



PAUL HAHN

Re-Thinking Return on Investment Analysis

Most frequently, Return on Investment (ROI) is thought of in terms of a payback timeline. “How long will it take to pay for itself?” is one of the questions that express this kind of thinking: Some refer to it as the “Payback Period”. This is a reasonable way to look at an investment that must be charged to only the current job, as that is an important budgeting issue. With productivity-enhancing technology investments the answer is often “it paid for itself on the first job” or perhaps “within the first year”. However, there are other ways to look at capital investments. Return on investment could also be calculated based on the useful life of the investment.

Many years ago my mentor on ROI thinking asked me a very simple question. Even though I had been studying the business impact of productivity-enhancing technology for quite some time; I got the answer wrong. That realization opened up a whole new world of thinking to me.

So what was the question? Well it wasn't that complicated. It was posed this way:

- You can invest in two pieces of equipment
- Both have a useful life of five or more years
- One cost \$10,000
- The other cost \$25,000
- Both pay for themselves in one year



“Which one would you choose to purchase?”

My answer was the \$10,000 investment. When I was asked why I would make that choice, I replied as follows:

- It costs less
- I would need to borrow less money to purchase it
- I break even in the same amount of time

Even though all of the above was true, my argument fell apart when I was asked the next question: “If the investment returned \$10,000 the first year; what would it return in year 2, 3, 4 or 5?” This stopped me cold in my tracks!

If the \$10,000 investment returned \$10,000 a year and had a useful life of five years then its total return over five years would be \$50,000. Deducting the \$10,000 purchase cost; the profit over the following 4 years would be \$40,000. Not a bad profit.

However, the \$25,000 investment would yield a return \$125,000 over 5 years. After deducting the cost to obtain it; the profit would be \$100,000 over its useful life. This realization forever changed my way of viewing capital investments and ROI.

In a recent study, 41% of respondents stated that the payback period for machine control was 0 to 12 months.

Another 34% believed the payback period to be 13 to 18 months. So, 75% think it is somewhere between 0 and 18 months. The same survey stated that the average cost for a 3D GPS-based system was between \$50,000 and \$74,999. So, if we accept these numbers as correct; we can perform a simple ROI analysis based on the useful life of the systems:

- Average payback period: Let's assume 18 months (the most conservative response)
- System cost: assume the median price (\$62,500)
- Useful life of the system: 5 years

Over the useful life of the investment, the investment will yield a profit (return on investment) of \$145, 833

The math: (60 mo. useful life /18 mo. payback period=3.33 payback

factor) (3.33 payback factor x \$62,500 purchase price=\$208,333 return) (\$208,333 return-\$62,500 purchase price=\$145,333 profit). The payback factor, times the purchase price, less the initial investment equals \$143,333 profit from making this investment decision.

This approach can be used to calculate other machine control investments or any investment you are considering. One assumes that the survey respondents considered the financing costs, training costs, data preparation and other costs when they gave their responses. Another factor to consider is that the decision to purchase and implement machine control made their bids more competitive and will continue to do so in the future; resulting in more business won.

This type of analysis assumes that there will be work for the equipment in the future, and these days that can

be a challenge. But then again, having a competitive advantage will increase your chances when it is time to submit you bids.

I hope this simply math exercise and the useful life approach to return on investment was an eye-opener for you as it was for me, those many years ago. It was true then and it is true today.

As the machine control market has matured, so have the acquisition option available. Today, contractors can rent, rent-to-own, lease or purchase machine control systems outright. Let the math speak for itself and consider the impact to the competitiveness of your bids and to your bottom line. ☐

Paul Hahn has more than 30 years of experience, and has held senior management positions at Carl Zeiss, Nikon, Geotronics, Spectra Precision, and Trimble, and is now a consultant.

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