



# Distribution Center MANAGEMENT

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Managing people, materials and costs in the warehouse and DC

## Do you see a fat payback from that project? Learn to calculate NPV and IRR

By John T. Phelan Jr.

You've probably managed to succeed in your career while leaving financial calculations to the bean counters, but the Great Recession has affected how companies justify capital projects. The reason is simple: With warehouses stripped of all excess labor, calculating labor savings alone isn't enough to approve an automation project.

If your DC is as lean as it can get, the only way to accommodate growth is to add capacity through labor, automation, or a combination of the two. In the past, justifying an investment required little more than looking at the standard "payback" method, which considered how much a project would cost up front and how much it would save over time.

These days, though, properly calculating return on investment requires a more advanced, financially based approach. It's time to get comfortable using net present value (NPV) and internal rate of return (IRR) justifications.

This might sound like a daunting task, but the variables have already been identified and are fairly easy to understand. Spreadsheet software includes functions for calculating NPV and IRR. However, since we base calculations on future cash flows, the trick is to be conservative in the estimates.

The NPV method is based on the evaluation of the discounted cash flow as a result of the

project. To find the NPV, take the present value of each cash flow, including the negative cash flow resulting from the initial cost of the project and all other cash flows including the cost savings, cost avoidance, and additional profits. Then discount them at the project's cost of capital. We sum these discounted cash flows and determine the NPV. If a project has a positive NPV, it adds value to the company.

The internal rate of return is defined as the discount rate that forces the NPV to equal zero. The purpose of analyzing the IRR is to determine if the discount rate that forces the NPV to equal zero is more than the "hurdle rate," typically the cost of capital. For example, if your company's cost of capital is 10 percent and a project's IRR is 15 percent, the project would be a beneficial investment.

To take a hypothetical example, say Lean DC Distributors Inc. is at 100 percent system capacity and 100 percent workforce productivity and is extremely lean and efficient. The \$100 million company has a budgeted return on sales of 1 percent, or \$1 million in net income. Lean DC Distributors plans on 2 percent growth each year for the next 5 years. To accommodate the growth, Lean DC is investigating either spending

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\$2,250,000 on a new pick module with a conveyor and sortation system or adding 10 employees per year at \$25,000 per year each in personnel expenses.

In this example, using a cost of capital of 10 percent (extremely conservative) would yield an NPV of \$190,336 and an IRR of 18.17 percent. Both of which would seem acceptable for project justification since the NPV is a positive number and the IRR is higher than the cost of capital.

As a second example, Lean DC Distributors' competitor down the street, GrowSlow Distributors LLC, is at 90 percent system capacity and 100 percent workforce productivity and therefore has the ability to receive, store, pick, and ship more products, but they would need to add more labor. GrowSlow also is a \$100 million company with a budgeted 1 percent return on sales for a \$1 million net income.

GrowSlow plans only 1 percent growth each year for the next five years. To accommodate the growth, GrowSlow is investigating either spending \$1,500,000 on a new pick module with a conveyor and sortation system, or adding five

employees per year at \$25,000 per year in personnel expenses each.

In this example, the same conservative cost of capital of 10 percent would yield an NPV of (\$55,047) and an IRR of 8.72 percent. Neither would be acceptable, because the NPV is a negative number and the IRR is lower than the cost of capital.

In summary, just like most aspects of doing business have been altered as a result of the economic situation, so have the means for justifying capital projects in a warehouse or distribution center. Continuous improvement is the only option for distributors to stay competitive.

Consequently, incorporating automated material handling systems at some point is required. So understanding and utilizing new strategies for providing financially based justification to CFOs and CEOs might provide the necessary advantage to get the project approved and the business properly positioned for profitable growth.

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