

## CALCULATING RETURN FOR INVESTMENT IN INFORMATION TECHNOLOGY INFRASTRUCTURE - FEW CASE STUDIES

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### ABSTRACT

Today more than ever, Government\Semi Government\Private organization decision makers must make the most of scarce resources and at the same time respond to ever-increasing demands for improved performance and new technology. These competing demands generate close scrutiny of proposals for new information technology (IT) investments. What's more, high profile IT system failures have raised concerns about why these investments so often fail to live up to expectations. As a result, many IT investment planning processes now require some analysis of the costs and returns expected from that proposed investment. Unfortunately, Public\Private sector managers often lack models that can guide them through such analyses. This research work may help to fill that gap.

**KEYWORDS:** ROI (Return on Investment), NPV (Net Present Value), IRR (Internal Rate of Return), IT (Information Technology), Non Financial ROI, Center for Effective Performance (CEP), CIO (Chief Information Officer)

### INTRODUCTION

The question that IT professionals and business analysts are asked about return on investment (ROI) today more than ever before. It is also one of the most difficult question to answer. One reason for the difficulty is a definition problem. For instance, a common accounting or finance definition is:

A measure of the net income a firm is able to earn with its total assets. Return on investment is calculated by dividing net profits after taxes by total assets.

But, this is hardly realistic for a single IT project or various alternative IT solutions under consideration for a project. When someone asks about ROI, they are asking:

*What do I get back ('return') for the money I'm being asked to spend in to procuring Information Technology Infrastructure ('investment')? What is it really worth (the "ROI")?*

Traditionally, when IT professionals and top-management discuss the ROI of an IT investment, they were mostly thinking of "financial" benefits. Today, business leaders and technologists also consider the "non financial" benefits of IT investments.

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Financial Benefits include impacts on the organization's budget and finances, e.g., cost reductions or revenue increases.

Non Financial Benefits include impacts on operations or mission performance and results, e.g., improved customer satisfaction, better information, shorter cycle-time.

## **LITERATURE REVIEW**

### **Information Technology Infrastructure Value**

Decision-makers make IT project selection decisions based upon the perceived value of the investment. Its value is determined by the relationship between what the organization will pay (costs) and what it will get back (benefits). Larger the amount of benefit in relation to cost, the greater the value of the IT project.

Financial ROI in reality, most organizations use one or more “financial metrics” which they refer to individually or collectively as “ROI”. These metrics include:

**Payback Period.** The amount of time required for the benefits to pay back the cost of the project.

**Net Present Value (NPV).** The value of future benefits restated in terms of today's money.

**Internal Rate of Return (IRR).** The benefits restated as an interest rate.

**Non Financial ROI.** These are the so-called “intangibles”, “soft”, or “unquantifiable” benefits of information technology. The use of these terms is unfortunate, but pervasive.

Unlike financial returns, there may be no widely-accepted metrics that can be applied. However, IT's potential for producing positive impacts on business performance and mission results are undeniable. The difficulty that most organizations encounter here is twofold: people aren't sure what to measure and they don't know how to measure. Read about what some organizations are doing to measure IT's non financial ROI and look for more Free tutorials on this subject on our website soon.

“Measuring the return on technology investment has been the holy grail for CEOs and CIOs for the past 30 years. Much effort has been expended trying to quantify the returns in terms of sales growth and cost reduction from the tens of millions of dollars invested in each new wave of technology from mainframes to PCs, to client/server, to ERP, to the Web. Generally, the results have been inconclusive and seem restricted to broad statements about productivity increases being somehow tied to technology investments. This loose, causal relationship has been discomfoting for many business leaders.” David A.J. Axson (DM Review Magazine, February 2001)

Many organizations are still investing significant time and effort in complex measurement processes to attempt to track returns. However, some are now beginning to question the value of the exercise. For many, the return on IT investment is a pointless question with no meaningful answer.

Why this change of view? The most significant driver has been the ever-increasing integration between technology and core business processes and operations. The pervasive impact of technology now means that in many cases information technology is so inextricably intertwined with people and processes that the identification of specific technology-related benefit streams is of marginal value. During IT's first 25 years, there was still a clear distinction

between the technology and the other elements of the business. Inputs and outputs were highly regulated and structured, and the handoff from people to machines was clear-cut. Starting with the PC and accelerating with Web and wireless mediums, those clear boundaries have been obliterated, making it almost impossible to isolate each element.

A secondary influence has been the realization that many technology investments have failed to deliver the expected returns, not because of technology failures but because of poor process design or inadequate training and education. Too many investments have simply automated inefficient processes or have delivered incredible functionality that no one fully understands how to leverage. It is only the combination of the judicious use of technology, optimized business processes and suitably trained and motivated people that in concert deliver the true value of a technology investment. As such, isolating a single input and attempting to measure its impact is akin to assessing the direct contribution of cheese to a pizza.

How should IT investments be evaluated? First, abandon the idea that there are IT projects there are no such things. There are only projects targeted at developing new or improved activities, be they products, more efficient customer service or more productive employees. Therefore, the evaluation of return on investment needs to match the total investments with the total returns, regardless of the nature of each. This leads to the utilization of broader investment criteria than have traditionally been used for IT projects, with techniques such as Monte Carlo simulation, scenario planning and real options being used to assess the speculative and uncertain nature of project returns.

## RESEARCH METHODOLOGY

Researcher had lot of interactions with senior managers and few Entrepreneurs having lot of exposure in selection, procurement, installation, implementation and maintenance of Information Technology Infrastructures. Hence based on this few case studies without disclosing the names written bring some important facts out of it.

## ANALYSIS AND FINDINGS

### Cases: Case-I

For example, consider the investment in a new customer relationship management (CRM) system. Typically, the expected benefits from such investments are framed in terms of improved customer satisfaction leading to increased retention and/or use of your products and services, together with an improved ability to target customer needs. However, the implementation of the new system is only one element in ensuring full value is realized. Having perfect customer information without adequately trained customer service representatives to interpret and act upon that information or having the insights derived from your CRM system but not providing these insights to your sales force or product development organization prevents you from maximizing return on investment.

Hence, companies are now beginning to value return on investment by addressing three key inputs to any project people, process and technology and then translating those into quantifiable returns related to utility of the products and services you offer and the cost of delivering them. In the CRM example, the investment evaluation would address the following:

- Returns to be gained from implementing a new CRM system (technology).
- The need to develop a set of processes to communicate to the sales force the insights gained from better customer

information so they can close more deals. The insights gained must also be shared with the product development team, enabling them to refine and design better products (process).

- Training customer service representatives to both interpret and respond to the new customer information and deliver better service (people).

Once investments are viewed in this context, it becomes easier to define expected benefits and subsequently measure those returns. One other crucial consequence is that this explicitly demands the creation of multi skilled, cross-functional teams with shared accountability and responsibility for success. No longer can users point fingers at IT and vice versa, because the degree of mutual dependency for success is explicit.

We are now beginning to see the development of tools and management processes that accommodate this more holistic and realistic view of the world. For example, companies are using portfolio management to evaluate projects as part of a portfolio of initiatives rather than in isolation and scenario planning to evaluate uncertainty in estimating future benefits under different assumptions. We are also seeing an increased use of project management tools imported from the large-scale construction and engineering sectors where these types of planning and measurement techniques have been standard for many years.

Over the next few years, it is likely that boards and senior executives will increasingly seek to better understand the total expected returns from projects where technology is a major component. This should drive adoption of broader, more business-based evaluation methods. In the meantime, IT professionals can consistently promote the non-technology related critical success factors for maximizing the return on investment at every stage of the evaluation and implementation process.

Many important and costly IT initiatives are justified via the traditional ROI exercise. This methodology alone may not be suitable for measuring how well IT contributes to the success of the organization. Although an ROI may predict how long it will take a capital investment to return anticipated savings via cost reductions or new revenue, it lacks a suitable measurement for the “qualitative” aspects that can contribute heavily to the realization of strategic objectives. Thus, the traditional ROI must be augmented with an account for improvements in customer relationships, internal processes, innovation, patient safety, and other qualitative factors that cannot be evaluated with short-term financial measurement techniques. The new ROI methodology must be more goal-oriented, agile, and scalable. It needs to be all of these things to adapt to the speed at which new technology advances, as well as the frequent changes that occur in business strategy resulting from competitive pressure and the ever increasing external scrutiny for quality improvement.

#### **Case-II**

“It is important to document both tangible and intangible benefits and use the results in the process of measuring or estimating the ROI on any clinical information system.” (Journal of Healthcare Information Management — Vol. 17, No. 4)

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“ROI is becoming not a means to decide on making an investment, but rather an analysis to choose the right investment for an organization.” (Journal of Healthcare Information Management — Vol. 17, No. 4)

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### Case-III

BIM: Building information modeling:

Calculation of ROI for BIM investment can be done by the help of a standard formula for the First year is shown below. It uses just a few key variables related to system cost, training and the overall productivity cost saving of a system.

$$(B-(B/1+E))*(12-C)/A+(B*C*D)=\text{First year ROI.}$$

The variables are A= Cost of H/W,S/W

B= Monthly labor cost

C= Training time(months)

D=Productivity cost during training (percentage)

E= Productivity gain after training (percentage)

**(autodeskrevita.com)**

The numerator represent the “earnings” part of the equation and those earnings come from an increase in human productivity. The increase in average monthly productivity is represented in the left bracket (B-(B/1+E)). The right bracket(12-C) is the number of months in a year(12) minus months in training (C).If the user needs three months to become as productive on the new system as on the old, then there are nine months left in the year to benefit from the productivity gain.

T the denominator, which is the “cost” part of the equation, includes the cost of the system (A)and the cost of the productivity lost, in terms of labor cost, as the user learn how to use the system. This second term is the product of the monthly labor cost (B) multiplied by months in time (C) multiplied by productivity lost in training (D), Therefore B\*C\*D. Note that “training time” refers to the time it takes a user to reach the same level of productivity experienced on the original system – not the length of a training course.

### To Improve IT Return on Investment, Pay Attention to the “People Factors”

#### *Workforce Performance is Critical in Systems Implementation*

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Companies looking to IT to improve performance and gain a competitive edge will most certainly face disappointing results unless they also invest in the employees who need to use these systems in their jobs. Technology alone will not yield companies’ anticipated rewards for capital investment in high-cost systems. “Companies spend millions of dollars on systems that, whenever possible, are bypassed and used by employees in ways most closely resembling the system that was replaced—thus ensuring that ROI goals are never achieved,” says Dr. Seth Libeler, Chief Executive Officer of The Center for Effective Performance (CEP). June 11, 2004 - Atlanta, GA

## **PARAMETERS TO GET BETTER PERFORMANCE OF THE IT INVESTMENT**

- Full understanding of your business and business goals and objectives
- Full understanding of your own requirements from IT.
- Better understanding with IT vendors about your business, business goals and your IT Solution requirements.

### **Upgrading the Skills for Users**

Poor training can lead to costly mistakes, loss of productivity, and a downward slide in morale. To prevent these significant consequences, Leibler offers these six recommendations:

- Don’t use system documentation in training. Most documentation is extremely long and difficult for users to follow. In addition, it is usually organized around system functionality instead of around user job tasks.
- Don’t just train the system. Training should focus on how employees will use the system to perform their job tasks.
- Use analysis to identify discrepancies between system functionalities and business processes. Ensure “holes” are identified and resolved before rollout.
- Ensure that every user practices on the new system using job-simulated exercises. Practice should mirror real-life conditions as much as possible. It’s the only way employees will become proficient with the system and confident in their ability to use it.
- Look for opportunities to develop job aids that are task-based and user friendly. Job aids that are organized around job tasks are much easier to understand and use, and can be a cost-effective substitute for full training.
- Allocate 10 percent to 13 percent of the total project budget to training. Being realistic about costs up front is more than worthwhile, given the investment being made in the technology.

## Motivational and Resource Supports

In addition to following the training recommendations, organizations should use diagnostic tools like Dr. Robert F. Mager's Performance Analysis to uncover motivational and other support requirements for successful implementation.

"Most people want to do a good job," says Dr. Seth Leibler, Chief Executive Officer of CEP, The Center for Effective Performance. "But the simple truth is that people don't adapt that easily to change. We can help them overcome the barriers so that companies achieve their anticipated results." Studies have unanimously determined that the four elements crucial to maximizing ROI are as follows:

- End-user involvement
- Solid governance backed by senior management
- Focus on business results
- A smooth- running project without delays and without exhausting resources.

To maximize ROI, the service should guarantee the following

- AN Assessment and plan
- Proactive assistance with operations and system landscape planning
- Full engagement of end users during the implementation to ensure their understanding of its business value and to help them take full advantage of it.
- Minimized unplanned downtime by resolving problems on the spot.
- An SLA (service level agreement) on response and corrective action
- A support advisor who serves as the single point of contact.
- Improvement of operations by maximizing the potential of each application.

## CONCLUSIONS

It is important to consider and document every tangible and intangible cost and benefits and use the results in the process of measuring or estimating the ROI carefully for any investment on Information Technology Infrastructure by Management and try to see the reruns within a time frame before any further demand to change and upgrade it.

CIOs and for decision makers for Information Technology Infrastructures continue to face expectations for IT even as system landscapes grow in complexity. The executive suite demands measurable ROI while management expects continuous improvement in business processes and a satisfactory user experience-all with concomitant demands for cost efficiency. Caught between these competing interests, CIOs and for decision makers for Information Technology Infrastructures should consider turning to their software providers themselves to relieve the pressure. How by providing what CIOs say they want most: service-level agreement and a dedicated resource to sever as their single point of contact. Put together, guaranteed response to trouble and one accountable expert can make for a smoother, faster implementation, broader organizational acceptance, and fuller realization of the software's potential.

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