

A Forrester Total Economic Impact™ Study Prepared For IBM

The Total Economic Impact™ Of IBM Informix Database Server

A Single-Company Analysis

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September 2010

FORRESTER

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Executive Summary

In May 2010, IBM commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) that enterprises may realize by deploying Informix database server. IBM Informix is object-relational database software with over 200,000 customers ranging from small companies to some of the world's largest enterprises. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of the Informix database server on their organizations. This study illustrates the financial impact of adopting Informix database software for a distributed global retailer with 4,000 instances of Informix located throughout the globe.

In conducting in-depth interviews with a large global retailer using Informix for transactional retail applications, Forrester found examples of how Informix delivered key benefits across the organization within three key benefit areas:

- Minimal DBA requirements that allowed high levels of DBA efficiency and a shift away from reactive to proactive functions.
- Cost avoidance of both planned and unplanned downtime.
- High levels of system performance resulting in lower capital investment costs.

Key Findings

Forrester's study yielded three key findings:

- **ROI.** Based on the interviews with the existing retail customer described above, Forrester constructed a TEI framework (see Appendix A) and the associated ROI analysis illustrating the financial impact areas. As seen in Table 1, the ROI for our composite company is 32% with a breakeven point (payback period) of 2.0 years after deployment.

Table 1

Three-Year Risk-Adjusted ROI/TCO¹

ROI	Payback period	Total benefits (PV)	Total costs (PV)	Net present value
32%	2.0	\$5,293,535	\$4,133,258	\$1,160,277

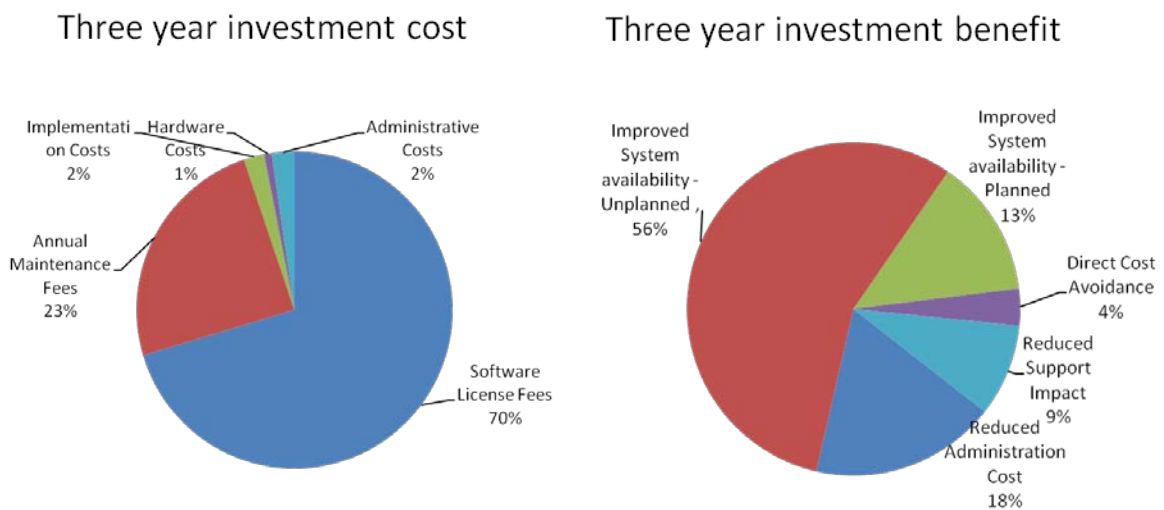
Source: Forrester Research, Inc.

- **Benefits.** Incremental benefits resulting from the adoption of Informix included both operational and capital impacts. Specific benefits included improved administration efficiency of the database environment, reduced impact of planned/unplanned downtime for transactional based applications, improved server utilization of existing server assets, as well as lower overall support costs resulting from fewer system incidents.

- **Costs.** The incremental cost to migrate to the Informix platform included the overall cost of license and annual maintenance, cost of upfront implementation and hardware, as well as the cost of ongoing support over a three year time horizon.

Figure 1 illustrates the relative size of the different cost and benefit categories for the representative organization.

Figure 1
Total Cost/Benefit Breakdown



Source: Forrester Research, Inc.

Factors Affecting Benefits And Costs

Table 1 illustrates the risk-adjusted financial results that were achieved by the representative organization. The risk-adjusted value is meant to provide a conservative estimation, incorporating any potential risk factors that might later affect the original cost and benefit estimates. Although the total cost and benefit values will vary by organization, the ROI and payback period may represent an anticipated result for organizations considering Informix.

The following factors may affect the financial results that an organization may experience:

- Ability to find and train administrators
- Size and complexity of deployment.
- Number and complexity of transactions.

Disclosures

The reader should be aware of the following:

- The study is commissioned by IBM and delivered by the Forrester Consulting group.
- Forrester makes no assumptions as to the potential return on investment that other organizations will receive. Forrester strongly advises that readers should use their own estimates within the framework provided in the report to determine the appropriateness of an investment in IBM Informix database server.
- IBM reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.
- The customer names for the interviews were provided by IBM.

TEI Framework And Methodology

Introduction

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ framework for those organizations considering implementing IBM Informix database server. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision.

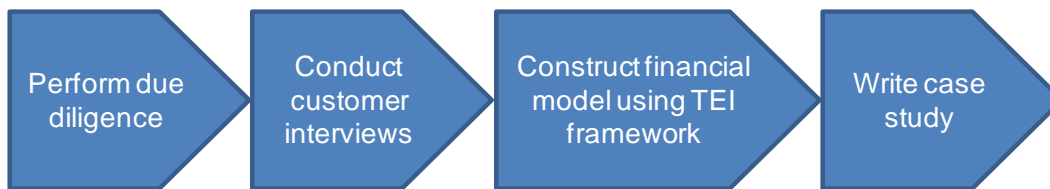
Approach And Methodology

Forrester took a multistep approach to evaluate the impact that IBM Informix database server can have on an organization (see Figure 2). Specifically, we:

- Interviewed IBM marketing/sales/consultants personnel and Forrester analysts to gather data relative to Informix database server and the marketplace for Informix database server.
- Interviewed an organization currently using IBM Informix database server to obtain data with respect to costs, benefits, and risks.
- Constructed a financial model representative of the interviews using the TEI methodology. The financial model is populated with the cost and benefit data obtained from the interviews as applied to the composite organization.

Figure 2

TEI Approach



Source: Forrester Research, Inc.

Forrester employed four fundamental elements of TEI in modeling IBM Informix database server's service:

1. Costs.
2. Benefits to the entire organization.
3. Flexibility.

4. Risk.

Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves the purpose of providing a complete picture of the total economic impact of purchase decisions. Please see Appendix B for additional information on the TEI methodology.

Analysis

Interview Highlights

Several interviews were conducted for this study, involving representatives from a US-based global retailer.

The interviews uncovered several key points that drove the creation of the financial analysis:

- The interviewed organization is a global retailer with primary locations within North America and with subsidiaries in Europe and South America.
- One of the key applications that use Informix is the pharmacy application. The organization has a pharmacy application in each store, requiring access to prescription information across stores as well as back to the central distribution facility.
- The organization uses a variety of database platforms within its environment and sought to expand the use of Informix within areas of high-transaction volumes. The organization sought to expand the usage of Informix within its pharmacy application for several reasons:
 - Informix is able to deliver high levels of performance in an environment of high transaction volumes (millions of transactions per day) and rapid growth
 - Limited staff to devote to individual stores required much of the administration to be centrally located; Informix reduced the need for distributed staff to manage the application.
 - The organization needed a platform that could scale quickly depending on store demand.

Framework Assumptions

Table 2 provides the model assumptions that Forrester used in this analysis.

Table 2
Model Assumptions

Ref.	Metric	Value
A1	Hours per week	40
A2	Weeks per year	52
A3	Hours per year (M-F, 9-5)	2,080
A4	Hours per year (24x7)	8,736

Source: Forrester Research, Inc.

The discount rate used in the PV and NPV calculations is 10%, and the time horizon used for the financial modeling is three years. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult with their respective company's finance department to determine the most appropriate discount rate to use within their own organizations.

Costs

The impact of cost is accrued in two different areas described below: increasing the investment in IBM and the organization's internal preparation and planning costs, which together amount to \$4,694,400. Informix Ultimate Edition provides the representative organization with ability to scale high transaction workloads within a large, distributed environment. Customers with a smaller deployment could benefit from a lower cost version of Informix, Choice Edition for Windows (also available for Mac OS X), which will impact the final ROI estimates.

- Cost of increasing investment in Informix Ultimate Edition:
 - \$3,200,000 — Informix software licensing fees.
 - \$1,280,000 — Annual software maintenance.
 - \$86,400 — Cost of implementation.
 - \$32,000 — Cost of hardware.
- Cost of administration — \$96,000

Total Costs

Table 3 illustrates the total incremental costs of the IBM platform for the interviewed organization.

Table 3

Total Costs — Non-Risk-Adjusted

Costs	Initial	Year 1	Year 2	Year 3	Total	Present value
Software license fees		(3,200,000)			(3,200,000)	(2,909,091)
Software license fees (yearly)			(640,000)	(640,000)	(1,280,000)	(1,009,767)
Implementation costs	(86,400)				(86,400)	(86,400)
Hardware costs	(32,000)				(32,000)	(32,000)
Administrative costs	(96,000)				(96,000)	(96,000)
Total	(\$214,400)	(\$3,200,000)	(\$640,000)	(\$640,000)	(\$4,694,400)	(\$4,133,258)

Source: Forrester Research, Inc

Benefits

In looking at the overall value proposition of Informix, the customer noted that the continued use of Informix came down to its ability to deliver high levels of availability for transactional applications, the ability to scale cost effectively as additional instances are needed, and the ability to administer and manage distributed instances from a centralized location. As a result, the model assumes several key benefits associated with the continued use of Informix for the representative organization: reduced support requirements, improved system availability, and improved utilization of existing assets, as well as reduced system costs to respond to incidents.

Reduced Support Requirements

The organization was able to improve the utilization of its resources in two ways. First, due to embedded features found in the Informix platform, the organization was able to reduce the overall resource requirements to manage the database environment. In addition, automation of specific tasks allowed the organization to shift lower-cost resources to the platform, freeing senior resources to complete more proactive rather than reactive tasks.

To calculate this benefit, the model assumes the organization is able to reduce the overall cost of administration through improved efficiency of junior and senior administrators. Prior to the investment, the organization would have needed to provide a total of six administrators, four junior and two senior, to support the database environment. Through Informix, the organization was able to improve the efficiency of junior staff by 40% and senior staff by 60%, directly as a result of improved stability of the environment. Table 4 illustrates the calculation used.

Table 4
Reduced Support Requirements — Non-Risk-Adjusted

Ref.	Metric	Calculation	Per period
B1	Number of DBAs — junior		4
B2	Number of DBAs — senior		2
B3	Annual cost of support — junior		\$160,000
B4	Annual cost of support — senior		\$190,000
B5	Estimated reduction — senior		60%
B6	Estimated reduction — junior		40%
Bt	Reduced administration cost	$(B1*B3*B6)+(B2*B4*B5)$	\$484,000

Source: Forrester Research, Inc

Cost Avoidance of Both Planned and Unplanned Downtime

The organization saw that one of the key benefits for Informix was the high degree of availability associated with the platform. For an application that handles millions of transactions per day, the organization needed high levels of data availability with minimum planned and unplanned downtime. This benefit included the ability to perform maintenance or make system changes without having to take the whole system down, which would have made the application unavailable to users.

To calculate this impact, the model assumes savings for both planned and unplanned downtime. The impact of downtime depends on many factors including industry vertical, size and type of organization, as well as organization location. For this analysis, Forrester choose to apply conservative estimates for the impact to downtime. For unplanned downtime, the model assumes two types of hourly incident cost: \$250,000 for a minor incident and \$500,000 for a major incident, which include impact to store sales as well as internal productivity. With Informix, the representative organization noted that it was able to achieve consistently higher availability compared with other alternative database platforms for transactional processing, achieving, on average, five 9s uptime (99.999%), compared with a slightly lower average 99.950% for other alternatives. This translates to an hourly difference of 4.29 hours per year if the model assumes that 40% of the incidents are major and 60% are minor. This results in a total annual benefit of \$1.5 million per year, as shown in Table 5.

Table 6 illustrates the impact to planned downtime. For this analysis, the model assumes that the amount of planned downtime is also reduced with higher levels of availability. For planned downtime, the organization will be able to

schedule work, causing minimal impact to the business. As a result, the cost has been reduced to \$25,000 per hour. Table 6 illustrates the calculation used.

Table 5
Improved System Availability, Unplanned — Non-Risk-Adjusted

Ref.	Metric	Calculation	Per period
C1	Baseline availability — Informix		99.9990%
C2	Percent impact — alternative		99.950%
C3	Yearly impact -hours	$(C1-C2)*24*365$	4.29
C4	Cost per hour — minor incident		250,000
C5	Cost per hour — major incident		500,000
C6	% of major incidents		40%
C7	% of minor incidents		60%
Ct	Improved system availability — unplanned	$(C6*C5*C3)+(C7*C4*C3)$	1,502,340

Source: Forrester Research, Inc

Table 6
Improved System Availability, Planned — Non-Risk-Adjusted

Ref.	Metric	Calculation	Per period
D1	Hourly impact		12.00
D2	Cost per hour		\$25,000
Dt	Improved system availability — planned	$D1*D2$	\$300,000

Source: Forrester Research, Inc

Improved Utilization Of Existing Assets

The high performance of Informix compared with other database alternatives allows the organization to more effectively utilize server resources.. The organization noted that, through Informix, it could delay or postpone having to upgrade existing servers in order to maintain performance while the same was not true for other database platforms. In addition, the organization noted the ability of Informix to work on multiple platforms, including Windows, Linux, and Unix servers, resulting in flexibility in adding servers to the environment.

To calculate this benefit, the model assumes that the organization is able to avoid having to purchase additional hardware assets as it scales its Informix footprint. Assuming a base server cost of \$2,400, the organization can reduce the annual spend due to hardware by \$96,000 per year. Table 7 illustrates the calculation used.

Table 7

Improved Utilization Of Existing Assets— Non-Risk-Adjusted

Ref.	Metric	Calculation	Per period
E1	Number of assets		50
E2	Cost per asset		\$2,400
E3	Percent captured		80%
Ht	Direct cost avoidance	$E1 * E2 * E3$	\$96,000

Source: Forrester Research, Inc

Reduction in support costs to respond to system incidents

The organization also noted that, in addition to reduced ongoing administration costs, having fewer system incidents reduced the overall support burden within the environment.

To calculate this benefit, the model assumes that the representative organization can reduce the time to resolve system incidents by 20%. Assuming a cost impact per resolution of \$25,000, the resulting benefit equates to \$240,000 per year.

Table 8

Reduction In Support Costs To Respond To System Incidents — Non-Risk-Adjusted

Ref.	Metric	Calculation	Per period
F1	Number of major incidents		4
F2	Time to resolve (hours)		12
F3	Cost impact per resolution		\$25,000
F4	Estimated savings		20%
Ft	Reduced cost of support	$F1 * F2 * F3 * F4$	\$240,000

Source: Forrester Research, Inc

Total Benefits

Table 9 illustrates the total three-year benefits as a result of the expansion of Informix within the pharmacy application. The total present value benefits equate to roughly \$5.4 million.

Table 9

Total Benefits — Non-Risk-Adjusted

Benefits	Year 1	Year 2	Year 3	Total	Present value
Reduced administration cost	242,000	484,000	484,000	1,210,000	983,636
Improved system availability — unplanned	751,170	1,502,340	1,502,340	3,755,850	3,053,215
Improved system availability — planned	180,000	360,000	360,000	900,000	731,630
Improved utilization of existing assets	48,000	96,000	96,000	240,000	195,101
Reduced support impact	120,000	240,000	240,000	600,000	487,754
Total	\$1,341,170	\$2,682,340	\$2,682,340	\$6,705,850	\$5,451,337

Source: Forrester Research, Inc

Flexibility

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for some future additional investment. This provides an organization with the right or the ability to engage in future initiatives but not the obligation to do so. There are multiple scenarios in which a customer might choose to implement Informix database server and later realize additional uses and business opportunities. Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix B).

Risk

Forrester defines two types of risk associated with this analysis: implementation risk and impact risk. Implementation risk is the risk that a proposed investment in Informix database server may deviate from the original or expected requirements, resulting in higher costs than anticipated. Impact risk refers to the risk that the business or technology needs of the organization may not be met by the investment in Informix database server, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for cost and benefit estimates.

Quantitatively capturing investment and impact risk by directly adjusting the financial estimates results in more meaningful and accurate estimates and a more accurate projection of the ROI. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates. The risk-adjusted numbers should be taken as realistic expectations, since they represent the expected values considering risk.

The following implementation risks that affect costs are identified as part of this analysis:

- Installation and testing could demand more time than originally anticipated.
- Acquisition costs could be higher than originally anticipated for hardware and software.

The following impact risks are identified as part of the analysis:

- The amount of development savings may be lower than originally anticipated due to the time it takes to train and move to an integrated environment.

Table 10 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates. The TEI model uses a triangular distribution method to calculate risk-adjusted values. To construct the distribution, it is necessary to first estimate the low, most likely, and high values that could occur within the current environment. The risk-adjusted value is the mean of the distribution of those points.

Table 10
Cost And Benefit Risk Adjustments

Costs	Low	Most likely	High	Mean
Total cost	\$4,133,258	\$4,133,258	\$4,133,258	\$4,133,258
Benefits	Low	Most likely	High	Mean
Total benefit	\$4,662,327	\$5,451,337	\$5,809,261	\$5,293,535

Source: Forrester Research, Inc.

Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Financial Summary

The financial results calculated in the Costs and Benefits sections can be used to determine the return on investment, net present value, and payback period for the organization's investment in Informix database server. These are shown in Table 11 below.

Table 11

Cash Flow — Non-Risk-Adjusted

Cash flow — original estimates						
	Initial	Year 1	Year 2	Year 3	Total	Present value
Costs	(\$214,400)	(\$3,200,000)	(\$640,000)	(\$640,000)	(\$4,694,400)	(\$4,133,258)
Benefits		\$1,341,170	\$2,682,340	\$2,682,340	\$6,705,850	\$5,451,337
Net benefits	(\$214,400)	(\$1,858,830)	\$2,042,340	\$2,042,340	\$2,011,450	\$1,318,079
ROI	32%					

Source: Forrester Research, Inc.

Table 12 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from Table 10 in the Risk section to the cost and benefits numbers in Tables 3 and 9.

Table 12

Cash Flow — Risk-Adjusted

Cash flow — Risk-adjusted estimates						
	Initial	Year 1	Year 2	Year 3	Total	Present value
Costs	(\$214,400)	(\$3,200,000)	(\$640,000)	(\$640,000)	(\$4,694,400)	(\$4,133,258)
Benefits		\$1,302,347	\$2,604,693	\$2,604,693	\$6,511,733	\$5,293,535
Net benefits	(\$214,400)	(\$1,897,653)	\$1,964,693	\$1,964,693	\$1,817,333	\$1,160,277
ROI	28%					

Source: Forrester Research, Inc.

IBM Informix Database Server: Overview

The Informix product family offers many editions, including no-cost editions and for-purchase editions, to meet a wide variety of enterprise, ISV, VAR and OEM needs. The Informix business enjoys exceptional levels of customer satisfaction and loyalty, as evidenced by having been voted #1 in customer satisfaction for years ending 2008 and 2009, across all rated products, not just database software.

Free editions of Informix include a Developer Edition, with all features of Informix for individual application development, testing and proof-of-concepts, on a wide variety of platforms, It has some processing and storage limitations. Another free edition is the Informix Innovator-C Edition, designed for low-cost embedded or workgroup computing that it allows small to medium-sized businesses to develop and deploy widely used database functionality, including replication and some clustering capabilities. The Innovator-C edition is available on a wide variety of platforms with some limitations. Recently introduced is the Choice Edition for Windows and the Choice Edition for Mac OS X, designed to give businesses, ISVs and OEMS with those respective environments the ability to develop and deploy near enterprise-class functionality at very low cost. The for-purchase Growth edition provides powerful data management capabilities for departmental solutions or small to medium-sized businesses, including unlimited replication cluster nodes to send or receive data updates from other nodes in the cluster. This edition supports up to two high-availability cluster nodes of any type, available on all platforms. Finally, the Informix Ultimate Edition includes all Informix features on all supported platforms for development, deployment and distribution with unlimited scalability. It includes full cluster and replication capabilities. Storage compression is available as an optional feature.

For more details on the different Informix editions, please visit www.ibm.com/informix/

The Informix Ultimate Edition includes all Informix features on all supported platforms for development, deployment, and distribution with unlimited scalability. It includes full cluster and replication capabilities. Storage compression is available as an optional feature.

- Allows unlimited data storage, processors, and memory.
- Includes the Continuous Availability Feature that enables you to build a cluster of Informix instances around a single set of shared storage devices. Properly written applications can easily leverage this architecture for load-balancing or continuously available data services, even if one or more servers fail.
- Allows full high-availability cluster and Enterprise Replication functionality, including unlimited replication nodes and all H/A cluster secondary instance types.
- Includes the Informix SQL Warehousing Tool (SQW)
- Includes the Advanced Access Control Feature (ACCF) enabling cell-, column- and row-level label-based access control (LBAC). Access to data can now be controlled down to an individual cell of information, providing greater security for your critical data and sensitive customer information.
- Includes Informix Spatial Datablade solution that can help you implement spatial data warehouses supporting your business intelligence objectives.

Appendix A Total Economic Impact™ Overview

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

The TEI methodology consists of four components to evaluate investment value: benefits, costs, risks, and flexibility.

Benefits

Benefits represent the value delivered to the user organization — IT and/or business units — by the proposed product or project. Often product or project justification exercises focus just on IT cost and cost reduction, leaving little room to analyze the effect of the technology on the entire organization. The TEI methodology and the resulting financial model place equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization. Calculation of benefit estimates involves a clear dialogue with the user organization to understand the specific value that is created. In addition, Forrester also requires that there be a clear line of accountability established between the measurement and justification of benefit estimates after the project has been completed. This ensures that benefit estimates tie back directly to the bottom line.

Costs

Costs represent the investment necessary to capture the value, or benefits, of the proposed project. IT or the business units may incur costs in the forms of fully burdened labor, subcontractors, or materials. Costs consider all the investments and expenses necessary to deliver the proposed value. In addition, the cost category within TEI captures any incremental costs over the existing environment for ongoing costs associated with the solution. All costs must be tied to the benefits that are created.

Risk

Risk measures the uncertainty of benefit and cost estimates contained within the investment. Uncertainty is measured in two ways: 1) the likelihood that the cost and benefit estimates will meet the original projections, and 2) the likelihood that the estimates will be measured and tracked over time. TEI applies a probability density function known as “triangular distribution” to the values entered. At a minimum, three values are calculated to estimate the underlying range around each cost and benefit.

Flexibility

Within the TEI methodology, direct benefits represent one part of the investment value. While direct benefits can typically be the primary way to justify a project, Forrester believes that organizations should be able to measure the strategic value of an investment. Flexibility represents the value that can be obtained for some future additional investment building on top of the initial investment already made. For instance, an investment in an enterprisewide upgrade of an office productivity suite can potentially increase standardization (to increase efficiency) and reduce licensing costs. However, an embedded collaboration feature may translate to greater worker productivity if activated. The collaboration can only be used with additional investment in training at some future point in time. However,

having the ability to capture that benefit has a present value that can be estimated. The flexibility component of TEI captures that value.

Appendix B: Glossary

Discount rate: The interest rate used in cash flow analysis to take into account the time value of money. Although the Federal Reserve Bank sets a discount rate, companies often set a discount rate based on their business and investment environment. Forrester assumes a yearly discount rate of 10% for this analysis. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult their respective organization to determine the most appropriate discount rate to use in their own environment.

Net present value (NPV): The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

Present value (PV): The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total net present value of cash flows.

Payback period: The breakeven point for an investment. The point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Return on investment (ROI): A measure of a project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits minus costs) by costs.

A Note On Cash Flow Tables

The following is a note on the cash flow tables used in this study (see the example table below). The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1. Those costs are not discounted. All other cash flows in Years 1 through 3 are discounted using the discount rate (shown in Framework Assumptions section) at the end of the year. Present value (PV) calculations are calculated for each total cost and benefit estimate. Net present value (NPV) calculations are not calculated until the summary tables and are the sum of the initial investment and the discounted cash flows in each year.

Table [Example]

Example Table

Ref.	Category	Calculation	Initial cost	Year 1	Year 2	Year 3	Total

Source: Forrester Research, Inc.

Appendix C: Endnotes

¹ Forrester risk-adjusts the summary financial metrics to take into account the potential uncertainty of the cost and benefit estimates. For more information on Risk, please see page [15].