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The Total Economic Impact™ Of IBM Cognos Analytics With Watson

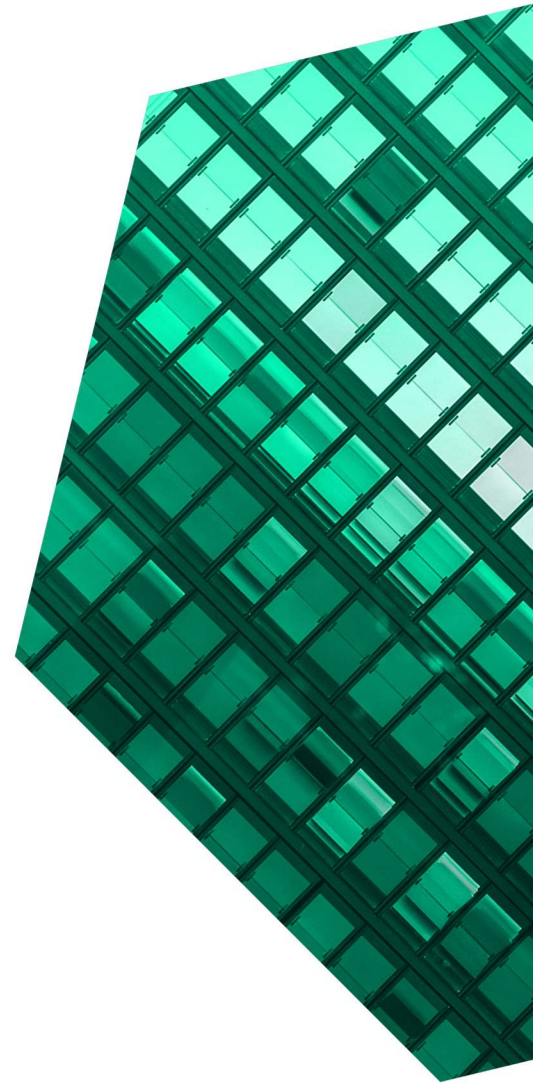
Cost Savings And Business Benefits
Enabled By IBM Cognos Analytics

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Executive Summary

Organizations across industries collect and consume more data than ever before due to digital transformation. However, the management of data continues to present a key challenge: presenting enterprisewide data across siloes in real time. IBM Cognos Analytics with Watson is a business intelligence (BI) solution that integrates reporting, analysis, and predictions, and it offers customers self-service reporting, data visibility depth, and a foundation for strong data governance across the enterprise.

Cognos Analytics with Watson is an enterprise-wide business intelligence solution that provides data reporting, analytics, and monitoring capabilities across segments of an organization.

IBM commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying Cognos Analytics with Watson.¹ The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Cognos Analytics with Watson on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed five representatives with experience using Cognos Analytics with Watson. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single composite organization that is a global organization with annual revenue of \$18.7 million.

Time saved for data analysis

25%



KEY STATISTICS



Return on investment (ROI)
77%



Net present value (NPV)
\$846K

These interviewees noted that prior to using Cognos Analytics with Watson, their organizations had poor data governance and manual production of reports and key metrics. However, prior attempts yielded limited success, leaving them with limited self-service reporting, limited drill-down reporting, and no row-level security. These limitations led to dispersed and decentralized data and inadequate analytic capabilities.

The interviewees reported that after the investment in Cognos Analytics with Watson, their organizations centralized dependable data due to automation and flexible, self-service reporting. Key results from the investment include overall improvement in data governance and democratization.

KEY FINDINGS

Quantified benefits. Three-year, risk-adjusted present value (PV) quantified benefits for the composite organization include:

- **Increased operational efficiency due to improved data visibility.** The composite organization uses drill-down reporting to see detailed, transaction-level detail and to pinpoint any potential issues. Additionally, the reduction of 8,000 employee hours annually due to improved visibility allows its workers to focus on additional tasks during time saved.
- **Retirement of seven legacy business intelligence applications.** The composite organization sunsets previous BI tools — both manual processes and more sophisticated applications — over time as it implements Cognos Analytics with Watson organization wide. These solutions do not scale and provide limited views of data within siloed departments. On average, the composite organization's annual cost savings per legacy application is \$57,000.
- **Increased operational efficiency due to data democratization.** The composite organization saves 25% of data analysts' time as user engagement with Cognos Analytics with Watson increases. Managers who need to use the data can access it directly without using another steward to collect and present report results.

Unquantified benefits. Benefits that provide value for the composite organization but are not quantified in this study include:

- **End-user satisfaction with user interface (UI).** Interviewees said they are comfortable and happy with the product's ease of use and the appearance of the tool's reports and dashboards.
- **Trustworthy data due to automation.** Replacement of manual reporting processes eliminates human error in analyzing data. Exception reporting allows for early alerting of data issues, which can be resolved daily rather than at the end of the month. Complete and reliable data is critical for accurate trend analysis and predictions.

Costs. Three-year, risk-adjusted PV costs for the composite organization include:

- **Internal implementation costs.** Organizations that implement Cognos Analytics with Watson using internal resources require labor hours during the requirements, design, development, and testing phases of the implementation.
- **Subscription costs.** Costs paid to IBM include annual subscription fees for deployment and use of Cognos Analytics with Watson.

The representative interviews and financial analysis found that a composite organization experiences benefits of \$1.9 million over three years versus costs of \$1.1 million, adding up to a net present value (NPV) of \$846,000 and an ROI of 77%.



ROI
77%



BENEFITS PV
\$1.9M



NPV
\$846K



PAYBACK
8 months

Benefits (Three-Year)

Increased operational efficiency due to improved data visibility

\$1.1M

Savings from retiring legacy applications

\$669.8K

Increased operational efficiency due to data democratization

\$140.3K

“We make key business decisions everyday with trust and clear visibility into our data.”

— Business controller, insurance

TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in Cognos Analytics.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that Cognos Analytics can have on an organization.

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by IBM and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the study to determine the appropriateness of an investment in Cognos Analytics.

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.

IBM provided the customer names for the interviews but did not participate in the interviews.



DUE DILIGENCE

Interviewed IBM stakeholders and Forrester analysts to gather data relative to Cognos Analytics.



INTERVIEWS

Interviewed five representatives at organizations using Cognos Analytics to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewees' organizations.



FINANCIAL MODEL FRAMEWORK

Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewees.



CASE STUDY

Employed four fundamental elements of TEI in modeling the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

The IBM Cognos Analytics With Watson Customer Journey

■ Drivers leading to the Cognos Analytics investment

Interviews					
Role	Industry	Region	Users	Years Using Cognos Analytics	Revenue
VP of financial planning and process	Media, marketing, and communications	Global	3,000+	12+	\$13B
Group business controller	Insurance	Global	450+	16+	\$1.2B
Business intelligence lead/product manager	Aerospace	US	30,000+	20+	\$61B
Senior manager of analytics and business intelligence	Mining	US	2,000+	7+	\$4.7B
Business intelligence manager	Healthcare	US	3,000+	19+	\$13.4B

KEY CHALLENGES

Interviewees noted that prior to deployment of Cognos Analytics, their organizations struggled with common challenges, including:

- **Limited self-service reporting.** Management-level employees were unable to produce their own reports with prior solutions. They lacked real-time visibility into data and the key drivers behind the data when only dashboard-level views were available. Users were unable to provide management with reports on demand and management was unable to create and run their own reports.
- **Manual production of key metrics.** Interviewees' organizations used spreadsheets and basic reporting tools to compile data. Manual compilation of data was slow and labor-intensive. Interviewees reported using static versions or copies of pre-run reports that did not provide insights in real time. By the time leadership got to the root cause of a problem, the issue had either grown or had already been solved.

- **Poor data governance.** Interviewees said they accessed dispersed and decentralized data across their organizations and between departments. They produced reports and viewed them in silos rather than across the enterprise.

SOLUTION REQUIREMENTS/INVESTMENT OBJECTIVES

The interviewees' organizations searched for a solution that could:

- Provide clearer and deeper visibility into issues.
- Allow management with access to self-service and real-time reporting.
- Aggregate data across departments and provide a centralized view.

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an ROI analysis that illustrates the areas financially affected. The composite organization is representative of the five interviewees, and it is used to present the aggregate financial analysis in the next section. The

composite organization has the following characteristics:

- Global organization with \$18.7 billion in annual revenue.
- 60,000 employees.
- 2,000 users.
- Uses Cognos Analytics for more than 15 years.

Key Assumptions

- **\$18.7 billion revenue**
- **2,000 users**
- **Enterprise license**
- **15+ years using Cognos Analytics with Watson**

Analysis Of Benefits

■ Quantified benefit data as applied to the composite

Total Benefits						
Ref.	Benefit	Year 1	Year 2	Year 3	Total	Present Value
Atr	Increased operational efficiency due to improved data visibility	\$456,000	\$456,000	\$456,000	\$1,368,000	\$1,134,005
Btr	Savings from retiring legacy applications	\$269,325	\$269,325	\$269,325	\$807,975	\$669,771
Ctr	Increased operational efficiency due to data democratization	\$56,430	\$56,430	\$56,430	\$169,290	\$140,333
Total benefits (risk-adjusted)		\$781,755	\$781,755	\$781,755	\$2,345,265	\$1,944,109

INCREASED OPERATIONAL EFFICIENCY DUE TO IMPROVED DATA VISIBILITY

Evidence and data. Interviewees stated that Cognos Analytics with Watson provided deep visibility into issues where users could clearly identify trouble areas to track and resolve in a timely manner rather than waiting for a month-end canned report.

- Drill-down reporting allowed users to view transactional-level data.
- Burst reporting allowed organizations to distribute thousands of report packages overnight to different departments and geographic locations, giving instant visibility across the organizations. They collated and presented data automatically. Previously, this reporting was done with manual distribution to separate departments and locations.
- Real-time data analysis and insights provided visibility into business operations rather than relying on stale batch reports only.

Modeling and assumptions. For the composite organization, Forrester makes the following assumptions:

- The average fully loaded hourly salary of a business employee is \$60.
- The composite organization saves 8,000 hours annually.

“We’re saving millions of dollars in reduced workload and having better visibility of bottlenecks in our supply chain.”

Business intelligence lead/product manager, aerospace

Risks. Operational efficiency due to improved data visibility benefits experienced by other organizations may vary based on the size and depth of the organization’s data.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of \$669,800.

Increased Operational Efficiency Due To Improved Data Visibility					
Ref.	Metric	Source	Year 1	Year 2	Year 3
A1	Employee time saved with Cognos Analytics with Watson	Interviews	8,000	8,000	8,000
A2	Fully loaded hourly salary of employee using Cognos Analytics with Watson	TEI standard	\$60	\$60	\$60
At	Increased operational efficiency due to improved data visibility	A1*A2	\$480,000	\$480,000	\$480,000
	Risk adjustment	↓5%			
Atr	Increased operational efficiency due to improved data visibility (risk-adjusted)		\$456,000	\$456,000	\$456,000
Three-year total: \$1,368,000			Three-year present value: \$1,134,005		

SAVINGS FROM RETIRING LEGACY APPLICATIONS

Evidence and data. The interviewees' organizations retired legacy business intelligence tools, processes, and applications incrementally over time within and across departments.

- As legacy tools were replaced by Cognos Analytics with Watson, the organizations viewed data through a single enterprise-wide platform.
- Cognos Analytics with Watson offered the organizations a scalable solution that replaced standalone tools and processes.

Modeling and assumptions. For the composite organization, Forrester makes the following assumptions:

- The attribution rate for the portion of the benefit specific to Cognos Analytics with Watson is 75%.
- An estimated seven BI tools are replaced over time after the initial Cognos Analytics with Watson deployment.

Risks. Savings from retiring legacy tools can vary based on the number of legacy tools replaced.

Results. To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV of \$1.1 million.

Savings From Retiring Legacy Applications

Ref.	Metric	Source	Year 1	Year 2	Year 3
B1	Retired legacy applications with Cognos Analytics deployment	Interviews	7	7	7
B2	Cost savings per application per year	(\$32M/B1)/14 years	\$57,000	\$57,000	\$57,000
B3	Portion of benefit attributed to Cognos Analytics	TEI standard	75%	75%	75%
Bt	Savings from retiring legacy applications	B1*B2*B3	\$299,250	\$299,250	\$299,250
	Risk adjustment	↓10%			
Btr	Savings from retiring legacy applications (risk-adjusted)		\$269,325	\$269,325	\$269,325
Three-year total: \$807,975			Three-year present value: \$669,771		

INCREASED OPERATIONAL EFFICIENCY DUE TO DATA DEMOCRATIZATION

Evidence and data. Interviewees said Cognos Analytics with Watson provided all their organizations' users with self-service access to data and report execution as needed. Management was able to produce reports as needed without delays waiting for batch reports or creating custom report requests from individual departments.

- Organizations experienced increased adoption and efficiency by business users.
- Democratized data allowed any user to easily access data in accordance with preconfigured access rights.
- Management accessed data on demand with advanced analytics containing better and deeper insight with clear explanation. Interviewees reported that management felt more self-sufficient and confident in forecasting and identifying trends when they could see it themselves without relying on an analyst.
- Self-service reporting streamlined the back-and-forth communications and report requests between departments.

- Management could more quickly leverage data insights to support or expedite key business decisions.

“Cognos Analytics with Watson provides a slick capability for reporting. Our team can access data quickly and to whatever extent [it needs].”
Business intelligence manager, healthcare

Modeling and assumptions. For the composite organization, Forrester makes the following assumptions:

- The fully loaded annual salary of a data analyst is \$118,800.
- Two data analysts reduce their time spent creating reports by 25%.

Risks. Operational efficiency due to data democratization benefits experienced by other organizations may vary based on:

- The size of the data reporting team.
- Engagement with legacy reporting and analytic tools.

Results. To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV of \$140,300.

Increased Operational Efficiency Due To Data Democratization

Ref.	Metric	Source	Year 1	Year 2	Year 3
C1	Engagement before Cognos	Interviews	20%	20%	20%
C2	Engagement with Cognos	Interviews	45%	45%	45%
C3	Labor reduction	C2-C1	25%	25%	25%
C4	Fully loaded annual salary of data analyst	TEI standard	118,800	118,800	118,800
C5	Number of data analysts	Assumption	2	2	2
Ct	Increased operational efficiency due to data democratization	$C3 \times C4 \times C5$	\$59,400	\$59,400	\$59,400
	Risk adjustment	↓5%			
Ctr	Increased operational efficiency due to data democratization (risk-adjusted)		\$56,430	\$56,430	\$56,430
Three-year total: \$169,290			Three-year present value: \$140,333		

“We moved from a manual-based process to an integrated reporting drill-down environment where we could drill down through 26 different layers of hierarchy without having to manually go scrape that data.”

— Business intelligence lead/product manager, aerospace

Analysis Of Costs

■ Quantified cost data as applied to the composite

Total Costs							
Ref.	Cost	Initial	Year 1	Year 2	Year 3	Total	Present Value
Dtr	Internal implementation costs	\$262,500	\$0	\$0	\$0	\$262,500	\$262,500
Etr	Subscription costs	\$0	\$336,000	\$336,000	\$336,000	\$1,008,000	\$835,582
	Total costs (risk-adjusted)	\$262,500	\$336,000	\$336,000	\$336,000	\$1,270,500	\$1,098,082

INTERNAL IMPLEMENTATION COSTS

Evidence and data. Interviewees' organizations relied on internal business analyst teams to develop requirements specifications and designs. Internal engineers spent labor hours during development, testing, and implementation of Cognos Analytics with Watson.

Modeling and assumptions. For the composite organization, Forrester assumes internal resources complete the requirements, design, development, testing, and implementation phases.

Risks. Internal implementation costs incurred by other organizations may vary based on the following factors:

- The expertise and capabilities of internal resources.
- The complexity of requirements specifications and designs.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of \$262,500.

Internal Implementation Costs						
Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
D1	Requirements specification and design	Interviews	\$50,000	\$0	\$0	\$0
D2	Development, testing, and implementation	Interviews	\$200,000	\$0	\$0	\$0
Dt	Internal implementation costs	D1+D2	\$250,000	\$0	\$0	\$0
	Risk adjustment	↑5%				
Dtr	Internal implementation costs (risk-adjusted)		\$262,500	\$0	\$0	\$0
Three-year total: \$262,500			Three-year present value: \$262,500			

SUBSCRIPTION COSTS

Evidence and data. Interviewees' organizations paid yearly subscription fees to IBM based on their subscription tiers and specific contract terms.

Modeling and assumptions. For the composite organization, Forrester makes the following assumptions:

- The composite organization scales Cognos Analytics with Watson to as many users as needed under the enterprise licensing agreement.
- Pricing may vary. Contact IBM for additional details.

Risks. IBM subscription costs are reflective of actual fees, and thus, no risk adjustment was made. Over three years, subscription services yield a total PV (discounted at 10%) of \$835,600.

“Our IBM investment runs into the millions of dollars every year and it’s been going very nicely for the last 19 years.”

Business intelligence manager, healthcare

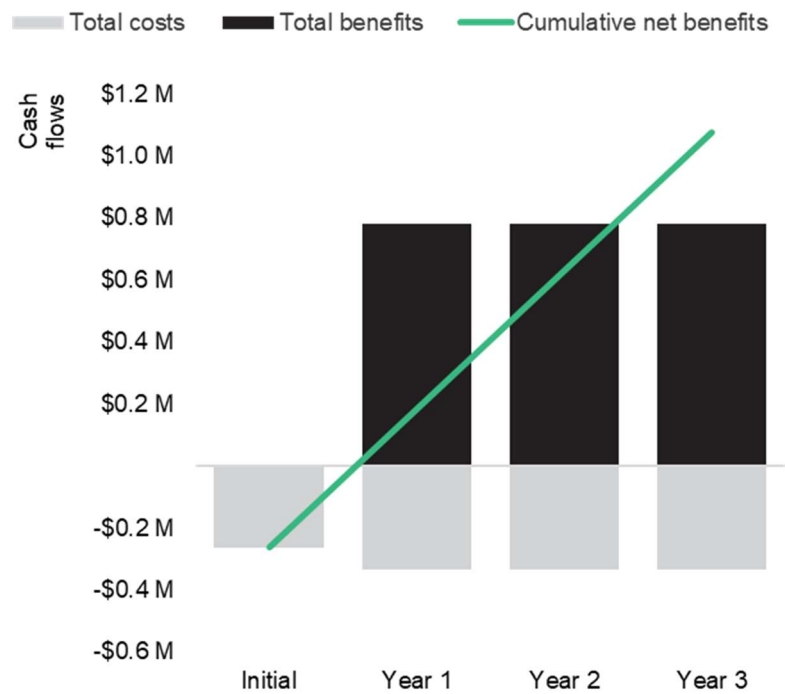
Subscription Costs

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
E1	Subscription costs	Interview	\$0	\$336,000	\$336,000	\$336,000
Et	Subscription costs	Interview	\$0	\$336,000	\$336,000	\$336,000
	Risk adjustment	0%				
Etr	Subscription costs (risk-adjusted)		\$0	\$336,000	\$336,000	\$336,000
Three-year total: \$1,008,000			Three-year present value: \$835,582			

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Analysis (Risk-Adjusted Estimates)						
	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	(\$262,500)	(\$336,000)	(\$336,000)	(\$336,000)	(\$1,270,500)	(\$1,098,082)
Total benefits	\$0	\$781,755	\$781,755	\$781,755	\$2,345,265	\$1,944,109
Net benefits	(\$262,500)	\$445,755	\$445,755	\$445,755	\$1,074,765	\$846,027
ROI						77%
Payback						8.0 months

Appendix A: Total Economic Impact

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.

TOTAL ECONOMIC IMPACT APPROACH

Benefits represent the value delivered to the business by the product. The TEI methodology places 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.

Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.

Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.



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 NPV of cash flows.



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.



RETURN ON INVESTMENT (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.



DISCOUNT RATE

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.



PAYBACK PERIOD

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Appendix C: Endnotes

¹ 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.

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