

Technology Group International

Calculating Return on Investment



Calculating Return on Investment

Introduction

When entering into a new project, one of the first steps the software selection team should complete is the development of a business case. This step is critical because it helps evaluate and support the potential project. Although this is standard practice, many project leaders have found this to be a major stumbling block because it generally requires a calculation of the project's potential return on investment (ROI). Due to these difficulties, some project managers may even chose to skip this step, and in turn, may fail to obtain the required executive support necessary to successfully complete the project. Determining the project's potential ROI is imperative in evaluating the overall project worth and therefore determining if pursuing the project is in the best interest for the corporation.

The most successful software selection and implementation projects are those that begin with and end with complete corporate support. The only way to achieve this support is to demonstrate how the software purchase will provide value to the organization. It may appear like this concept is being discussed over and over again, and it is, but for a valid reason. Executive and end user support is critical to an organization engaging in and embracing any business software purchase. This stands true for all software, whether it be ERP, supply chain management, MRP/MRP II, warehouse management systems, business intelligence software, or e-commerce software. The project team must be backed by the organization as a whole or failure is imminent.

How is the organization support obtained? This is probably easier said than actually done in many companies. Regardless of the company or industry, support is obtained through the development of a solid business case. The business case provides information on what personnel and financial resources the project will require and in the end what the project will deliver. The most popular and easiest way to show this on paper is to produce a solid business case that begins with the realistic and accurate calculation of ROI.

Many software developers suggest their prospective clients use an average ROI figure based on what previous customers have experienced with the potential software or service under evaluation. Although this may be acceptable for initial review of the product, it is not acceptable for supporting a business case. These software companies do not understand the prospective client's organization well enough to know what is applicable elements and benefits for the ROI calculation. Although informative, these average ROI estimates should only be used as thought starters for the team.

Another popular ROI technique is to use industry averages or benchmarks to justify the project's ROI. Again, this is not acceptable. Plain and simple, every company is unique. The project drivers may be similar, but they are not necessarily the same. A true ROI calculation should be based on real life business scenarios that have tangible and quantifiable results for which the ROI calculation can be based.

Calculating Return on Investment

Where does one start in calculating ROI? It may seem like a fairly simple task for any well versed accountant and yet the task normally becomes a daunting endeavor for the average information technology (IT) director. With so many different formulas available for ROI calculation, how does an IT director determine the true value of his potential software project? It takes some research and some due diligence, but the task itself can be done fairly quickly and will provide its reward ten fold.

To assist in this step of the software selection process, this document provides guidance on gathering information to develop the business case and various formulas available to calculate the ROI. Additional information is available in supplementary documents within TGI's Software Selection Tool Kit.

Calculating Return on Investment

Project Questions

Before the team can begin to calculate a project's ROI, the organization needs to answer the following questions:

1. What are the team's reasons for considering new software?

This is also referred to as the project drivers. They are everyday 'pains' that exist within an organization. Set aside a few heavy users of the current software and ask them a few quick questions about what they consider time consuming or problematic in their daily job functions. The list will grow rapidly and will continue to grow as the project progresses.

In software selection, this list could be virtually endless and could include a number of items such as:

- Improvement in the Current Software's Functionality
- More Efficient Cycle Times
- Increased Ability to Meet Customer Requirements, i.e., EDI, Compliance Labeling, Lead Times and Delivery Windows, E-Commerce Functionality
- Improved Information Visibility – Desire for Quick and Accurate Data or Reporting for Management Review and Discussion
- Reduction Operating Costs
- Reduction in Headcount
- Support Organizational Growth
- Quicker Time to Market
- Reduction in Operating Errors
- Reduction in Outstanding Receivables
- Reduction in Paperwork and Manual Processes or 'Workarounds'

2. What is the depth of the project?

This refers to the functional areas and stakeholders the project will affect. Keep in mind these areas include individuals both inside and outside the company.

For most ERP software projects, these areas include:

- Accounting and General Ledger Activities
- Manufacturing, Forecasting, and Scheduling
- Inventory Control and Warehousing
- Transportation

Calculating Return on Investment

- Purchasing and Accounts Payable
- Customer Service, Sales, and Accounts Receivable
- Executive Staff
- External Customers
- External Suppliers

3. What is the project's overall budget?

A main failure in evaluating the project and providing an accurate business case is the failure to include all applicable costs within the project's budget. The budget should accurately reflect the total cost of ownership which includes first year costs, expenditures for implementation, and on-going maintenance and system administration costs.

At a high level, most software selection budgets include:

- Expenditures for the Software Selection Process
- ERP Software Licenses
- Database Licenses
- Hardware
 - Servers
 - End User PC's
 - Cables
 - Racking
 - Bar Code Printers & RF Equipment
- Third Party Software Licenses for Add On Packages
- On-Going Communication Costs
- Hardware and Software Installation
- Project Management
- Technical Training
- End User Training
- Data Cleansing and Conversion
- Customizations and Modifications
- Report Customizations
- On-Going Maintenance and Support Fees
- On-Going System Administration Costs

Calculating Return on Investment

Review TGI's budget analysis document for further information on allocation of these costs.

4. What is the estimated project timeline?

To determine the anticipated ROI, a project timeline must be estimated. How long will each step in the process actually take?

The answer to this question falls outside the scope of this document. To help in this step, refer to TGI's process check list and implementation process documents which provide some industry standard guidelines.

5. What is the potential benefit of the project?

Reviewing the possible benefits derived from the project will help calculate the estimated income used in the ROI formula. Understanding what is obtainable at the conclusion of the project is crucial to determine the overall project worth.

The easiest way to accomplish this step is to review the original reasons for entering into the project. Although these reasons may be both tangible and intangible in nature, many will provide the team a basis for measuring the possible financial benefit of a successful project. Keep in mind the increase in income can originate from both increased sales and a reduction in costs. Cost reductions are highly desirable because they are an immediate hit to the organization's bottom line numbers.

Examples are:

- Reduced Carrying Costs of Inventory
- Time Value of Money for Reductions in Open Receivables
- Reductions in Premium Freight Costs Due to Improved Cycle Times and Order Fill Rates
- Reduced Manufacturing Costs Due to Longer Production Runs and Reduced Changeovers
- Increased Sales Due to Improved Throughput, Improved Customer Service, and the Ability to Meet Customer Requirements
- Reduced Headcount

6. What is the future income generated from the project?

To be able to determine the anticipated ROI, the potential income generated from the project will be factored over a specific period of time. Once the timetable is determined for potential income, the organization must determine the potential income or cost reductions generated from the project based on the original reasons for the project and the desired outcome of the project.

Calculating Return on Investment

For some organizations, this task may be easy due to the nature of the existing business environment and the magnitude of the project objectives. For others, this may be more difficult due to the intangible nature of the project benefits. If an organization falls into the second category, an outside consultant may be helpful in objectively reviewing the project and leading the initial stages of this selection process.

Once the above factors are reviewed and answered, the project team can begin to understand the full scope of the project, determine the value proposition the project offers, and finally calculate the overall ROI to support the project's business case.

Calculating Return on Investment

ROI Formulas

Contrary to what some may believe, there is not one perfect ROI formula for all situations. There are a number of formulas available for use within the selection process with the correct formula depending on the actual purchase, the organizational structure, and the available project information.

Some may choose to ignore ROI entirely and utilize an approach based on payback period or net present value (NPV). Caution is needed when looking solely at payback period, because this method fails to consider the true life of the software and thus the total return on investment. Due to this, calculations using ROI or NPV are preferred.

Standard ROI Formula

The below formula is the standard ROI formula for investment calculations. It is the basic formula taught in Accounting 101 classes and unless conditions indicate otherwise, it is the preferred formula for evaluating a future IT purchase.

$$\text{ROI} = \text{Net Benefits} / \text{Project Investment}$$

↑
Return or Income

Sample ROI Calculation

As stated previously, the potential return generated from a new software purchase may be tangible or intangible in nature and may be achieved by receiving increases in revenue or by receiving reductions in cost. For this example, only tangible benefits will be used.

These benefits are real life situations that TGI has already encountered in implementations of the Enterprise 21 product. They are very conservative examples that can be used as placeholders for the formula and idea generators for those reviewing their own ROI.

Calculating Return on Investment

Quantifiable Tangible Benefits

- Increased Order Fill Rates – Moving to a fully integrated ERP package can easily increase order fill rates by 1%. If existing order (this could also be line item fill rates) fill rates are currently at 90%, a move to only 91% is a 1% increase in efficiencies or a 1% decrease in annual freight costs.

$$\text{Annual Freight} \times 1\% = \text{Annual Benefit}$$

Note that this represents a partial benefit, because it does not take into account decreases in labor costs due to the increase in efficiencies.

- Inventory Level Reductions – Historically TGI has experienced inventory level reductions as high as 50% within one year of implementation. For purposes of this example, a much more conservative estimate of a 10% reduction will be used.

$$\text{Current Inventory Carrying Value} \times 10\% = \text{Annual Benefit}$$

- Increased Shipments Per Day – Many prior implementations have experienced a 50% increase in shipments per day without the need of additional warehouse personnel. For purposes of this example, a much more conservative estimate would be a savings of 10% in overall warehouse labor costs.

$$\text{Annual Warehouse Labor Costs} \times 10\% = \text{Annual Benefit}$$

- Accounts Payable Cost Reductions – Assuming economic conditions remain constant, an average accounts payable department moving to a system based matching process receives significant cost reductions by both reducing clerical staff and overall operating time. One TGI client reduced AP headcount from 90 clerks down to 5 clerks by moving from a paper based payables system to Enterprise 21's three way matching system. To estimate possible cost reductions, the best way would be to review total annual AP transactions against the annual man hours to complete those transactions. At the very least, a 20% reduction in AP overhead is easily achievable by moving to an electronic matching process. One would expect a much higher percentage, if not elimination in over time completely, but a 50% reduction is a conservative figure.

$$\text{Annual Account Payable Overtime Costs} \times 50\% = \text{Annual Benefit}$$

- Increases IT Output – Moving to an integrated system which includes data warehousing, decision support systems, and business intelligence significantly decreases the need for specialized report creation. Other IT savings come from reduced user support and many times even reduced costs in annual maintenance fees for out-of-date software. Overall, the estimated savings is conservatively estimated at approximately 10% of annual IT personnel costs.

$$\text{Annual IT Personnel Costs} \times 10\% = \text{Annual Benefit}$$

Calculating Return on Investment

- Increased Manufacturing Output – Gaining control over the production environment is critical to a lean manufacturing environment. An integrated environment can quickly increased production schedule efficiencies by lengthened production runs and reduced frequencies in machine changeovers. Average manufacturing cost reductions can be anywhere from 10% to 30%.
- Increased Customer Service Efficiencies – Providing higher order fill rates, quick access to customer information, visibility to inventory levels, and reductions in data entry mistakes quickly provide cost benefits, as well as overall improvements with customer satisfaction. Providing an internet based or e-commerce customer center for on-line customer inquiries and responses will quickly reduce both customer service personnel and communication costs. Integration and back office efficiencies provide almost an endless amount processing improvements for the front line customer representative. As with many of the operating improvements, 10% to 20% cost reductions for this department are conservative estimates.

Annual Customer Service Personnel Costs x 10% = Annual Benefit

Calculation Example

Utilizing just a few of the examples listed above, the project's potential ROI can be calculated similar to the below sample. For example purposes a project cost of \$300,000 is provided.

Annual Benefit

Inventory Carrying Value Reductions

$\$2,000,000 \times 10\% = \$200,000$

Annual Account Payable Overtime Costs

$\$15,000 \times 50\% = \$7,500$

Order Fill Rate Improvements/Freight Savings

$\$250,000 \times 1\% = \$2,500$

Total Annual Benefit = \$210,000

ROI Percentage

$\$210,000 / \$300,000 = 70\%$ Annually

For easiest calculation process, utilize TGI's ROI Excel template in the Software Selection Tool Kit.

Calculating Return on Investment

Alternate ROI Formula Variations

As stated previously, the standard ROI formula is not a “one size fits all” type of calculation. The below list of formulas provide a sampling of the many variants available to calculate potential returns on the investment associated with software selection and purchase.

Formula # 1

$$\text{ROI} = \text{Margin} \times \text{Turnover}$$

Margin = (Net Operating Income / Sales) Turnover = (Sales / Average Operating Assets)

Formula # 2

$$\text{ROI} = (\text{Net Income} + \text{Interest}) / \text{Value of the Asset or Investment}$$

Interest = (1 – Tax Rate)

Formula # 3

$$\text{ROI} = (\text{Return} - \text{Investment}) / \text{Investment}$$

Formula # 4

$$(\text{Revenue} / \text{Investment}) \times (\text{Income} / \text{Revenue}) = \text{Income} / \text{Investment} = \text{ROI}$$

Calculating Return on Investment

Formula # 5

$$\text{ROI} = \frac{\text{Income} + \text{Interest}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Investment at Cost} + \text{Investment Adj. Factor}} \times \frac{\text{Income} + \text{Interest}}{\text{Income}} \times \frac{\text{Investment at Cost} + \text{Investment Adj. Factor}}{\text{Investment at Cost}}$$

The adjusted investment factor is used to convert the investment to replacement cost.

Payback Period Formula

$$\text{Payback Period} = \text{Investment Amount} / \text{Annual Net Cash Flow}$$

Net Present Value (NPV) Formula

$$\begin{aligned} \text{NPV} = & \text{Year One Savings} / [(1 + \text{Discount Rate})^1] \\ & + \text{Year Two Savings} / [(1 + \text{Discount Rate})^2] \\ & + \text{Year Three Savings} / [(1 + \text{Discount Rate})^3] \end{aligned}$$

Discount rate = Organization's Investment Yield Rate

Formula assumes time value of money for three years.

Calculating Return on Investment

Industry Research Studies

Individual corporate responses to industry research may be surprising, but they do offer a great deal of information concerning both the value of ROI and level of confidence in actual ROI calculations.

Various studies have shown:

- Only a third of companies calculate ROI on all IT investments.
- Of those that calculate ROI, virtually all do so at the beginning of the project to justify the project spending.
- The majority of organizations believe intangible benefits are important to ROI and that intangible benefits need some dollar value assigned for utilization in ROI calculations.
- Although many struggle with ROI calculations, very few seek outside assistance.
- The majority of professionals feel their ROI calculations fail to capture the full value of the project.
- The majority of professionals feel it is difficult to quantify ROI on IT investments.
- Of those companies that spent money on an ERP system:
 - Less than half calculated an ROI on the project.
 - Of those that did, the majority said they reached their ROI or their ROI was greater than anticipated.

Calculating Return on Investment

Conclusion

As the varying formulas prove, there is no one way to calculate a project's potential ROI or rate or return. The best method is to mold a formula to best fit the organization without distorting the data.

If you fail to find a 100% confident level in your ROI calculation, you are not alone. There are many methodologies of evaluating a potential project and deciding if the project return is worth the investment. Use ROI as one element of this evaluation and not the overriding factor.