

A Forrester Total Economic Impact™
Study Commissioned By Heap
January 2019

The Total Economic Impact™ Of Heap

Cost Savings And Business Benefits
Enabled By Heap

Table Of Contents

Executive Summary	1
Key Findings	1
TEI Framework And Methodology	3
The Heap Customer Journey	4
Interviewed Organization	4
Decision Drivers	4
Key Results	5
Analysis Of Benefits	6
Product Innovation Agility	6
Profit From Conversion Rate Optimization And Product Enhancements	8
Data Capture And Analysis Efficiency	9
Issue Resolution Efficiency	10
Cost Avoidance Of Retired Legacy Analytics Tool	11
Unquantified Benefits	12
Flexibility	13
Analysis Of Costs	14
Heap And Third-Party Technology Costs	14
Implementation Labor	15
Administration And Training	15
Financial Summary	17
Heap: Overview	18
Appendix A: Total Economic Impact	19
Appendix B: Endnotes	20

Project Director:
Benjamin Brown

ABOUT FORRESTER CONSULTING

Forrester Consulting provides independent and objective research-based consulting to help leaders succeed in their organizations. Ranging in scope from a short strategy session to custom projects, Forrester's Consulting services connect you directly with research analysts who apply expert insight to your specific business challenges. For more information, visit forrester.com/consulting.

© 2018, Forrester Research, Inc. All rights reserved. Unauthorized reproduction is strictly prohibited. Information is based on best available resources. Opinions reflect judgment at the time and are subject to change. Forrester®, Technographics®, Forrester Wave, RoleView, TechRadar, and Total Economic Impact are trademarks of Forrester Research, Inc. All other trademarks are the property of their respective companies. For additional information, go to forrester.com.

Executive Summary

Forrester defines digital intelligence (DI) as “the practice of capturing, managing, and analyzing customer data and insights to deliver a holistic view of customers’ digital interactions for the purpose of continuously optimizing business decisions and customer experience across the customer life cycle.”¹

Heap provides a platform for customer data infrastructure and analytics that enables such digital intelligence, allowing organizations to gather customer behavioral data from many sources, analyze it in the platform, and automatically load the data into third-party data stores for specialized storage, analysis and activation — helping organizations improve offerings with speed and agility. Heap commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying Heap. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Heap on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed one customer with several years of experience using Heap. The interviewed organization chose Heap because they believed it offered a robust solution to track and analyze customer actions. The investment led to improved analytics efficiency, facilitated democratization of analysis and simplified collaboration across teams, and enabled the organization to improve its product offerings to increase revenue and improve the customer experience.

Prior to using Heap, the interviewed organization manually coded tags in its digital products for analysis using a pre-existing analytics tool. Developers and data scientists found this time-consuming, and teams struggled with inadequate data — often neglecting data analysis entirely due to limited capacity, slow turnarounds, or limited capability. The organization sought a solution that could efficiently capture more data with better context and manage an extract, transform, and load (ETL) process to sync the data into a data warehouse for further analysis. The organization looked to accelerate analysis, improve insights, reduce development barriers, enable retroactive analysis, and empower cross-functional employees to conduct their own ad hoc analyses — ultimately enabling teams to move faster, expand analytics’ profile, and improve its products.

Key Findings

Quantified benefits. The interviewed organization achieved the following three-year risk-adjusted present value (PV) quantified benefits with Heap:

- › **Accelerated product innovation, recapturing \$3.9 million in labor.** Heap insights identified areas of improvement and helped product teams quickly design and deploy better solutions. Heap eliminated the tagging roadblock, while teams leveraged live insights and efficient ad hoc analysis to learn and iterate faster. Product teams ultimately reduced the average number of sprints per innovation by 40%.
- › **Enhanced user experience and improved product offerings, driving \$1.7 million in additional revenue for at least \$201,131 in operating profit.** The organization used Heap to gather and analyze customer behavioral data to inform at least 70 product improvements annually. Such enhancements included new foreign-language funnels, improved

Key Benefits



Revenue from conversion rate optimization and improved UX (three-year present value):

\$1.7 million



Efficiency savings from accelerated product innovation (three-year present value):

\$3.9 million

“We often look at the user journey through their clickstream. That lets us build a very good story and validate our hypotheses about what users are doing.”

Head of product analytics,
financial technology



ROI
361%



Benefits PV
\$4.6 million



NPV
\$3.6 million



Payback
<6 months

site usability, better product understanding, and elimination of critical drop-off points in clickstreams.

- › **Improved developer and data scientist productivity, recapturing \$229,609 in labor.** Developers no longer needed to hardcode event tracking code and data scientists increased their capacity for analysis. Further, the organization avoided significant potential labor needs that would have been required to implement a similar ETL process for deeper analysis.
- › **Resolved issues faster, recapturing \$21,455 in labor.** Support engineers no longer needed to wait overnight for log analytics data, instead using Heap in real time to identify where critical errors occurred in a user's experience. Further time savings were achieved with Heap's superior user interface and broader capabilities. The organization also believes Heap-enabled product improvements have prevented support tickets, for potential cost savings beyond those measured in this model.
- › **Retired a legacy web analytics tool, avoiding \$202,348 in licensing costs.** Heap replaced the legacy tool and provided net-new capabilities.

Unquantified benefits. The interviewed organization additionally experienced the following benefits, which are not quantified for this study:

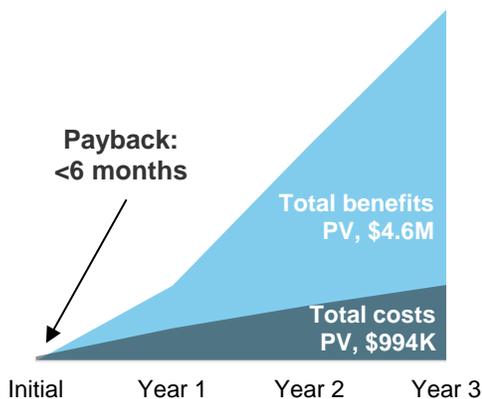
- › **Accelerated time-to-market for increased competitiveness.** Faster analysis and better data helped product teams move more quickly.
- › **Automatically synced data to a cloud data warehouse for analysis alongside other data sources in business insights (BI) tools.** Heap's automated ETL required almost no internal labor, compared to extensive resources that would have otherwise been needed for such effort.
- › **Reduced support tickets.** Heap helped proactively identify and resolve issues and improve product clarity, preventing support calls from users.
- › **Minimized risk of oversights.** Heap helped to discover and resolve site issues and customer pain points that were previously unknown.
- › **Democratized analytics.** Hundreds of employees without data expertise could utilize Heap to conduct their own ad hoc analyses, with approximately 20% of the organization's workforce trained in Heap.
- › **Improved marketing planning and effectiveness.** Marketers identified higher-performing content and improved landing pages with Heap.
- › **Maintained security, privacy, and compliance standards.** Heap met the stringent financial services security and compliance needs.

Costs. The interviewed organization experienced the following three-year risk-adjusted PV costs:

- › **Heap and data warehouse costs of \$820,661.** The organization incurs annual subscription, integration, and support costs from Heap, along with minimal storage costs for its third-party cloud data warehouse.
- › **Implementation labor costs of \$89,742.** The organization dedicated labor for the one-month deployment and first-year optimization of Heap.
- › **Administration and training costs of \$83,098.** The organization incurs labor costs for systems administration, event optimization, and training.

Forrester's interview and subsequent financial analysis found that the interviewed organization experienced three-year benefits of \$4,582,097 versus costs of \$993,501, adding up to a net present value (NPV) of \$3,588,596, an ROI of 361%, and a payback period of under six months.

Financial Summary



The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

TEI Framework And Methodology

From the information provided in the interview, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing Heap.

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 Heap can have on an organization:



DUE DILIGENCE

Interviewed Heap stakeholders and Forrester analysts to gather data relative to Heap.



CUSTOMER INTERVIEW

Interviewed one organization using Heap 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 interviewed organization.



CASE STUDY

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

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by Heap 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 report to determine the appropriateness of an investment in Heap.

Heap 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.

Heap provided the customer name for the interview but did not participate in the interview.

The Heap Customer Journey

BEFORE AND AFTER THE HEAP INVESTMENT

Interviewed Organization

For this study, Forrester interviewed one current Heap customer. This organization is a publicly traded company headquartered in the United States and has a workforce of between 1,500 and 2,000 employees. It provides financial services technology products to consumers.

The organization introduced Heap approximately three years ago and has since trained almost 400 employees to use the solution, with between 100 and 150 active users utilizing the solution at least monthly. It uses Heap to track customer actions on its website and applications. This data is analyzed on a regular and ad hoc basis within the platform both by the data analytics team and by product managers, designers, support engineers, and marketers. Customer data is also synced into a third-party cloud data warehouse for more robust analysis using BI tools alongside other data sources such as transactions and customer profiles.

Decision Drivers

The organization faced several productivity and functionality issues, and sought to:

- › **Eliminate wasteful tagging labor.** Prior to implementing Heap, the organization required its developers to manually hardcode event tags into the interactions it hoped to gather data on. This process was time-consuming, required highly compensated employees, and required diligence to ensure all potential actions and funnels were tracked. The organization risked missing certain tags and finding itself unable to perform key analytics, and tagging effort added unnecessary manual work that could slow development.
- › **Improve analytics usability.** The prior solution lacked the usability and features that Heap provided the organization. The learning curve and difficult user interface of the legacy solution prevented the platform from being adopted across the wider organization, and the data analytics team could not deliver insights at the speed and capacity the organization desired.
- › **Enhance insights.** The organization searched for a way to better understand user journeys to uncover critical disconnects in site usage. The organization needed better user data, faster, to empower its product teams in an environment of constant improvement and experimentation.
- › **Integrate with a data warehouse.** The organization hoped to take its analytics to the next level by bringing customer data into its data warehouse and using the data alongside other important data sources in BI tools.
- › **Improve products, user experience, and conversion rate.** The organization frequently dealt with site reliability issues, link breaks, confusing directions, or nonintuitive site mapping. It sought to better educate customers and help them through potentially confusing financial services transactions. Further, the organization resolved to enhance its offerings through better analytics to drive greater revenue.

“We have extracted a tremendous amount of value from looking at the clickstream data. It has helped us a lot in terms of designing and organizing the materials we wanted to present to our users in a more efficient way.”

*Head of product analytics,
financial technology*



“[Heap] makes our design process a lot more efficient.”

*Head of product analytics,
financial technology*



“We can monitor the engagement of customer tooltip interactions. That gives us a great quantitative way to measure the awareness and comprehension of users. Higher comprehension means people are more educated, and most of the time it is very beneficial to conversion.”

*Head of product analytics,
financial technology*

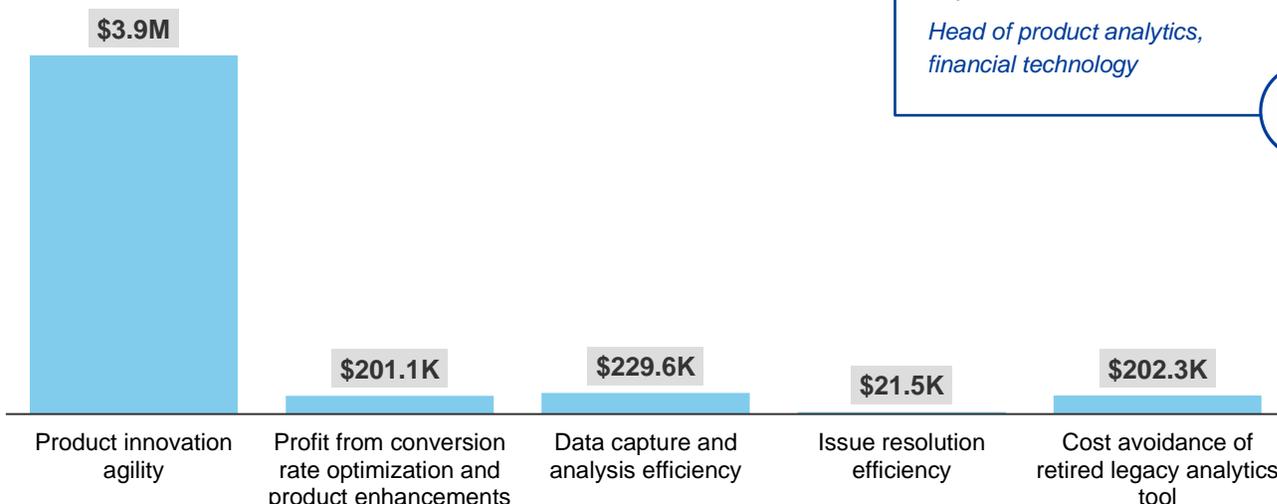


Key Results

The interviewed organization shared several key results from the Heap investment. The organization:

- › **Reduced sprint cycles required for product improvements by 40%.** With more robust user data, the organization was able to add context to its experimentation process, reducing the overall effort required to identify opportunities and potential solutions. It was enabled to conduct precise A/B testing with instant data results and retroactive data, and no longer had to code and test data tags during development.
- › **Avoided dedicating FTE time to manual tagging.** Heap provided the organization with automatic data-capturing capabilities, meaning it no longer had to dedicate engineers to manually coding event tags. The organization saved almost 3,000 FTE hours annually by eliminating the manual tagging process. Further, retroactive analytics capabilities in Heap eliminated the risk of a forgotten or improper tag causing irreversible data loss, preventing the organization from gaining insights for a funnel.
- › **Increased product revenue.** The organization used Heap as part of at least 70 experiments to improve products annually. These innovations resulted in such benefits as a 300% increase in click-through rates for one product by analyzing user behavior and remediating key bottlenecks in user journeys. Improvements led to at least \$200,000 in revenue in the first year, with impacts growing both of the following two years for a three-year present value of at least \$1.7 million as products were continually improved.
- › **Greatly reduced time to resolve site issues.** Instead of relying on reverse engineering and support calls, the organization could use clickstream data for individual users collected with Heap to identify and resolve bugs or breaks in its site. Having a bird’s-eye view of all customer interactions on its site allowed support teams to quickly identify issues and resolve bugs, broken links, and confusing mapping.
- › **Reduced annual software spend by retiring legacy solution.** Heap provided all the data collection tools the organization required, facilitating the retirement of its previous solution.

Quantified Benefits (Three-Year)



“For a recent project, we increased conversion from roughly 20% to almost 60%. This makes the traffic to our website more valuable.”

*Head of product analytics,
financial technology*



“The awareness of Heap has matured, and we’ve become more open to experimentation. For every single experiment, we need to understand a lot deeper about what customers are doing, and these analytics became extremely important.”

*Head of product analytics,
financial technology*



“We make the journey through the application very streamlined, so if customers have a question, they can find their answer right on the page they are at. This accelerates an application process, and when an application happens, it is a very solid lead toward conversion, which directly impacts revenue downstream.”

*Head of product analytics,
financial technology*



Analysis Of Benefits

QUANTIFIED BENEFIT DATA

Total Benefits						
REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	Product innovation agility	\$966,280	\$1,932,560	\$1,932,560	\$4,831,400	\$3,927,554
Btr	Profit from conversion rate optimization and product	\$23,360	\$58,400	\$175,200	\$256,960	\$201,131
Ctr	Data capture and analysis efficiency	\$82,725	\$92,980	\$103,234	\$278,939	\$229,609
Dtr	Issue resolution efficiency	\$8,628	\$8,628	\$8,628	\$25,883	\$21,455
Etr	Cost avoidance of retired legacy analytics tool	\$0	\$128,250	\$128,250	\$256,500	\$202,348
	Total benefits (risk-adjusted)	\$1,080,993	\$2,220,817	\$2,347,872	\$5,649,682	\$4,582,097

Product Innovation Agility

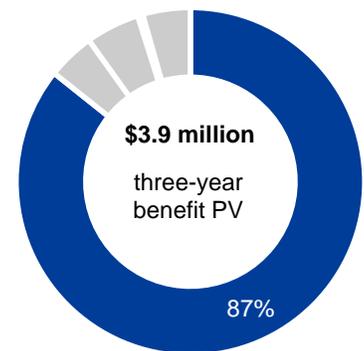
The organization interviewed for this study provides financial services products direct to consumers digitally. The primary points of interaction for customers are websites and apps, which are under a constant state of development to provide an optimal user experience. The organization employs a many development teams, which sometimes run experiments to make product improvements — analyzing customer interactions, making site changes, and then investigating how this impacts behaviors and outcomes.

Heap helped the organization be more-data driven and increased awareness of the potential for behavioral analytics. The head of product analytics described how data has become more central to business innovation since adopting Heap: “The awareness of Heap has matured, and we’ve become more open to experimentation. For every single experiment, we need to understand a lot deeper about what customers are doing, and these analytics became extremely important.”

Prior to implementing Heap, product teams had to estimate how users interacted with its offerings. This led to inaccurate findings and required multiple iterations of experiments to refine. After implementing Heap, the organization could provide its product teams with in-depth information and analysis regarding user activity, which informed better experiments and reduced the number of sprints required during each iteration. The head of product analytics said: “Without having a good picture about what people are doing in the user journey, our team may have to guess. We are going into the iterations of experiments blind. Once we learned these journeys, we knew where the turning points were, and we could specifically address them. During the subsequent iteration, the issue we observed in the first iteration was addressed.”

- › The organization had at least 70 product teams with an average staffing of one product manager, one designer, seven developers, and one testing engineer. Each team ran at least one experiment per year. During the first year, only 50% of these experiments involved the use

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the interviewed organization expects risk-adjusted total benefits to be a PV of more than \$4.5 million.



Product innovation agility: **87%** of total benefits

of Heap, but in subsequent years, all of these experiments were conducted leveraging data and insights from Heap.

- › Prior to Heap, the average experiment required five sprints. Heap provided better initial and ongoing data, resulting in two fewer sprints per experiment — a 40% labor reduction per product innovation.
- › Performing fewer sprints reduced the overall labor hours required for product team experiments. In the first year, the organization avoided 39,200 labor hours — accelerating to 78,400 hours saved per year by Year 2.
- › The organization recaptured the hours saved for increased value in further feature development and optimization.

In modeling the impact of Heap of product team efficiency, Forrester assumes:

- › Employees are utilized at 70% when involved in sprints. Sprints last two weeks; the total time per FTE per sprint is therefore 56 hours.
- › The average fully burdened hourly salary of a product team member is \$58, which equates to approximately \$120,000 annually.
- › FTEs rededicate 50% of their time savings to value-add activities.

Forrester recognizes that product team efficiency and the associated savings will vary across teams, companies, countries, and industry verticals. Specific risk considerations include:

- › Internal development policies and procedures.
- › Complexity and scope of a product and the experiments being tested.
- › Size, structure, and average labor costs for product teams.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of \$3,927,554.

“It’s about how much more we can do and how many more features we can cover, or how many experiment iterations we can conduct in the same period of time. Heap has helped us [increase] to hundreds of experiments. And if we can make decisions at an earlier time, it can immediately go into the next sprint — which helps us get to market faster.”

*Head of product analytics,
financial technology*



Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

Product Innovation Agility: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Annual number of experiments	1 per product team, per year	70	70	70
A2	Percent of experiments using Heap		50%	100%	100%
A3	Number of experiments using Heap	A1*A2	35	70	70
A4	Employees per product team		10	10	10
A5	Labor hours per sprint	A4*56 hrs (70% utilization)	560	560	560
A6	Reduced sprints per experiment		2	2	2
A7	Avoided labor hours	A3*A5*A6	39,200	78,400	78,400
A8	Average fully burdened hourly rate	\$120K/year	\$58	\$58	\$58
A9	Percent recaptured for productivity		50%	50%	50%
At	Product innovation agility	A7*A8*A9	\$1,136,800	\$2,273,600	\$2,273,600
	Risk adjustment	↓15%			
Atr	Product innovation agility (risk-adjusted)		\$966,280	\$1,932,560	\$1,932,560

Profit From Conversion Rate Optimization And Product Enhancements

The interviewed organization used Heap to analyze the customer journey on its website and identify critical drop-off points in the clickstream that prevented conversions while identifying ways to simplify and clarify steps for customers. With this data, teams could update and upgrade the products, eliminating failure points and increasing click-through rates. The head of product analytics shared: “We tremendously improved our conversions. A good amount of our conversions are introduced through the optimization of the user journey. Heap data contributed significantly to this effort.” The organization makes at least 70 notable improvements based on experiments annually. Specifically, the organization has:

- › **Created new funnels based on user information gleaned by Heap.** Adding new funnels localized for foreign language preferences helped serve key audiences that previously lacked localized landing pages, FAQs, and transactional capabilities.
- › **Implemented usability improvements to make buying decisions easier to understand.** The organization’s analytics teams observed where users paused their interactions or turned to informational pages to identify areas that were confusing or needed additional tooltips.
- › **Identified critical failure points in clickstreams.** Heap helped highlight previously unknown site defects for remediation to prevent drop-off that led to recapturing at least \$200,000 in incremental revenue in Year 1 alone.
- › **Increased conversion.** For one key application process, click-through rates increased from 20% to 60% that ultimately increased transactional conversion.

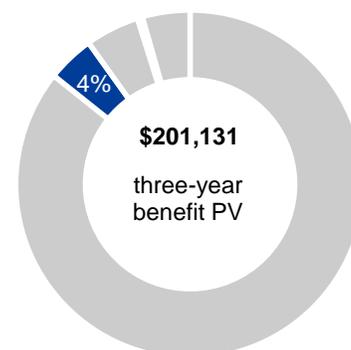
For the interviewed organization, Forrester assumes:

- › Increased revenue of \$200,000, \$500,000, and \$1.5 million in Years 1 through 3, respectively, for a total present value of \$1.7 million.
- › An estimated operating margin for a typical software applications company of 14.6%.

Determining the direct financial impact of hundreds of small product improvements can be challenging. While key changes resulted in increased revenue at minimum what is projected in this calculation, actual achieved revenue increases are likely much higher but cannot be individually isolated for the purposes of this model. That said, Forrester recognizes that increased profits will vary significantly with:

- › Traffic, conversion rates, and profit margins for a product and industry.
- › Scope of changes and the size of the audiences they affect.

To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year risk-adjusted total PV of \$201,131.



Profit from conversion rate optimization and product enhancements: **4% of total benefits.**

“When we look at the Heap data and see that people pause on a page, then go out of their way to find an FAQ, it tells us we should give an option to find that information more quickly. We can test how we want to present it: Is it a tool-tip with a link or question mark? What color should it be? Then, we can monitor engagement to see if we’ve improved comprehension.”

*Head of product analytics,
financial technology*



\$1.7 million
Additional revenue with Heap (three-year PV)

Profit From Conversion Rate Optimization And Product Enhancements: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Increased revenue from Heap		\$200,000	\$500,000	\$1,500,000
B2	Operating margin, typical software application		14.6%	14.6%	14.6%
Bt	Profit from conversion rate optimization and product enhancements	B1*B2	\$29,200	\$73,000	\$219,000
	Risk adjustment	↓20%			
Btr	Profit from conversion rate optimization and product enhancements (risk-adjusted)		\$23,360	\$58,400	\$175,200

Data Capture And Analysis Efficiency

The interviewed organization greatly improved the efficiency of its analytics process by implementing Heap. The organization previously required developers to manually hardcode event tags for analysis, wasting expensive labor hours. Furthermore, the organization encouraged increased analytics use across functional product teams, increasing the burden on its development staff. Manually tagging events narrowed the scope of findings, and errors in tagging could lead to missed information or a complete rework.

With Heap, the organization automatically captured the breadth and granularity of site interactions and associated metadata, eliminating the need to request and manually tag events — freeing up developers to complete more mission-critical tasks. With auto capture, the organization ensured that no valuable user data slipped through the cracks.

The head of product analytics explained: “Our teams are encouraged to leverage all of the back-end data, and Heap provides two critical components. One is Heap’s user interface — we just define events and basically drag and drop. When my team delivers, we use it as a delivery tool, and we’ve built dashboards in Heap for communications and delivering routine work. The other part is access to the back-end data, which we leverage a lot. We treat Heap as the source of web analytics in our data warehouse and combine it with service data to make a story.”

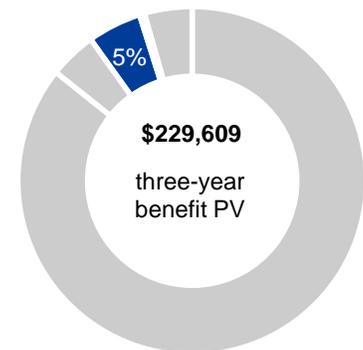
- › The organization maintained a five-member data and analytics team to handle data requests for the organization. Heap enabled the analytics team to increase its capacity for analytics requests thanks to improved efficiency; the team handled up to a 12% increase by Year 3.
- › Previously, one developer on each of 70 product teams typically supported tagging, which accounted for 2% of their workload (42 hours per year). Heap eliminated the need for this labor.

In modeling analytics efficiency, Forrester assumes:

- › The average fully burdened FTE rate is \$58.
- › FTEs rededicate 50% of their time savings to productive activities.

Analytics efficiency and its accompanying benefits will vary based on:

- › Size and scope of operations.
- › Size and skill set of data analytics team.
- › Complexity of product and related tagging requirements.



Data capture and analysis efficiency: 5% of total benefits

“We are handling more analytics requests with Heap, which provides the opportunity to make the business better.”

Head of product analytics, financial technology



The organization avoided **2,940 hours** of manual tagging annually with Heap.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of \$229,609.

Data Capture And Analysis Efficiency: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Number of data analytics FTEs		5	5	5
C2	Percent increase in handled analytics requests		4%	8%	12%
C3	Hours avoided for analytics requests	$C1 * C2 * 2,080$ hours	416	832	1,248
C4	Number of developers involved in tagging	1 per product team	70	70	70
C5	Hours previously devoted to tagging annually per developer	2% of workload	42	42	42
C6	Hours avoided for tagging	$C4 * C5$	2,940	2,940	2,940
C7	Total hours avoided	$C3 + C6$	3,356	3,772	4,188
C8	Average fully burdened hourly rate	A8	\$58	\$58	\$58
C9	Percent recaptured for productivity		50%	50%	50%
Ct	Data capture and analysis efficiency	$C7 * C8 * C9$	\$97,324	\$109,388	\$121,452
	Risk adjustment	↓15%			
Ctr	Data capture and analysis efficiency (risk-adjusted)		\$82,725	\$92,980	\$103,234

Issue Resolution Efficiency

The interviewed organization maintained a resolution team dedicated to fixing errors on its website and apps. As these digital platforms were the main platform for customer interactions and revenue generation, even minor errors that impeded users could have tremendous impacts on earnings. Heap helped the organization identify critical failure points: mysterious drop-off, unintuitive or confusing sections, broken links, and any other issue that would obstruct a user's journey. The data collected using Heap provided rich context for the resolution team to pinpoint and quickly resolve issues, minimizing the impact on user experience.

Furthermore, support engineers who previously had to wait for a nightly log dump to begin analysis in their log analytics tool could instead immediately turn to Heap for real-time access to the data they needed. Not only did they gain immediate data, they also enjoyed Heap's superior interface and found its capabilities to be broadly beneficial. The head of product analytics explained: "Heap is more friendly and provides richer information than [our log analytics tool]. I don't recall a question that Heap couldn't answer that the log analytics tool could; it's usually the other way around." The product analytics head continued: "If a certain page is not functioning well, usually the operations team would get calls from people saying they were blocked or cannot proceed further, or they're having some other weird experience. Heap is the immediate tool for us to go and evaluate the issue with."

In modeling issue resolution efficiency, Forrester assumes:

- The organization handles at least 50 issues annually using Heap's ad hoc analysis, saving 7 hours in identification and resolution per issue.



Saved 7 hours of labor for issue identification and resolution

"Heap is more friendly and provides richer information than [our log analytics tool]. I don't recall a question that Heap couldn't answer that the log analytics tool could; it's usually the other way around."

Head of product analytics, financial technology



- › The average fully burdened FTE rate is \$58.
- › FTEs rededicate 50% of their time savings to productive activities.

Benefits derived from issue resolution efficiency will vary based on the size and skill sets of the resolution team, and the frequency, complexity, and nature of issues.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of \$21,455.

Issue Resolution Efficiency: Calculation Table					
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
D1	Number of annual issues using Heap ad hoc analysis		50	50	50
D2	Hours saved with Heap for issue identification and resolution		7	7	7
D3	Hours saved for support	D1*D2	350	350	350
D4	Average fully burdened hourly rate	A8	\$58	\$58	\$58
D5	Percent recaptured for productivity	C9	50%	50%	50%
Dt	Issue resolution efficiency	D3*D4*D5	\$10,150	\$10,150	\$10,150
	Risk adjustment	↓15%			
Dtr	Issue resolution efficiency (risk-adjusted)		\$8,628	\$8,628	\$8,628

Cost Avoidance Of Retired Legacy Analytics Tool

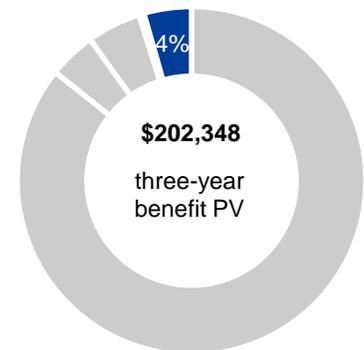
The organization found that Heap met all its behavioral analytics needs, performing all the functions of its previous solution along with bringing many additional capabilities. Heap therefore rendered the organization's legacy analytics platform redundant, allowing it to discontinue its license.

- › The organization avoided an annual cost of \$135,000 in licensing fees by discontinuing its legacy tools starting in Year 2.

The cost savings from retiring legacy solutions will vary based on:

- › Previous analytics tools portfolio and related license fees.
- › Potential desire of other teams in the organization to maintain prior technology in combination with Heap.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year risk-adjusted total PV of \$202,348.



Retired legacy tool savings:
4% of total benefits

Cost Avoidance Of Retired Legacy Analytics Solution: Calculation Table					
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
E1	Cost of legacy analytics tool		\$0	\$135,000	\$135,000
Et	Cost avoidance of retired legacy analytics tool	E1	\$0	\$135,000	\$135,000
	Risk adjustment	↓5%			
Etr	Cost avoidance of retired legacy analytics tool (risk-adjusted)		\$0	\$128,250	\$128,250

Unquantified Benefits

The interviewed organization also identified a variety of benefits achieved with Heap that could not be quantified for this study.

- › **Accelerated time-to-market for increased competitiveness.** Faster analysis and better information helped product teams move quickly, helping release updates more quickly, as the head of product analytics explained: “If we can make decisions at an earlier time, it can immediately go into the next sprint — which helps us get to market faster.” Ultimately, faster time-to-market can help drive greater adoption, retain customers, and provide competitive advantage.
- › **Automatically synced Heap data to a cloud data warehouse for advanced analytics using other data sources in BI tools.** Data could be synced retroactively, enabling agility for analytics down the road. Heap’s managed ETL required virtually no internal labor, as compared to extensive resources that would otherwise be needed for such effort. Combining the web analytics data with transactional, finance, legal, and CRM data empowered the organization to discover additional insights and to build other types of reporting with BI tools.
- › **Minimized risk of oversights.** Heap helped to discover and resolve site issues and customer pain points that were previously unknown, improving the products and eliminating drop-off.
- › **Reduced support tickets.** Heap helped proactively identify and resolve issues, while also enabling teams to improve the products themselves with clearer tooltips, FAQs, and better user experience. This prevented users from needing to reach out to support and saved the organization on support costs.
- › **Democratized analytics and expanded data access.** Heap’s user interface, dashboards, and ad hoc analytics capabilities enabled nontechnical employees to run analytics themselves. No longer was the five-person data analytics team responsible for virtually all web analytics, with Heap, hundreds of employees were trained to conduct their own data discovery and analysis, including product managers, designers, support engineers, and marketers (approximately 20% of the workforce).
- › **Improved marketing planning and effectiveness.** Marketing teams could now view more data about landing pages and the audiences that reached them from their marketing efforts, informing and improving future campaign performance.
- › **Maintained security, privacy, and compliance standards.** Heap provided the organization with stringent security and anonymization, ensuring that the interviewed organization maintained compliance with industry and government regulations.

“If we can make decisions at an earlier time, it can immediately go into the next sprint — which helps us get to market faster.”

*Head of product analytics,
financial technology*



“Sometimes we just don’t think through a new feature fully, and didn’t tag the events for data collection. Instead of the frustration of having to tell a product manager that we can’t answer their question about an existing feature, Heap is like having insurance. It especially helps developers who need to push things quickly because now they don’t need to worry about tagging.”

*Head of product analytics,
financial technology*



Flexibility

The value of flexibility is clearly unique to each customer, and the measure of its value varies from organization to organization. There are multiple scenarios in which a customer might choose to implement Heap and later realize additional uses and business opportunities, including:

- › **Expanding into new markets.** Analysis of user demographics has provided the organization with actionable information for targeting new markets to expand its offerings in.
- › **Offering new products.** Analysis of customer behavior could inform the launch of entirely new products for additional revenue.
- › **Better sharing of product statistics and proving results to leadership.** Dashboards and reports in Heap could streamline the reporting process for teams to share their performance with leaders and could help leaders to get a better pulse on the current state of their products.

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

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a future additional investment. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so.

Analysis Of Costs

QUANTIFIED COST DATA

Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Ftr	Heap and third-party technology costs	\$0	\$330,000	\$330,000	\$330,000	\$990,000	\$820,661
Gtr	Implementation labor	\$53,360	\$40,020	\$0	\$0	\$93,380	\$89,742
Htr	Administration and training	\$5,104	\$35,218	\$35,218	\$22,458	\$97,997	\$83,098
	Total costs (risk-adjusted)	\$58,464	\$405,238	\$365,218	\$352,458	\$1,181,377	\$993,501

Heap And Third-Party Technology Costs

The interviewed organization pays annual costs for Heap, including user licenses, data volume processed, customer support, and integration with its data warehouse. Furthermore, the organization incurs incremental storage costs from its cloud data warehouse provider where the customer data from Heap is stored to be analyzed in conjunction with other internal data sources, requiring a separate third-party contract.

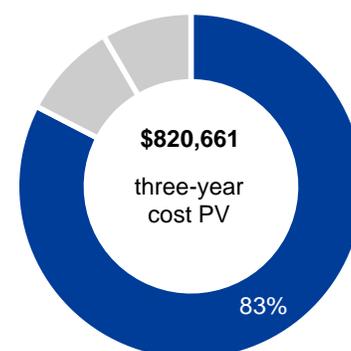
- › The organization pays an annual fee of \$290,000 to Heap for the ongoing use of the platform.
- › The organization pays a third-party provider \$10,000 for a data warehouse it has integrated with Heap.

Implementation risk is the risk that a proposed investment may deviate from the original or expected requirements, resulting in higher costs than anticipated. The greater the uncertainty, the wider the potential range of outcomes for cost estimates. Such risks include:

- › Organization size, the number of users, the data retention period, and necessary integrations with third-party data sources or warehouses.
- › Third-party data warehouse provider and the amount of data stored.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of \$820,661.

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the interviewed organization expects risk-adjusted total costs to be a PV of more than \$994K.



**Technology fees:
83% of total costs**

Heap And Third-Party Technology Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
F1	Heap costs			\$290,000	\$290,000	\$290,000
F2	Third-party data warehouse cost			\$10,000	\$10,000	\$10,000
Ft	Heap and third-party technology costs	F1+F2	\$0	\$300,000	\$300,000	\$300,000
	Risk adjustment	↑10%				
Ftr	Heap and third-party technology costs (risk-adjusted)		\$0	\$330,000	\$330,000	\$330,000

Implementation Labor

The organization conducted an initial implementation of Heap by setting up the system, integrating it with internal systems, and establishing events, funnels, and dashboards. In this phase, the organization also scoped how to integrate Heap with its site and third-party data warehouse, while ensuring that it remained in compliance with regulatory guidelines. The implementation process involved one project manager, three developers, and two BI engineers. Cross-functional staff members were also involved periodically to ensure that Heap integrated with their product teams.

After six months of usage, the organization revisited its deployment to redesign its events, funnels, and dashboards based off its initial learnings. This phase two refinement process was shorter and involved fewer FTE hours from the development and BI teams.

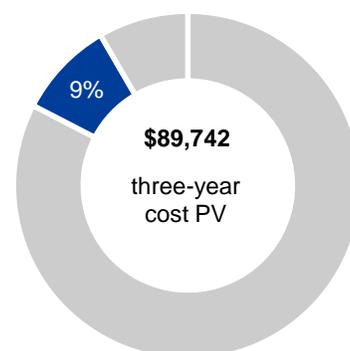
In modeling implementation labor costs, Forrester assumes:

- › Average fully burdened FTE rate of \$58.

Costs related to implementation and deployment may vary based on:

- › Size and scope of operations.
- › Available skill sets of teams.
- › Organizational agility.

To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year risk-adjusted total PV of \$89,742.



Implementation labor:
9% of total costs



1 month
Total implementation
and deployment time

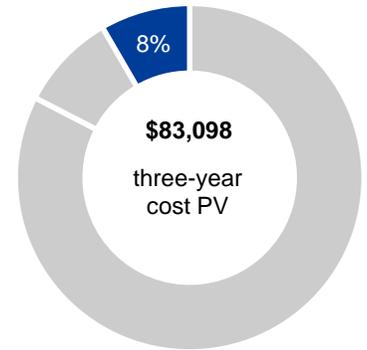
Implementation Labor: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
G1	Project management hours	1 staff * 160 hrs	160	160		
G2	Developer hours	3 staff * 80 hrs [reduced to half in Y1]	240	120		
G3	BI engineer hours	2 staff * 80 hrs [reduced to half in Y1]	160	80		
G4	Cross-functional team hours	12 staff * 20 hrs	240	240		
G5	Total implementation hours	G1+G2+G3+G4	800	600		
G6	Average fully burdened hourly rate	A8	\$58	\$58		
Gt	Implementation labor	G5*G6	\$46,400	\$34,800	\$0	\$0
	Risk adjustment	↑15%				
Gtr	Implementation labor (risk-adjusted)		\$53,360	\$40,020	\$0	\$0

Administration And Training

The interviewed organization incurs ongoing costs related to the administration of Heap, management of data in the data warehouse, optimization of events and dashboards, and the onboarding training of new users within the company.

- › The head of product analytics spends 1 hour per week on user administration and meets with Heap for 2 hours every month as part of an ongoing improvement effort.
- › As analytics become an ever more important part of organizational operations, new users across functional teams are incorporating Heap into their daily use. New power users require 8 hours of training to become self-sufficient, and the organization dedicates 2 hours of training to business users.
- › The organization spends 160 hours a year optimizing its environment on a quarterly basis. Within Heap, it removes old events and dashboards, builds new ones, and reorganizes them to surface the most relevant information. In the data warehouse, the organization carefully examines what data is currently synced and chooses certain information to remove from the warehouse that may not be needed at that time, which allows the organization to save costs with its third-party provider.



Administration and training: 8% of total costs

In modeling administrative and training costs, Forrester assumes:

- › Average fully burdened FTE rate of \$58.

Administrative and training costs can vary based on:

- › Workforce size and current skill sets.
- › Business requirements and analytics usage across product teams.
- › Internal data retention policies.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of \$83,098.

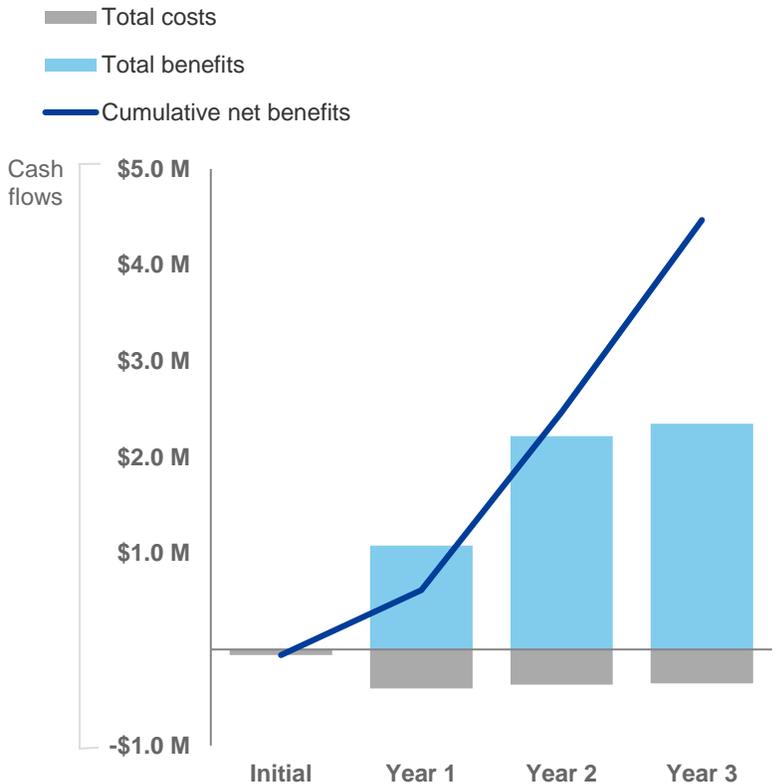
Administration And Training: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
H1	Systems administration hours (new users, monthly meetings, etc.)		0	76	76	76
H2	Event and storage cleanup hours		0	160	160	160
H3	Number of new power users		10	2	2	2
H4	Hours per business user		8	8	8	8
H5	Number of new business users		0	150	150	50
H6	Hours per business user		2	2	2	2
H7	Training hours for users	$H3*H4+H5*H6$	80	316	316	116
H8	Total hours spent	$H1+H2+H7$	80	552	552	352
H9	Average fully burdened hourly rate	A8	\$58	\$58	\$58	\$58
Ht	Administration and training	$H8*H9$	\$4,640	\$32,016	\$32,016	\$20,416
	Risk adjustment	↑10%				
Htr	Administration and training (risk-adjusted)		\$5,104	\$35,218	\$35,218	\$22,458

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 interviewed 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 Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	(\$58,464)	(\$405,238)	(\$365,218)	(\$352,458)	(\$1,181,377)	(\$993,501)
Total benefits	\$0	\$1,080,993	\$2,220,817	\$2,347,872	\$5,649,682	\$4,582,097
Net benefits	(\$58,464)	\$675,755	\$1,855,600	\$1,995,414	\$4,468,305	\$3,588,596
ROI						361%
Payback period						<6 months

Heap: Overview

The following information is provided directly by Heap. Forrester has not validated any claims and does not endorse Heap or its offerings.



Heap is the new standard in tracking customer data.

Heap's technology automatically captures, organizes, analyzes, and connects customer data sets, so businesses can create more valuable products and experiences.

Heap's mission is to power business decisions with truth. Heap empowers companies to focus on what matters — discovering insights and taking action — not writing tracking code or building data pipelines. With Heap, organizations of all sizes can accelerate digital transformation efforts by removing technical bottlenecks and creating better customer experiences.

Through Autocapture, Heap pioneered the approach of automating how a complete picture of behavioral customer data is captured. It's hard to know what questions you'll have months or years from when you implement your customer data and analytics infrastructure, so it's difficult to know what data you'll need to generate to actually answer those questions. Legacy data and analytics tools require you to tag events upfront and manually instrument tracking code. Instead, Heap automatically captures everything: clicks, taps, swipes, form changes, and more. As a result, a complete behavioral customer data set is available — retroactively back to day 0 — enabling organizations to get answers in seconds and make decisions faster.

Over 6,000 companies in finance, eCommerce, software, and other industries use Heap's platform to:

- › **Bring products to market faster and out-innovate competitors.** Heap enables faster time-to-insight with retroactive and codeless behavioral analytics. Heap automatically generates customer data sets and then makes them useful for all employees — technical or not. Your team can gather insights, generate hypotheses, and evaluate impact without waiting for developer resources or worrying about missing data.
- › **Maintain flexibility through growth.** Decouple analytics from code with the flexibility of Virtual Events. Customer data sets are abstracted through data virtualization. Retroactively name, modify, merge, or create new Virtual Events for each user interaction without writing new tracking code or changing the underlying data.
- › **Increase reliability and trust in their customer data sets with modernized architecture.** Heap delivers a complete customer data set. Never worry about data loss, missing data, outdated events, or the context behind an event. Enable your organization to make better decisions based on more complete customer data.

Heap offers a range of products including a self-service, ad hoc analytics interface and activation of customer data into an enterprise data warehouse or data lake.

To learn more about Heap's data and analytics solutions, contact sales@heapanalytics.com or call +1.415.938.9398.

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

¹Source: "Vendor Landscape: Digital Intelligence Technology Providers You Should Care About," Forrester Research, Inc., February 17, 2017.