The Total Economic Impact™ Of IBM Robotic Process Automation

Cost Savings And Business Benefits
Enabled By Robotic Process Automation

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Executive Summary

> Increasingly, businesses are leveraging automation to increase productivity and gain competitive advantage. Robotic process automation (RPA) can be used to eliminate repetitive steps, take on simple calculations, and access unstructured data and knowledge. IBM's RPA solution enables companies to improve staff efficiency, scale quickly, address business challenges, and meet compliance requirements effectively.

IBM Robotic Process Automation is designed for business users to create automations without the need for professional developers. Recorded sequences of individual steps supported by low-code features and principles assist with this goal. These software robots can run on-demand by the end user or by an automated scheduler.

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 Robotic Process Automation (RPA).[1] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of RPA on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed the decision-maker of an organization who has experience using RPA. Forrester used this experience to project a three-year financial analysis of the costs and benefits associated with deploying RPA.

Prior to using RPA, the interviewee noted how the organization had many manual processes across the business that were labor intensive and prone to error. These limitations led to a need for staff to focus on repetitive, low-level tasks rather than spending additional time supporting customers and growing business opportunities.

KEY STATISTICS

Return on investment (ROI)
124%

Net present value (NPV)
$549K

After the investment in RPA, the decision-makers organization used bots to automate a lot of the account creation process, allowing the company to redeploy 80% of the process team that handles the creation of new customer accounts. Additionally, the organization used automation to proactively identify 2% of fraudulent activity, leading to significant loss avoidance. Key results from the investment include productivity gains, fraud reduction, compliance improvements, and data quality improvements.

KEY FINDINGS

Quantified benefits. Risk-adjusted present value (PV) quantified benefits include:

- **Increased efficiency in account creation, allowing 80% of the prior team to move to higher skill tasks.** The reduction of effort required to create customer accounts enabled the interviewee's organization to redeploy most of its team to more strategic work. For the composite organization, the reduction in

resources required for account creation is 10% in the first year, 50% in the second, and reaches 80% of staff resources in the third year of the analysis. Over three years, this productivity gain is worth nearly $740,000 to the composite organization.

- **Reduced fraud by approximately 2% of the overall total annually.** The composite organization adds an additional use case to proactively identify accounts that are likely to be fraudulent in the second year of the analysis, enabling early action to prevent loss. Over two years, this benefit is worth nearly $255,000 to the composite organization.

> **"With RPA, computers do the computer jobs, and people can do the human tasks — taking care of our customers."**
>
> *Computer scientist, financial services*

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

- **Process improvement, due to redesign of the process.** Formerly, account creation required 10 to 12 tasks; as part of the RPA implementation, this was reduced to six to seven tasks of which three to four were automated. Overall, the time needed to create a new account fell from two days to 40 minutes.

- **Improvement in data quality through automation.** Previously, manual data entry tasks were prone to errors; once automated, these errors were eliminated. Additionally, before RPA, staff would work with a customer while simultaneously reading a document or filling out a form as part of the information intake required to create a new account. This created opportunity for errors which was removed when RPA assumed the data-oriented tasks.

- **Compliance reporting, particularly involving sensitive information.** The need to keep sensitive account information private from employees impacted some compliance reporting. By using bots, the compliance reporting process was completely automated and this risk was eliminated. This had the impact of saving resource time, as well as facilitating more frequent on-demand reporting. Previously, reports were generated once a month due to time and resource constraints.

- **Increased visibility providing easier understanding of ongoing processes.** By using RPA, the interviewee's company generated a record of the execution of every task. These records could then be pulled into dashboards, allowing managers to have a clear vision of what the bots were doing, as well as providing a window into the process.

Costs. Risk-adjusted PV costs include:

- **IBM Robotic Process Automation costs.** The costs associated with IBM's RPA solution are structured on a platform basis; in this analysis, one platform license was required for each use case (two total). Additionally, the composite organization uses IBM professional services in implementing RPA. The total cost for IBM licenses and services is just over $84,000.

- **Additional software costs.** In addition to the RPA license and services cost, the composite organization requires additional software to support the solution, adding capabilities in optical character recognition (OCR), natural language processing (NPR), text analytics, and other complementary services. This software cost totals slightly over $300,000 over the three years of the analysis.

- **Administrative costs.** To identify the use cases, implement the bots, and maintain the solution, the composite organization requires an internal

team of eight resources, spending approximately 25% of their time in this area. The total cost for this team's time was nearly $50,000 over three years.

The interview and financial analysis found that the decision-maker's organization experienced benefits of nearly $992,000 over three years versus costs of under $443,000, adding up to a net present value (NPV) of over $549,000 and an ROI of 124%.
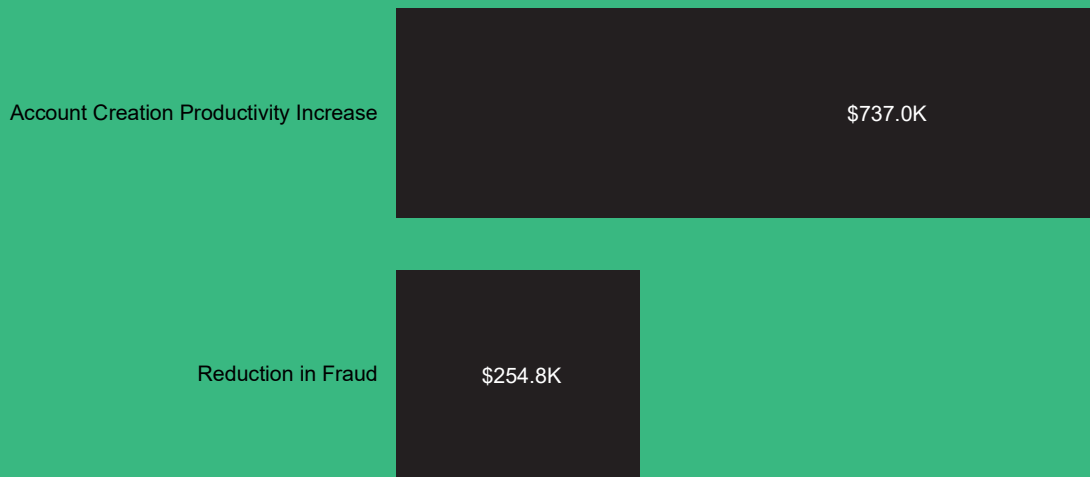
ROI
124%

BENEFITS PV
$992K

NPV
$549K

PAYBACK
16 months

Benefits (Three-Year)

Account Creation Productivity Increase — $737.0K

Reduction in Fraud — $254.8K

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 RPA.

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 RPA 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 RPA.

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 name for the interview but did not participate in the interview.

DUE DILIGENCE
Interviewed IBM stakeholders and Forrester analysts to gather data relative to the RPA solution.

DECISION-MAKER INTERVIEW
Interviewed the decision-maker of an organization using RPA to obtain data with respect to costs, benefits, and risks.

FINANCIAL MODEL FRAMEWORK
Constructed a financial model representative of the interview using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the decision-maker.

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.

INTERVIEWEE'S ORGANIZATION

Forrester interviewed the decision-maker at a company utilizing IBM Robotic Process Automation, whose organization has the following characteristics:

- Credit union system.

- Based in Brazil.

- $500 million in annual revenue (approximately R$3 billion).

- 41,000 employees.

KEY CHALLENGES

Prior to implementing IBM's RPA solution, the interviewee's organization had many processes that involved a large amount of manual, repetitive tasks. These tasks required a great deal of effort, were error-prone, and often introduced delays.

The interviewee noted how their organization struggled with common challenges, including:

- **Needing up to two working days to fully create new accounts.** Prior to the RPA implementation, creating accounts required staff to gather information from multiple sources, introducing both delays and opportunities for mistakes. Additionally, this extended time impacted customer satisfaction.

- **Fraud identification was a considerable effort for the organization.** Identifying potentially fraudulent accounts was a challenge for the interviewee's organization, requiring manual effort to recognize key characteristics on extremely large sets of accounts.

- **Compliance reports involving sensitive information were challenging to generate.** Due to restrictions in employee access to sensitive

customer account information, monthly compliance reports took more than 10 hours to generate.

> **"People make mistakes — typos, etc. Robots don't make those kinds of mistakes."**
>
> *Computer scientist, financial services*

SOLUTION REQUIREMENTS/INVESTMENT OBJECTIVES

The interviewee's organization searched for a solution that could:

- Improve the quality of process execution.

- Release the workforce to complete other tasks.

- Increase compliance with local regulations.

- Reduce operational risk.

USE CASE DESCRIPTION

When implementing RPA, the composite organization begins with a pilot of a small-scale management process that does not affect core processes. This proof of concept allows the composite to understand how RPA works, as well as to identify security issues and technology culture challenges. After this effort is complete, the composite organization automates a core process: account creation. This use case, along with the fraud identification, is captured in the financial analysis.

For these use cases, Forrester has modeled benefits and costs over three years.

Analysis Of Benefits

Quantified benefit data

Total Benefits

Ref.	Benefit	Year 1	Year 2	Year 3	Total	Present Value
Atr	Account creation productivity increase	$66,690	$333,450	$533,520	$933,660	$737,047
Btr	Reduction in fraud	$0	$161,500	$161,500	$323,000	$254,808
	Total benefits (risk-adjusted)	$66,690	$494,950	$695,020	$1,256,660	$991,855

ACCOUNT CREATION PRODUCTIVITY INCREASE

Evidence and data. To quantify the impact of the productivity gain achieved in account creation, the interviewee's organization estimated the total number of staff that were redeployed to other work.

- The overall improvement in productivity is due to the process improvement as well as the automation of tasks.

- Creating an account formerly required two working days, which was reduced to 40 minutes. This was due to the elimination of some tasks and the automation of others. Overall, the number of tasks fell from 10 to 12 to six to seven, with three to four of those tasks being fully automated.

- In aggregate, these time savings allow the organization to significantly reduce the overall size of the team dedicated to account creation.

Modeling and assumptions. To quantify this benefit, the model estimates the reduction in effort required from the original team size of 100 people. In each year, the number of resources reallocated to other areas is captured as the benefit amount.

- The fraction of the team that is redeployed grows in each year: 10% in Year 1, 50% in Year 2, and 80% in Year 3.

- Overall, the size of the team falls from 100 people before the RPA implementation to 20 people in the third year.

- The annual fully loaded compensation is based on local rates in Brazil.

> **"Over three years, we were able to release 80% of the account creation team to other tasks."**
>
> *Computer scientist, financial services*

Risks. There are several risks to this benefit category, impacting the level of return that can be expected:

- The benefit captured includes both the improvement due to the automation, as well as to the process improvement. Therefore, the risk adjustment compensates for the variability in the balance between the benefit due to the automation as opposed to the process improvements.

- The total volume of accounts varies over time, impacting the total number of resources required for account creation.

- The annual rate used will vary based on industry and location.

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 nearly $740,000.

$737,047

three-year
benefit PV

74%
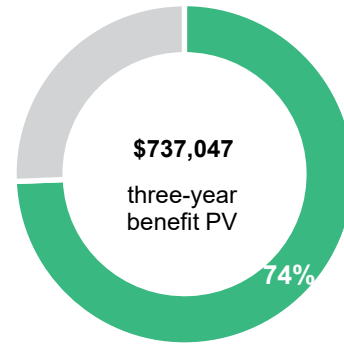
Account Creation Productivity Increase

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
A1	Number of workers redeployed	Interview	10	50	80
A2	Yearly rate per person	Interview	$7,410	$7,410	$7,410
At	Account creation productivity increase	A1*A2	$74,100	$370,500	$592,800
	Risk adjustment	↓10%			
Atr	Account creation productivity increase (risk-adjusted)		$66,690	$333,450	$533,520
	Three-year total: $933,660		**Three-year present value: $737,047**		

REDUCTION IN FRAUD

Evidence and data. Fraudulent activity, including money laundering, was a considerable and recurring issue for the interviewee's organization.

To identify accounts likely to be involved in money laundering or other fraudulent activities, employees had to engage in manual account management and monitoring. Due to the large scale of the organization's customer accounts, this was a challenging effort with limited success.

The use of automation allowed for monitoring more accounts and led to the proactive identification of more accounts liable to be fraudulent, allowing the organization to take action to prevent losses.

Modeling and assumptions. To capture the benefit associated with this improvement, the interviewee's organization provided an estimate of the total amount of avoided fraud due to the use of automation, as well as the percent of total fraud that this amount represented.

- In this benefit, we estimate the total amount that the composite organization expects to be fraudulent activity and apply the percentage of reduction to capture the total amount of fraud avoided.

- This estimate is extremely conservative, as the exact amount of fraudulent activity can vary widely.

- This benefit begins in the second year of the analysis, as this use case was added after the prior one.

Risks. Due to the difficulty in estimating the total amount of fraudulent activity as well as the percent of this fraud impacted by the automated discovery process, Forrester has applied a risk adjustment to this calculation.

- The total amount of fraudulent activity is difficult to identify and can vary widely on an annual basis.

- The impact of the improved identification of fraudulent accounts is likewise difficult to confirm; the interviewee provided an estimate based on the available data.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of nearly $255,000.

26%

$254,808
three-year
benefit PV
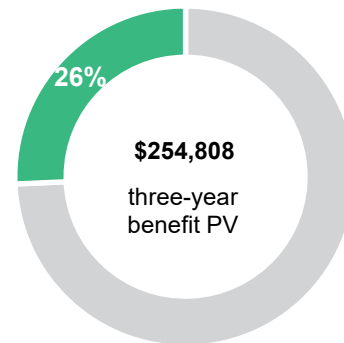
Reduction In Fraud

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
B1	Funds susceptible to fraud	Interview		$9,500,000	$9,500,000
B2	Percent reduction in fraud	Interview		2%	2%
Bt	Reduction in fraud	B1*B2	$0	$190,000	$190,000
	Risk adjustment	↓15%			
Btr	Reduction in fraud (risk-adjusted)		$0	$161,500	$161,500
	Three-year total: $323,000		**Three-year present value: $254,808**		

UNQUANTIFIED BENEFITS

Additional benefits that the customer experienced but was not able to quantify include:

- **Process improvement.** As part of the RPA implementation, the account creation process was redesigned, leading to the elimination of several steps and resulting in a smoother, faster process. Due to the process improvement, the number of tasks required for account creation went from 10 to 12 down to six to seven.

- **Improvement in data quality.** Using automation for manual tasks associated with data entry reduced the number of errors generated, improving overall data quality in customer accounts. Additionally, employees focused on customer interactions rather than attempting to capture data simultaneously, which eliminated another source of errors in data entry.

- **Compliance reporting.** Reports to meet compliance requirements sometimes required the inclusion of sensitive customer data, which limited employees' ability to interact with the source data. By using bots to pull the data and generate the report, this risk was eliminated. Additionally, the effort required to produce the reports was reduced, allowing reports to be generated on a weekly or as-needed basis, rather than monthly.

- **Increased visibility.** The use of bots to run specific processes generated records associated with these tasks, which could then be used to build dashboards for executive use. The additional visibility allowed managers to understand processes quickly, as well as to stay informed on operations.

FLEXIBILITY

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

- **The ability to scale without hiring.** By using bots, the interviewee's organization gained the ability to scale processes as quickly as needed without additional staff. This capability offered opportunities for growth that would be difficult to support without automation.

- **The potential to leverage automation across the business and reshape operations based on RPA technology.** Beyond the two use cases modeled in this analysis, the interviewee's organization has additional core and management processes which were candidates for RPA. By using bots across the business, the organization continued to gain productivity while supporting strategic business initiatives.

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

Total Costs

Ref.	Cost	Initial	Year 1	Year 2	Year 3	Total	Present Value
Ctr	IBM RPA costs	$0	$20,748	$41,496	$41,496	$103,740	$84,333
Dtr	Additional software required	$0	$104,500	$125,400	$146,300	$376,200	$308,554
Etr	Administrative costs	$0	$19,950	$19,950	$19,950	$59,850	$49,613
	Total costs (risk-adjusted)	$0	$145,198	$186,846	$207,746	$539,790	$442,500

IBM ROBOTIC PROCESS AUTOMATION COSTS

Evidence and data. RPA costs captured in the financial model are divided into two parts: license fees and professional services.

- The license fees are charged on a platform basis; one platform is required for each use case.

- The professional services are required on an ongoing basis, providing support in identifying and implementing use cases.

Modeling and assumptions. The financial model captures the license fees as the composite organization increases its usage of RPA, as well as the corresponding increase in associated professional services.

- In the first year of the analysis, the organization implements the account creation use case, requiring a single platform.

- In the second year, the organization adds an additional platform for the fraud detection use case.

- The cost of professional services scales proportionally with the increased usage.

Risks. RPA costs can vary due to the specific customer situation. Some specific considerations include:

- The number of use cases required which drives the number of platforms the organization requires.

- The variety of professional services based on the maturity of the user organization, as well as the specific processes to be automated.

- The experience level of the internal team, which can also impact the level of professional services required.

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 just over $84,000.

19%

$84,333
three-year
cost PV
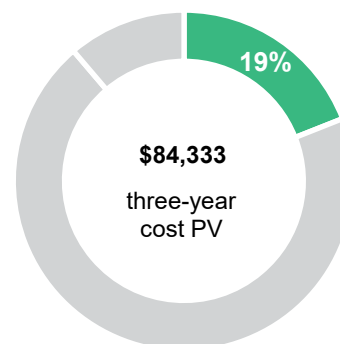
IBM Robotic Process Automation Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
C1	RPA license fees	Interview		$7,600	$7,600	$7,600
C2	Number of licenses	Interview		1	2	2
C3	RPA cost	C1*C2		$7,600	$15,200	$15,200
C4	Professional services	Interview		$12,160	$24,320	$24,320
Ct	IBM RPA costs	C3+C4	$0	$19,760	$39,520	$39,520
	Risk adjustment	↑5%				
Ctr	IBM RPA costs (risk-adjusted)		$0	$20,748	$41,496	$41,496
	Three-year total: $103,740			Three-year present value: $84,333		

ADDITIONAL SOFTWARE REQUIRED

Evidence and data. To implement RPA with existing processes, the interviewee's organization required supplementary software to support the automation.

- The software was required to provide capabilities in optical character recognition, natural language processing, and text analytics. This additional software was acquired specifically for the RPA implementation; previously, the interviewee's organization did not need this level of capability in these areas.

- In addition to the costs of purchased software, the interviewee's organization also included the internal development cost for front-end software used to upload documents, manage queues, and for quick interaction across applications.

Modeling and assumptions. The interviewee estimated this cost as a bundled amount, as captured in the table.

- The amount the interviewee provided includes the various technologies required to support RPA.

- The investment in Year 1 covers most of the composite organization's requirements; however, some additional capability is added in Year 2 and Year 3.

Risks. As this is an estimate of multiple technology investments taken together, Forrester expects some variability in the total.

- The exact number and types of additional software required will depend on the characteristics of the process to be automated.

- Organizations may vary in their scale and maturity of automation, leading to different needs of supporting products.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of nearly $309,000.

$308,554

three-year
cost PV

70%
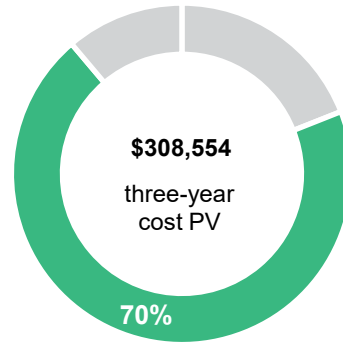
Additional Software Required						
Ref.	**Metric**	**Calculation**	**Initial**	**Year 1**	**Year 2**	**Year 3**
D1	Additional software required	Interview		$95,000	$114,000	$133,000
Dt	Additional software required	D1	$0	$95,000	$114,000	$133,000
	Risk adjustment	↑10%				
Dtr	Additional software required		$0	$104,500	$125,400	$146,300
	Three-year total: $376,200			**Three-year present value: $308,554**		

ADMINISTRATIVE COSTS

Evidence and data. The interviewee's organization required an internal team to support the bots; the cost of this staff is captured in this category.

- Internal staff were needed to identify, implement, and maintain the RPA solutions.

- The internal team also supported business users interacting with the bots.

Modeling and assumptions. To quantify this cost, Forrester has included both the size of the team as well as the amount of time spent on RPA.

- The team size is eight full-time resources, spending approximately a quarter of their time supporting RPA.

- The annual fully loaded compensation is based on local rates in Brazil.

Risks. This cost category is subject to risk due to the estimations of the various components.

- The percent of time spent on RPA can vary depending on the specific initiative and the stage of the project.

- The annual rate used will vary based on industry and location.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of nearly $50,000

11%

$49,613
three-year
cost PV
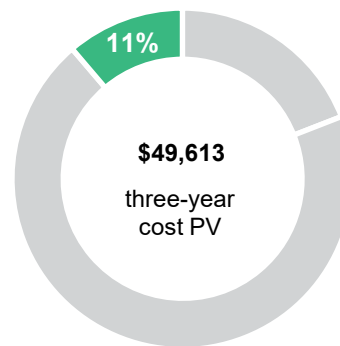
Administrative Costs						
Ref.	**Metric**	**Calculation**	**Initial**	**Year 1**	**Year 2**	**Year 3**
E1	Number of people	Interview		8	8	8
E2	Annual rate	Interview		$9,500	$9,500	$9,500
E3	Percent of time needed	Interview		25%	25%	25%
Et	Administrative costs	E1*E2*E3	$0	$19,000	$19,000	$19,000
	Risk adjustment	↑5%				
Etr	Administrative costs (risk-adjusted)		$0	$19,950	$19,950	$19,950
	Three-year total: $59,850			**Three-year present value: $49,613**		

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

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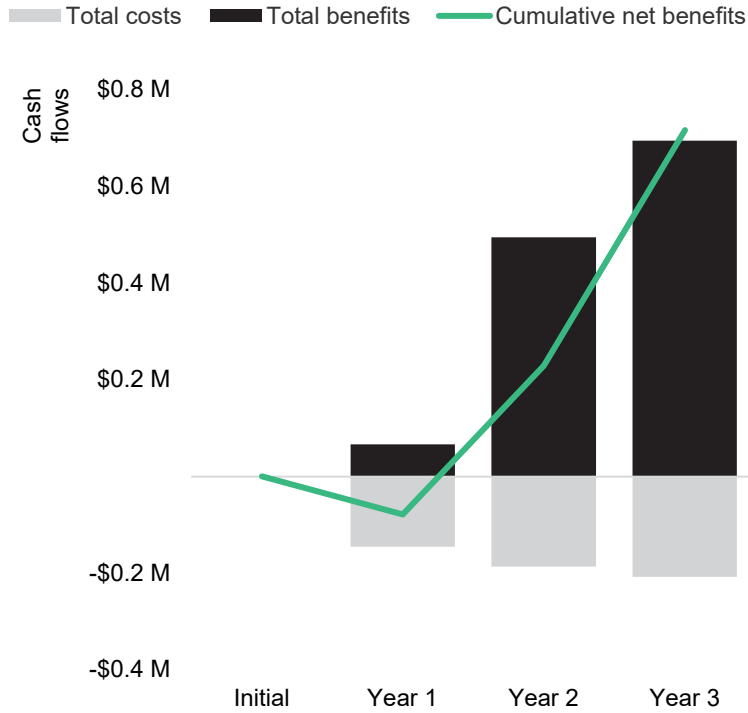
The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

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	$0	($145,198)	($186,846)	($207,746)	($539,790)	($442,500)
Total benefits	$0	$66,690	$494,950	$695,020	$1,256,660	$991,855
Net benefits	$0	($78,508)	$308,104	$487,274	$716,870	$549,355
ROI						124%
Payback period						16 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 B: Supplemental Material

Related Forrester Research
"Now Tech: Robotic Process Automation, Q4 2020," Forrester Research, Inc., October 6, 2020.

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.

FORRESTER®