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The Total Economic Impact™ Of Cloudera Data Platform Public Cloud

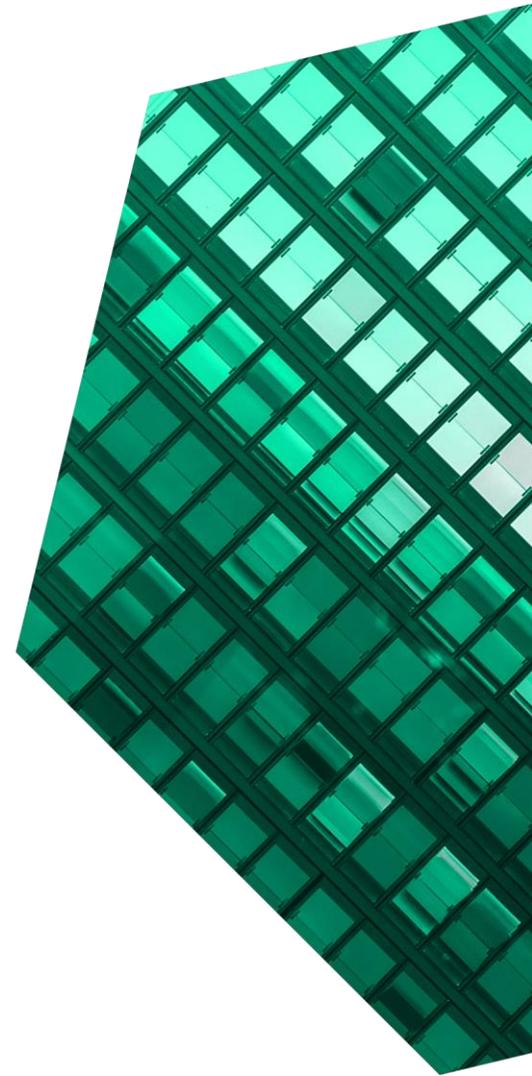
Cost Savings And Business Benefits
Enabled By Cloudera Data Platform Public Cloud

OCTOBER 2021

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Executive Summary

Organizations adopt Cloudera Data Platform to modernize their data practices and benefit from the elasticity and scalability of cloud-based infrastructure. Interviewees noted improving their cost to scale by 99% and their time-to-value of scaling by 97.6%, recouping 48.8% of lost productivity due to scaling timelines, improving their efficiency of data reporting by 50% and of data integrations by 70%, growing revenues by 1.5%, and decommissioning expensive on-premises legacy infrastructure and software.

Cloudera Data Platform (CDP) is a data analytics and management platform targeted at large enterprises that can be flexibly deployed on public cloud and on-premises, giving enterprises a hybrid or multicloud environment. This study analyzes customer experiences deploying CDP as a public-cloud service. CDP Public Cloud features include:

- Ingestion, management, and delivering of workloads like data analytics, transactions, and machine learning (ML) with a data visualization dashboard.
- Data security and governance.
- Centrally managed data that allows for self-service for data analytics and business decision-making.
- Deployment on major public clouds and combinations of these (multicloud).

Cloudera commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying [Cloudera Data Platform Public Cloud](#).¹ The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Cloudera Data Platform Public Cloud on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed six decision-makers from four organizations that use Cloudera Data Platform Public Cloud. Five of these

KEY STATISTICS



Return on investment (ROI)

194%



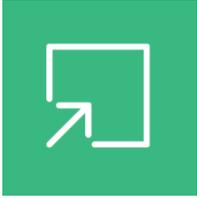
Improved time-to-value of data

97.6%

decision-makers came from large enterprises. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single [composite organization](#).

Prior to using Cloudera Data Platform Public Cloud, inelastic data analytics infrastructure and software hampered the interviewees' organizations. This inelasticity produced inefficient data analytics and IT workflows, delaying the time-to-value of data analytics, and increasing the burden and pressure on both IT and business teams to deliver value.

After the investment in Cloudera Data Platform Public Cloud, data analytics at the interviewees' organizations became more flexible and less expensive. As data analytics became nearly instantly scalable, costs to scale and the time-to-value of data workflows both shrunk. Employees also benefited from less data reporting and system integration work, while organizations spent less on infrastructure and software on a gross and net basis.



Reduced costs to scale:

99.5%

KEY FINDINGS

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

- **Reduced costs to scale data analytics by 99.5% and improved time-to-value by 97.6%.** By leveraging Cloudera Data Platform Public Cloud's elastic and scalable infrastructure for data analytics, interviewees' organizations reduced the labor time of deploying additional data analytics infrastructure from two months for 5 FTEs (1,665 person-hours) down to one day for 1 FTE (eight person-hours). They also reduced the total time to deployment of this infrastructure to end users from six months (1,000 hours) down to three days (24 hours). This resulted in a productivity improvement to data workflows of 48.8%.
- **Improved efficiency of data reporting by 50%.** Interviewees described improving the efficiency of their organizations' data-reporting practices via automation, saving 72 person-hours of labor for each of the 250 reports ran annually. As a result, reports were automatically generated in 30 minutes, compared to an average of three days before, for a reduction of 97.9%. Interviewees shared that CDP Public Cloud was 50% responsible for these savings.
- **Improved efficiency of data integrations by 70%.** CDP Public Cloud also enabled the interviewees' organizations to develop data integrations more efficiently from an average prior time of 50 days down to 15 days per integration project.
- **Improved business value by increasing revenues by 1.5%.** Interviewees noted various ways that CDP Public Cloud improved their business value from less time spent on R&D to more successful product development. For one decision-maker and the composite organization, CDP Public Cloud was used to improve customer

“ Compared to before, we really embrace scalability with CDP, spawning a new environment within just a day or two. ”

— IT manager, telecommunications

loyalty with a total impact of adding 3% to annual revenues of which CDP Public Cloud was 50% responsible.

- **Reduced related on-premises infrastructure by 100% and associated labor costs by 50%.** After deploying CDP Public Cloud, the interviewees decommissioned their on-premises data analytics infrastructure and software while also saving on the associated labor costs for this infrastructure. After moving to the cloud, interviewees decommissioned 100% of the on-premises infrastructure associated with the data moved while reducing net labor costs by 50%.

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

- **Better decision-making.** Interviewees reported that CDP Public Cloud enabled their organizations to reduce the number of internal data silos at their organizations, getting visibility into organizationwide data. The improved rate of data reporting and use of fresher data also had a positive impact on data-based decision-making across their firms.
- **Improved security, compliance, and reporting.** Interviewees also noted that their organizations' security and compliance postures improved after deploying CDP Public Cloud, since data could be properly tracked and governed with controlled access, which was limited in prior environments.
- **Open-source platform.** Organizations that deployed CDP Public Cloud took advantage of the open-source platform and open standards of CDP Public Cloud to not only smooth their transition from on-premises to cloud-based data analytics, but also take advantage of the latest analytics technologies with less risk thanks to Cloudera's support.
- **Improved adaptation to market changes.** Interviewees' organizations were also able to use the flexibility and scalability of CDP Public Cloud

to respond faster to shifting market forces. Interviewees noted missing market opportunities in their prior state but being able to respond faster to such changes and take better care of their stakeholders after the investment.

Costs. Risk-adjusted PV costs include:

- **Cloudera and cloud platform provider fees.** Cloudera charges varying hourly fees for different services based on a combination of compute cores and memory called Cloudera Compute Units (CCUs).
- **Costs of deployment and ongoing management.** Interviewees noted spending between six months and one year on deployment, using between four and six employees. Ongoing management required between one and six FTEs, depending on the organization.

The decision-maker interviews and financial analysis found that a composite organization experiences benefits of \$35.54 million over three years versus costs of \$12.07 million, adding up to a net present value (NPV) of \$23.46 million and an ROI of 194%.



ROI
194%



BENEFITS PV
\$35.54M

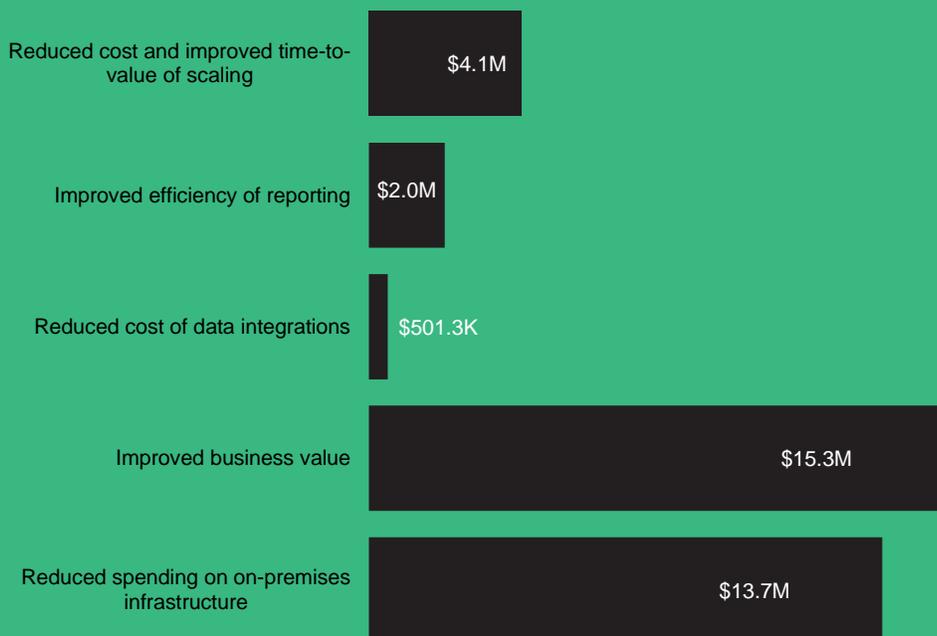


NPV
\$23.46M

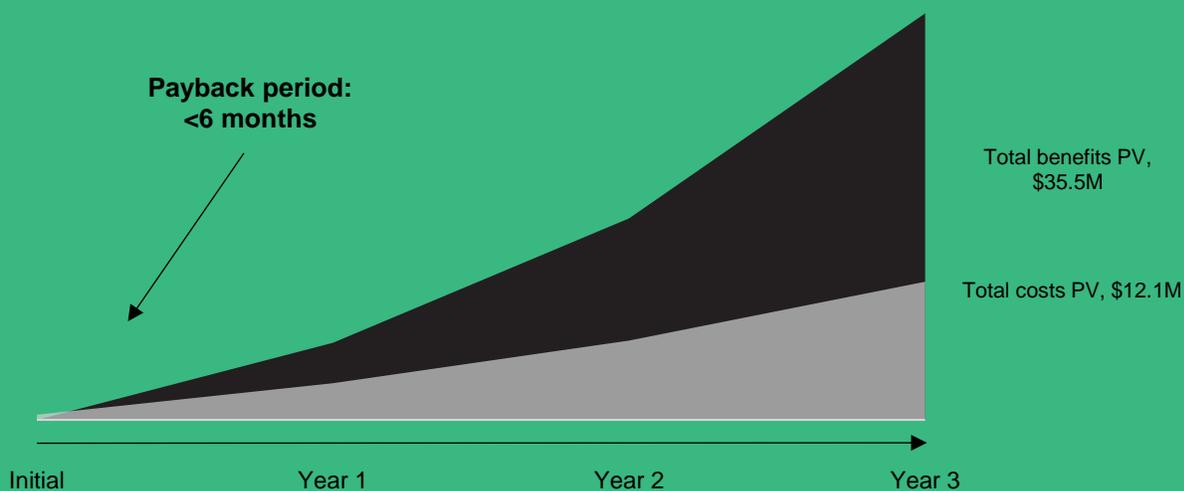


PAYBACK
<6 months

Benefits (Three-Year)



Financial Summary



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 Cloudera Data Platform Public Cloud.

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 Cloudera Data Platform Public Cloud can have on an organization.

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by Cloudera 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 Cloudera Data Platform Public Cloud.

Cloudera 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.

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



DUE DILIGENCE

Interviewed Cloudera stakeholders and Forrester analysts to gather data relative to Cloudera Data Platform Public Cloud.



DECISION-MAKER INTERVIEWS

Interviewed six decision-makers at organizations using Cloudera Data Platform Public Cloud to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

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



FINANCIAL MODEL FRAMEWORK

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



CASE STUDY

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

The Cloudera Data Platform Public Cloud Customer Journey

■ Drivers leading to the Cloudera Data Platform Public Cloud investment

Interviewed Decision-Makers			
Interviewee	Industry	Region	Revenue and size
Head of data management	Technology	EMEA	\$3 million and 180 employees
Data scientist	Telecommunications	APAC	\$3 billion and 8,000 employees
Director of data analytics	Telecommunications	APAC	\$3 billion and 8,000 employees
IT manager	Telecommunications	APAC	\$3 billion and 8,000 employees
Global IT architect	Logistics	Global	\$10 billion and 41,000 employees
Chief data and analytics officer	Pharmaceuticals	Global	\$46 billion and 47,000 employees

KEY CHALLENGES

Prior to investing in Cloudera Data Platform Public Cloud, the interviewees' organizations utilized data analytics solutions designed to run on-premises. While some of the customers did run this software on-premises, others deployed the software to the cloud (using infrastructure-as-a-service), experiencing a number of limitations as a result. Furthermore, some customers used this legacy software to analyze data stored on-premises, while others used it to analyze data stored on the public cloud.

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

- **Difficulty scaling data analytics.** Regardless of how interviewees' organizations deployed their legacy analytics solutions or where data was stored, the interviewees found their solutions were hard to scale to meet their data analytics needs. For example, one interviewee noted that running their organization's legacy solution on-premises would need up to six months and the involvement of at least three large teams to expand the analytics workloads. This was

particularly challenging as many decision-makers could not predict exactly how much volume their organizations truly needed to effectively run analytics work. This meant that they were constantly attempting to grow to meet unforecasted workloads, and this work would be delayed while additional on-premises infrastructure was deployed.

“Even when we deployed our legacy solution on the cloud, we never got the elasticity of a true cloud analytics solution. We still had to do all the same work when expanding our analytics that we would have done if it was running in a data center.”

*Chief data and analytics officer,
pharmaceuticals*

- **Data chaos.** Before Cludera Data Platform Public Cloud, interviewees' firms also struggled with the fact that data was spread out across multiple silos within each organization. This impacted the organizations' ability to analyze organizationwide data to understand their businesses as a whole and develop overarching business strategies.

“Each line of business owns its own operational system and data related to that business, making it difficult to have corporate projects that require data from different sources and different businesses.”

Global IT architect, logistics

SOLUTION REQUIREMENTS

The interviewees' organizations searched for a solution that could:

- Easily scale up and down analytics workloads as demand fluctuated.
- Built with and seamlessly integrates with open-source technologies to accelerate analytics work.
- Flexibly enable multicloud and hybrid-cloud strategies for their analytics workloads.

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and a ROI analysis that illustrates the areas financially affected. The composite organization is representative of the six decision-makers that Forrester interviewed and is used to present the aggregate financial analysis in

the next section. The composite organization has the following characteristics:

Description of composite. The composite is a global, business-to-business organization that generates \$15 billion in annual revenue and has 24,000 employees. It has an average profit margin of 6%, total organizational data of 1 petabyte (PB), and spends over \$20 million annually on its on-premises infrastructure and analytics solutions to run analytics workloads.

Deployment characteristics. After a seven-month deployment process, the organization gets 15% of its organizational data set up for analytics on CDP Public Cloud. By Year 3, this figure reaches 50%. All the while, the organization reduces its total cost of analytics solutions and infrastructure while saving time and expenses on its previous two annual capacity upgrades, its prior 250 annual reports run, and its eight annual integration projects.

Key assumptions

- **\$15 billion in annual revenue**
- **24,000 employees**
- **6% profit margin**
- **1PB total data**
- **>\$20M annually on prior data analytics infrastructure and software**

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	Reduced cost and improved time-to-value of scaling	\$1,636,698	\$1,636,698	\$1,636,698	\$4,910,094	\$4,070,226
Btr	Improved efficiency of reporting	\$810,000	\$810,000	\$810,000	\$2,430,000	\$2,014,350
Ctr	Reduced cost of data integrations	\$201,600	\$201,600	\$201,600	\$604,800	\$501,349
Dtr	Improved business value	\$1,912,500	\$5,766,188	\$11,705,361	\$19,384,048	\$15,298,491
Etr	Reduced spending on on-premises infrastructure	\$2,849,294	\$4,748,824	\$9,497,647	\$17,095,765	\$13,650,638
	Total benefits (risk-adjusted)	\$7,410,092	\$13,163,309	\$23,851,306	\$44,424,707	\$35,535,054

REDUCED COST AND IMPROVED TIME-TO-VALUE OF SCALING

Evidence and data. Interviewees reported saving on costs related to scaling while also improving the time-to-value of additional compute capacity after deploying Cloudera Data Platform Public Cloud. Before deployment, the interviewees described their legacy data analytics infrastructure and software as inelastic and time-consuming to scale. When additional compute capacity for data analytics work was needed in their prior environments, interviewees shared having to spend upwards of six months on planning, budgeting, procurement, bidding, waiting for delivery, racking, and platform configuration.

Because of the extensive time requirement for adding capacity, interviewees described having to regularly prioritize different data analytics work by the estimated business value impact the work could have. In the meantime, unprioritized data analytics work had to wait until additional capacity could be added. This might be fine given perfect foresight, however the interviewees shared that many unforecasted workloads would have taken precedence over already prioritized analytics work if

they had known about it earlier. This exacerbated the time cost of adding inelastic infrastructure by not only delaying productivity but potentially impacting end-customer experience and firm revenues.

“On top of all the work we had to do to add capacity before, all instances were running 100% of the time. There was no scalability and no elasticity.”

*Chief data and analytics officer,
pharmaceuticals*

After deploying Cloudera Data Platform Public Cloud, interviewees scaled their data analytics work up or down much more efficiently, saving on time costs and downstream costs of delayed analytics work. The chief data and analytics officer from the pharmaceuticals company shared: “With CDP Public Cloud, you can start with a smaller number of

instances and scale up as needed. CDP uses autoscaling, meaning that as workloads increase, the platform grows automatically.”

“With CDP Public Cloud, we just push a button, decide the size of the cluster, and CDP launches all the machines, configurations, etc. It’s magic.”

Head of data management, technology

Because of the scalability and elasticity CDP Public Cloud provides, interviewees no longer needed to determine which data analytics work should be prioritized and expanded or contracted their organizations’ analytics infrastructure as demand fluctuated. This reduced the costs associated with delaying subsets of data analytics work whether to internal employee productivity or to the downstream impact on customers and the business.

“The most important thing has been being able to handle the bursting of unforecasted workloads. We can actually work on these now instead of prioritizing them, putting others on hold, and potentially losing money.”

Data scientist, telecommunications

Modeling and assumptions. For the composite organization, Forrester assumes:

- Two annual compute capacity upgrades are needed for analytics workloads.
- Two months of labor are required of five FTEs to add capacity.
- Labor time is reduced by 97.6% from two months (333 hours) to one day (eight hours) and associated labor resources are reduced by 80% for a total cost reduction of 99.5% thanks to Cloudera Data Platform Public Cloud.
- Six months total time to deploy a compute capacity upgrade on-premises.
- This total deployment time is reduced by 97.6% from six months (1,040 hours) to three days (24 hours) with Cloudera Data Platform Public Cloud.
- The wait for additional capacity impacts 15 data professionals.
- The fully burdened hourly rate for data professionals is \$100 each.
- Data professional productivity is recaptured at a rate of 50%.



Reduced costs to scale

99.5%

Risks. The reduced cost and improved time-to-value of scaling will vary with:

- The total time to deploy additional compute capacity and the internal labor time required for deployment.
- The number of employees the total wait time impacts and the number of IT professionals required to deploy additional capacity.

- The fully burdened hourly rates of these employees.

Results. To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of nearly \$4.1 million.

Reduced Cost And Improved Time-To-Value Of Scaling					
Ref.	Metric	Calculation	Year 1	Year 2	Year 3
A1	Annual capacity increases	Composite	2	2	2
A2	Prior labor hours to add additional capacity	Interviews; 2 months	333	333	333
A3	Prior FTEs to add additional capacity	Interviews	5	5	5
A4	New labor hours to add additional capacity	Interviews	8	8	8
A5	New FTEs needed to add additional capacity	Interviews	1	1	1
A6	Fully burdened hourly rate of IT FTEs	Composite	\$60	\$60	\$60
A7	Subtotal - IT cost savings to scale	$(A1 \cdot A2 \cdot A3 \cdot A6) - (A1 \cdot A4 \cdot A5 \cdot A6)$	\$198,840	\$198,840	\$198,840
A8	Prior total hours to add new capacity	Interviews; 6 months	1,040	1,040	1,040
A9	New total hours to add new capacity	Interviews; 3 days	24	24	24
A10	Number of impacted employees	Interviews	15	15	15
A11	Fully burdened hourly rate per impacted employee	Interviews	\$100	\$100	\$100
A12	Productivity recapture rate	Interviews	50%	50%	50%
A13	Subtotal - improved productivity from faster capacity deployment	$A1 \cdot (A8 - A9) \cdot A10 \cdot A11 \cdot A12$	\$1,524,000	\$1,524,000	\$1,524,000
At	Reduced cost and improved time-to-value of scaling	$A7 + A13$	\$1,722,840	\$1,722,840	\$1,722,840
	Risk adjustment	↓5%			
Atr	Reduced cost and improved time-to-value of scaling (risk-adjusted)		\$1,636,698	\$1,636,698	\$1,636,698
Three-year total: \$4,910,094			Three-year present value: \$4,070,226		

IMPROVED EFFICIENCY OF REPORTING

Evidence and data. Interviewees also saved time creating data analytics reports, while also allowing business users to leverage the insights within these reports in a timely fashion. Interviewees noted that their reporting processes before deploying Cloudera Data Platform Public Cloud could take days or weeks to complete before business stakeholders consumed them.

“Before CDP Public Cloud, reporting could take days or weeks and required expensive specialists in the data analytics solution we were using. By the time business stakeholders were getting reports, the data was already stale.”

*Director of data analytics,
telecommunications*

After deploying CDP Public Cloud, interviewees described not only automating the reporting process, which saved on labor costs, but shrinking its delivery time from weeks at the high end to a consistent 30 minutes. This allowed business stakeholders to utilize fresher data in their decision-making, potentially having positive impacts to business value.

“Because of the architecture we’re using with CDP Public Cloud and some open-source solutions, reports are now automatically generated and take an average of 30 minutes. We can drill down, use filters, and have very little impact on the time the report gets used by business stakeholders.”

*Director of data analytics,
telecommunications*

Modeling and assumptions. For the composite organization, Forrester assumes:

- One report is run every working day for a total of 250 reports annually.
- Three specialist developers take an average of 24 hours to build a report before Cloudera Data Platform Public Cloud.
- The fully burdened hourly rate for developers is \$100.
- This process is fully automated with Cloudera Data Platform Public Cloud in conjunction with other solutions with reports generated in 30 minutes.
- Cloudera Data Platform Public Cloud is 50% responsible for this automation.



Reduction in data-reporting time:

97.9%

Risks. The improved efficiency of reporting will vary with:

- The current number of reports run annually, and the number and type of resources needed to build reports.
- The time cost per report.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of over \$2 million.

Improved Efficiency Of Reporting

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
B1	Number of reports run annually	Interviews; 1 daily	250	250	250
B2	Prior specialist developers per report	Interviews	3	3	3
B3	Prior average labor hours to build report	Interviews	24	24	24
B4	Fully burdened cost per hour of specialist developer	Composite	\$100	\$100	\$100
B5	Responsibility of Cloudera CDP for Public Cloud	Interviews	50%	50%	50%
Bt	Improved efficiency of reporting	$B1*B2*B3*B4*B5$	\$900,000	\$900,000	\$900,000
	Risk adjustment	↓10%			
Btr	Improved efficiency of reporting (risk-adjusted)		\$810,000	\$810,000	\$810,000
Three-year total: \$2,430,000			Three-year present value: \$2,014,350		

REDUCED COST OF DATA INTEGRATIONS

Evidence and data. Interviewees shared that Cloudera Data Platform Public Cloud also made data integration workflows more efficient. Before deploying CDP Public Cloud, interviewees shared spending 50 days of development on average building integrations to share data between various systems.

After deploying CDP Public Cloud, integration work decreased substantially. Thanks to a number of CDP features, including pre-integrations, a common platform, and standardized processes, interviewees’ organizations cut integration work by an average of 70%. Over the long term, organizations hoped they could consolidate teams thanks to this efficiency gain, shifting employees to higher value, more strategic work.

“Every time one system needs to share data with another, we would have to build or rebuild interfaces, spending 50 days per interface five to 10 times annually.”

Global IT architect, logistics

“Before CDP Public Cloud, developing integrations was like building a house from scratch. Now, it’s like putting together a prefabricated home with fewer and modular components.”

Chief data and analytics officer, pharmaceuticals

Modeling and assumptions. For the composite organization, Forrester assumes:

- A prior eight integration projects undertaken annually.
- Fifty days are required to complete one of these integrations.
- Cloudera Data Platform Public Cloud reduces the time for integrations by 70%.
- One data engineer is required per integration project at a fully burdened hourly rate of \$100.

Risks. The reduced cost of data integrations will vary with:

- The number of integration projects undertaken.
- The current time required to complete an integration.
- The prior number of engineers required to complete an integration.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of over \$500,000.



Reduction in data integration time:

70%

Reduced Cost Of Data Integrations

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
C1	Number of integration projects annually	Interviews	8	8	8
C2	Prior person-hours spent on integrations annually	Interviews; 50 days	400	400	400
C3	Time reduction from Cloudera Data Platform	Interviews; 70%	70%	70%	70%
C4	Fully burdened hourly rate of data engineers	B4	\$100	\$100	\$100
Ct	Reduced cost of data integrations	$C1 \times C2 \times C3 \times C4$	\$224,000	\$224,000	\$224,000
	Risk adjustment	↓10%			
Ctr	Reduced cost of data integrations (risk-adjusted)		\$201,600	\$201,600	\$201,600
Three-year total: \$604,800			Three-year present value: \$501,349		

IMPROVED BUSINESS VALUE

Evidence and data. The interviewees also described leveraging Cloudera Data Platform Public Cloud to provide business value to their organizations. The exact value and type of benefit varied by

organization. For example, the pharmaceuticals business accelerated staff productivity for R&D processes, which shrunk the time-to-market of new developed products by 50% to 67%. Additionally, better data analytics enabled developed products to have more likelihood of effectiveness, effectively

doubling the likelihood that a developed drug would be successful at trials.

“We would have never been able to do what we’re doing now with our prior technology stack. CDP Public Cloud has enabled R&D staff to improve productivity by 20% to 40%, reducing preclinical trials from eight months at the high end down to two months at the low end. We’ve also doubled the probability that a development is successful at trials, moving from 5% to 10% likelihood.”

*Chief data and analytics officer,
pharmaceuticals*

The telecommunications organization, on the other hand, uses CDP Public Cloud in conjunction with other data solutions to deliver insights and predictive analytics on its customers. By more accurately predicting the characteristics and likelihood of particular actions of its customers, the organization maximized the effectiveness of its marketing and promotions, improving revenues while avoiding customer attrition. The director of data analytics from this organization described: “We’ve used CDP Public Cloud to impact customer retention and ultimately revenues. For example, we saw conversion for one retention campaign move from 2% before CDP Public Cloud to 8% after, thanks to better predicting customer behavior. We get the right message to the right customer at the right time.”

Modeling and assumptions. For the composite organization, Forrester assumes:

- Total organizational revenues of \$15 billion, growing at 5% annually.

- Additional revenue from data projects completed with Cloudera Data Platform Public Cloud of 0.5% in Year 1, 1.5% in Year 2, and 3% in Year 3.
- A net margin of 6%.
- Cloudera Data Platform Public Cloud is 50% responsible for the revenue increase compared to other solutions in the data analytics environment.

“The revenue impact from CDP Public Cloud has been significant. It’s been partially responsible for at least 3% of our revenue growth.”

*Director of data analytics,
telecommunications*

Risks. Improved business value will vary with:

- Current revenues.
- The additional revenues accruing from any data analytics work.
- The net margin.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of nearly \$15.3 million.



Added revenue from analytics:

3%

Improved Business Value					
Ref.	Metric	Calculation	Year 1	Year 2	Year 3
D1	Total revenues	Composite	\$15,000,000,000	\$15,075,000,000	\$15,301,125,000
D2	Additional revenue from data-based projects on CDP for Public Cloud	Interviews	0.5%	1.5%	3%
D3	Net margin	Composite	6%	6%	6%
D4	Responsibility of Cloudera CDP for Public Cloud for new revenues	C5	50%	50%	50%
Dt	Improved business value	D1*D2*D3*D4	\$2,250,000	\$6,783,750	\$13,771,013
	Risk adjustment	↓15%			
Dtr	Improved business value (risk-adjusted)		\$1,912,500	\$5,766,188	\$11,705,361
Three-year total: \$19,384,048			Three-year present value: \$15,298,491		

REDUCED SPENDING ON ON-PREMISES INFRASTRUCTURE AND SOFTWARE SERVICES

Evidence and data. By moving to a cloud-based data analytics solution, the interviewees' organizations decommissioned their legacy infrastructure and data analytics software services, realizing additional cost savings. The types of infrastructure and software that customers decommissioned after their investment in CDP Public Cloud included:

- On-premises servers.
- On-premises data warehouses.
- Data integration platforms.
- Relational databases.
- On-premises data analytics software.
- Cloud-based machine-learning platforms.
- Cloud-provider fees (from the ability to now shut down instances when not needed).

Interviewees noted spending in the double-digit millions annually on their legacy infrastructure and data analytics solutions. They estimated achieving overall cost savings of 50% switching from their legacy environment to CDP Public Cloud. When considering infrastructure and analytics solution licensing costs alone, these interviewees estimated net savings of between 60% and 80% from CDP Public Cloud.

“The ability to significantly reduce the cost of our legacy infrastructure was a core part of our business case to adopt Cloudera Data Platform Public Cloud.”

Director of data analytics, telecommunications

Those interviewees whose organizations were running their data analytics in the cloud noted the ability to save on cloud platform-provider fees as well. These customers used legacy data analytics solutions that were designed to deploy on-premises but deployed these in the cloud. Because of this, cloud instances ran 24/7 due to the limitations of the data analytics solutions. After switching to CDP Public Cloud, interviewees noted saving up to 30% on their cloud platform provider fees as they could now shut instances off when they were not needed.

“We’re saving on our [cloud platform provider] fees with CDP Public Cloud by switching off two clusters every evening. With 8 hours less usage, we’re saving about 30% on our cloud compute costs.”

Head of data management, technology

Interviewees also noted saving on the costs to manage and service their legacy infrastructure. On a gross basis, the interviewees’ organizations saved on all internal and external management and servicing costs associated with their decommissioned infrastructure and data analytics solutions. However, interviewees also noted saving on these management costs on a net basis, estimating that it took approximately 50% fewer resources to manage CDP for the Public Cloud than it did to manage their legacy infrastructure and data analytics solutions.

Modeling and assumptions. For the composite organization, Forrester assumes:

- The prior costs of on-premises data analytics infrastructure and software licenses are over \$20 million annually.

- Before CDP Public Cloud, the composite needs 12,000 total annual hours to service this infrastructure.
- The fully burdened hourly rate for the IT professionals servicing this infrastructure is \$60.
- In Year 1, 15% of this infrastructure is moved to the cloud, while a total of 25% is moved in Year 2 and 50% is moved in Year 3.

“With our legacy infrastructure, 200 nodes required between three and four admins to manage, while with CDP Public Cloud, the same nodes now only require one or two admins.”

Chief data and analytics officer, pharmaceuticals

Risks. The reduced cost of on-premises infrastructure and software services for data analytics will vary with:

- The current cost of on-premises infrastructure and data analytics solutions.
- The total person-hours and fully burdened hourly rate of employees servicing this infrastructure.
- The amount of infrastructure decommissioned and the rate of decommissioning.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of nearly \$13.7 million.

Reduced Spending On On-Premises Infrastructure					
Ref.	Metric	Calculation	Year 1	Year 2	Year 3
E1	Prior cost of on-premises data analytics infrastructure and software licenses	Interviews; 60% more expensive than Cloudera	\$20,385,882	\$20,385,882	\$20,385,882
E2	Prior person-hours spent servicing infrastructure	Interviews	12,000	12,000	12,000
E3	Fully burdened hourly rate per IT professional	A6	\$60	\$60	\$60
E4	Percentage of infrastructure moved to CDP for Public Cloud	Composite	15%	25%	50%
Et	Reduced spending on on-premises infrastructure	$(E1+(E2*E3))*E4$	\$3,165,882	\$5,276,471	\$10,552,941
	Risk adjustment	↓10%			
Etr	Reduced spending on on-premises infrastructure (risk-adjusted)		\$2,849,294	\$4,748,824	\$9,497,647
Three-year total: \$17,095,765			Three-year present value: \$13,650,638		

UNQUANTIFIED BENEFITS

Additional benefits that customers experienced but were not able to quantify include:

- **Better decision-making.** Interviewees shared that implementing Cloudera Data Platform Public Cloud enabled their organizations to break down data silos, implementing self-service data access and better business decision-making as a result. The global IT architect from the logistics firm shared: “We used to have difficulty accessing data coming from other parts of the organization, but CDP Public Cloud now gives us the organizationwide visibility we need to see what’s going on in the company and make better decisions based on this better understanding.” Additionally, firms reduced data reporting lead times, which led to using fresher data in decision-making processes, improving the resultant decisions.
- **Improved governance, security, compliance, and reporting.** Interviewees noted challenges related to data security and tracking data lineage in their legacy environments. Decision-makers described their organizations’ data governance, security, and lineage as very weak before implementing CDP. They could not explain who the owner of the data was, where it came from, or the data processing mechanisms or data journey. The global IT architect from the logistics firm

“We’re subject to strict regulations, data governance, and security requirements, such as GDPR. Cloudera’s Shared Data Experience (SDX) allows me to accelerate compiling a data governance story without too much effort.”

Head of data management, technology

said, “With CDP, we are now able to provide the data lineage, which helps manage security access very precisely.”

- **Open-source platform.** Cloudera’s open-source platform and open standards benefitted the interviewees’ organizations in two ways. The first was to make the transition from their legacy solutions to Cloudera easier. The global IT architect from the logistics firm stated: “With an open-source platform and standard components, we reintegrated objects onto CDP without too much effort. We could unify our data initiatives around one platform quite easily.” Interviewees also noted benefitting from open source by making use of the latest technologies. The director of data analytics from the telecommunications firm noted: “Cloudera gives us the ability for IT to embrace open-source while being supported. We’re able to use the latest tools and technologies with less risk.”
- **Citizen data scientists.** One interviewee noted that their organization was making use of citizen data scientists and that Cloudera enabled the data scientists to become more effective in their roles. The data scientist from the telecommunications firm shared: “CDP is providing a better environment for our citizen data scientists. They know statistics but not code. With CDP, they can just point the tool to the data location without any code.”

FLEXIBILITY

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

- **Improved adaptation to market changes.** Interviewees noted that CDP Public Cloud enabled their organizations to become more flexible, adapting quickly and easily to market changes. For example, the head of data

management from the technology firm said: “Before Cloudera, we had an experience where we tried to build our own solution but were late and lost the window of opportunity. Cloudera enables us to build a data lake with all the security and governance needed but much faster. We can now react quickly to market stimuli and the needs of our stakeholders.”

- **Ability to pursue hybrid and multicloud strategies.** Interviewees also discussed how CDP Public Cloud enabled their firms to adopt hybrid cloud or multicloud strategies. For example, the head of data management from the technology company stated: “We wanted to avoid lock-in onto one cloud platform and want to keep the flexibility to move to another cloud platform or even on-premises in the future. Also, from a regulatory standpoint, different clouds are better for different use cases. With Cloudera, we can use whatever underlying infrastructure we want while reaping the most benefit.”

“Everyone likes to talk a good game about enabling a multicloud approach for data analytics, but Cloudera actually delivered on this for us.”

*Chief data and analytics officer,
pharmaceuticals*

CDP Public Cloud, and now four or five other parts of the company want to leverage it for their own programs.”

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

- **Expansion of scalable analytics to other teams.** Interviewees mentioned that, after initial success, they planned to expand their use of Cloudera Data Platform Public Cloud across their organization. The chief data and analytics officer from the pharmaceuticals industry said, “We’ve just successfully completed our first use case of

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
Ftr	Cloudera Data Platform and cloud computing provider fees	\$0	\$2,950,588	\$4,425,882	\$6,638,824	\$14,015,294	\$11,327,953
Gtr	Costs of deployment and ongoing management	\$462,000	\$59,400	\$99,000	\$198,000	\$818,400	\$746,579
	Total costs (risk-adjusted)	\$462,000	\$3,009,988	\$4,524,882	\$6,836,824	\$14,833,694	\$12,074,532

CLOUDERA DATA PLATFORM AND CLOUD COMPUTING PROVIDER FEES

Evidence and data. Interviewees shared incurring costs both from their use of Cloudera Data Platform Public Cloud and from the public cloud platform providers on which CDP Public Cloud was deployed. Cloudera’s CDP Public Cloud fees vary by service but were all charged at an hourly rate per Cloudera Compute Unit (CCU), which is a combination of compute cores and memory. Cloud platform provider or infrastructure fees vary by provider and by the number of instances of CDP Public Cloud deployed on each platform.

“In our case, CDP Public Cloud was significantly cheaper than we thought. We estimated CDP alone would cost us about 40% of our cloud provider fees, but the real cost ended up being around one-ninth.”

Head of data management, technology

Modeling and assumptions. For the composite organization, Forrester assumes:

- Cloudera Data Platform Public Cloud fees of \$1,200,000 in Year 1, growing by 50% annually as usage of CDP Public Cloud grows within the organization.
- Cloud computing provider fees of over \$1.4 million in Year 1, growing at the same rate as the CDP Public Cloud fees.

Risks. The cost of Cloudera Data Platform Public Cloud and cloud computing provider fees will vary with:

- The total number of workloads needed for data analytics work annually.
- The rate of consumption growth for data analytics.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of over \$11.3 million.

Cloudera Data Platform And Cloud Computing Provider Fees

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
F1	Cloudera fees	Composite		\$1,200,000	\$1,800,000	\$2,700,000
F2	Cloud computing provider fees	Composite		\$1,482,353	\$2,223,529	\$3,335,294
Ft	Cloudera Data Platform and cloud computing provider fees	F1+F2	\$0	\$2,682,353	\$4,023,529	\$6,035,294
	Risk adjustment	↑10%				
Ftr	Cloudera Data Platform and cloud computing provider fees (risk-adjusted)		\$0	\$2,950,588	\$4,425,882	\$6,638,824
Three-year total: \$14,015,294			Three-year present value: \$11,327,953			

COSTS OF DEPLOYMENT AND ONGOING MANAGEMENT

Evidence and data. Interviewees’ organizations also experienced costs associated with the deployment and ongoing management of Cloudera Data Platform Public Cloud. Interviewees noted various steps to their deployment process, including:

- Surveying organizationwide data.
- Taking inventory across different data sources to understand organizational data volumes.
- Designing the foundational part of the CDP Public Cloud platform to handle processing of analytic, transactional, and machine-learning workloads.
- Setting up the development environment.
- Building data pipelines.
- Refining use cases and gaining understanding of the data needed to support these use cases.
- Establishing the consumption layer of the data lake.
- Creating and hardening the user experience.
- Bringing the platform into production.

- Setting up monitoring of the platform.
- User management, including onboarding, creating groups, and applying governance models to users and groups of users.

“Without knowing anything, it took me only 1.5 months to implement the main part of the architecture of Cloudera Data Platform Public Cloud.”

Head of data management, technology

Interviewees estimated spending between six months and one year implementing and deploying CDP Public Cloud. Resource requirements for this process ranged from a total of four to six employees.

In terms of ongoing management, interviewees noted needing between one and six FTEs on an ongoing basis.

Modeling and assumptions. For the composite organization, Forrester assumes:

- A seven-month deployment process requiring six FTEs at a fully burdened hourly rate of \$60.
- For ongoing management, 0.5 IT FTEs are needed in Year 1, 0.8 in Year 2, and 1.5 in Year 3.
- The fully burdened annual rate for an IT FTE is \$120,000.

- The amount of compute needed and the corresponding IT FTEs needed to manage Cloudera Data Platform Public Cloud workloads on an ongoing basis.
- The fully burdened cost of FTEs managing Cloudera Data Platform Public Cloud.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of over \$740,000.

Risks. The costs of deployment and ongoing management will vary with:

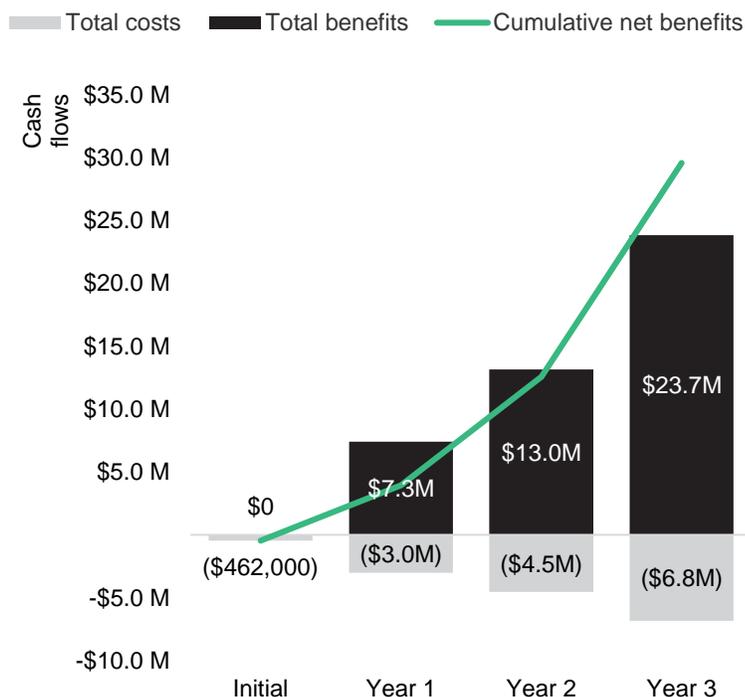
- The number of FTEs needed for deployment and their fully burdened rates.

Costs Of Deployment And Ongoing Management						
Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
G1	FTEs needed for deployment	Interviews	6			
G2	Hours needed to deployment	Interviews; 7 months	1,167			
G3	Fully burdened hourly rate per deployment FTE	A6	\$60			
G4	IT professionals needed for ongoing management	Interviews; $E2 * E5 * 0.5 / 2000$		0.5	0.8	1.5
G5	Fully burdened annual rate per management FTE	Composite		\$120,000	\$120,000	\$120,000
Gt	Costs of deployment and ongoing management	$(G1 * G2 * G3) + (G4 * G5)$	\$420,000	\$54,000	\$90,000	\$180,000
	Risk adjustment	↑10%				
Gtr	Costs of deployment and ongoing management (risk-adjusted)		\$462,000	\$59,400	\$99,000	\$198,000
Three-year total: \$818,400			Three-year present value: \$746,579			

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



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

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

Cash Flow Analysis (Risk-Adjusted Estimates)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	(\$462,000)	(\$3,009,988)	(\$4,524,882)	(\$6,836,824)	(\$14,833,694)	(\$12,074,532)
Total benefits	\$0	\$7,410,092	\$13,163,309	\$23,851,306	\$44,424,707	\$35,535,054
Net benefits	(\$462,000)	\$4,400,104	\$8,638,427	\$17,014,482	\$29,591,013	\$23,460,522
ROI						194%
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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