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The Total Economic Impact™ Of aPriori's Manufacturing Insights Platform

Cost Savings And Business Benefits Enabled By aPriori

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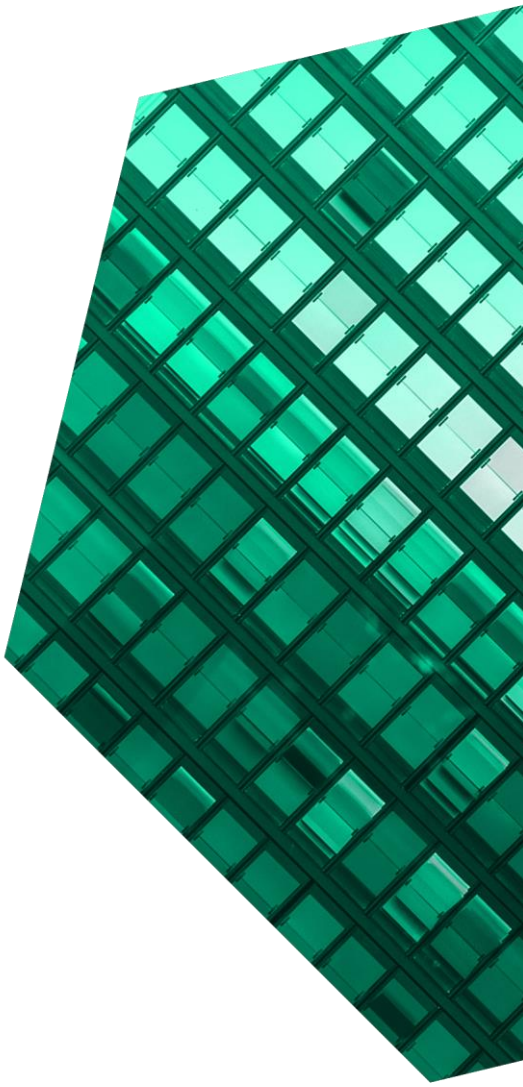


ABOUT FORRESTER CONSULTING

Forrester provides independent and objective research-based consulting to help leaders deliver key transformation outcomes. Fueled by our customer-obsessed research, Forrester's seasoned consultants partner with leaders to execute on their priorities using a unique engagement model that tailors to diverse needs and ensures lasting impact. For more information, visit forrester.com/consulting.

Executive Summary

Manufacturers are under pressure to lower design costs, meet functional specifications, and launch products on schedule. aPriori enables engineering and procurement teams to abandon their manual environments, streamline processes through automation, and improve sourcing methods, leading to significant operational efficiencies, enhanced negotiating power with suppliers, and reduced product delivery delays.

aPriori is a digital manufacturing insights and supplier collaboration platform that offers discrete manufacturing organizations a "design for X" (DfX) solution, whereby "X" represents costs, manufacturability, and sustainability. aPriori enables engineers to create, import, and analyze computer-aided design (CAD) models in a virtual environment, also known as a digital factory. This solution can quickly and precisely iterate through multiple design alternatives, reducing downstream manufacturability issues and costly time-to-market delays. With detailed and accurate cost-modeling capabilities, aPriori enables users to better negotiate in the procurement process, resulting in more strategic supplier relationships and significant cost savings.

aPriori commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by incorporating aPriori into their design processes.[1] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of aPriori on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed four representatives with experience using aPriori. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single composite organization that is a global manufacturing enterprise organization with 40,000 employees and annual revenue of $5 billion.

KEY STATISTICS

Return on investment (ROI)	Net present value (NPV)	Payback
603%	**$19.7 million**	**<6 months**

Prior to using aPriori, the interviewees' engineering teams primarily relied on manual processes in their design operations, typically using spreadsheets to analyze potential issues and perform "what if" scenarios to determine both the efficacy and the cost drivers of the model inputs. The process for a single design took weeks to months to complete and led to last-minute engineering change orders (ECOs) to account for manufacturing constraints or in-service experience. The result? Less control over the procurement process and time-to-market delays and stalled profitability.

After the investment in aPriori, the interviewees reported that their ability to automate DfX processes enabled them to significantly improve early design stage metrics, including efficiencies for design engineers, procurement cost controls, and negotiating power with vendors.

KEY FINDINGS

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

- **Reduction in procurement spend of 10%.** aPriori helps the composite organization improve negotiations and collaboration with suppliers by accurately calculating the cost to manufacture a design within the digital factory. Detailed manufacturing data output enables proactive, fact-based vendor negotiation and eliminates pricing markups due to unanticipated, urgent demands for components. With 2% - 4 % of the organization's Cost of Goods Sold (COGS) addressed by aPriori in the first three years of implementation, and 10% of these costs saved through negotiations with aPriori, the three-year, risk-adjusted PV of the reduction in procurement spend is $20.4 million.
- **Design team efficiency gains of up to 70%.** aPriori's digital factory capabilities automate processes that engineers completed manually in the composite organization's previous environment. By detecting manufacturability issues in the early design stages, the composite organization reduces costly iterations and penalties of late-stage ECOs. Over three years, with the number of engineers growing from 30 to 43 and the productivity growing from 50% to 70%, the organization realizes a risk-adjusted PV efficiency benefit of $2.5 million.

Unquantified benefits. Benefits that are not quantified in this study include:

- **Improvement in the employee experience.** Automating the manual, iterative tasks of product design, engineering resources are now assigned to more innovative, strategic activities. Additionally, in the event of a market-driven shortage of skilled manufacturing labor, the automated capabilities of aPriori allow the composite organization to realign its resources to avoid a potential delivery slowdown.
- **Accuracy with CAD model integration.** The automated capabilities of aPriori allow engineering design teams to integrate CAD models directly into the platform, greatly reducing the opportunity for error in estimating and analyzing cost models. With this feature, engineers can arrive at optimal cost targets early in the process, eliminating expensive late-stage problems and change orders.
- **Accuracy with design quotes.** The use of aPriori allows management to adopt design-to-cost principles and standardize the design process, leading to better, more profitable outcomes.

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

- **Annual fees**. The composite organization incurs annual license fees and professional services fees payable to aPriori, totaling $2.2 million over three years.
- **Initial and ongoing costs.** Initial and ongoing costs include resources required for licensing, implementation, software customization, ongoing maintenance, and training costs for the

> **"aPriori analyzes the material of each part. It knows your exact parameters and can calculate a very accurate cost model in a few hours. It used to take weeks or months. aPriori also provides a high level of detail for each cost estimate"**
>
> *Manager, cost engineering, manufacturing*

composite organization. The three-year, risk-adjusted PV of initial and ongoing costs is $1 million.

The representative interviews and financial analysis found that a composite organization experiences benefits of $22.9 million over three years versus costs of $3.3 million, adding up to a net present value (NPV) of $19.7 million and an ROI of 603%.

"We had initially wanted a 10 times ROI on the investment and, in our first year, we were at about 12 times ROI, so that was good and then would like to continue growing that year-over-year."

Program manager, strategic sourcing, manufacturing

"It took a skilled engineer up to 24 hours to complete an analysis manually. Now, with aPriori's cycle time estimations, this can be done in much less time, maybe four hours total, and that's inclusive of modifying the CAD file to be ingested into aPriori and then getting the output."

— VP, best cost analytics, manufacturing

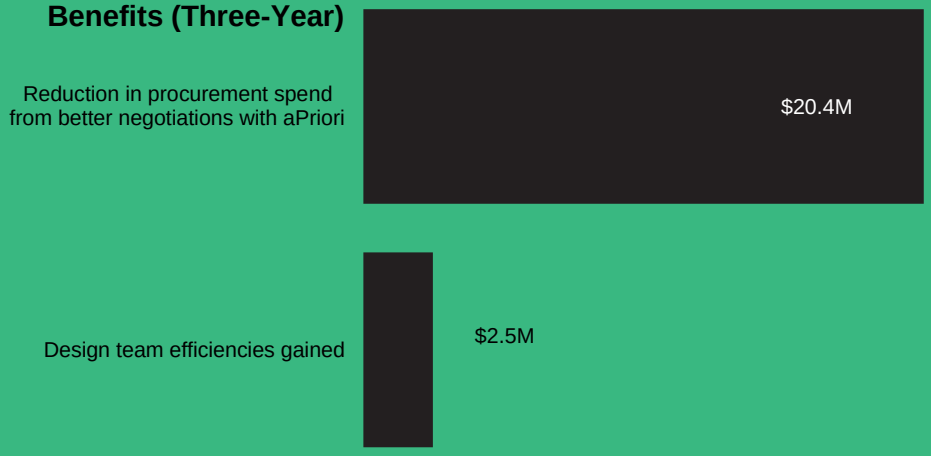
ROI
603%

BENEFITS PV
$22.9M

NPV
$19.7M

PAYBACK
<6 months

Benefits (Three-Year)



> "Rather than the mechanical engineer updating the part and sending the model back to us, we evaluate it, we talk to them, they modify the part again, they can just sit in the [computer-aided three-dimensional interactive application] (CATIA) cockpit and cut down some of those iterative loops back and forth with the cost engineering team."
>
> *Vice president, best cost analytics, manufacturing*

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 aPriori.

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 aPriori can have on an organization.

The aPriori Manufacturing Insights Platform Customer Journey

Drivers leading to the aPriori Manufacturing Insights Platform investment

Interviews			
Role	**Industry**	**Region**	**Annual revenue**
Program manager, strategic sourcing	Manufacturing	United States	$19.6 billion
Manager, design to cost	Manufacturing	France	$15.5 billion
Vice president, best cost analytics	Manufacturing	United States	$8.8 billion
Manager, cost engineering	Manufacturing	Denmark	$3.2 billion

KEY CHALLENGES

Before implementing aPriori, engineering teams at the interviewees' organizations performed design analysis manually, typically with spreadsheets, to find the most functional, cost-effective design. Engineers tested different design scenarios through a trial-and-error method through iterative modifications in the CAD models. This approach led to inefficiencies across technical teams, a high rate of human error in designs, and expensive late-stage change orders. Moreover, the lack of standardization in the process undermined their negotiating position with suppliers.

The interviewees noted how their organizations struggled with common challenges, including:

- **Delays and inefficiencies in the design cycle.** Engineers struggled in the legacy environment, tasked with manually testing, analyzing, and selecting the most cost-effective iterative design based on a process of issue elimination and cost estimation rather than on an automated, precisely calculated cost model. The lack of a streamlined solution eroded team efficiency and led to product launch delays, directly impacting product sales revenue.
- **An undesirable negotiating position with component suppliers.** Lacking accurate cost information, procurement teams priced out the components required to build the design according to the specifications the engineering teams estimated. Absent standardized vendor pricing lists, however, and with unexpected, late-stage requisitions attempting to fulfill downstream change orders, vendor quotes were based not on what the design should realistically cost to manufacture, but on negotiating power.
- **Inaccurate pricing and human error.** The manual approach to calculating manufacturing design costs resulted in rough, imprecise estimates and were prone to human mistakes, making it difficult for decision-makers to budget for production and unanticipated mid- to late-stream failures, often requiring additional resources.

> "Without the 3D capability, it's much harder to identify those things that are going to impact your cost. With aPriori, it was much clearer to see how the design changes were tied to cost improvements."
>
> *Manager, design to cost, manufacturing*

SOLUTION REQUIREMENTS

The interviewees' organizations searched for a solution that could:

- Provide an automated, streamlined cloud-based solution and eliminate the manual spreadsheet approach.
- Produce detailed and accurate cost models.
- Connect directly to 3D CAD models.
- Reduce the time to build cost models, improving product time to market.

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 four interviewees, and it is used to present the aggregate financial analysis in the next section. The composite organization has the following characteristics:

Description of composite. The composite organization is global manufacturing enterprise with an annual revenue of $5 billion, 40,000 FTEs a worldwide reach, and 30 aPriori users.

Deployment characteristics. The aPriori installation is cloud based, requiring no local hardware. Using a phased approach, the composite organization hires or reassigns engineers to focus specifically on the implementation of aPriori, yielding efficiencies of 50% in Year 1.

Key Assumptions

- **Global manufacturer**
- **Manual legacy environment**
- **$5 billion annual revenue**
- **40,000 employees**
- **30 FTE aPriori users**

“aPriori provides us a ‘zero RFQ,’ or request for quotation. Using aPriori with our suppliers, we upload the key parameters to the cloud and quickly agree on a cost model.”

Vice president, best cost analytics, manufacturing

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	Reduction in procurement spend	$5,600,000	$8,400,000	$11,200,000	$25,200,000	$20,447,784
Btr	Design team efficiencies gained	$702,000	$1,010,880	$1,408,680	$3,121,560	$2,531,982
	Total benefits (risk-adjusted)	$6,302,000	$9,410,880	$12,608,680	$28,321,560	$22,979,766

REDUCTION IN PROCUREMENT SPEND

Evidence and data. Before deploying aPriori, procurement staff at the interviewees' organizations were disadvantaged when negotiating with suppliers because actual part costs were unclear, primarily due to a lack of standardized industry pricing and rushed late-stage design changes.

- The cost and time penalties of late-stage ECOs put pressure on profit margins and cash flow.
- The best negotiator usually dictated final quotes, not the best cost.
- aPriori provided procurement with timely, detailed and accurate part pricing for the interviewees. Additionally, the pricing assumptions used to create the internal cost model were shared with suppliers in real time, putting manufacturers in a much better bargaining position with vendors.

Modeling and assumptions. For the financial analysis, Forrester assumes that:

- The composite organization generates $5 billion in annual revenue.
- Total cost of goods sold (COGS) makes up 70% of revenue or $3.5 billion per year.
- Of the COGS, 2% is addressed with aPriori in Year 1, 3% in Year 2 and 4% in Year 3.
- aPriori enables the procurement team to reduce the portion of COGS addressed with aPriori by 10% due to improved negotiating power.
- aPriori automatically updates cost drivers on the back end, so the models reflect the most up-to-date and economical cost information.

Risks. The ability to realize cost savings from improved negotiations will vary based on an organization's percentage of COGS relative to their revenue and based on the percentage of COGS applicable to negotiations through the use of aPriori.

Results. To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of over $20.4 million.

> "The global supply managers who use aPriori's 'should-cost' analysis to negotiate with our suppliers have seen millions in annual cost savings with their suppliers."
>
> *Program manager, strategic sourcing, manufacturing*

Reduction In Procurement Spend					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
A1	Total Sales	Assumptions	$5,000,000,000	$5,000,000,000	$5,000,000,000
A2	Cost of Goods Sold (COGS)	70% of total sales	$3,500,000,000	$3,500,000,000	$3,500,000,000
A3	COGS addressed by year	2%, 3% and 4% of COGS	$70,000,000	$105,000,000	$140,000,000
A4	Percent reduction in costs attributable to aPriori	Interviews	10.0%	10.0%	10.0%
At	Reduction in procurement spend from better negotiations with aPriori	A3*A4	$7,000,000	$10,500,000	$14,000,000
	Risk adjustment	↓20%			
Atr	Reduction in procurement spend from better negotiations with aPriori (risk-adjusted)		$5,600,000	$8,400,000	$11,200,000
	Three-year total: $25,200,000		**Three-year present value: $20,447,784**		

DESIGN TEAM EFFICIENCIES GAINED

Evidence and data. Prior to using aPriori, design-to-cost modeling was a labor-intensive, inefficient process. Engineers manually analyzed different cost drivers and correlated part design possibilities until determining the best option.

- Using spreadsheets and different homegrown solutions, engineers frequently required weeks or months to optimize a single-part design.
- Identifying potential manufacturability issues from 3D CAD models during early design stages was difficult using manual design methods and required additional downstream resources, diverting labor from new, marketable projects.

Modeling and assumptions. For the financial analysis, Forrester assumes that:

- The composite organization employs 30 engineers in Year 1, growing 20% annually in Years 2 and 3.
- The fully loaded cost of an engineer is $50 per hour.
- Engineers spend 50% of their time working with aPriori, and the other 50% are dedicated to CAD design and administrative tasks.
- The composite organization experiences efficiency gains of 50% to 70% based on aPriori's ability to import CAD models and generate a cost-effective model in hours rather than iteratively perform variations over weeks or months.

Risks. While the interviewees attributed the bulk of their cost savings to aPriori, other factors, including the engineers' experience and the types of parts required, also contributed to the benefit.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $2.5 million.

> **"aPriori analyzes the material of each part, the exact parameter and size, so you can calculate a very accurate cost for each single part, and it can be done in just a few hours."**
>
> *Manager, design to cost, manufacturing*

Design Team Efficiencies Gained					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
B1	Number of aPriori design engineers	Interviews	30	36	43
B2	Fully loaded hourly cost of design engineer	TEI standard	$50	$50	$50
B3	Number of design engineer hours per year	2,080 hours*50%	1,040	1,040	1,040
B4	Percent efficiency gained due to aPriori	Interviews	50%	60%	70%
Bt	Design team efficiencies gained	B1*B2*B3*B4	$780,000	$1,123,200	$1,565,200
	Risk adjustment	↓10%			
Btr	Design team efficiencies gained (risk-adjusted)		$702,000	$1,010,880	$1,408,680
	Three-year total: $3,121,560			**Three-year present value: $2,531,982**	

UNQUANTIFIED BENEFITS

Interviewees mentioned the following additional benefits that their organizations experienced but were not able to quantify:

- **Improvement in employee experience.** In their previous environment, interviewees noted that their engineers spent weeks to months attempting to optimize designs. Interviewees mentioned that morale was low and that turnover was a growing concern. Adopting aPriori to perform more menial tasks freed engineers up to innovate and focus on higher-level activities.
- **Accuracy with CAD model integration.** Integrating CAD models directly into aPriori limited human contact, interpretation, and error during transfer, leading to improved, consistent, and more cost-effective models.
- **Accuracy with design quotes.** With cost being a primary driver in manufacturing, aPriori allowed management to adopt standardized design-to-cost principles, leading to better profitability outcomes.

FLEXIBILITY

The value of flexibility is unique to each organization. There are multiple scenarios in which an organization might implement aPriori and later realize additional uses and business opportunities, including:

- **Enhanced collaboration across teams.** Currently, engineering teams only use aPriori related to part design. However, its use is expanding to other engineering departments to take advantage of aPriori's ability to analyze optimal engineering designs.
- **Designing products for sustainability.** aPriori allowed engineers to easily and reliably test different variations of CAD models to determine the most sustainable designs over the long term.
- **Strengthening brand-supplier collaboration.** aPriori allowed engineers and their supplier counterparts to collaborate CAD designs in real time, leading to faster product launches.
- **Reshoring manufacturing to mitigate risk.** Lowering design costs made inhouse manufacturing feasible and reduced the need to offshore manufacturing in an effort to lower expenses.

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

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**
Ctr	Total annual fees to aPriori	$301,875	$649,750	$770,500	$925,750	$2,647,875	$2,224,863
Dtr	Total internal initial and ongoing costs	$633,600	$151,200	$163,200	$182,400	$1,130,400	$1,042,970
	Total costs (risk-adjusted)	$935,475	$800,950	$933,700	$1,108,150	$3,778,275	$3,267,833

TOTAL ANNUAL FEES TO APRIORI

Evidence and data. The interviewees confirmed that they incurred an annual license fee payable to aPriori. In addition, the organizations paid an initial implementation fee and an annual professional services fee to aPriori.

Modeling and assumptions. For the financial analysis, Forrester assumes that:

- The composite pays aPriori an initial licensing fee of $225,000, representing a six-month ramp-up, followed by $540,000 in Year 1. After that, the licensing fee increases by approximately 20% per year.
- The composite organization incurs initial professional services fees of $37,500, followed by ongoing fees of $25,000 per year.
- Licensing costs may vary depending on the type of subscription, site or per user, and type of installation (cloud or on-premises). Contact aPriori for additional details.

Risks. Forrester recognizes that these results may not be representative of all experiences, and the cost will vary depending on the following factors:

- The level of services required for installation and ongoing customization may vary based on the size, type, and maturity of the organization.
- On-premises licensing may add additional costs.

Results. To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $2.2 million.

Total Annual Fees To APriori						
Ref.	**Metric**	**Source**	**Initial**	**Year 1**	**Year 2**	**Year 3**
C1	aPriori software license	Interviews	$225,000	$540,000	$645,000	$780,000
C2	Professional services fees to aPriori	Interviews	$37,500	$25,000	$25,000	$25,000
Ct	Total annual fees to aPriori	C3+C4	$262,500	$565,000	$670,000	$805,000
	Risk adjustment	↑10%				
Ctr	Total annual fees to aPriori (risk-adjusted)		$301,875	$649,750	$770,500	$925,750
	Three-year total: $2,647,875			**Three-year present value: $2,224,863**		

TOTAL INTERNAL INITIAL AND ONGOING COSTS

Evidence and data. The initial implementation, annual updates, and software customization required the dedicated time of internal engineers.

- An internal engineering team member performed ongoing platform management.
- New aPriori users were expected to participate in training on the solution.

Modeling and assumptions. For the financial analysis, Forrester assumes that:

- Ten engineers dedicate 50% of their time to the implementation of aPriori over a period of six months. Ongoing software updates and infrastructure maintenance also require the attention of one to two FTEs over three years.
- The average hourly rate of an FTE is $50.
- The platform training requires 160 hours (about four weeks) per engineer for those new to aPriori.
- Ongoing maintenance requires one-quarter of an FTE.

Risks. Forrester recognizes that these results may not be representative of all experiences, and the cost will vary depending on the following factors:

- The cost of implementation may vary depending on the complexity of the deployment, the skill level of existing engineers, and the organization's size.
- Costs of on-premises licensing may increase maintenance costs.
- The amount of training may vary based on the maturity of the organization and the experience of engineers.
- Salary levels may vary depending on the geographical location and experience of the engineers.

Results. To account for these risks, Forrester adjusted this cost upward by 20%, yielding a three-year, risk-adjusted total PV of $1 million.

“aPriori provided excellent support to us during that ramp-up phase, which I think was key and I felt like we got off to a pretty fast start. And we also were able to get some results with our supplier base pretty quickly, which was quite important for us.”

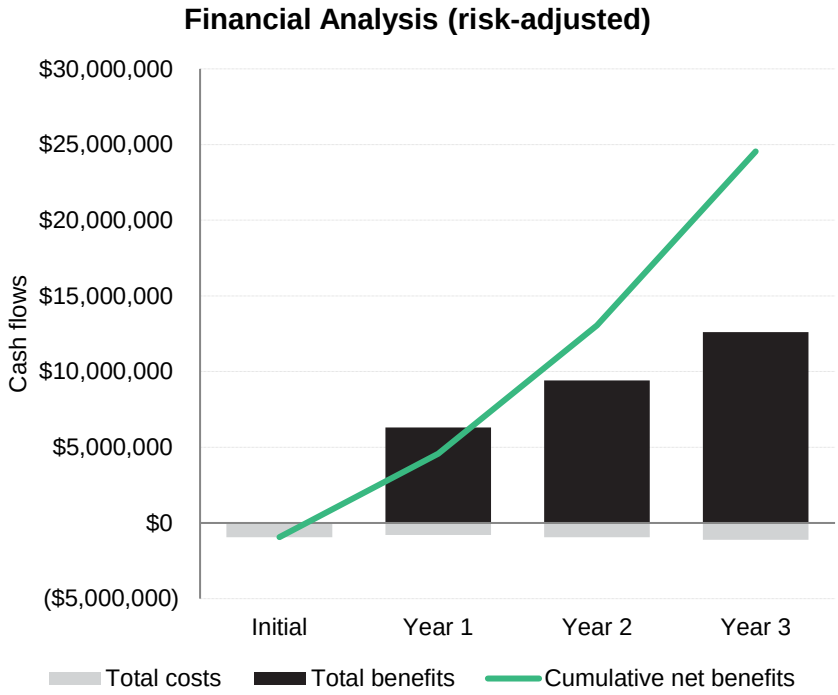
— Vice president, best cost analytics, manufacturing

Total Internal Initial And Ongoing Costs

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
D1	Initial implementation and yearly software updates	6 months*10 engineers* $104,000 annual salary*50% time committed	$260,000	$50,000	$50,000	$50,000
D2	Number of engineers required for software customization	Interviews	1	1	2	2
D3	Hours per year	Interviews	40	40	40	40
D4	Fully loaded hourly cost of engineer	TEI standard	$50	$50	$50	$50
D5	Subtotal: Software customization costs	D2*D3*D5	$2,000	$2,000	$4,000	$4,000
D6	Number of engineers required for ongoing maintenance	Interviews	0.25	0.25	0.25	0.25
D7	Fully loaded salary of engineer	TEI standard	$104,000	$104,000	$104,000	$104,000
D8	Subtotal: Infrastructure maintenance costs	D6*D7	$26,000	$26,000	$26,000	$26,000
D9	Number of engineers requiring training	Interviews	30	6	7	9
D10	Hours per year required	Interviews	160	160	160	160
D11	Fully loaded hourly cost of engineer	TEI standard	$50	$50	$50	$50
D12	Subtotal: Training costs	D9*D10*D11	$240,000	$48,000	$56,000	$72,000
Dt	Total internal initial and ongoing costs	D1+D5+D8+D12	$528,000	$126,000	$136,000	$152,000
	Risk adjustment	↑20%				
Dtr	Total internal initial and ongoing costs (risk-adjusted)		$633,600	$151,200	$163,200	$182,400
	Three-year total: $1,130,400			**Three-year present value: $1,042,970**		

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS



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	($935,475)	($800,950)	($933,700)	($1,108,150)	($3,778,275)	($3,267,833)
Total benefits	$0	$6,302,000	$9,410,880	$12,608,680	$28,321,560	$22,979,766
Net benefits	($935,475)	$5,501,050	$8,477,180	$11,500,530	$24,543,285	$19,711,933
ROI						603%
Payback period (months)						<6

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 B: 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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