Using Partial Budgets to Propose Change

Partial Budgets

- Primary tool for looking at operational changes within a business
- Only looking at those items impacted by the change.

Proposing Change

- Many changes can be made
- Which ones will work?
- Which do you do first?
- How do you propose change?

Partial Budgets

- All items not effected are assumed to stay the same.
- Only use when looking at a change that impacts few areas of the business.
- Have to compare to something - usually status quo.
- Can use for sensitivity analysis

A Process

- Prepare/answer the following
  - How will the change work
  - Budgets
  - People impacted
  - Areas of the business impacted
  - Timeline
  - Things Needed
  - Control

Step 1 - What is Impacted/How Will it Work

- What is the change?
- What will be impacted
  - Income, plus or minus
  - Expenses, plus or minus
- Write down all assumptions
- Basis for budget
Status Quo

- What is currently being done?
- If no longer going to be doing something, what changes?
  - What is the income not earned?
  - What expenses no longer paid?
- No only new things associated with change, but old things no longer done.

Profitability Partial Budget

- **Depreciation Expense**
  
  \[
  \text{Depreciation Expense} = \frac{(\text{Purchase cost} + \text{Installation cost} - \text{salvage value})}{\text{useful life}}
  \]

- **Manure spreader**
  - $50,000 cost
  - 10 year life
  - 10% salvage value
- What is the depreciation expense?
  - $4,500

Prepare Partial Budgets

Step 2

- **Two principal types**
  - Cash
  - Profitability
- Which one should you work on first?

Profitability Partial Budget

- **Opportunity cost**
  
  \[
  \text{Opportunity cost} = \frac{(\text{Initial investment} + \text{salvage value})}{2} \times \text{opportunity cost %}
  \]

- **Manure spreader**
  - Opportunity cost = 5%
- What is the annual opportunity cost?
  - $1,375

Profitability Partial Budget

- **Question:** Does this investment make money?
- **Key considerations**
  - Economic life of the investment
  - Depreciation expense
  - Opportunity cost of investment
- Change in both cash and non-cash income and expenses

Calculations

- **Depreciation**
  
  \[
  \text{Depreciation} = \frac{(\text{Investment} - \text{salvage value})}{\text{useful life}}
  \]

- **Salvage value**
  
  \[
  \text{Salvage value} = 50,000 \times 0.10 = 5,000
  \]

- **Depreciation expenses**
  
  \[
  \text{Depreciation expenses} = 50,000 - 5,000 = 45,000 \div 10 = 4,500 \text{ per year}
  \]

- **Opportunity Cost**
  
  \[
  \text{Opportunity Cost} = \frac{(\text{Investment} + \text{salvage value})}{2} \times \text{opportunity % rate}
  \]

- **Calculations**
  
  \[
  \begin{align*}
  \text{Opportunity Cost} & = \frac{(50,000 + 45,000)}{2} = 27,500 \times 0.05 = 1,375
  \end{align*}
  \]
**Profitability Partial Budget**

Items That Add to Net Income:  
- Added Receipts
- Reduced Expenses

Items That Reduce Net Income:  
- Reduced Receipts
- Added Expenses

Total (A) $_________  
Total (B) $_________

Change in Net Income (A-B) $_________

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**Cash Flow Partial Budget**

- Principal and interest expense for the loan key numbers if investing capital
- Replaces depreciation expense and opportunity cost in the profitability budget.

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**Profitability Partial Budget**

- Always the first one to consider
- Can't forget the DIRT! 5 if involves capital expense
- What changes in inventories may there be?
- If not capital investment or changes in non-cash items, than profit budget = cash budget

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**Cash Flow Partial Budget**

- Even if self financing, can still use a loan payment to see if make sense
  - Will the cash savings be rebuilt?
- Many places to determine these figures

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**Cash Flow Partial Budget**

- Only includes cash inflows and outflows
- What cash is generated?
- What new cash expenses are there?
- What expenses are saved?
- What is the interest expense and principal payment required if financed?
- How will the change be paid for?

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**Cash Flow Partial Budget**

Items That Add to Cash Flow:  
- Added Inflows
- Reduced Outflows

Items That Reduce Cash Flow:  
- Reduced Inflows
- Added Outflows

Total (A) $_________  
Total (B) $_________

Change in Cash Flow (A-B) $__________
Partial Budgets

- **Hard Numbers**
  - High degree of certainty will occur
  - Highly accurate estimate of dollar change
- Generally added costs only hard number
- If no longer using an input, a hard savings.

**Excel Spreadsheet**

- Can use spreadsheets to do calculations
- What type of budget are we doing?
- Do profit first, cash second

**Partial Budgets**

- **Soft Numbers**
  - May or may not occur
  - Hard to accurately estimate dollar value of change
- Increase in milk production or increase in breeding efficiency are examples of soft numbers.
- Generally income is always soft

**Further Analysis**

- Simple partial budget looking at first year annual costs
- What if things change over time?
- More complicated analysis
- Many different spreadsheets available on the web to help perform analysis

**Limitations of Partial Budgets**

- If positive results - does it occur from hard numbers or soft numbers?
- Just looking at one area of the business - doesn't answer the question, is this the best use of limited resources?
- Not additive
- Sensitivity analysis
- Projecting the future!

**Further Analysis**

- What is the net present value of the change?
- What is the tax implications of the change?
Summary

• Partial budgets key decision tool
• Hard vs soft numbers
• In our head vs on paper
• Done quickly vs over time

Questions?

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Resources

• Center for Dairy Profitability,
  University of Wisconsin
  http://cdp.wisc.edu/

• University of Wisconsin Forage
  Extension Resources
  http://fyl.uwex.edu/forage/

Resources

• Pro-Dairy Website Resources
  http://ansci.cornell.edu/prodairy/resources

• Penn State Publication
  – pubs.cas.psu.edu/freepubs/pdfs/ua 366.pdf

Build New Driveway

• Decrease time for trucks hauling
  manure and forages.
• Save 5 minutes per load
• 1,195 hours of truck driving labor
• Labor costs average $15 per hour
• Number of loads
  – Corn Silage = 900
  – Haylage = 700
  – Manure = 450
Build New Driveway

• 1 truck used 10 hours less as not needed to keep up with harvester during corn
• Cost of Driveway
  – $30,000 initial investment
  – 20 year useful life
  – 30% salvage value
  – $500 annual maintenance
  – 5% opportunity cost

Build New Driveway

• Decrease time for trucks hauling manure and forages.
• Save 5 minutes per load
• 1,195 hours of truck driving labor
• Labor costs average $15 per hour
• Number of loads
  – Corn Silage = 900
  – Haylage = 700
  – Manure = 450

Reduced Expenses

Labor Savings
  5 min X 2050 loads = 10,250 minutes
  10,250 minutes/60 = 170.8 hours
  170.8 hours x 15 = $2,562 per year

Idle Truck
  10 hours, ownership costs of $30 per hour, 10 X 30 = $300

Total Reduced Expenses = 2,862

Build New Driveway

• 1 truck used 10 hours less as not needed to keep up with harvester during corn
• Cost of Driveway
  – $30,000 initial investment
  – 20 year useful life
  – 30% salvage value
  – $500 annual maintenance
  – 5% opportunity cost

Reduced Income

• None
**Added Expenses**

- **Depreciation**
  - $30,000 (investment) - $9,000 (30% salvage) = $21,000 / 20 years = $1,050 annual depreciation

- **Opportunity Cost**
  - $30,000 (investment) + $9,000 (salvage) = $39,000 / 2 = $19,500 x 5% = $975

- **Added Maintenance** = $500

- **TOTAL** = $2,525

**Added Inflows**

- **None**

**Profit Partial Budget**

<table>
<thead>
<tr>
<th>Total of Added Income + Reduced Expenses</th>
<th>Total of Reduced Income + Added Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 Added Income</td>
<td>$0 Reduced Income</td>
</tr>
<tr>
<td>$2,862 Reduced Expenses</td>
<td>$2,525 Added Expenses</td>
</tr>
<tr>
<td><strong>Total = $2,862</strong></td>
<td><strong>Total = $2,525</strong></td>
</tr>
</tbody>
</table>

\[(A) - (B) = $337\]

**Reduced Outflows**

- **Labor Savings**
  - 5 min X 2050 loads = 10,250 minutes
  - 10,250 minutes / 60 = 170.8 hours
  - 170.8 hours x 15 = $2,562 per year

- **Idle Truck**
  - 10 hours, ownership costs of $30 per hour, 10 X 30 = $300

**Total Reduced Outflows** = 2,862

**Build New Driveway**

- **Investment** = $30,000
- **5 year loan**
- **5% interest rate**
- **Annual Payment**
  - $6,929 per year

**Reduced Inflows**

- **None**
### Added Outflows

- **Principal and Interest Payments**
  - $6,929
- **Added Maintenance** = $500
- **Total Added Outflows** = $7,429 per year, first 5 years, $500 after first five years.

### Cash Partial Budget

<table>
<thead>
<tr>
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<th>Total of Reduced Inflows + Added Outflows</th>
</tr>
</thead>
<tbody>
<tr>
<td>• $0 Added Inflows</td>
<td>• $0 Reduced Inflows</td>
</tr>
<tr>
<td>• $2,862 Reduced Outflows</td>
<td>• $7,429 Added Outflows</td>
</tr>
<tr>
<td>• Total = $2,862</td>
<td>• Total = $7,429</td>
</tr>
<tr>
<td>- (A)</td>
<td>- (B)</td>
</tr>
</tbody>
</table>

(A) - (B) = -$4,567