Building a Business Case for Automation
The Financial Considerations

Presented by:
OPEX Corporation
Troy VanWormer
Director, Warehouse Automation-West
OPEX Corporation
Why invest in automation?

• Reduce dependence on labor
  • Wage rates are increasing
  • Competition for labor is fierce
  • Hidden costs of labor – retention, training, absence, FMLA, worker’s comp risk

• Better utilize space
  • Optimize clear height
  • More inventory in “pick” (reduce replenishment delays)
    • Extend life of facilities

• Increase throughput
<table>
<thead>
<tr>
<th>Benefit</th>
<th>Semi-Automated</th>
<th>Automated</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC size (sq. ft.)</td>
<td>400,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Throughput Capacity</td>
<td>20,000 orders per day</td>
<td>35,000 orders per day</td>
</tr>
<tr>
<td>Labor Cost per Unit shipped</td>
<td>$0.40 per unit</td>
<td>$0.15</td>
</tr>
<tr>
<td>Order processing speed</td>
<td>4 hours</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Headcount</td>
<td>500+</td>
<td>150+</td>
</tr>
<tr>
<td>Shifts</td>
<td>2 shifts – 10 hr (7 days)</td>
<td>1 day – 10 hr (5 days) 1 night – replen only</td>
</tr>
</tbody>
</table>
What is a business case?

According to Wikipedia…

“A **business case** captures the reasoning for initiating a project or task”

“A compelling business case adequately captures both the **quantifiable** and **non-quantifiable** characteristics of a proposed project”

- Quantifiable = ROI
- Non-quantifiable = Practical Considerations (tomorrow at 1:15pm)
So what’s the ROI?

- It’s NOT just “less than 2 years”…
3 Primary ROI Methods

• Payback Period
• Net Present Value (NPV)
• Internal Rate of Return
Time Value of Money

• A dollar today is worth a whole lot more than tomorrow

• Three concepts used to analyze capital expenditures
  • **Future value** - $ value in the future if loaned or invested
  • **Present value** – reverse of FV
  • **Required rate of return** – rate required in order to make an investment
    • Varies based on project risk
    • Depends on company’s “cost of capital”
What is needed to do these analyses?

• Capital Expense
  • Cost of the “project” - equipment plus installation, freight, taxes and future maintenance/software license fee

• Cash flows (savings)
  • For automation, labor is the most obvious but don’t forget space savings

• Cost of Capital, Rate of Return or “Hurdle Rate”
  • Rate of return a firm pays it’s long term investors
Project Cash Flows (e.g. Savings)

• Labor savings
  • Wages
  • Liability costs (disability, lawsuits, etc.)
  • Reliability costs (sickness, injury, tardiness, consistency)

• Space savings
  • Rent
  • Utilities
Potential Cash Flows

• Increased revenue due to higher service levels
  • Faster order processing
  • Better accuracy
  • Less damage (less product handling)

• Value of additional space
  • Extend life of current facility and delay capex
  • Sublease extra space and generate revenue

• Less labor “risk”
  • Comp claims
  • Absence and FMLA
  • Turnover and training costs
Example:

• Your company is considering investing $3,000,000 in automation, e.g. “a goods to person picking system”
• The benefits are better storage/space utilization and lower labor costs
• The system will last 3 years (ease of calculations) and the system will save the company $1,300,000 per year
• Your company’s required rate or return – hurdle rate – is 8%
• Do you purchase this equipment or not?
Three methods

• Payback
• Net Present Value
• Internal Rate of Return
Payback Method

• Time required from the project to return the original investment

\[
\frac{3,000,000}{1,300,000/\text{year}} = 2.31 \text{ years}
\]

• The payback period is less than the project life (3 years)
• Payback longer than project life is “no-go”
Net Present Value (NPV)

- Takes into account the “time value of money” and “cost of capital”
- NPV is equal to “present value” minus the capital expense

\[
\text{Present Value} = \frac{FV_1}{(1+i)} + \frac{FV_2}{(1+i)} + \frac{FV_3}{(1+i)}
\]

Where:
- PV = present value
- FV = future value
- \(i\) = hurdle rate
- \(n\) = number of time periods
Net Present Value (NPV)

• Takes into account the “time value of money” and “cost of capital”

\[
\begin{align*}
\text{Present Value} & \quad \text{\$1,300,000} & \quad \text{\$1,300,000} & \quad \text{\$1,300,000} & \quad \text{\$3,350,000} \\
\text{Present Value} & \quad \text{\$1,300,000} & \quad \text{\$1,300,000} & \quad \text{\$1,300,000} & \quad \text{\$3,350,000} \\
\text{Net Present Value} & \quad \text{\$3,350,000} & \quad \text{\$3,000,000} & \quad \text{\$350,000} \\
\end{align*}
\]

• The NPV is greater than “\$0”, so it should be accepted
Internal Rate of Return

• The interest rate where the NPV equals zero
• 14.36% rate of return vs 8% hurdle rate, so it should be accepted
Taking it home...

• Don’t underestimate the savings
  • Find the hidden labor costs
  • Space is NOT free
  • Opportunity costs only knock once
• Know your “hurdle” rate
• ROI is more than just payback
• NPV and IRR are better methods
• Investing in automation has a VERY strong business case
For more information

Troy VanWormer
Director - Warehouse Automation, West Coast
tvanwormer@opex.com
www.opex.com

OPEX CORPORATION

Visit ProMat Booth #S631