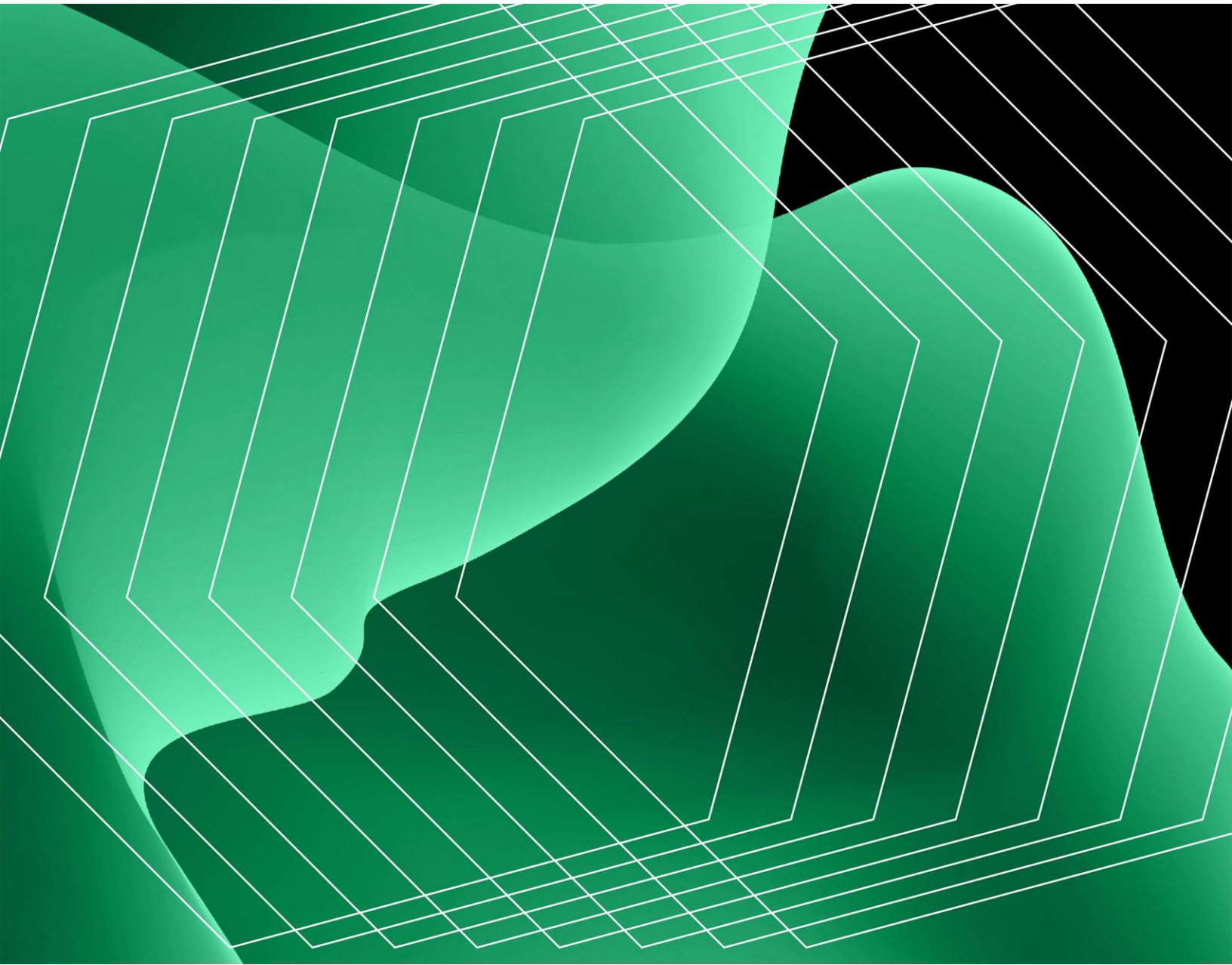
FORRESTER®

The Total Economic Impact™ Of IBM Consulting for Hybrid Cloud Services

Cost Savings And Business Benefits Enabled By IBM Consulting for Hybrid Cloud Services

A FORRESTER TOTAL ECONOMIC IMPACT STUDY
COMMISSIONED BY IBM CONSULTING, JUNE 2024



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ABOUT FORRESTER CONSULTING

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

Executive Summary

More and more organizations are adopting a hybrid cloud strategy and need to manage this complicated reality with centralized visibility. On average, cloud decision-makers spend $33 million per year on cloud.[1] The transition they often go through is a difficult task fraught with building net-new applications, replacing platforms with software as a service (SaaS), as well as some combination of modernization and migration work – all enormous endeavors.

IBM Consulting supports enterprises trying to adapt and configure their core competencies with technologies that can capitalize on market opportunities faster. IBM Consulting provides the right people, methods, tools, and expertise to help these enterprises define and execute the best hybrid cloud strategy to support their business objectives. Area offerings, supported by IBM Consulting Cloud Accelerator, include: (1) cloud strategy, (2) application migration and modernization, and (3) cloud application development.

IBM commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential benefits enterprises may realize by working with IBM Consulting on their hybrid cloud environment.[2] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of IBM Consulting for hybrid cloud related projects on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed four representatives with experience working with IBM Consulting for their hybrid cloud projects. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single composite organization with global presence, $2 billion in annual revenue, and 25,000 in total employees. Their environment involves managing anywhere from 2000 to 5000 applications a year, which they are now looking to modernize and migrate some applications to the cloud.

Speed to market related to application modernization

20-50%

Efficiency gain in application management

50%

Reduction in system downtime

70-90%

Cost savings from retiring on-premise infrastructure

$3M

Interviewees shared their interest in a hybrid cloud environment due to wanting the benefits and efficiency provided by moving select applications from on-premise to the cloud environment, while understanding that for a multitude of security and practicality reasons, not all applications should be migrated. Even for organizations where it might make sense to migrate their entire application portfolio to cloud, the migration process could not happen instantly. During that migration period, these organizations have to manage a hybrid environment, which posed challenges, especially for those with limited experience around cloud environment. Some of the challenges include downtime and system unreliability, difficulty in scaling, as well as multiple operational inefficiencies causing a slower time to value for their applications.

After the investment in IBM Consulting for Hybrid Cloud Services, the interviewees noted benefiting from IBM's access to expertise, familiarity with industry best practices around the globe, and its flexible workforce. Key results from the investment include efficiency gains related to application management, modernization, cloud migration, and overall better system availability.

KEY FINDINGS

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

- **20-50% faster speed to market related to application modernization.** The knowledge sharing and expertise provided by IBM Consulting allows the composite organization to improve their technical capabilities related to application modernization projects. This enables the organization to complete projects quicker and thus realize faster time to value. This improved agility is worth close to $2.4 million to the composite organization over three years.

- **Over $4 million in cost savings from retiring on-premise infrastructure.** Part of the IBM Consulting scope of work is assisting the composite organization in migrating a percentage of its applications to the cloud. This can help them realize cost savings related to being able to retire physical data centers along with the maintenance effort around it. Over three years, this cost savings is worth over $4 million to the composite organization.
- **80-95% reduction in system downtime.** The expertise shared by IBM Consulting as well as having IBM manage parts of their application also helps ensure better system stability and reliability. This reduces downtime, which in turn improves end user productivity. Over three years, the business value and productivity gain related to this system availability improvement is worth more than $16 million to the composite organization.
- **75% efficiency gain from using IBM Consulting as a managed service related to application management.** Having IBM be their managed service provider frees up time for their staff who were previously managing these applications. Now, these employees have time that can be repurposed for other things. Over three years, the efficiency gain is worth $6.7 million to the composite organization.

Total benefits realized by the composite organization after three years of working with IBM Consulting for Hybrid Cloud Services

$29 million

> “IBM Consulting helps [our organization] enter the next phase of our sustainable transformation with cloud and intelligent workflows. They give us access to talented people [and] they commit to driving outcomes.”
>
> **PORTFOLIO DIRECTOR, UTILITY**

Unquantified benefits. Benefits that provide value for the composite organization but are not quantified for this study include:

- **Knowledge, expertise, and best practices related to data models, architecture, and overall hybrid cloud strategy.** Building and managing a hybrid cloud environment is a massive and transformative task for any implementing organization. The partnership from IBM Consulting ensures that the composite organization has a clear pathway on how to plan and execute this transformation, and provides the dedicated expertise needed when faced with unexpected issues.
- **Business innovation.** The composite organization benefits from the innovative thinking shared by the IBM Consulting team around best practices related to DevOps, infrastructure, and web application. This knowledge can then translate into adjustments to create further efficiencies, or even new product and service offerings.

> “Our IT development mode, format, and approach has changed and improved thanks to IBM. We encountered many issues during our journey, but IBM Consulting helps us solve them quicker.”
>
> HEAD OF IT, EDUCATION

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

- **Annual IBM Consulting project cost.** The composite organization pays an annual fee of $6 to 13 million for their IBM Consulting engagement. This project is a 3-year commitment, with option to extend it if needed.
- **Internal time investment related to project planning and ongoing managament.** The composite organization also had to dedicate internal staffs to set up the project, which includes defining the scope of work with IBM Consulting. Then, once the project is set up, there are a group of employees that meet with IBM consultants on an ongoing basis to track progress and make adjustments as needed.

The representative interviews and financial analysis found that a composite organization experiences benefits of $29.51M over three years versus costs of $27.16M, adding up to a net present value (NPV) of $2.35M.

> “IBM comes with a level of expertise and agile skillset where if anything in the market changes, we will be ready and know how to adapt.”
>
> CTO, FINANCIAL SERVICES

SPEED TO MARKET RELATED TO APP MODERNIZATION

20-50%

REDUCTION IN SYSTEM DOWNTIME

70-90%

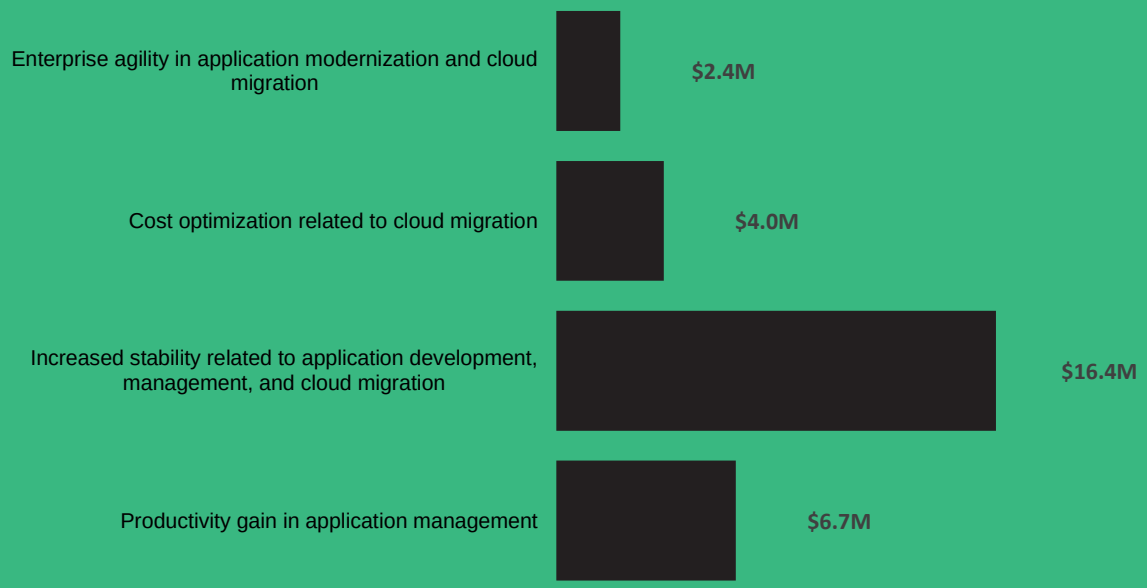
EFFICIENCY GAIN IN APP MANAGEMENT

50%

COST SAVINGS FROM RETIRING ON-PREM

$3M

Benefits (Three-Year)



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 Consulting for Hybrid Cloud Services.

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 Consulting can have on an organization.

1. **Due Dilligence**
   Interviewed IBM stakeholders and Forrester analysts to gather data relative to the value of IBM Consulting for Hybrid Cloud Services.
2. **Interviews**
   Interviewed four representatives at organizations using IBM Consulting for Hybrid Cloud Services to obtain data about costs, benefits, and risks.
3. **Composite Organization**
   Designed a composite organization based on characteristics of the interviewees' organizations.
4. **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.
5. **Case Study**
   Employed four fundamental elements of TEI in modeling the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of business value 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 IBM Consulting for Hybrid Cloud Services Customer Journey

Drivers leading to the IBM Consulting for Hybrid Cloud Services investment

Interviews			
Role	**Industry**	**Region**	**[Relevant Metric]**
CTO	Financial services	$6 billion	100,000
Portfolio director	Utility	$3 billion	4,000
Head of IT	Education	$500 million	15,000
Department head	Manufacturing	$800 million	18,000

KEY CHALLENGES

Before engaging with IBM Consulting, the interviewees' organizations were in different stages of maturity related to their cloud experience. Some interviewees had more significant exposure to cloud, dedicated significant internal resource to develop in-house technology, and had a specific purpose in mind for their engagement with IBM Consulting. For others, they were venturing into new space and therefore were looking for a partner that could guide them in navigating the cloud technology landscape.

Despite the differences in the before environments, there were common challenges that the interviewees organizations struggled with, including:

- **Limited internal technology capabilities and the need to upgrade to compete in an evolving market.** Interviewees shared that they engaged IBM Consulting because they had limited to no capability and knowledge about how to benefit from technologies like cloud, let alone how to manage the additional complexities of a hybrid cloud environment. The department head in manufacturing said: "Our internal technology capability was low, which made it

very hard to grow our business and acquire new customers. We needed help related to project management, problem and issue solving, and general additional knowledge related to how best to upgrade our cloud environment."

- **Inability of previous technology enviornment to match up with business growth.** The interviewees also shared that their technology environment was hard to scale. As their business grew, they expected their system and technology to scale with them. However, they found that various aspects of their legacy environment had issues as it tried to scale. This translated to challenges related to:
  - **System availability.** The CTO at a financial services company shared: "In our previous environment, we had issues with production. A lot of downtime was happening. We wanted to ensure 5x9 uptime with our platform. This impacts the architecture, component, code configuration, quality of code, cost optimization, and more focus on stability and scalability of the platform."
  - **Time to market.** The head of IT in education noted: "If we continued to [operate with an] on-prem [only] system, we could not [keep up to bring in] new business. Having a hybrid cloud environment increases our speed to market."
  - **Maintenance cost.** The department head at a manufacturing company noted: "With on-premises solution, our maintenance costs were high. By deciding to migrate [parts of our environment] to the cloud, we can reduce [the overall cost by being hybrid]."

INVESTMENT OBJECTIVES

The interviewees' organizations' shared different reasons pertaining to their interest in establishing a hybrid cloud environment, including:

- **Understanding not everything can and should be migrated to the cloud**. Some interviewees shared that due to factors such as data security, industry-specific compliance, or just overall complexity, it does not make sense to move everything to the cloud. The portfolio director at a utility company said: "There are benefits to cloud including flexibility and speed to deliver once you are

established, [but] cloud is not the solution to everything, so we still want to maintain an on-prem infrastructure."

- **Having a comprehensive hybrid cloud strategy to meet market demands while maintaining agility**. Other interviewees emphasized the intricate nature of cloud migration, highlighting the necessity for a well-defined strategy for the complexities of hybrid cloud environment. Even if organizations aim for a full cloud migration, the transition will not happen instantaneously. Having a strong hybrid cloud strategy ensures they are well positioned to continue serving their market, while finding opportunities to gain further efficiencies. The department head at a manufacturing company explained: "[While] we have a vision of a fully cloud-based environment, the transition will be gradual. [We must operate and manage a hybrid cloud setup] to serve our existing customers, which includes having the right hybrid cloud strategy to support our environment."

With this in mind, interviewees looked for vendor partners that has the expertise to guide them through their hybrid cloud journey and help them achieve:

- **Understanding on migration prioritization.** The interviewees also looked for partners that could provide them guidance around applications that should move to the cloud versus stay on-premise. The department head at a manufacturing company said: "IBM [Consulting] has better expertise and knowledge on cloud migration, system management, system development, among their many other technology expertises."
- **Scalability.** Given the limits of their previous technology environments, interviewees noted that being able to scale any new features and capabilities they introduce in the environment is one of the main criteria they look for. The CTO at a financial services company noted: "We wanted to leverage the resources provided by IBM Consulting because it would give us the elasticity and scalability that allows our business to expand. For example, [IBM Consulting] helped tell architectural changes to be done in our platform that can ease future load increases."
- **Speed to market.** Interviewees also shared with Forrester that speed to market was another metric they tracked, as it impacts how their business remains competitive and meet market demands. Thus, they seeked vendor partners that could effectively maximize time to value of whatever capability they help build,

without sacrificing the quality. The portfolio director at a utility company explained: "We had extremely aggressive and tight timelines around delivering major parts of the migration."

Percentage of enterprise's application budget spent on average to develop and maintain on-premises enterprise business systems

32%[3]

"Since this project relates to our core system, our hybrid cloud project cannot fail. We valued IBM [Consulting]'s expertise, track record, business logic, and ability to understand our business."

HEAD OF IT, EDUCATION

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and a business value 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. A global organization with $2 billion in annual revenue and 25,000 employees. The organization manages 2,000 to 5,000 applications all in an on-premise environment. This includes five data centers with five staff managing each location.

Deployment characteristics. The organization is going through a digital modernization effort. They aim to migrate a percentage of their applications and move to a hybrid cloud environment. They work with IBM Consulting for application modernization, cloud migration, as well as application management. The project starts with 33% of their environment falling under scope in Year 1, and gradually increases to 66% in Year 2, and 100% in Year 3.

KEY ASSUMPTIONS

$2 billion revenue

25,000 employees

2,000 – 5,000 applications under IT environment

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	Enterprise agility in application modernization and cloud migration	$240,570	$962,280	$1,822,500	$3,025,350	$2,383,244
Btr	Cost optimization related to cloud migration	$832,500	$1,665,000	$2,497,500	$4,995,000	$4,009,260
Ctr	Increased stability related to application development, management, and cloud migration	$3,212,055	$6,768,630	$10,516,500	$20,497,185	$16,415,161
Dtr	Productivity gain in application management	$706,073	$2,471,255	$5,349,038	$8,526,366	$6,703,056
	Total benefits (risk-adjusted)	$4,991,198	$11,867,165	$20,185,538	$37,043,901	$29,510,721

ENTERPRISE AGILITY IN APPLICATION MODERNIZATION AND CLOUD MIGRATION

Evidence and data. Interviewees emphasized the need for their organizations to respond to the dynamic nature of their market, evolving customer demands, and advancing technologies swiftly and efficiently. To achieve this, they recognized the importance of embracing a flexible and adaptable approach to their business processes, strategies, and technologies. With the assistance of IBM Consulting in their application modernization and cloud migration initiatives, interviewees expressed confidence in their ability to enhance enterprise agility.

- The portfolio director at a utility company told Forrester: “[IBM Consulting] accelerated our [ERP] transformation with zero disruption and record speed.”

- The same interviewee added: “If we didn’t have IBM [Consulting] on board advising us on how to configure our cloud environment, we would have taken a lot longer to go and iterate through commissioning, testing, working out what won’t work for ourselves, and then recommissioning and retesting. [Instead, we are able to] shorten these cycles of testing, commissioning, and infrastructure setups.”
- The head of IT at an education organization said: “IBM [Consulting] shared many know-hows and skills for our IT development, which changed our way of thinking in hybrid cloud best practices, data models, and architecture skills.”
- The same interviewee estimated: “If we didn’t work with IBM [Consulting], we would need a couple people to do planning and architecture, and another group to handle infrastructure. That’s a saving of 5-7 FTEs that we [can repurpose for other areas] because we work with IBM [Consulting].”
- According to Forrester Benchmark data, enterprises spend 61% of the average spend on applications for its maintenance and support, with the remaining 39% on its development.[4]

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- There are 60 engineers involved in application modernization projects happening at the organization.
- By leveraging IBM Consulting’s expertise, resources, and support, the composite organization is able to complete its modernization projects 20% faster in Year 1, 40% in Year 2, and 50% in Year 3.
- The involved engineers averages $135,000 in annual fully burdened salary.[5]
- A 50% productivity recapture adjusts the total time saved for full-time employees to only count the time that is actually used to drive value -- i.e. to complete more work that prevents more hires, reduces costs, or drives revenue. Not all productivity or time savings add complete or partial value to the business.
- The percentage of the composite organization’s environment that falls under the scope of the IBM Consulting project is 33% is Year 1, 66% in Year 2, and 100% in Year 3.

Risks. Understanding the uncertainty, variability, and real-world business factors that can affect the actual financial impact of an investment, the exact benefit realized by an organization may depend on various factors, including:

- The complexity of the application modernization project, which can impact the number of engineers that need to be involved and the time savings that can be gained. Complex legacy systems or monolithic architectures may require more extensive changes or redevelopment to achieve the desired agility. The level of interdependencies and integration with other systems also influences the ease of modernization.
- The availability of skilled resources within the organization or access to external expertise can impact the success of application modernization. Adequate training and upskilling need to be considered to ensure a smooth transition and effective utilization of resources.
- The availability of time and financial resources can impact the scope and pace of application modernization efforts. The process of planning and managing modernization initiatives to ensure realistic timelines, allocate appropriate budgets, and avoid compromising the quality and desired outcomes can impact the outcome.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $2,383,244.

Efficiency gain per year in terms of realizing time to value of their application modernization and cloud migration projects

20% to 50%

> "IBM [Consulting] gave us a lot of knowhow about system development and cloud migration, which improved our own system development capability, and allowed us to increase our speed to market when introducing new offerings."
>
> DEPARTMENT HEAD, MANUFACTURING

Enterprise Agility in Application Modernization and Cloud Migration					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
A1	Number of engineers involved in application modernization projects	Composite	60	60	60
A2	Efficiency gain in speed to market	Interviews	20%	40%	50%
A3	Average annual fully burdened engineer salary	TEI standard	$135,000	$135,000	$135,000
A4	Productivity recapture	TEI standard	50%	50%	50%
A5	Percent of environment in IBM hybrid cloud environment	Composite	33%	66%	100%
At	Enterprise agility in application modernization and cloud migration	A1*A2*A3*A4*A5	$267,300	$1,069,200	$2,025,000
	Risk adjustment	↓10%			
Atr	Enterprise agility in application modernization and cloud migration (risk-adjusted)		$240,570	$962,280	$1,822,500
	Three-year total: $3,025,350			**Three-year present value: $2,383,244**	

COST OPTIMIZATION RELATED TO CLOUD MIGRATION

Evidence and data. Interviewees discussed the potential efficiency gains of migrating to a hybrid cloud environment, including being able to ease the operational complexities and costs associated with maintaining and managing on-premises infrastructures, such as hardware maintenance, upgrades, and ongoing support. Additionally, interviewees

highlighted the advantage of offloading the responsibility of infrastructure management, maintenance, and support to the cloud service provider. This shift allows their internal employees to focus on more strategic initiatives, ultimately maximizing resource allocation and driving business growth.

- The head of IT at an education company said: “[Moving to a hybrid cloud environment] allows us to retire [some] on-prem servers, which allows us to shift some capital expenditures (CapEx) to operating expenditures (OpEx). We can potentially repurpose some Full-Time Employees (FTEs) currently working on our on-prem based systems to other higher priority tasks. We [could potentially] be able to [consolidate] some external vendors for certain activities. All of these benefits because our engagement with IBM Consulting creates efficiency and productivity gains throughout our company.”
- The CTO at a financial services firm estimated: “By working with IBM [Consulting], we [realized efficiency gains for our] developers and technical team, which allowed us to much more productive with the talent we already have.”
- The department head at a manufacturing firm shared: “IBM [Consulting] has provided us with many valuable technology proposals related to cloud migration and modernization.”

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- Forrester research assumes the average enterprise spends about 3% of their revenue on IT spend. Infrastructure is about 41% of the overall IT budget. Networking consumes 23% of the infrastructure budget, and data centers accounts for about 27% of networking budgets.[6]
- Based on these datapoints, for the purpose of this study, Forrester assumes the annual cost of maintaining data centers is $2 million per year.
- This annual cost covers the 5 data centers operated by the composite organization in their previous environment.
- A Forrester survey also highlights cloud decision-makers maintaining a 34% on-premises environment for their application when they operate a hybrid cloud environment.[7]

- The composite organization retires 1 data center each year by migrating to the cloud. Cumulatively, this translates to 1 data center retired in Year 1, 2 data centers in Year 2, and 3 data centers in Year 3.
- Maintaining each data center involves 5 employees.
- On average, the fully burdened annual salary of the involved employees at a data center is $85,000.

Risks. Understanding the uncertainty, variability, and real-world business factors that can affect the actual financial impact of an investment, the exact benefit realized by an organization may depend on various factors, including:

- Suitability of applications for cloud migration that may require significant modifications or redevelopment before it can function effectively in the cloud environment.
- The volume and complexity of data that is migrated and integrated with cloud services.
- Choices related to cloud service model and cloud provider.
- Governance and management related to establishing policies, processes, and controls to manage cloud resources, monitor costs, enforce security measures, and ensure compliance.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $4,009,260.

Cumulative percentage of physical data centers that the composite organization was able to retire by Year 3

60%

> "[By working] with IBM Consulting, we gained productivity from our technical team that helped us optimize our overall cost and resources."
>
> CTO, FINANCIAL SERVICES

Cost Optimization Related to Cloud Migration					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
B1	Annual cost of maintaining data centers	Composite	$2,000,000	$2,000,000	$2,000,000
B2	Cumulative percentage of infrastructure migrated to cloud	Composite	25%	50%	75%
B3	Cost savings from data center cloud migration	B1*B2	$500,000	$1,000,000	$1,500,000
B4	Cumulative total of data centers that are retired each year	Forrester assumption	1	2	3
B5	Cumulative number of employees involved in data center maintenance that can be repurposed	Forrester assumption	5	10	15
B6	Average fully-burdened annual salary	Forrester standard	$85,000	$85,000	$85,000
B7	Cost savings from repurposed employees related to data center cloud migration	B5*B6	$425,000	$850,000	$1,275,000
Bt	Cost optimization related to cloud migration	B3+B7	$925,000	$1,850,000	$2,775,000
	Risk adjustment	↓10%			
Btr	Cost optimization related to cloud migration (risk-adjusted)		$832,500	$1,665,000	$2,497,500
	Three-year total: $4,995,000			**Three-year present value: $4,009,260**	

INCREASED STABILITY RELATED TO APPLICATION DEVELOPMENT, MANAGEMENT, AND CLOUD MIGRATION

Evidence and data. By working in a hybrid cloud environment, interviewees shared that their organization could distribute workloads and data between cloud and on-premises infrastructure, or even across different cloud providers. This allows their organizations to create redundancy and implement high availability strategies. This results in less disruption for different end users and ensures better business continuity.

- The CTO at a financial services company shared the different knowledge areas IBM Consulting helped their team understand, noting: “[IBM Consulting] helps us understand new technologies, such as zero trust security, site reliability engineering, Kubernetes, containerization, moving from [one application framework to another]. They provide suggestions to make the code better, both quality and stability wise”
- The same interviewee also highlighted the role of IBM in knowledge sharing with direct impact to their system availability, saying: “The main contribution of the IBM team is ensuring we have 5x9 uptime with the platform. They provide a stringent process on different environments, where check and balances happen across system integration testing, user acceptance testing, pre-production, and production to ensure that the functionalities does not break and go smoothly with the canary-based”
- The interviewee also highlighted the gradual improvement they realized year over year related to this reliability benefit, highlighting: “During onboarding, the performance was around 30%. There were code issues in terms of timeout, wrong configuration, circuit braker not implemented. Then, after 5 months, it went up to 70%. The benefits happen gradually over 6 months.”

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- Based on Forrester research, the average annual cost of unplanned downtime, excluding end user productivity loss is $5.8 million per year.
- The average total time of downtime per year is 13 hours.[8]
- The average fully burdened hourly salary of a user is $38.

- A 50% productivity recapture is introduced, assuming that the average employee does not repurpose 100% of their time savings into further productivity. Thus, the total value of time saved is adjusted to only count the time that is actually used to drive value.
- The percentage of the composite organization's environment that falls under the scope of the IBM consulting project is 33% is Year 1, 66% in Year 2, and 100% in Year 3.

Risks. Understanding the uncertainty, variability, and real-world business factors that can affect the actual financial impact of an investment, the exact benefit realized by an organization may depend on various factors, including:

- Efficiency and reliability of data transfer methods, such as network connectivity, data replication, and synchronization processes.
- The design of the hybrid cloud architecture.
- Skill and resource availability.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $15,682,602.

Percentage reduction in downtime at the composite organization with the support of IBM Consulting

80% to 95%

> “IBM brings experience and talent that helps us have more quality and stable production platform. We don’t have many issues in production. In the long run, this will help us provide better customer experience.”
>
> **CTO, FINANCIAL SERVICES**

Increased Stability Related to Application Development, Management, and Cloud Migration					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
C1	Average annual cost of unplanned downtime (excluding end user productivity lost)	Forrester research	$5,800,000	$5,800,000	$5,800,000
C2	Percent reduction in downtime with IBM consulting	Interviews	80%	90%	95%
C3	Avoided cost for unplanned downtime (excluding end user productivity)	C1*C2	$4,640,000	$5,220,000	$5,510,000
C4	Number of employees	Composite	25,000	25,000	25,000
C5	Average length of downtime per year (hours)	Forrester research	13	13	13
C6	Average fully burdened hourly salary (business employee)	Forrester standard	$38	$38	$38
C7	Productivity recapture	Forrester standard	50%	50%	50%
C8	Productivity gain from end users	C4*C5*C6*C7	$6,175,000	$6,175,000	$6,175,000
C9	Percent of environment in IBM hybrid cloud environment	A5	33%	66%	100%
Ct	Increased stability related to application development, management, and cloud migration	(C3+C8)*C9	$3,568,950	$7,520,700	$11,685,000
	Risk adjustment	↓10%			
Ctr	Increased stability related to application development, management, and cloud migration (risk-adjusted)		$3,212,055	$6,768,630	$10,516,500
	Three-year total: $20,497,185		**Three-year present value: $16,415,161**		

PRODUCTIVITY GAIN IN APPLICATION MANAGEMENT

Evidence and data. Interviewees shared that working with IBM Consulting as an application managed service provider allows their organization to benefit from IBM's skills and expertise, have access to timely support and focus on strategic work related to their core business. The dedicated IBM support team can quickly resolve any issues or provide guidance as needed, ensuring uninterrupted application performance. In turn internal employees at the organization can dedicate their time and resources to developing new applications, improving existing systems, and aligning technology with business objectives.

- The portfolio director at a utility firm shared: “IBM is our application managed service provider, and our SAP environment is under their operational management. The value for us includes: (1) it’s in their best interest to get things right, so that it’s low maintenance for them once in production, (2) they have autonomy over all delivery resourcing end to end, so can quickly respond to the need for changes, (3) they leverage their global support services relationship to access subject matter experts.”

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- There are 2,000 applications in the composite organization’s environment. As business grows, the number of applications also increases to 3,500 in Year 2, and 5,000 in Year 3.
- The average platform administrator can manage 25 applications, which means that if the composite organization moved forward without IBM, they needed 80 admins involved in application management in Year 1, 140 in Year 2, and 200 in Year 3.
- These admins spend 58.7% of their time (relative to their other work) managing applications in their environment.[9]
- By working with IBM as their application managed service provider, the composite organization realized 75% in efficiency gain each year.
- The average fully burdened annual salary of an IT employee is $135,000.

- A 50% productivity recapture is introduced, assuming that the average employee does not repurpose 100% of their time savings into further productivity. Thus, the total value of time saved is adjusted to only count the time that is actually used to drive value.
- The percentage of the composite organization's environment that falls under the scope of the IBM consulting project is 33% is Year 1, 66% in Year 2, and 100% in Year 3.

Risks. Understanding the uncertainty, variability, and real-world business factors that can affect the actual financial impact of an investment, the exact benefit realized by an organization may depend on various factors, including:

- The complexity of the applications being managed. Highly complex applications can require more specialized expertise and resources.
- Some organizations' application may require extensive customization or integration with other systems.
- Communication and collaboration between the organization and the managed service provider in facilitating problem resolution, knowledge sharing, and alignment of goals.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $6,703,056.

Percentage of efficiency gain due to IBM being the application managed service provider of the composite organization

75%

> "IBM [Consulting] helps us change the way we think about development. This allows us to develop better habits, think deeper about our value proposition, and overall helps improve our IT productivity."
>
> HEAD OF IT, EDUCATION

Productivity Gain in Application Management					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
D1	Number of applications	Composite	2,000	3,500	5,000
D2	Number of platform/ops admins	Forrester assumption	80	140	200
D3	Percentage of time spent on application management	Forrester assumption	58.7%	58.7%	58.7%
D4	Percentage of efficiency gain due to IBM consulting's application management work	Interviews	75%	75%	75%
D5	Average fully burdened annual salary (IT employee)	Forrester standard	$135,000	$135,000	$135,000
D6	Productivity recapture	Forrester standard	50%	50%	50%
D7	Percent of environment in IBM hybrid cloud environment	A5	33%	66%	100%
Dt	Productivity gain in application management	D2*D3*D4*D5*D6*D7	$784,526	$2,745,839	$5,943,375
	Risk adjustment	↓10%			
Dtr	Productivity gain in application management (risk-adjusted)		$706,073	$2,471,255	$5,349,038
	Three-year total: $8,526,366			**Three-year present value: $6,703,056**	

UNQUANTIFIED BENEFITS

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

- **Knowledge, expertise, and best practices related to data models.** Interviewees shared that one of the areas of improvements related to knowledge sharing with the IBM team is around data models. This includes how to manage their data and create models to generate insights from them. As cloud environments often involve multiple systems and applications that share and exchange data, having clear data models provide common framework that enables seamless data flow between the various applications and systems. The head of IT in education said: “While services changes with time, the data handled is accumulated over long periods of time and is intended to be utilized long-term. Defining the data owner and creating a generalized model based on meaning and relationships has been a very educational experience.”
- **Knowledge, expertise, and best practices related to architecture.** Interviewees also shared the importance on gaining knowledge around architecture, specifically how to implement a microservices architecture that allows better scalability, agility, issue isolation, and reusability. The same head of IT noted: “We moved away from the traditional monolithic system and adopted a microservices architecture. Determining the appropriate granularity for services and defining interfaces is an area where experience plays a significant role, and we have been helped by IBM’s advices.”
- **Knowledge, expertise, and best practices related to overall hybrid cloud.** Interviewees highlighted IBM's expertise and experience in the hybrid cloud domain, noting their ongoing investments in research and development, exploration of new technologies, and extensive ecosystem of partners, including hyperscalers. IBM's industry-specific expertise in areas like financial services, healthcare, manufacturing, education, retail, and public sector further enhances their ability to assist organizations at any stage of their hybrid cloud journey. Partnering with IBM allows organizations to access these resources and gain insights into industry best practices. The head of IT added: “When migrating to the cloud, IBM advised us on various issues, for example the adoption of

container technology that is compatible with microservices or how to introduce OpenShift. We believe those advices to be valuable."

> "The main value of IBM is the best practice they keep sharing with us about the cloud industry and landscape. What is happening in the industry in terms of DevOps, which helps us understand if and how we need to adjust."
>
> CTO, FINANCIAL SERVICES

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might partner with IBM Consulting for their Hybrid Cloud Services and later realize additional uses and business opportunities, including:

- **Fostering a culture of innovation.** In the long run, the continuous knowledge sharing combined with the accumulation of recaptured time from the efficiency gain results in the organization being able to put more effort in other more strategic work. For some, this means being able to better assess and potentially meet the evolving demands of their customers, be it through new updates or even new offerings. They can better understand the need of their target audience, which can result in better adoption of their offerings. The department head in manufacturing told Forrester: "As a result of the work with IBM, we have been able to provide more digital products and services, where we see gradual increase in adoption."
- **Continuous realization of benefits in a compounding manner to support further business growth.** As their organizations continue to leverage the

advantage gained from their partnership with IBM, the interviewees noted that they expect to see a snowball effect of positive outcomes. These benefits not only contribute to their ongoing success but also create a foundation for sustained expansion. By building on these cumulative advantages, they believe their organizations can seize new opportunities, drive innovation, and fuel long-term growth strategies.

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

> "We would not be able to do all the planning, design, development, testing, integration, and deployment in-house if we did not work with IBM [Consulting]."
>
> HEAD OF IT, EDUCATION

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**
Etr	Annual project cost	$0	$6,856,500	$11,686,500	$14,112,000	$32,655,000	$26,494,001
Ftr	Internal time investment for project planning and ongoing management	$297,000	$148,500	$148,500	$148,500	$742,500	$666,298
	Total costs (risk-adjusted)	$297,000	$7,005,000	$11,835,000	$14,260,500	$33,397,500	$27,160,299

ANNUAL PROJECT COST

Evidence and data. The annual project cost of an IBM consulting engagement in hybrid cloud services can vary depending on the project complexity.

Modeling and assumptions. Based on the interviews, Forrester assumes the composite organization pays $6.53 million for their project with IBM consulting in Year 1, $11.13 million in Year 2, and $13.44 million in Year 3.

Risks. The exact cost related to the project cost incurred by an organization may depend on various factors, including:

- Complexity of project.
- Length of engagement, scope, and deliverables that are expected.
- Ongoing versus one-off project.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of $26,494,001.

Annual Project Cost						
Ref.	**Metric**	**Source**	**Initial**	**Year 1**	**Year 2**	**Year 3**
E1	Annual project cost			$6,530,000	$11,130,000	$13,440,000
Et	Annual project cost	E1	$0	$6,530,000	$11,130,000	$13,440,000
	Risk adjustment	↑5%				
Etr	Annual project cost (risk-adjusted)		$0	$6,856,500	$11,686,500	$14,112,000
	Three-year total: $32,655,000			**Three-year present value: $26,494,001**		

INTERNAL TIME INVESTMENT FOR PROJECT PLANNING AND ONGOING MANAGEMENT

Evidence and data. Interviewees shared that they needed to dedicate internal employees' time to set up the scope of the project with IBM. This includes discussing what the desired outcomes of the project are and the project timeline. Then, once set up, there is an internal employee team dedicated to interacting and engaging with the IBM team on an ongoing basis. This includes keeping a consistent touch base to ensure the project is on schedule, and make timely adjustments as needed.

- The CTO at a financial services company noted: "In terms of setting up the project, we involved IBM, along with our previous vendor, and our internal team. We had to map the modules from IBM resources into our environment, and then we went through several handholding sessions transferring from our previous vendor to IBM. We provided all the DevOps access to IBM so they were able to review the required information."
- Related to ongoing management, the principal architect at a utility company said: "At any given time, I have two teams working with IBM. That involves 7-10 project managers across my environment. On the managed services side, we have 15-20 people involved."

- The head of IT shared: “We have people managing the delivery process. They work with the IBM team to clarify anything that can impact the delivery schedule. They alert us if any changes in the priority happens and support the IBM team in the deployment. This is less than 10% of their time (relative to their other responsibilities).”

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- Setting up the project takes four months.
- The process involves 10 internal staff members.
- They dedicated 80% of their time to set up the project. Once set up, ongoing management required 10% of their time.
- The average annual fully burdened salary of the involved internal staff members is $135,000.

Risks. The exact cost incurred by an organization may depend on various factors, including:

- Scope and complexity of the project.
- Project planning and documentation.
- Resource availability and allocation.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of $666,298.

Percentage of internal time dedicated for ongoing management with the IBM team

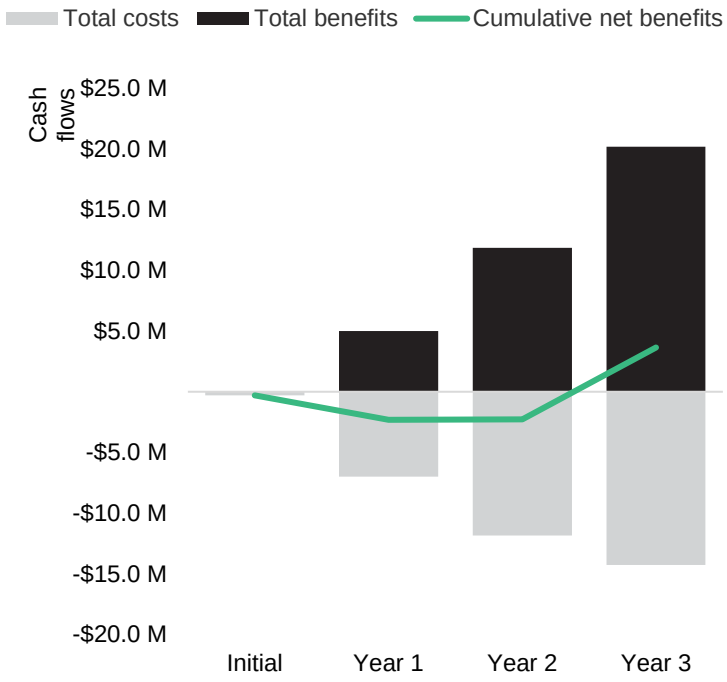
10%

Internal Time Investment For Project Planning And Ongoing Management						
Ref.	**Metric**	**Source**	**Initial**	**Year 1**	**Year 2**	**Year 3**
F1	Setup time (years)		0.25			
F2	Number of internal staff involved		10	10	10	10
F3	Percentage of time invested		80%	10%	10%	10%
F4	Average annual burdened salary		$135,000	$135,000	$135,000	$135,000
Ft	Internal time investment for project planning and ongoing management	F1*F2*F3*F4	$270,000	$135,000	$135,000	$135,000
	Risk adjustment	↑10%				
Ftr	Internal time investment for project planning and ongoing management (risk-adjusted)		$297,000	$148,500	$148,500	$148,500
	Three-year total: $742,500			**Three-year present value: $666,298**		

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)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	($297,000)	($7,005,000)	($11,835,000)	($14,260,500)	($33,397,500)	($27,160,299)
Total benefits	$0	$4,991,198	$11,867,165	$20,185,538	$37,043,901	$29,510,721
Net benefits	($297,000)	($2,013,802)	$32,165	$5,925,038	$3,646,401	$2,350,422
Payback						29.0

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."

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.

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.

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.

APPENDIX B: ENDNOTES

[1] "Answers To Your Top Hybrid Cloud Management Questions," Forrester Research, Inc., April 5, 2023.

[2] 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.

[3] "2023 Application Development Benchmarks, Global," Forrester Research, Inc., August 9, 2023.

[4] "2023 Application Development Benchmarks, Global," Forrester Research, Inc., August 9, 2023.

[5] The burden rate accounts for additional costs of employment, such as benefits (healthcare, insurance, bonuses, etc.), technology, office space, and employer taxes.

[6] "2023 IT Network Benchmarks, Global," Forrester Research, Inc., August 7, 2023.

[7] "Infrastructure Cloud Survey, 2023," Forrester Research, Inc., August, 2023.

[8] "2023 IT Network Benchmarks, Global," Forrester Research, Inc., August 7, 2023.

[9] "2023 Application Development Benchmarks, Global," Forrester Research, Inc., August 9, 2023.

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