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The Total Economic Impact™ Of IBM Data Management
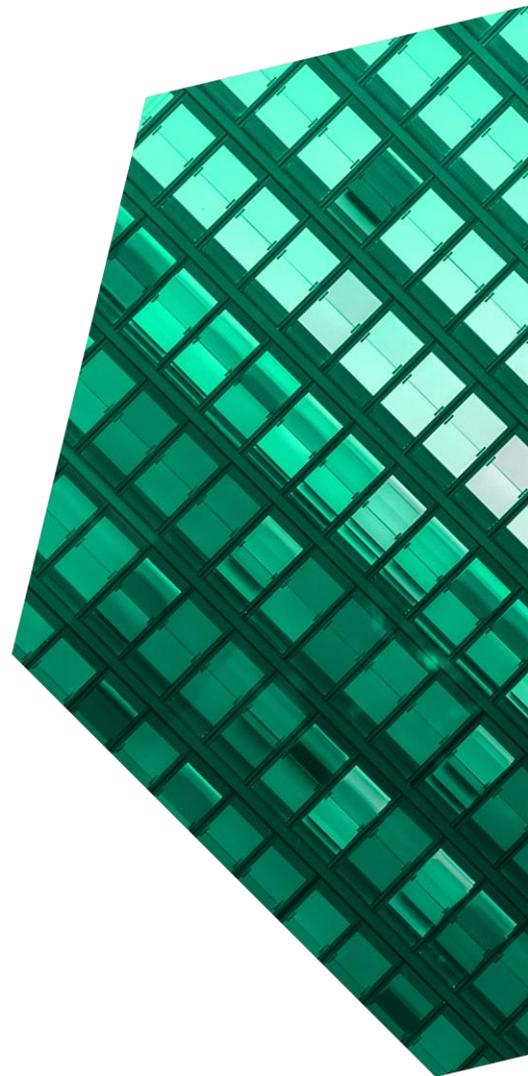
Improved Customer Experience And Operational Efficiency Enabled By IBM Data Management

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Executive Summary

IBM Data Management accelerates time-to-value through end-to-end management of transactional, operational, and analytical data across any cloud. Customers deploying the IBM solutions observed increased revenues from improved customer experience and retention; increased productivity of data stakeholders; and a variety of operational efficiencies driven by enhanced resiliency and faster insights on management practices for inventory, supply chain, cash flow, data center costs, and compliance programs.

IBM Data Management unifies end-to-end enterprise management of transactional, operational, and analytical data and provides comprehensive data management capabilities while promoting automation of governance, risk, and compliance tasks. The solutions help organizations know, trust, enrich, and use data to drive better outcomes with operations, analytics, and artificial intelligence (AI) initiatives. IBM Data Management also empowers businesses to improve database management and facilitates data operations (DataOps) to automate the design, deployment, and delivery of data with a data fabric. The portfolio of solutions includes IBM Db2; Netezza; Informix; DataStage; Master Data Management; Watson Knowledge Catalog; Watson Query; Data Virtualization; IBM partner solutions such as Cloudera, MongoDB, EDB, DataStax, SingleStore, and IBM Streams; and other data management capabilities with IBM Cloud Pak for Data and associated Cartridges.

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

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed four representatives with experience using IBM Data Management. For the purposes of this study, Forrester aggregated the interviewees' experiences

KEY STATISTICS

Return on investment (ROI)
241%

Payback
<6 months

Benefits PV
$3.43M

Net present value (NPV)
$2.42M
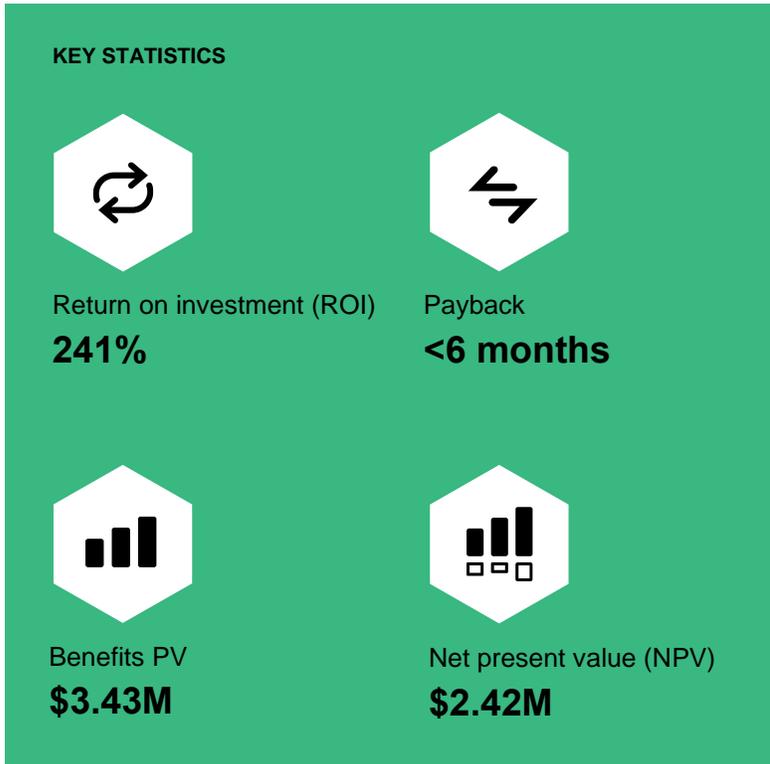
and combined the results into a single composite organization.

These interviewees noted how, prior to using IBM Data Management, their organizations faced mounting challenges with finding a data solution that could be implemented amid broader technological transformations and a rapid increase in the volume and types of data they needed to manage. Interviewees also described a need to find value in the increased volume and variety of data, which was further complicated by regulatory demands to demonstrate explicit adherence to requirements.

After the investment in IBM Data Management, the interviewees observed augmentations in operational and analytical capabilities that increased revenues through improved customer experience and retention, increased the productivity of data stakeholders, and drove a variety of operational efficiencies related to management practices for inventory, supply chain, cash flow, data center costs, and compliance programs.

KEY FINDINGS

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

- **Reduced customer churn worth $1.1 million.** The resiliency of IBM Data Management solutions improved system performance and disaster recovery metrics, boosting customer retention and resulting in additional revenue.

- **Increased productivity of data stakeholders by $882,000.** AI-powered automation and simplification of data-related tasks improved data stakeholders' productivity.

- **Increased revenue from improved customer experience worth $671,000.** Better data management empowered organizations to improve customer experience, generating additional revenues from new customers.

- **Increased operational efficiencies worth $473,000.** IBM Data Management helps organizations drive improvements in inventory and supply chain management, cash flow practices, and data center costs for increased operational efficiencies.

- **Accelerated compliance efforts worth $320,000.** Efforts needed to comply with global privacy standards and other regulations are accelerated with IBM Data Management.

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

- **Expanded opportunity for innovation.** Less time spent on collecting, validating, and preparing data for analysis and compliance activities leaves more time to focus on customer needs and foster innovation across the enterprise.

- **Mitigated compliance, governance, and security risks.** End-to-end data lifecycle management and other features mitigated compliance, security, and governance risks.

  Access to IBM support and broader data ecosystems. IBM offers broad support and expertise through its partner network to ensure successful implementation of use cases covering numerous open source and third-party tools, reducing the time and cost that would be needed in multivendor arrangements.

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

- **License, support, and professional services.** Fees paid to IBM and its partners total $325,000 over three years.

- **Internal implementation and operation costs.** Internal efforts to implement and provide ongoing support for the solutions total $682,000 over three years.

The representative interviews and financial analysis found that a composite organization experiences benefits of $3.43 million over three years versus costs of $1.01 million, adding up to a net present value (NPV) of $2.42 million and an ROI of 241%.

Benefits (Three-Year)

Higher growth through better customer experience
$1.76M

Automation-driven productivity gains
$1.20M

Data-driven operational improvements
$473K

"**The Net Promoter Score increased by 0.6, [which equates] to an increase in [total] customer lifetime value by about $120 million.**"

— Director of enterprise architecture, financial services

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 IBM Data Management.

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 IBM Data Management can have on an organization.

DISCLOSURES

Readers should be aware of the following:

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

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

IBM reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.

IBM did not participate in the interviews.

DUE DILIGENCE
Interviewed IBM stakeholders and Forrester analysts to gather data relative to IBM Data Management.

INTERVIEWS
Interviewed four representatives at organizations using IBM Data Management to obtain data with respect to costs, benefits, and risks.

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

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

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

Interviews			
Role	**Sector**	**Annual Revenue**	**Employees**
Director of technology	Weather	$150 million	550
Director of enterprise architecture	Financial services	$5 billion	3,600
Director of data management and controls	Energy	$19 billion	23,000
Program manager	Automotive	>$100 billion	>150,000

KEY CHALLENGES

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

- **Managing a hybrid data footprint with rapid expansion of data types and volume.** The interviewees discussed plans for migrating hybrid data footprints to the cloud and dealing with the growth of data types and volumes being ingested and used for analysis. The director of enterprise architecture at a financial services organization said: "The biggest challenges that existed were related to the variety of data. … We started to get a lot of different kinds of data in different structures."

  The director of technology at a weather organization said: "My IT group supports about 60 billion to 80 billion requests and hundreds of apps. … We do a lot of business analysis from my own business but a lot for customers … [that] want us to analyze sales data and other data with the weather data."

- **Implementing a data management solution that can grow and adapt with broader technological transformations.** The interviewees described the need for a solution in the context of broader technological transformations and the need for a dynamic solution that works now and will work as their organizations change. The director of enterprise architecture at a financial services organization said: "Part of this transformation is a deeper look at the data platform used across the enterprise. There are different initiatives — one is related to creating a clean and well-defined data management strategy. Then we have ingestion, obfuscation, and securing the data properly. We have elements related to robotic process automation and logging of the data across the enterprise. [And] we have analytics components, and this includes fast analytics such as machine learning [and] recognition of documents."

- **Managing regulatory and compliance risk.** The director of enterprise architecture at a financial services organization said: "The bank has ... grown very fast … and it's expected to grow equally as fast within the next several years. … It's going to be under increased scrutiny from government regulators around the globe."

COMPOSITE ORGANIZATION

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

composite organization has the following characteristics:

Description of composite. The composite organization was constructed using characteristics of four interviewed IBM Data Management customers. The composite organization is a global enterprise with $2 billion in annual revenue and 8,000 employees. It has five separate large-scale data stores located in different countries and employs five data scientists who use various data analytical tools.

Deployment characteristics. The composite organization uses a variety of databases and related technologies including IBM Db2, IBM Netezza, Cloudera, MongoDB, EDB PostgreSQL, and other third-party tools. This organization also intends to balance investments in open source and third-party proprietary tools across multiple clouds, including private cloud and on-premises deployments.

Key Assumptions

- **Global organization**
- **$2 billion annual revenue**
- **8,000 employees**
- **5 large-scale data stores**

"[IBM Data Management] comes with native features that make it very easy to prove to regulators that a process is enforced. … It has increased our ability to avoid regulatory scrutiny [and] allows us to focus on our business needs."

— Director of enterprise architecture, financial services

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 customer churn from improved disaster recovery	$225,000	$450,000	$675,000	$1,350,000	$1,083,584
Btr	Increased productivity	$354,791	$354,791	$354,791	$1,064,374	$882,313
Ctr	Increased revenue from improved customer experience	$270,000	$270,000	$270,000	$810,000	$671,450
Dtr	Increased operational efficiencies	$190,000	$190,000	$190,000	$570,000	$472,502
Etr	Accelerated compliance efforts	$128,700	$128,700	$128,700	$386,100	$320,058
	Total benefits (risk-adjusted)	$1,168,491	$1,393,491	$1,618,491	$4,180,474	$3,429,907

REDUCED CUSTOMER CHURN FROM IMPROVED DISASTER RECOVERY

Evidence and data. Interviewees explained how IBM Data Management improved the resiliency and availability of systems, leading to improved disaster recovery and a reduction of the recovery point objective (RPO). These improvements have a positive impact on customer experience and are credited for a reduction in customer churn.

> **"The RPO with IBM has decreased by 50%. … If [a disruption] happens at a critical time … and I couldn't recover within 30 minutes, I could lose 200 customers, and the customer lifetime value would be at least $1 million."**
>
> *Director of enterprise architecture, financial services*

Modeling and assumptions. Forrester assumes the following to quantify this benefit:

- The composite analysis reduces RPO by 50% and avoids losing 100 customers per year.

- The annual profit per customer is $5,000.

- Fifty percent of this benefit is attributed to IBM Data Management solutions.

Risks. The ability of organizations to reduce customer churn from improving disaster recovery metrics can vary due to differences in:

- Disaster recovery abilities with legacy solutions.

- The relationship between disaster recovery abilities and customer experience.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $1.1 million.

Reduced Customer Churn From Improved Disaster Recovery

Ref.	Metric	Source	Year 1	Year 2	Year 3
A1	Cumulative customer loss avoided from 50% reduction in RPO	Interviews	100	200	300
A2	Annual profit per customer	Composite	$5,000	$5,000	$5,000
A3	Portion of benefit attributed to IBM Data Management	Interviews	50%	50%	50%
At	Reduced customer churn from improved disaster recovery	A1*A2*A3	$250,000	$500,000	$750,000
	Risk adjustment	↓10%			
Atr	Reduced customer churn from improved disaster recovery (risk-adjusted)		$225,000	$450,000	$675,000
	Three-year total: $1,350,000		**Three-year present value: $1,083,584**		

INCREASED PRODUCTIVITY

Evidence and data. IBM Data Management reduces the level of effort from IT and data personnel on a number of tasks needed to provide data in an accessible and useful format, such as managing distributed data stores, collecting and consolidating data from different sources, and the validation and cataloging of data sets. DataOps capabilities such as master data management, data virtualization, and data quality are used for AI engineering with DevOps and ModelOps to drive higher productivity.

- The director of enterprise architecture at a financial services organization said: "Database admins [DBAs] now don't have to spend so much time managing the database engines because Db2 has a lot of self-healing and self-management capabilities. The database management [staffing need] has decreased compared to before. We saved two DBAs because of this."

  The director of enterprise architecture continued: "Data analysts don't have to spend so much time questioning whether the data is accurate or not. It used to be a significant amount of time they would [need to validate] the data. Now, they don't have to do that because [IBM] Master Data Management … explains the data sufficiently well that they don't have to waste time doing data preparation and questioning."

- When asked if the weather organization has been able to democratize data analysis activities, the director of technology said: "Yes, for sure. Now, even sales and marketing can write their own data analysis query. It has lifted the shift. I would say it's probably saved $500,000 in employee costs in my AI team. … Now, my weather, sales, and marketing teams make more inquiries themselves instead of having to get the AI or data scientists team involved. My AI data team can concentrate on internal software products and customer products. … We gain a lot — at least two or three people managers a year."

> **"Before, my AI and data scientist would clean [data sets] manually or using a data cleanse program. [IBM Data Management] does help save about 70% from manually or semi-manual [tasks previously needed]."**
>
> *Director of technology, weather*

Modeling and assumptions. Forrester assumes the following to quantify this benefit:

- Two DBAs are reallocated to other value-added tasks.

- The fully burdened annual salary of a DBA is $121,000.

- Three data stewards increase productivity by 15%.

- The fully burdened annual salary of a data steward is $121,000.

- Five data scientists increase productivity by 15%.

- The fully burdened annual salary of a data scientist is $198,000.

- Data stewards utilize 75% of the time saved for value-added tasks.

Risks. The ability of organizations to increase productivity can vary due to differences in:

- The size and complexity of legacy environments.

- The availability of other value-added tasks for data personnel.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $882,000.

	Increased Productivity				
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
B1	Reallocated DBAs	Interviews	2	2	2
B2	Fully burdened annual salary of DBA	TEI standard	$121,000	$121,000	$121,000
B3	Data steward productivity gain	Interviews	15%	15%	15%
B4	Number of data stewards	Composite	3	3	3
B5	Fully burdened annual salary of data steward	TEI standard	$121,000	$121,000	$121,000
B6	Data scientist productivity gain	Interviews	15%	15%	15%
B7	Number of data scientists	Composite	5	5	5
B8	Fully burdened annual salary of data scientist	TEI standard	$198,000	$198,000	$198,000
B9	Productivity recapture	TEI standard	75%	75%	75%
Bt	Increased productivity	(B1*B2)+(B3*B4*B5*B9)+ (B6*B7*B8*B9)	$394,213	$394,213	$394,213
	Risk adjustment	↓10%			
Btr	Increased productivity (risk-adjusted)		$354,791	$354,791	$354,791
	Three-year total: $1,064,374		**Three-year present value: $882,313**		

INCREASED REVENUE FROM IMPROVED CUSTOMER EXPERIENCE

Evidence and data. IBM Data Management helps organizations maintain transactional and operational data integrity and provide timely data and analytics. The IBM solutions maintain a record of data moving through pipelines and simplify the process of storing data for analytics within a unified environment. Businesses gain a better understanding of customer needs and can provide an improved, timely customer experience at scale, leading to increased revenues.

- The director of enterprise architecture at a financial services organization said: "One way the machine learning helped increase business value to our clients is that it helped speed up document inspection for client onboarding. … It used to be hours and days to do this. Now, you can do it within minutes using other data, so I can onboard a customer very quickly within minutes without decreasing or increasing the risk profile of the institution.

  "[Another] way to look at it is [the] increased speed with which we respond to customer service queries. It used to be that you send a message, you will wait for an answer. Now, once you send a message, depending on who you are, we have a probabilistic approach that tells us what is the most likely question that you're going to ask, how to send you a reply, [and] other

questions that we can anticipate. Now we're increasing customer satisfaction in Net Promoter Score^{SM} [NPS], which actually impacts the customer lifetime value.[2]

"The Net Promoter Score increased by 0.6. An increase of 1 in Net Promoter Score brings an additional 200 customers to the bank. The customer lifetime value could be $1 million, so for the 0.6 increase, you could say that it contributed to increase in the customer lifetime value by about $120 million."

Modeling and assumptions. Forrester assumes the following to quantify this benefit:

- The composite organization increases its NPS by 0.6 in Year 1.

- A 0.1 increase in NPS results in 20 new customers.

- Annual profit per customer is $5,000.

- Fifty percent of this benefit is attributed to IBM Data Management.

Risks. The ability of organizations to increase revenue from improved customer experience can vary due to differences in the correlation between NPS and addition of new customers.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $671,000

Increased Revenue From Improved Customer Experience					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
C1	Increase in NPS	Interviews	0.6		
C2	Customers added per 0.1 increase in NPS	Interviews	20		
C3	Subtotal: cumulative customers added	C1*C2	120	120	120
C4	Annual profit per customer	Composite	$5,000	$5,000	$5,000
C5	Portion of benefit attributed to IBM Data Management	Interviews	50%	50%	50%
Ct	Increased revenue from improved customer experience	C3*C4*C5	$300,000	$300,000	$300,000
	Risk adjustment	↓10%			
Ctr	Increased revenue from improved customer experience (risk-adjusted)		$270,000	$270,000	$270,000
Three-year total: $810,000			**Three-year present value: $671,450**		

INCREASED OPERATIONAL EFFICIENCIES

Evidence and data. Improved data integration, automation, transparency, and governance empowers organizations to democratize data and AI with self-service capabilities, accelerate time to value, and achieve a variety of operational efficiencies that were not previously recognized.

- The program manager at an automotive organization said: "We maintain inventory at different plants. … We did an analysis [after asking], what if we only store inventory for 15 days [versus 30 days]? What is the risk involved in that, and what's the benefit and cost [associated] with it? …That ended up saving us millions of dollars every year in costs.

  "Parts that have been replaced [become] obsolete. … After a certain time, they had to go in there to clear their inventory and they would end up basically selling those for scrap. We created a report to find out what [were the] obsolete parts and where they can be used. Sometimes we can put those parts for sale, [but] if somebody is looking for a part and they're sitting in a plant,

nobody knew about it. … That ended up saving us just on the first day … $1 million. … It took us literally like two weeks to do that."

- The program manager described another program that resulted in more savings: "When you request the parts [for a car build], they come in a kit with 10 [pieces], and if you're building 10 cars, that's good. … Every now and then, the cars you're building were not multiples of 10. … We [wrote] a program so that they're not stuck with the fixed 10 size limit. [Our analysis showed a savings of] $1.5 million … on that project."

- The program manager described another example of how his organization leveraged IBM Data Management to facilitate improved cash flow management by providing data that provided valuable insights on the organization's currency management practices. He said: "We have suppliers all over the world, and we were paying them all in dollars. We did an analysis and discovered [that] if we paid them in the local currency, we can save a lot of money because the dollar was so strong at the time. It was

$52 million annual savings alone by just implementing that one change."

- The interviewees discussed other examples of operational efficiencies. The director of technology at a weather organization said: "One of the things we like about IBM Db2, especially with it being container-based and keeping the data in-house, [is that] I don't have to shift [data and data stores] from multiple locations. I can reduce my data warehouse … and the architecture, [which] will really reduce my costs. … [Not only] the time spent but also the cost when I run some amount of data moving it from one platform to an app. … Once you're moving data and analyzing it, especially with [the] AI team, machine learning, and [the sales team] analyze all the customer data, you will probably save $1 million to $2 million a year [through avoided] data migration costs, acquiring a little bit less public cloud, … [and] consolidating data lakes [and warehouses] across my whole team."

- The director of enterprise architecture at a financial services organization said: "The aggregation engine has decreased the demands on the network. It's highly optimized from a hardware perspective, so we don't have to spend a significant amount of time optimizing the hardware. It's self-optimizing. It has taken off pressure from our internal teams to not focus on those things. I would estimate that saves about 10% overall, but certainly, it could be even more because it provided [us] with a facility, for instance, to offload the data that's not needed, much easier. It allows us to leverage the same hardware in multiple ways with a virtualization layer."

Modeling and assumptions. Forrester assumes the following to quantify this benefit:

- Improvements made to inventory management practices save $125,000 per year.

- Improvements to supply chain management practices save $75,000 per year.

- Other improvements in data center costs, cash flow, or currency management practices save $275,000 per year.

- Fifty percent of this benefit is attributed to IBM Data Management.

> **"Every time they were looking for an obsolete part, they can go run the report [created with IBM Data Management] and … instead of ordering the part again from the supplier … now they can just ship it from one plant to another plant. … [Over] three years, [it] was over $2,500,000 that they have saved using that one report."**
>
> *Program manager, automotive*

Risks. The ability of organizations to realize this benefit can vary due to differences in the efficiency of standard inventory, supply chain, and other practices with legacy solutions.

Results. To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV of $473,000.

Increased Operational Efficiencies

Ref.	Metric	Source	Year 1	Year 2	Year 3
D1	Savings from improved inventory management	Interviews	$125,000	$125,000	$125,000
D2	Savings from improved supply chain management	Interviews	$75,000	$75,000	$75,000
D3	Savings from other operational efficiencies	Interviews	$275,000	$275,000	$275,000
D4	Portion of benefit attributed to IBM Data Management	Interviews	50%	50%	50%
Dt	Increased operational efficiencies	(D1+D2+D3)*D4	$237,500	$237,500	$237,500
	Risk adjustment	↓20%			
Dtr	Increased operational efficiencies (risk-adjusted)		$190,000	$190,000	$190,000
	Three-year total: $570,000		**Three-year present value: $472,502**		

ACCELERATED COMPLIANCE EFFORTS

Evidence and data. IBM Data Management enhances data governance, expediting efforts related to managing regulatory compliance and other risks.

- The director of technology at a weather organization said: "[We] combine IBM Master Data Management with Db2 to get [our data] secure [and achieve a] governance and master data solution. It's definitely improved that [compared to the] four or five vendors [previously used for] governance and data processes. It has improved achieving GDPR and CCPA by at least two to three months and the Brazilian data protection, LGPD, by probably five to six months, as well as the upcoming Australian and Japanese data privacy standards."

- When asked about the effort needed for compliance tasks prior to IBM Data Management, the director of technology said: "[It takes] usually one to two people. … Db2 has the best policy management. … Db2 really helps you holistically get together all your policy controls."

Modeling and assumptions. Forrester assumes the following to quantify this benefit:

- Compliance efforts are accelerated by six months for two compliance managers.

- The fully burdened annual salary of a compliance manager is $143,000.

Risks. The ability of organizations to accelerate compliance efforts can vary due to differences in:

- The volume and nature of data subject to compliance requirements.

- The level of effort required to achieve compliance under legacy solutions.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $320,000

Accelerated Compliance Efforts					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
E1	Acceleration of compliance efforts (years)	Interviews	0.50	0.50	0.50
E2	FTEs managing compliance efforts	Interviews	2	2	2
E3	Fully burdened annual salary of compliance manager	TEI standard	$143,000	$143,000	$143,000
Et	Accelerated compliance efforts	E1*E2*E3	$143,000	$143,000	$143,000
	Risk adjustment	↓10%			
Etr	Accelerated compliance efforts (risk-adjusted)		$128,700	$128,700	$128,700
	Three-year total: $386,100		**Three-year present value: $320,058**		

UNQUANTIFIED BENEFITS

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

- **Expanded opportunity for innovation.** Simplifying data management practices and increasing the productivity of data stakeholders puts organizations in a position to foster innovation and focus on customers rather than administrative and compliance tasks.

- **Mitigated compliance, governance, and security risks.** Automatic capture of data and metadata along with end-to-end data lifecycle management help detect and mitigate areas of risk exposure, with growing data use and regulatory requirements expected in the future.

- **Access to IBM support and broader data ecosystems.** Businesses using a diverse set of open source and third-party propriety data management tools and can leverage IBM and its partner network to procure licensing, support, and assistance with deploying these tools, saving the time and cost of multivendor maintenance costs for open source and other third-party tools like Cloudera, MongoDB, EDB PostgreSQL, DataStax, and SingleStore.

> **"Db2 scales up and down with our business. It's very easy to create or destroy databases and allocate and de-allocate memory. This has increased the ability to experiment and innovate, and our teams don't have a fear that it's going to take a long time before benefits could be visible."**
>
> *Director of enterprise architecture, financial services*

FLEXIBILITY

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

- **Leverage non-OEM hardware and extend purchase cycles.** The director of enterprise architecture at a financial services organization said: "[IBM Data Management] has actually allowed us to delay the buying cycle by a year.

We used to look at hardware every four years. Now, we can do this every five years because we can continue to leverage non-OEM hardware, which is a lot cheaper."

- **Harness multicloud data and AI portability.** IBM Data Management can be deployed on any cloud including private, public, on-premises, and hybrid clouds from IBM and non-IBM vendors alike. Organizations can start with legacy cloud solutions and move to others as business demands change.

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

Analysis Of Costs

Quantified cost data as applied to the composite

Total Costs

Ref.	Cost	Initial	Year 1	Year 2	Year 3	Total	Present Value
Ftr	License, support, and professional service costs	$231,000	$37,800	$37,800	$37,800	$344,400	$325,003
Gtr	Internal implementation and operation costs	$58,870	$250,688	$250,688	$250,688	$810,933	$682,293
	Total costs (risk-adjusted)	$289,870	$288,488	$288,488	$288,488	$1,155,333	$1,007,296

LICENSE, SUPPORT, AND PROFESSIONAL SERVICES COSTS

Evidence and data. Interviewees mentioned licensing, ongoing support, and professional services costs that were incurred to implement IBM Data Management. Estimates provided by the interviewees include license and support fees ranging from $50,000 to $100,000 per year and professional services costs of less than $50,000. IBM corroborated these estimates and provided a cost estimate for the composite organization.

Modeling and assumptions. Forrester assumes the following to quantify this cost:

- Initial licensing costs $180,000.

- Ongoing IBM support of the deployed solutions costs $36,000 per year.

- Professional services from an IBM partner to assist with the deployment costs $40,000.

Risks. The cost of license, support, and professional services can vary across organizations due to differences in the IBM Data Management solutions deployed, the size and complexity of legacy environments, and potential discounts based on vendor.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $325,000.

License, Support, And Professional Services Costs

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
F1	IBM license	Interviews	$180,000			
F2	Ongoing support	Interviews		$36,000	$36,000	$36,000
F3	Professional services	Interviews	$40,000			
Ft	License, support, and professional services costs	F1+F2+F3	$220,000	$36,000	$36,000	$36,000
	Risk adjustment	↑5%				
Ftr	License, support, and professional services costs (risk-adjusted)		$231,000	$37,800	$37,800	$37,800
	Three-year total: $344,400			**Three-year present value: $325,003**		

INTERNAL IMPLEMENTATION AND OPERATION COSTS

Evidence and data. Interviewees described other costs related to internal efforts to implement the IBM Data Management solutions, train personnel, support use cases, and add hardware to optimize deployment.

Modeling and assumptions. Forrester assumes the following to quantify this cost:

- Two IT FTEs spend two months implementing the solutions.

- The fully burdened annual salary of an IT FTE is $134,000.

- Five data scientists receive three days (or 24 hours) of training on the solutions.

- The fully burdened hourly salary of a data scientist is $95.

- One data engineer spends one-quarter of their time maintaining metadata for the solutions.

- The fully burdened annual salary of a data engineer is $155,000.

- A one-time investment of $200,000 is made toward hardware to optimize the deployment of the solutions.

Risks. The cost of internal efforts toward implementation and operation can vary across organizations due to differences in the IBM Data Management solutions deployed, the size and complexity of legacy environments, and the experience and skill set of internal staff.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of $682,000.

Internal Implementation And Operation Costs

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
G1	Internal IT FTEs for implementation	Interviews	2			
G2	Implementation time (months)	Interviews	2			
G3	Fully burdened annual salary of IT FTE	TEI standard	$134,000			
G4	Data scientists	Composite	5			
G5	Training for data scientists (hours)	Interviews	24			
G6	Fully burdened hourly salary of data scientist	TEI standard	$95			
G7	Data engineers to maintain metadata	Interviews		0.25	0.25	0.25
G8	Fully burdened annual salary of data engineer	TEI standard		$155,000	$155,000	$155,000
G9	Hardware costs (including operations and maintenance)	Interviews		$200,000	$200,000	$200,000
Gt	Internal implementation and operation costs	(G1*G2/12*G3)+(G4*G5*G6)+(G7*G8)+G9	$56,067	$238,750	$238,750	$238,750
	Risk adjustment	↑5%				
Gtr	Internal implementation and operation costs (risk-adjusted)		$58,870	$250,688	$250,688	$250,688
Three-year total: $810,933			**Three-year present value: $682,293**			

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

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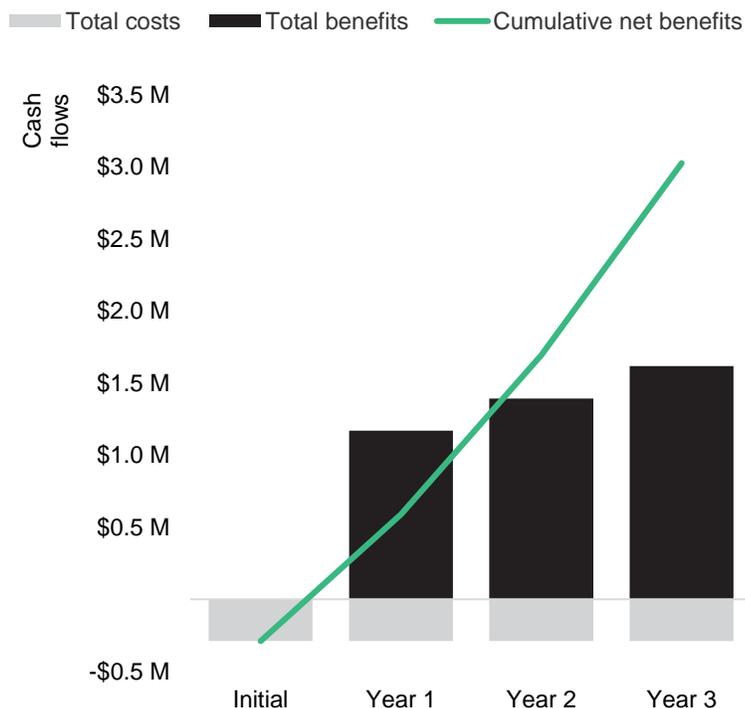
The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

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	($289,870)	($288,488)	($288,488)	($288,488)	($1,155,333)	($1,007,296)
Total benefits	$0	$1,168,491	$1,393,491	$1,618,491	$4,180,474	$3,429,907
Net benefits	($289,870)	$880,004	$1,105,004	$1,330,004	$3,025,141	$2,422,611
ROI						241%
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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