Financial Feasibility Assessment of a Very Small Meat Processing Plant Tool Instructions

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This is an enterprise budget and other financial analysis for a very small-scale meat processing plant (maximum 750 head per year) in Utah. It has been setup to allow users to modify the assumptions to customize to an individual situation. Initial numbers are from "Potential for Growth in Local Processing and Sales of Utah Beef" by the tool authors (this report and the tool can be found at www.extension.usu.edu/apec/meatprocessing . It should be noted that any budget is a set of assumptions and individual results may vary. This study includes a budget, analysis of profit sensitivity, and capital budgeting analysis. A summary of each of these is found below. Additional details are provided in the appendices.

A sample budget of operating costs for a meat processing facility in Utah was built using current budgeting information for the USU Meats Lab and gathering pricing data from Waltons, Inc., Processor Division Koch Supplies, and Ultra Source to determine current market prices for equipment and supplies. Given the variance of land prices across the state, as well as other initial start-up costs such as running utilities to the building location, this budget focuses on the operating costs of current facilities, with a number of assumptions.

Enter Initial Cost Assumptions

There are two places where you can modify the assumptions on the initial costs to get the facilities setup. One is on the "Initial Cost" tab and the other is the "Small Tools" tab. They are separated because of how they are used.

Initial Cost – These are the costs of the building and all equipment. It is separated into two portions the harvest floor and the processing floor. Any cell with a green background can be modified. There is a place to enter the number purchased, cost per unit, and the years of useful life. The total initial cost is used as the initial cost in the capital budgets. The cost divided by the useful life is the annual depreciation. It is used in the general budget as a part of overhead costs.

Small Tools- This table is to account for additional small tools that are needed to purchase in the first year in setting up the operation. They will be replaced as needed either as part of miscellaneous costs or maintenance costs. This amount is used in the capital budgets as an additional cost in the first year. It is not used in the general budget as that is for a typical year and this cost is factored into the miscellaneous and maintenance costs.

Modify Budget Assumptions

Budget Costs - The detailed budget allows for modification of the amounts used and costs for various estimated expenses.

Head processed – the number of head that are processed for wholesale and for custom are entered into the cells at the top of the page. This will modify the sales for both wholesale meat and custom processing. It will also modify the cost of purchasing livestock and the marketing and distribution costs. It will not modify the other expenses in the budget. Those should be modified using the cells in green for each expense.

Weight – There are three numbers entered at the top of the page for the average weight for a live animal, the weight of the carcass and the yield for each animal in retail-cut meat.

Budget Tables

There are two different budget tables on the budget tab. This is the detailed budget and then a summary budget. Both are located on the budget page and can be printed. To print one, the print area will need to be selected. These are meant to be an average year based on the various assumptions in green. The actual results will vary. The sensitivity discussed below uses the budget information to show the sensitivity of estimated profit to changes in assumptions.

Sensitivity

A table to allow examining the range of profit from various assumptions.

Factors to adjust: There are four items that affect the profit in significant ways. There are spaces to allow modifying each of these to see the effects.

- **Price of cattle** – The cattle market can vary within a very short period of time. There is one box at the very top that allows entering a cost per cwt. for cattle. This number is used in the whole table.
- **Price premium** – This is the average amount above the price of meat that consumer will pay for the meat from the facility. It is set up with 20%, 30% and 40%, but can be modified.
- **Retail margin** – This is the difference between the wholesale and retail price. The wholesale price is the retail price multiplied by 1 minus the margin. It is set up with 40%, 30% and 20% but the numbers can be modified.
- **Head processed** – There are three places to allow for the estimated head that are processed for wholesale meat and for custom processing. This allows seeing the effects of three levels of capacity to be examined at the same time.

Results- The table results use the information in the green cells along with the information from the budget and initial cost tabs to calculate the following:

- **Wholesale prices** – The margins and price premiums are used to calculate the various wholesale prices.
- **Estimated Net Income** – the estimated net income or loss is calculated for each of the wholesale prices for the number of head chosen. Numbers in red are losses. This is the net income before paying any self-employment or income tax owed.

Capital Budgeting

Capital budgeting analysis is done by estimating the annual cash flows over a period of time. A discount rate can be used to find net present value (NPV), internal rate of return (IRR), and a modified internal rate of return (MIRR). Appendix D provides details for a 20-year capital budget. This is based on a discount rate of 10 percent pre-tax or 6.5 percent after tax. While similar to an ROI, this is a more robust technique and allows accounting for the timing of the cash flows. It also allows for assumptions on decreased operating levels in the first years as the business is starting. It was assumed that only 50 percent capacity the first year and 75 percent in year 2. 50 percent of the initial investment was financed at 5 percent for 15 years. We also added an extra $20,000 in the first year to the overhead to account for additional small tools purchased. Additional costs were added in year 10 for purchasing new equipment.

Items to modify or input:

All the numbers in green can be adjusted. However, some start linked to information in other cells. If they are adjusted on this sheet. They will not go back to the original. You may always download a new copy or can save a version of the workbook before adjusting them**. Below are two separate lists. The first is items linked to other sheets and the second is items that are not.**

Items linked to other sheets. We suggest not changing them, instead change the information in green in the other sheets. They are not protected cells and can be changed but will not go back to the original links.

- **Initial Cost. This is the total from the initial costs table.**
- **Terminal.** The terminal value would be dependent upon what the building and equipment could sell for and would differ depending on location. It initially is set to the remaining book value (any amount not depreciated). It is in green to allow adjusting to another number.
- **Sales per head**. This is set to the sales per head from the budget tab.
- **Variable cost per head:** This is set to the cost of good sold per head from the budget.
- **Cash Overhead:** This is set to the sum of all items but depreciation in the overhead section of the budget. Depreciation is not included because it is a non-cash cost.
- **Additional Cost Year 1.** This is the total of the small tools table. It allows for additional purchases of small tools in the first year getting started. The cost of replacement is included in the miscellaneous and maintenance costs.
- **Depreciable Assets.** These are included here to calculate depreciation. Even thought depreciation is non-cash cost, it affects the taxable income and income taxes paid.
    - **Truck.** This is the cost of the truck on the initial costs table.
    - **Equipment.** This is the total of the initial costs less the truck and building costs.
    - **Building.** This is the cost of the harvest floor and processing floor buildings from the initial costs.

These Items are not linked to other sheets and can be adjusted.

- **Max Head per Year.** This is set initially to the amounts the initial budget we based on. It can be adjusted. This is the maximum number that can be processed each year.

- **Growth/Inflation**. This is the rates used to increase the sales per head and costs per head each year for inflation.
- **Tax rate.** This is the income and self-employment tax rate.
- **% Financed:** The percent of the initial investment that is financed. The amount not financed is the down payment needed.
- **Finance Rate**. The rate on the loan to finance the initial investment.
- **Nominal discount rate**. This is the desired rate of return pre-tax. It is multiplied by 1 minus the tax rate to get the After tax nominal discount rate used in the calculations for NPV, IRR, and MIRR.
- **Years financed.** Used to calculate the loan payment for the initial cost.
- **% capacity**. This can be adjusted each year to show the amount processed during that year.

Here are explanations of each line in the yearly cash flows.

Receipts. The cash receipts come from a combination of sales of wholesale meat and custom processing. The number of head for each one is multiplied by the sales per head from Table A3 for year 1. This is then multiplied by the capacity percent. Subsequent years are the same formula but sales per head is increased each year by an inflation rate.

Terminal Value. In the final year it is the amount listed under terminal value.

Cash Inflow. This is the receipts and terminal value added together.

Down Payment. This is 1 minus the finance rate multiplied by the initial cost.

Operating Expense. This is the head per year for both wholesale and custom multiplied by the variable cost per year per head. This is all multiplied by the percent capacity. Each year the variable cost per head is increased by the percent for inflation.

Cash Overhead. This is the cash overhead.

Depreciation. Depreciation is based on Internal Revenue Service guidelines using the tables for General Depreciation System (GDS). The truck is considered to be a 5-year class property and the equipment is in the 7-year class. They are both depreciated based on rates for GDS depreciation, using tables which are 150% declining balance switching to straight line (USDT-IRS, 2020). The building is considered non-residential property and is depreciated over 39.5 years using straight-line depreciation. In year 10, new equipment is purchased and is depreciated in years 11 to 18. For the 30-year capital budget equipment is also purchased in year 20 and depreciated in years 21 to 28.

Interest and Principal. This is the loan payment broken into the interest and principal portions.

Payoff Loan/New Investment. This is to account for additional purchases of equipment in year 10 (and 20 for 30-year cash flow). The amount of purchases is all equipment, adjusted for inflation. This also includes any amount in the final year that is remaining on the loan.

Taxable Income. This includes the cash inflow less operating expenses, cash overhead expenses, depreciation, and interest. In the final year there is also a deduction for any remaining book value on the building.

Income taxes. Taxable income multiplied by the tax rate of 35 percent.

Cash Outflow. This includes the operating expenses, cash overhead, interest, principal, payoff loan/new investment, and income taxes.

Net Cash flow. Cash inflow less cash outflow.

Results of Capital Budgeting Analysis

Net Present Value (NPV). The net present value is the amount that is the sum of all future returns discounted to the beginning of the project and added together, or, the sum of the present value of all new cash flows. A positive NPV indicates that the investment is earning more than the desired rate of return.

Internal Rate of Return (IRR). IRR is the rate that the project is returning on the initial investment. It should be noted that this is the return to the down payment and not the full cost of equipment since the investor would only be paying the down payment. It should also be noted that IRR assumes reinvestment at the IRR rate which, when above the discount rate, causes the IRR to be overstated. An IRR above the after-tax discount rate indicates the investment is profitable.

Modified Internal Rate of Return (MIRR). The MIRR is a modification of the IRR that assumes a reinvestment rate at the discount rate not the IRR. It is a more accurate measure. An MIRR above the after-tax discount rate indicates the investment is profitable.