000 and Over	2,272	17,659	161,522
Total	17,445	198,682	1,460,406
Per Capita Poultry Consumption	85 pounds	85 pounds	85 pounds
Estimated Annual Area Consumption of Poultry (lbs)	**1,482,825**	**16,887,970**	**124,134,510**

A poultry producer has the capacity to produce 26,500 birds annually. Assuming each bird will produce 4 pounds of marketable meat produces, the producer will have 106,000 pounds of meat. The above market analysis estimates that annual poultry consumption is in excess of 1 million pounds. The market appears to be sufficiently large enough to absorb an additional 106,000 pounds of poultry.

Price- It is important to estimate how much a business will charge for each unit of its products and/or services. One method of determining price is to spy on the competition and collect their products pricing information. It is important that you do not use the retail price as it contains a retailer mark-up if the producer sells directly to the retailer. If the producer utilizes a broker or wholesaler, there may be additional mark-up reflected in the final retail price. It is important to investigate or estimate the price the producer is paid for its products as over estimating the price

received will lead to inflated revenue figures leading to a faulty break-even analysis.

Example: According the results of the University of Wisconsin's Center for Integrated Agriculture Systems (CIAS), farmers are charging an average of $1.90 per pound for a whole processed free-range chicken. Assuming an average of 4 pounds per carcass processed and the $1.90 per pound selling price, each bird would generate $7.60.

Calculating a Break-Even Figure

Given both the cost and marketing information provided above, it is possible to calculate a break-even for a proposed mobile processing facility. It is important to calculate a break-even unit and price to effectively evaluate the business opportunity. These calculation will rely on information presented earlier in this document. For example, the average variable cost figure of $1.18 was derived in the variable cost section.

Break-Even Unit Calculation

The first calculation is focused on calculating the number of birds that need to be processed and sold for the mobile poultry operation to break-even.

> ***Break-Even in Units*** = *Fixed Cost / (Unit Price - Average Variable Cost)*
> ***Break-Even in Units*** = *$78,775/($7.60-1.18)*
> **Break-Even in Units** = 12,270.25 - number of birds processed to break-even.

The calculation reveals that 12,270 birds need to be processed at a selling price of $1.90 per pound for the operation to break-even. Sales exceeding this level will allow the business to start generating a profit. Given that the pounds of poultry consumed in the market area far exceeds the number of birds needed to break-even, the operation could expect to sell the 12,270 birds needed to break even.

Break-Even Price Calculation

The second calculation is focused on calculating the price per-bird that needs to be achieved for the mobile poultry operation to break-even.

> **Break-Even Price** = (Fixed Costs/Estimated Sales(Units)+ Average Variable Costs
> **Break-Even Price** = *($78,775*/(26,500+1.18))
> ***Break-Even Price*** = $2.97 per bird is the break-even price

The calculation reveals that each of the birds being processed needs to sell for $2.97 per bird for the operation to break-even. Given that other farmers producing similar products are generating $7.60 per bird, capturing $2.97 per bird is not unrealistic.

Appendix A - Start-up Cost Calculators

http://www.bplans.com/common/calculators/startingcosts.cfm

http://www.businessknowhow.net/bkh/startup.htm

Appendix B - Break-Even Calculators

Break-even quantity calculator
http://connection.cwru.edu/mbac424/breakeven/BreakEven.html
http://www.dinkytown.net/java/BreakEven.html

Break-even quantity and price calculator
http://www.eventageous.com/planning_guides/breakeven.htm

Break-Even Information

Financial

A.	Start –up Costs*	$ _____
B.	Fixed Costs	
	Land Purchase	$ _____
	Equipment	$ _____
	Computer	$ _____
	Furniture	$ _____
	Building	$ _____
	Total	$ _____
C.	Variable Costs	
	Labor	$ _____
	Fuel	$ _____
	Utilities	$ _____
	Insurance	$ _____
	Lease or Rent	$ _____
	Professional Services (Accounting, Legal)	$ _____
	Total	$ _____
D	Total	$ _____

Sales

E.	Market Potential	
	Target Market	$ _____
	Consumption per time period	$ _____
F.	Sales Price	$ _____

* Make sure costs are not double counted in start-up and fixed and variable

Break-Even Units = Fixed Costs ÷ (Unit Price - Average Variable Cost)

Break-Even Units =

Break-Even Price = Fixed Costs ÷ (Estimated unit sales + Average Variable Costs)

Break-Even Price =

Are the break-even unit sales and price figures consistent with potential sales and realistic price per unit? If so, the business may be profitable. However, additional analysis is needed to ensure that the business can cash flow and generate a profit.

The Center for Agribusiness and Economic Development

The Center for Agribusiness and Economic Development is a unit of the College of Agricultural and Environmental Sciences of the University of Georgia, combining the missions of research and extension. The Center has among its objectives:

- **To provide feasibility and other short term studies for current or potential Georgia agribusiness firms and/or emerging food and fiber industries.**
- **To provide agricultural, natural resource, and demographic data for private and public decision makers.**

To find out more, visit our Web site at: http://www.caed.uga.edu/

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