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## **The Total Economic Impact Of IBM Information Server – Trusted Data for SAP**

Single Company Analysis - Manufacturing

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FORRESTER®



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## The Total Economic Impact Of IBM Information Server

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## Executive Summary

In September 2007, IBM commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) enterprises may realize by deploying IBM Information Server as part of an overall Master Data Management strategy for Trusted Data needs within SAP Applications. Information Server is a unified data integration platform that provides integration and transformation of data and content to deliver information throughout its life cycle. This study illustrates the financial impact of adopting IBM Information Server as it relates to providing trusted actionable information for an organization's SAP applications. For this analysis, Forrester examines the impact of Information Server both on IT and business processes within a European based manufacturing organization.

In conducting in-depth interviews with the manufacturing organization, Forrester found the use of Information Server with an effective Master Data Management strategy provides the ability to drive process efficiencies within the organizations order to cash and purchase to pay operations, as well as reduce cost in integrating different sources of siloed data. In addition, as the organization increased usage of Information Server they expect to see additional benefits in the form of Improving the accuracy and data quality for data used as part of their SAP BW analytics, improving the accuracy of credit scoring of their partners, better management of vendor purchase order information, increasing the likelihood of reducing the number of sourcing vendors across global contracts, providing additional visibility to the overall ownership of partner organizations, as well as improving the visibility and granularity of individual product specifications.

For the organization, the process of justifying the investment in IBM Information Server required the entire organization buy into the value proposition of an effective Master Data Management strategy, coupled with positive gains to both IT and the business in the early phases of the project.

## Purpose

The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Information Server as part of an overall Data Governance strategy in relation to an organization's existing SAP applications. Forrester's aim is to clearly show all calculations and assumptions used in the analysis. Readers should use this study to better understand and communicate a business case for investing in IBM Information Server.

## Methodology

IBM selected Forrester for this project because of its industry expertise in data integration technologies and Forrester's Total Economic Impact™ (TEI) methodology. TEI not only measures costs and cost reduction (areas that are typically accounted for within IT) but also weighs the enabling value of a technology in increasing the effectiveness of overall business processes.

For this study, Forrester employed four fundamental elements of TEI in modeling the adoption of Information Server within the manufacturing organization:

1. Costs and cost reduction.
2. Benefits to the entire organization.
3. Flexibility.
4. Risk.

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

### Approach

Forrester used a five-step approach for this study.

1. Forrester gathered data from existing Forrester research relative to IBM Information Server and the data integration market in general.
2. Forrester interviewed IBM Information Server marketing and sales personnel to fully understand the potential (or intended) value proposition of IBM Information Server solution.
3. Forrester conducted a series of in-depth interviews with a European manufacturing organization currently using IBM Information Server solution in conjunction with SAP.
4. Forrester constructed a financial model representative of the interviews. This model can be found in the TEI Framework section below.
5. Forrester created a composite organization based on the interviews and populated the framework using data from the interviews as applied to the composite organization.

### Key Findings

Forrester's study yielded three key findings:

- **ROI.** Based on the interviews with the manufacturing customer, 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 38% with a breakeven point (payback period) of 1.69 years after deployment.
- **Benefits.** Benefits of deploying IBM Information Server in conjunction with an overall information management strategy include the ability for the organization to drive process efficiencies within the organizations order to cash and purchase to pay operations, as well as reduce development cost in integrating different sources of siloed data. In addition, implementing IBM Information Server with SAP allowed the organization to further improve additional processes allowing for deeper operational data visibility.
- **Costs.** Costs of Information Server included the costs of product licenses and maintenance, ongoing services costs, as well as costs of implementation and developer training.

Table 1 illustrates the risk-adjusted cash flow for the organization, based on data and characteristics obtained during the interview process. Forrester risk-adjusts these values to take into account the potential uncertainty that exists in estimating the costs and benefits of a technology investment. The risk-adjusted value is meant to provide a conservative estimation, incorporating any potential risk factors that may later impact the original cost and benefit estimates. For a more in-depth explanation of risk and risk adjustments used in this study, please see the Risk section.

**Table 1: Composite Company ROI, Risk-Adjusted**

Ref.	Total benefits	Calculation	Initial	Year 1	Year 2	Year 3	Total	NPV
H1	Total costs		\$2,057,477	\$313,108	\$349,108	\$390,441	\$3,110,134	\$2,923,983
L1	Total benefits			\$1,489,125	\$1,624,025	\$1,772,605	\$4,885,755	\$4,027,704
P2	Total		\$(2,057,477)	\$1,176,017	\$1,274,917	\$1,382,164	\$1,775,621	\$1,103,720
P3	Return on investment		38%					
P4	Payback period (yrs)		1.69					

Source: Forrester Research, Inc.

Forrester found the primary drivers associated with the ROI at the representative organization were the amount of data integration, the number and level of experience of the development staff, the complexity of the business processes that feed directly into business applications.

## Disclosures

The reader should be aware of the following:

- The study is commissioned by IBM and delivered by the Forrester Consulting group.
- IBM reviewed and provided feedback to Forrester, but Forrester maintained editorial control over the study and its findings and did 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.
- Forrester makes no assumptions as to the potential return on investment that other organizations will receive. Forrester strongly advises that the readers should use their own estimates within the framework provided in the report to determine the appropriateness of an investment in IBM Information Server.
- This study is not meant to be used as a competitive product analysis.

## IBM Information Server: Overview

According to IBM, information integration is the process of integrating and transforming data and content to deliver authoritative, consistent, timely, and complete information and governing the quality of that information throughout its life cycle.

Increased information integration can potentially provide these advantages:

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- Increased business insight and competitiveness, grounding business decisions and operations in authoritative, consistent, timely, and complete information.
- Reduced business risk by basing business processes on authoritative, consistent, timely, and complete information.
- Improved productivity and operational efficiency through easy access to authoritative, consistent, timely, and complete information.

Information Integration is a process involving these typical steps:

**Understand information:** Automated data profiling and analysis to unlock the mystery of source data content and structure.

**Cleanse information:** Data quality enhancement to identify, correct, match, standardize, and reconcile inaccurate or redundant data.

**Transform information:** Data transformation and delivery to get data of any complexity from any sources, format it as required, and deliver it to any targets, within or outside the enterprise, at the right time.

**Federate information:** Information access and integration for diverse data and content as if it were a single resource, regardless of where the information resides.

**Connect information:** Consolidation, synchronization, and distribution across disparate databases.

The outcome of these steps allows firms to achieve tangible value from information integration.

## Analysis

As stated in the Executive Summary, Forrester took a multistep approach to evaluate the impact that implementing Information Server can have on an organization:

- Interviews with IBM marketing and sales personnel.
- In-depth interviews of a European manufacturing organization currently using Information Server in conjunction with their SAP ERP platform.
- Construction of a common financial framework for the implementation of Information Server.
- Construction of a composite organization based on characteristics of the interviewed organization.

## Interview Highlights

The interviews uncovered a number of characteristics of this customer's need for improved data integration and the results of implementing IBM Information Server:

- In July 2006, the organization embarked on a Master Data Management strategy around enterprise wide data across the organization. One of the program's goals was providing close integration between data quality and integration and global business processes.
- In addition to close alignment to global production processes, the organization was challenged by the need to have access to relevant customer and supplier data. The organization was looking to improve the efficiency and effectiveness of its business unit staff by reducing the time to reconcile potentially conflicting information from disparate sources.
- Prior to the investment in IBM Information Server, Master Data Management was undocumented and ad-hoc across multiple data sources. The organization was using SAP prior to the purchase of IBM Information Server and information fed into the organization's SAP platform came potentially from multiple sources. The time to integrate and manage sources of information was time consuming and costly.
- While the immediate benefit to the organization was to improve business and IT process efficiency, the organization saw the implementation of IBM Information Server in combination with a Master Data Management strategy could potentially have longer term impacts on overall business operations.
- A key success of the implementation of IBM Information Server was the creation of specific Key Performance Indicators within data integration, allowing the organization to track and measure progress of data quality and integration within the SAP platform. Key Performance Indicators followed six key dimensions: Completeness, Timeliness, Integrity, Consistency, Accuracy and Validity.
- In addition to the quantified benefits associated with the initial implementation, the organization also realized the flexibility of the IBM Information Server platform to drive other benefits into the future. These include Improving the accuracy and data quality for data used as part of their SAP BW analytics, improving the accuracy of credit scoring of their partners, better management of vendor purchase order information, increasing the



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likelihood of reducing the number of sourcing vendors across global contracts, providing additional visibility to the overall ownership of partner organizations, as well as improving the visibility and granularity of individual product specifications.

## TEI Framework

### Introduction

From the information provided in the in-depth interviews, Forrester has constructed a TEI framework for those organizations considering implementation of IBM Information Server. The objective of the framework is to identify the cost, benefit, and risk factors, and flexibility that affect the investment decision.

### Framework Assumptions

Table 2 lists the discount rate used in the PV and NPV calculations and the time horizon used for the financial modeling.

**Table 2: General Assumptions**

Ref.	General assumptions	Value
	Discount rate	10%
	Length of analysis	Three years

Source: Forrester Research, Inc.

Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult with their finance department to determine the most appropriate discount rate to use within their own organization. Please see glossary for a more detailed description of the financial metrics used as part of this analysis.

In addition to the financial assumptions used to construct the cash flow analysis, Table 3 provides salary assumptions used within this analysis.

**Table 3: Salary Assumptions**

Ref.	Metric	Calculation	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
A6	Hourly		\$48

Source: Forrester Research, Inc.

## Costs

Costs around IBM Information Server for the interviewed organization include cost of, software, maintenance, implementation, and ongoing administration. The actual cost of the solution will vary depending on the size of the development staff as well as the level of data integration undertaken by the organization. Based on the discussions with the interviewed customer, the cost of platform hardware is incorporated into the cost of implementation.

*License Cost*

The cost of licensing represents a portion of the overall investment cost of the solution. License costs are priced according to the number of CPUs required. Based on interviews with the representative organization, the estimated license cost was discounted off list price to \$800,000 at the time of purchase. This would have been enough to cover the cost of the ETL production and development environment. Table 4 illustrates the cost of licensing.

**Table 4: License Cost**

Ref.	Metric	Calculation	Initial cost
A1	License fees		\$800,000
At	Estimated license fees	A1	\$800,000

Source: Forrester Research, Inc.

*Annual Maintenance: Software*

In addition to the initial cost of software, the organization also incurs annual costs around software maintenance for the IBM platform. Based on the interviews with the representative organization, we assume the annual software maintenance cost equates to roughly 24% of the discounted cost of license. Table 5 illustrates the equations used.

**Table 5: Annual Maintenance: Software**

Ref.	Metric	Calculation	Per period
B1	License fees		\$800,000
B2	Yearly percent		24%
Bt	Software maintenance cost	B1 * B2	\$194,071

Source: Forrester Research, Inc.

*Training Cost*

The cost to train the individual developers on the new IBM Information Server platform was another cost cited by the interviewed organization. The organization indicated that it had 2 developers who it had trained on the IBM Information Server platform. Prior to implementing IBM Information Server the majority of the developers had been trained on the legacy platform, and the organization had made an investment to re-train the developers on the IBM Information Server platform. For the purpose of this analysis, we assume that each of the 2 developers will participate in training totaling 25 hours. The cost per developer includes the formal cost of training, the lost productivity from participating in the training session, as well as the indirect cost of informal training. Table 6 illustrates the total training cost.

**Table 6: Training Cost**

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Ref.	Metric	Calculation	Initial cost
C1	Number of people		2
C2	Cost per person		\$100
C3	Hours		25
Ct	Training cost	$C1 * C2 * C3$	\$5,000

Source: Forrester Research, Inc.

*Implementation Cost*

The cost to implement the IBM DataStage platform includes the cost of internal resources to plan and deploy as well as external third party to aid in planning and implementation the Information Server platform. The organization indicated it invested roughly \$291,000 in internal effort for the implementation. In addition, the organization also estimated it invested roughly 3 years in external effort equating to roughly \$900,000 for implementation. Of the total implementation costs, roughly 20% of the cost was devoted to strategy and planning while 80% was devoted to actual implementation and testing of the solution. Tables 7 and 8 illustrate the total implementation cost.

**Table 7: Implementation Cost – Internal**

Ref.	Metric	Calculation	Initial cost
D1	Number of FTE's - Year 1		\$ 291,107
Dt	Implementation cost	D1	\$ 291,107

Source: Forrester Research, Inc.

**Table 8: Implementation Cost – External**

Ref.	Metric	Calculation	Per period
E1	Number of man years		3
E2	Hours per year		2,000
E3	Cost per hour		\$150
Et	Total cost	$E1 * E2$	\$900,000

Source: Forrester Research, Inc.

*Ongoing support Cost*

In addition to initial implementation costs, Forrester assumes that the incremental costs to support improved master data management within the organization. Ongoing support costs include the IT

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and business labor necessary to support and manage data integration. For the purpose of this analysis, the organization allocates one IT staff member in the first year, 1.5 in Year 2 and 2 in Year 3 to handle the increasing level of data integration. In addition, we assume the organization devotes .25 FTE's on the business side for data integration and management as it relates to the existing SAP platform. Assuming a fully burdened cost of \$80,000 per year, we can calculate the total yearly cost of administration and support equates to \$100,000. Tables 9 and 10 illustrate the equation used.

**Table 9: Ongoing Support -IT**

Ref.	Metric	Calculation	Year 1
F1	Number of FTE's (Yr1)		1
F2	Cost per FTE		\$80,000
Ft	Total cost (Yr1)	F1*F2	\$80,000

Source: Forrester Research, Inc.

**Table 10: Ongoing Support -BU**

Ref.	Metric	Calculation	Year 1
G1	Number of FTE's (Yr1)		0.25
G2	Cost per FTE		\$80,000
Gt	Total cost (Yr1)	G1*G2	\$20,000

Source: Forrester Research, Inc.

### *Total Costs*

Table 11 illustrates the total incremental costs of the IBM platform for the interviewed organization.

**Table 11: Total Cost**

Cash Flow Analysis (Original Estimates)						
Costs	Initial	Year 1	Year 2	Year 3	Total	Present value
Software licensing	\$800,000				\$800,000	\$800,000
Annual Maintenance		\$194,071	\$194,071	\$194,071	\$582,213	\$482,626
Internal Labor Costs	\$291,107				\$291,107	\$291,107
External Labor Costs	\$900,000				\$900,000	\$900,000
Training		\$5,000			\$5,000	\$4,545
Ongoing support - IT		\$80,000	\$120,000	\$160,000	\$360,000	\$292,111

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Ongoing Support – BU		\$20,000	\$20,000	\$20,000	\$60,000	\$49,737
Total	\$1,991,107	\$299,071	\$334,071	\$374,071	\$2,998,320	\$2,820,126

Source: Forrester Research, Inc.

### Benefits

The second component of this analysis looks at the potential benefits associated with an organization investing in the IBM Information Server platform. As a result of the interview process, the representative organization indicated that it received benefits from reduced overall development cost as well as acceleration of time to benefits associated with the migration to the IBM Information Server platform.

#### *Integration Cost Efficiency*

In discussions with the interviewed organization, the organization noted that the migration to IBM Information Server allowed for developers to become more efficient and reduce the overall cost of project deployment. Cost reduction and efficiency was one of the drivers for the organization in migrating to the new platform; it recognized that continuing to use custom development was much more costly as the organization migrated away from the mainframe environment and integrated greater levels of data into their SAP platform. . The organization noted that it had anticipated a 50% cost reduction savings in development cost as a result of migrating to the IBM Information Server product. The 50% cost reduction estimate is used as the basis to calculate the overall financial savings to the organization. To perform this analysis, we assume that the organization prior to the migration to Information Server devoted roughly 6 FTE's on data integration and cleansing with annual FTE growth of 20% mirroring the growth of data. Assuming a \$100,000 fully burdened salary, we can calculate a 50% reduction cost would equate to \$360,000 in the first year (6 FTE's  $\times (1+20) \times 50\%$ ). Table 12 illustrates the equation used to calculate total savings across the three years.

**Table 12: Integration Cost Efficiency**

Ref	Description	Metric	Calc.	Baseline	Year 1	Year 2	Year 3	Total
A1	Total FTE's assigned to development and data cleansing		A1*A2	6	7.2	8.64	10.368	
A2	Estimated annual growth	20%						
A3	Estimated efficiency improvement	50%	A1*A3		3.6	4.3	5.2	
A4	Annual FTE Salary	\$100,000						
Ato	Total Savings		A4*A3		\$360,000	\$432,000	\$518,400	\$1,310,400

Source: Forrester Research, Inc.

*Impact To Order Reconciliation*

In addition to reducing the overall cost of data cleansing and integration, migrating to IBM Information Server also had the effect of reducing the time it took to reconcile order information within the SAP platform. The impact of an effective master data management strategy was to improve the efficiency of reconciling orders as a result improved data quality. Prior to their master data initiative, the organization was devoting a significant amount of time reconciling errors within a customers order. Specific data included address and contact information which was inaccurate or mislabeled as a result outdated addresses or information.

With the introduction of IBM Information Server for data integration and data quality, the organization was able to reduce the time the number of errors within an electronic order, reducing burden on operations and finance staff. For the purpose of this analysis, we assume the organization processes roughly 500,000 orders per month with roughly 70% of those orders delivered electronically. Prior to the investment in IBM Information Server, the organization devoted the equivalent of 6 FTE's to reconcile electronic order information. The organization estimates a 70% reduction in that cost as a result of that investment. Assuming an annual salary of \$100,000, we can calculate the estimated savings in year 1 of \$420,000, increasing to \$560,000 in year 3. Table 13 illustrates the calculation used.

**Table 13: Impact to Order Reconciliation**

Ref	Description	Metric	Calc.	Baseline	Year 1	Year 2	Year 3	Total
A1	Average number of orders per month	500,000	A1*A2	500,000				
A2	% of orders delivered electronically	70%						
A3	Number of FTE's reconciling orders	6	A1*A3		6.0	7.0	8.0	
A4	Estimated savings	70%						
A5	Annual salary	\$100,000						
Ato	Total Savings		A4*A3*A5		\$420,000	\$490,000	\$560,000	\$1,470,000

Source: Forrester Research, Inc.

*Reduction in Processing Time*

A third quantifiable area of impact mentioned by the interviewed organization is around the financial impact of reducing order time through more timely and accurate information. Prior to the movement of IBM Information Server, the organization noted the recurrence of delay in the order process as a result of inaccurate or missing information within the SAP platform. With effective data integration, the organization noted it was able to reduce the time processing and completing electronic orders for the organization.

To calculate this benefit, we assume roughly 2% of the orders are classified as high value order with an average order value of \$300,000. High value orders on average take on average 6 months to complete and process. We conservative estimate through data integration, the organization can improve the time to close and process by 1%, this results in an increase in improvement of 0.1 years. Assuming accelerating the order processing cycle allows the organization to collect sooner, we can calculate the additional value from a typical return on the cost of capital of 10%. This allows

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us to calculate the ret savings resulting from accelerating order process time. Table 14 illustrates the calculation used.

**Table 14: Reduction in Processing Time**

Ref.	Description	Metric	Calculation	Baseline	Year 1
A1	Average number of orders per month	500,000	A1*A2	500,000	
A2	% of orders delivered electronically	70%			
A3	% of high value orders	2%	A1*A3		-
A4	Average order size (High Value)	\$300,000			
A5	Average order time (Years)	.5			
A6	Estimated improvement in order time (%)	1%			
A7	Estimated improvement in order time (yrs)	0.1			
Ato	Total Savings		A4*A3*A5		\$ 787,500

Source: Forrester Research, Inc.

### *Total Benefits*

Table 15 illustrates the total three-year benefits as a result of the migration to the IBM Information Server platform. The total present value benefits equate to roughly \$4.2 million.

**Table 15: Total Benefits**

Cash Flow Analysis (Original Estimates)						
Benefits	Initial	Year 1	Year 2	Year 3	Total	Present value
Integration Cost Efficiency		\$360,000	\$432,000	\$518,400	\$1,310,400	\$1,073,779
Impact to Order Reconciliation		\$420,000	\$490,000	\$560,000	\$1,470,000	\$1,207,513
Reduction in processing time		\$787,500	\$787,500	\$787,500	\$2,362,500	\$1,958,396
Total Benefits		\$1,567,500	\$1,709,500	\$1,865,900	\$5,142,900	\$4,239,688

Source: Forrester Research, Inc.

## Risk

Forrester defines two types of investment risk associated with this analysis: implementation and impact risk. **Implementation risk** is the risk that a proposed technology investment may deviate from original resource requirements needed to implement and integrate the investment, 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 technology investment, 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 risk by directly adjusting the financial estimates results in more meaningful and accurate estimates and a more accurate projection of the return on an investment.

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

- Installation and testing could demand more time than originally anticipated.
- Timeliness of having to provide specific functionality to meet business requirements
- 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.
- The time-to-benefit savings may be lower than originally anticipated due to the time to integrate Information Server into existing technology.

### *Steps For Measuring Investment Risk*

Risk factors are used in TEI to widen the possible outcomes of the costs and benefits (and resulting savings) associated with a project. 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 estimate. The expected value — the mean of the distribution — is used as the risk-adjusted cost or benefit number. The risk-adjusted costs and benefits are then summed to yield a complete risk-adjusted summary and ROI. In this study, Forrester discovered that engaging with IBM was a relatively low-risk endeavor, as expressed by the interviewed organizations, and applied a risk factor of 100% to the costs and 98% to the benefits to arrive at a risk-adjusted number. Table 16 provides a risk adjusted breakdown of the costs received. Table 17 provides a risk adjusted breakdown of the benefits received.

**Table 16: Risk Adjustment, Cost**

Costs	Step 1			Step 2	
	Original estimate	High	Low	Risk Adjustment	
				%	Value
Software licensing	\$ 800,000	\$ 920,000	\$ 760,000	103%	826,666.67
Annual Maintenance	\$ 582,213	\$ 698,656	\$ 553,102	105%	611,323.65
Internal Labor Costs	\$ 291,107	\$ 334,772	\$ 276,551	103%	300,810.05
External Labor Costs	\$ 900,000	\$ 1,035,000	\$ 855,000	103%	930,000.00
Training	\$ 5,000	\$ 6,250	\$ 4,750	107%	5,333.33
Ongoing support - IT	\$ 360,000	\$ 414,000	\$ 342,000	103%	372,000.00
Ongoing Support - BU	\$ 60,000	\$ 75,000	\$ 57,000	107%	64,000.00

Source: Forrester Research, Inc.

**Table 17: Risk Adjustment, Benefit**

Benefit	Step 1			Step 2	
	Original estimate	High	Low	Bias adjustment	
				%	Value
Integration Cost Efficiency	\$ 1,310,400	\$ 1,375,920	\$ 1,048,320	95%	\$ 1,020,090
Impact to Order Reconciliation	\$ 1,470,000	\$ 1,543,500	\$ 1,176,000	95%	\$ 1,147,137
Reduction in processing time	\$ 2,362,500	\$ 2,480,625	\$ 1,890,000	95%	\$ 1,860,476

Source: Forrester Research, Inc.

## Anticipated Solution Benefits

In addition to the quantitative benefits described above, the organization saw several other key qualitative benefits resulting from the investment in IBM Information Server. These included:

- Improving the accuracy and data quality for data used as part of their SAP BW analytics. The organization noted SAP BW was used to perform advanced financial forecasting calculations.

- Better management of vendor purchase order information, increasing the likelihood of reducing the number of sourcing vendors across global contracts. As a goal, the organization would like to achieve up to 10% purchasing order savings by year by focusing and consolidating on global contracts.
- Improving the accuracy of credit scoring of their partners, providing additional visibility to the overall ownership of partner organizations. In a siloed data environment, the organization was limited in their ability to see the ownership structures of their partner organizations, leading in certain cases inaccuracy in credit scoring.
- Improving the visibility and granularity of individual product specifications. The organization noted it currently has upwards of 100,000 available products and improving the visibility and accuracy of product specification can improve the ability to accurately estimate warehouse storage and transportation logistics requirements.

### **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. Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

The interviewed organization noted the use of the IBM Information Server platform in conjunction with an effective Master Data Management Strategy can potentially enable future benefits throughout the organization as a way to break down geographic barriers around existing operational data.

While Forrester believes that organizations purchasing IBM Information Server and an effective Master Data Management strategy in combination can take advantage of these flexibility options, quantification (using the financial industry standard Black-Scholes or the binomial option pricing models) of the additional value associated with these options for this customer would require scenario development and forward-looking analysis that is not available at this time..

The value of flexibility is unique to each organization, and the willingness to measure its value varies from company to company (see Appendix A for additional information regarding the flexibility calculation).

### **TEI Framework: Summary**

Considering the financial framework constructed above, the results of the Costs, Benefits, Flexibility, and Risk sections using the representative numbers can be used to determine a return on investment, net present value, and payback period. Table 18 shows the consolidation of the numbers for the composite organization.

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**Table 18: Cash Flow Summary, Non-Risk Adjusted**

Ref.	Total benefits	Initial	Year 1	Year 2	Year 3	Total	NPV
H1	Total costs	\$1,991,107	\$299,071	\$334,071	\$374,071	\$2,998,320	\$2,820,126
L1	Total benefits		\$1,567,500	\$1,709,500	\$1,865,900	\$5,142,900	\$4,239,688
P2	Total	\$(1,991,107)	\$1,268,429	\$1,375,429	\$1,491,829	\$2,144,581	\$1,419,562
P3	Return on investment	50%					
P4	Payback period (yrs)	1.53					

Source: Forrester Research, Inc.

Table 19 below shows the risk-adjusted values, applying the risk adjustment method indicated in the “Risks” section and the values from Tables 15 and 16 to the numbers in Tables 11 and 14.

**Table 19: Cash Flow Summary – Risk Adjusted**

Ref.	Total benefits	Initial	Year 1	Year 2	Year 3	Total	NPV
H1	Total costs	\$2,057,477	\$313,108	\$349,108	\$390,441	\$3,110,134	\$2,923,983
L1	Total benefits		\$1,489,125	\$1,624,025	\$1,772,605	\$4,885,755	\$4,027,704
P2	Total	\$(2,057,477)	\$1,176,017	\$1,274,917	\$1,382,164	\$1,775,621	\$1,103,720
P3	Return on investment	38%					
P4	Payback period (yrs)	1.69					

Source: Forrester Research, Inc.

It is important to note that values used throughout the TEI Framework are based on in-depth interviews with a single organization. Forrester makes no assumptions as to the potential return that other organizations will receive within their own environment. Forrester strongly advises that readers use their own estimates within the framework provided in this study to determine the expected financial impact of implementing IBM Information Server.

## Study Conclusions

Based on information collected in interviews with a current IBM Information Server customer, Forrester found that organizations can potentially realize benefits in the form of improved development efficiency within their current environment as well as faster time to benefit from their development projects.

In addition to the quantified benefits associated with the initial implementation, the organization also realized the flexibility of the IBM Information Server platform to drive other benefits into the future. These include Improving the accuracy and data quality for data used as part of their SAP BW analytics, improving the accuracy of credit scoring of their partners, better management of vendor purchase order information, increasing the likelihood of reducing the number of sourcing vendors across global contracts, providing additional visibility to the overall ownership of partner organizations, as well as improving the visibility and granularity of individual product specifications.

The financial analysis provided in this study illustrates the potential way an organization can evaluate the value proposition of IBM Information Server for SAP. Based on information collected during the in-depth customer interviews, Forrester calculated a three-year risk-adjusted ROI of 38% for the composite organization with a payback period of 1.69 years All final estimates are risk-adjusted to incorporate potential uncertainty in the calculation of costs and benefits.

Based on these findings, companies looking to implement IBM Information Server can see cost savings and productivity benefits. Using the TEI framework, many companies may find the potential for a compelling business case to make such an investment.

## 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. For the purpose of this analysis, the impact of flexibility was not quantified.

### 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: the likelihood that the cost and benefit estimates will meet the original projections and 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 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 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 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 one through three are discounted using the discount rate shown in Table 2 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.

### **Example Table**

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

Source: Forrester Research, Inc.