

A Forrester Total Economic Impact™  
Study Commissioned By Microsoft  
June 2017

# The Total Economic Impact™ Of Microsoft Azure IaaS

Cost Savings, New Revenue Opportunities,  
And Business Benefits Enabled By Azure  
IaaS

# Table Of Contents

<b>Executive Summary</b>	<b>1</b>
TEI Framework And Methodology	4
<b>The Azure IaaS Customer Journey</b>	<b>5</b>
Interviewed Organizations	5
Key Challenges	5
Solution Requirements	6
Key Results	6
Composite Organization: MultiGlobal, Inc.	7
<b>Financial Analysis</b>	<b>9</b>
Reduced Data Center Sites And Avoided Costs	9
Reduced IT Outsourcing Costs	10
Process Re-Engineering Improvements	11
Profit From New Enterprise Sales	13
Profit From New And Larger Customer Sales	14
Unquantified Benefits	15
Flexibility	16
Implementation Costs	18
Annual Costs	19
<b>Financial Summary</b>	<b>20</b>
<b>Microsoft Azure IaaS: Overview</b>	<b>21</b>
<b>Appendix A: Total Economic Impact</b>	<b>22</b>
<b>Appendix B: Endnotes</b>	<b>23</b>

**Project Director:**  
Sean Owens  
June 2017

## ABOUT FORRESTER CONSULTING

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

© 2017, Forrester Research, Inc. All rights reserved. Unauthorized reproduction is strictly prohibited. Information is based on best available resources. Opinions reflect judgment at the time and are subject to change. Forrester®, Technographics®, Forrester Wave, RoleView, TechRadar, and Total Economic Impact are trademarks of Forrester Research, Inc. All other trademarks are the property of their respective owners. For additional information, go to [forrester.com](http://forrester.com)

## Benefits And Costs



Avoided data center and outsourcing costs:

**\$21.9 million**



Data center reduction:

**73% by Year 5**



Outsourcing cost reduction:

**Between 33% and 83%**



Increased annual website sales:

**Between 48% and 63%**



Increased website transaction size:

**Between 20% and 27%**

## Executive Summary

Microsoft commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study to examine the potential return on investment (ROI) enterprises may realize by shifting some or all their management and operations from on-premises, hosted, and outsourced implementations to Azure's infrastructure-as-a-service (IaaS) offering. The purpose of this study is to give readers a framework to evaluate the potential financial impact, or ROI, of leveraging Azure IaaS for their organizations. Benefits gained by interviewed customers that migrated or re-architected some or all workloads from on-premises to IaaS include:

- **Greater revenue opportunities** from business-to-business (B2B) and customer web channels with a solution that is more mobile and reliable, and meets scale and seasonality needs.
- **Increased profits** from those revenues.
- **Improved production efficiency.**
- **Reduced datacenter, IT resource, and outsourcing costs.**
- **Easier and faster software and hardware management** (such as patching and support)

Forrester interviewed six customers with several years of experience with Azure. The ease of development and management meant that many workloads, including some lighter SAP applications as well as related services disaster recovery, were a simple "lift and shift" to Azure quickly done with little end user impact. The VP of product development at a US IT services and hosting firm summarized the value of Azure: "I could never build a service infrastructure as fast as Azure can." They leverage many Azure service offerings such as Compute, Storage, Networking, Management, Security, StorSimple, and Azure Active Directory. Some organizations have implemented a hybrid solution, migrating workloads to Azure that are securely connected to on-premises applications and data.

**Quantified benefits.** The following risk-adjusted quantified benefits are measured over a five-year investment period and representative of those experienced by the companies interviewed:

- **A data center reduction of 50% to 73%, leading to cost savings of \$12 million.** Servers were deployed onsite or hosted with a partner, but still managed by organization resources. Migrating these workloads to Azure reduced internal office space or hosting costs. These benefits add up to a five-year present value (PV) of about \$12 million.<sup>1</sup>
- **An annual reduction between 33% and 83% in IT outsourcing needs, leading to \$9.8 million in cost savings.** Migrating to Azure IaaS enabled significant cost savings. The five-year PV is about \$9.8 million.
- **Re-engineering that delivers an 85% improvement for a key process, leading to \$2.8 million in cost savings.** Azure IaaS enables process improvement opportunities; a textile manufacturer now provides virtual samples instead of many prototypes, leading to cost savings and faster production times. The five-year PV is about \$2.8 million.
- **New sales leading to \$1.7 million in new income from improved processes, global reach, and better customer service.** With better processes and improved global performance, there was an improvement of \$1.7 million (five-year PV) in enterprise sales with Azure IaaS.



**ROI**  
**435%**



**Benefits PV**  
**\$27.6 million**



**Costs PV**  
**\$5.2 million**



**NPV**  
**\$22.4 million**

"I could never build a service infrastructure as fast as Azure can."

*VP of product development, US services and hosting firm*



- › **Website scale and performance improvements, increasing annual customer sales between 48% and 63% and increasing transaction size between 20% and 27%, adding up to \$1.2 million in new income.** Significant improvements in global scale (such as faster page load times in China) reduce purchase barriers, meaning more and larger sales of about \$1.2 million (five-year PV).

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

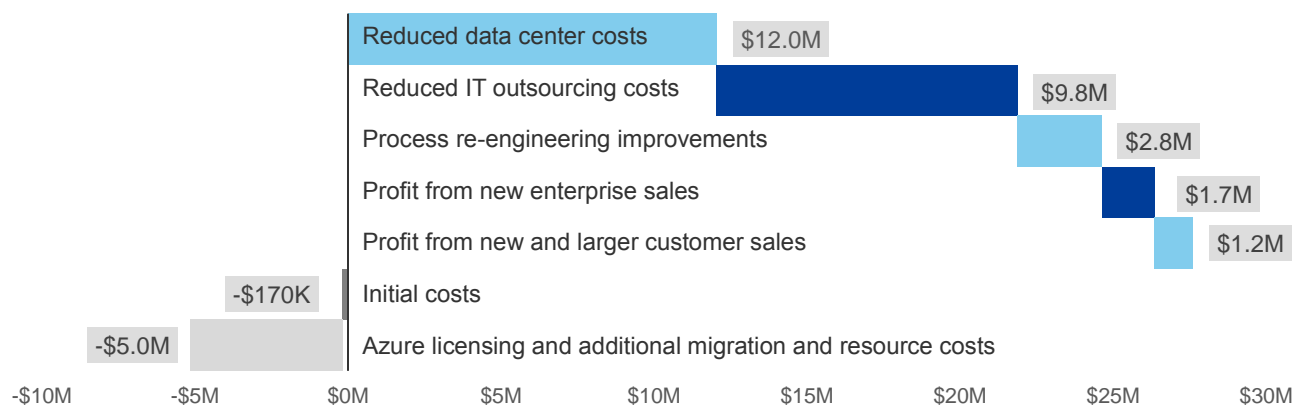
- › **Ability to experiment with new and (otherwise) cost-prohibitive technologies.** IT managers can test out and pilot new technologies such as Hadoop or high-performance computing (HPC) more quickly with virtualized environments on Azure, significantly lowering costs.
- › **Developer and tester process improvements.** Developers and testers saw improvements in tasks such as setting up a new server environment (or turning it off when done); simulating real-time scale scenarios; and standardizing test, development, and production environments.
- › **Additional business-critical workload migrations.** As lift-and-shift migrations are completed, organizations will move to migrate more business-critical workloads, leading to greater scale, performance, and mobility benefits.
- › **Azure PaaS implementation.** Future plans include rearchitecting some applications or interfaces for Azure platform-as-a-service (PaaS) that are expected to create new benefit opportunities and save time and costs.

**Costs.** The interviewed organizations experienced the following risk-adjusted costs:

- › **Initial costs of \$170,000.** Many workload migrations were simple lift-and-shift migrations, meaning that the initial implementation was relatively quick and simple.
- › **Azure licensing and management costs of nearly \$5 million.** Azure license costs are estimated for a composite organization to start at \$560,000 in the first year and grow to \$1.4 million by Year 5. As more workloads are migrated in later years, additional costs are included for additional migration effort as well as expected new hires.

Forrester's interviews with six existing customers and financial analysis found that an organization based on these interviews experienced benefits of \$27.6 million over five years versus costs of \$5.2 million, adding up to a net present value (NPV) of \$22.4 million and an ROI of 435%.<sup>2</sup>

### Benefits And Costs (Five-Year Present Value)



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

## TEI Framework And Methodology

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

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 Microsoft Azure IaaS can have on an organization:



### **DUE DILIGENCE**

Interviewed Microsoft stakeholders and Forrester analysts to gather data relative to Azure IaaS.



### **CUSTOMER INTERVIEWS**

Interviewed six organizations using Azure IaaS to obtain data with respect to costs, benefits, and risks.



### **COMPOSITE ORGANIZATION**

Designed a composite organization based on characteristics of the interviewed 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 interviewed organizations.



### **CASE STUDY**

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

## DISCLOSURES

Readers should be aware of the following:

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

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the report to determine the appropriateness of an investment in Microsoft Azure IaaS (IaaS).

Microsoft 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.

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

# The Azure IaaS Customer Journey

## BEFORE AND AFTER THE AZURE IAAS INVESTMENT

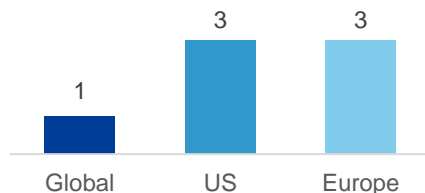
### Interviewed Organizations

For this study, Forrester conducted six interviews with Microsoft Azure IaaS customers. Interviewed customers include the following:

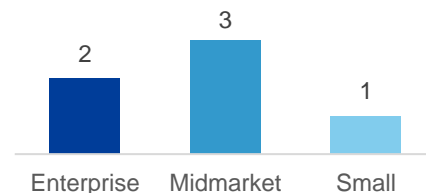
INDUSTRY	REGION	INTERVIEWEE	DETAILS
Software and services	Headquartered in Europe and North America	Product director	5,000 employees and \$1 billion in revenue for software and services primarily for financial services
Manufacturing	Global conglomerate	Director of IT and chief architect	Organization with shared IT services across large equipment and vehicle manufacturing subsidiaries, totaling 50,000 employees and \$15 billion in revenue
Sporting equipment manufacturing and sales	Headquartered in the US	Manager of web technologies	2,000 employees and \$300 million in revenue. Sporting goods manufacturer selling through distributors as well as direct online sales.
Professional services	Headquartered in Europe	Exec. director of IT operations	150,000 employees and \$20 billion in revenue for professional services firm delivering projects worldwide
Textiles manufacturing	Headquartered in Europe	CIO	2,600 employees and \$400 million in revenue from B2B textiles manufacturing
Software hosting, development, and services	Headquartered in the US	VP of product development	Small but high-skilled services firm delivering Microsoft-focused consulting, IT services, and hosting

### Interviewed Organizations Highlights

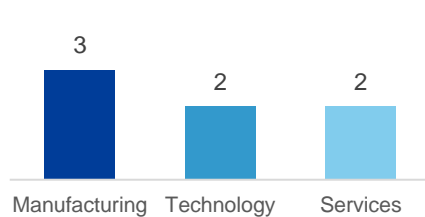
#### MAIN HEADQUARTERS



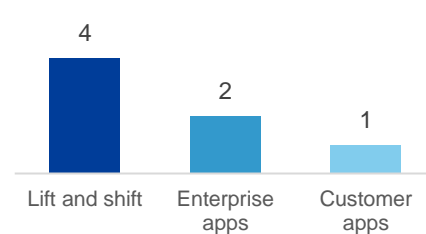
#### SEGMENT



#### INDUSTRY



#### MIGRATION FOCUS



NOTE: Some chart totals add up to more than the six interviews, as some organizations fit in more than one category.

### Key Challenges

Interviewed organizations had primarily implemented on-premises workloads, either through onsite, co-location, or outsourced services. These options were starting to become much more inflexible and created scale and resource issues, such as:

- › **IT costs were expensive with no sign of change.** Internal and outsourced IT costs were expensive, with expected increases coming for new planned data centers and outsourced IT growth needs. On-premises developments and QA tasks were inefficient and error prone.
- › **Global expansion was difficult.** It often required new or expanded data center footprints that were expensive and complicated; data center investments are often governed by data privacy requirements, and they take a long time to plan, deploy, and implement.
- › **Some process costs were too high.** This was also part of a larger issue that limited some B2B sales. For example, one organization developed 20 samples for customers to review and select for production, which meant high production setup costs and longer wait times.
- › **The ability to scale infrastructure was limited.** Customer growth was exceeding the ability of the website infrastructure to scale. One issue was that it took several weeks just to order and provision new hardware.

“Without Azure, we would need to build out dozens of data centers to provide the same service and meet client requirements that we can with Azure.”

*VP of product development, US services and hosting firm*



## Solution Requirements

The interviewed organizations searched for a solution that could:

- › **Support global reach** to meet country-specific data privacy and management regulations and support last-mile performance.
- › **Scale both up and down** to meet current needs and future growth for internal and web applications.
- › **Be flexible** to support several scenarios with one solution tool set, such as internal application development, enterprise collaboration, web hosting, and integration with current applications and systems.
- › **Be cost effective.**
- › **Provide opportunities for piloting and experimenting** with new solutions without major planning, deployment time, or data center costs.

## Key Results

The interviews revealed that key results from the Azure IaaS investment include:

- › **Reduced data center and outsourcing costs.** “Without Azure, we would need to build out dozens of data centers to provide the same service and meet client requirements that we can with Azure,” said the VP of product development at a US services and hosting firm. With Azure IaaS, organizations were able to reduce onsite or co-location data center costs by “lifting and shifting” workloads to Azure. While some organizations did not have any in-house management for on-premises or hosted servers, they were able to significantly reduce fees paid for IT outsourcing services provided by solution integrators.

“When someone says, ‘We need another 100 gigs,’ we can just add it.”

*Manager of web technologies, sporting goods manufacturer*





- › **Business process re-engineering opportunities.** Organizations can take advantage of Azure IaaS to host servers that facilitate mobile and enterprise workloads. One organization could greatly reduce the production amount and costs for samples during the pre-order process by replacing it with a digital review. “Azure helps to provide this new service without adding a fee,” said the CIO at a textiles manufacturer, highlighting the three samples the organization now produces for a final customer review. “This really helps our business, not only from a cost perspective, but for speed and engagement with the customer.”
- › **Increased profits through more enterprise and customer sales.** With applications and websites deployed to Azure IaaS, organizations can leverage Azure’s scale and reach to better meet global needs and seasonal bursts of the business. With Azure, the manager of web technologies highlights the issues their organization has now resolved: “As our site grew and our traffic grew, we ran into a lot of problems. We’re in a market where we have busy seasons, and we had issues with scale.”
- › **Development and test productivity improvements and opportunities.** IT and development managers can speed up processes such as quickly setting up and turning off new server environments (that *exactly* match production). And they can easily pilot a new Azure service such as Hadoop or high-performance computing (HPC) that before Azure would have required significant investment, planning, and data center buildout to even try out. “Now, we can easily spin up a number of different environments,” said the VP of product development at a US services and hosting firm.
- › **Additional business-critical workload migrations.** Many business-critical workloads can benefit from Azure IaaS to reduce costs and improve scale, performance, and mobility. These are planned for later years, since more planning time and resource involvement is required, but are expected to provide significant benefits. “Not every workload is suited for cloud deployment today based on network utilization or other issues,” said the director of IT at a global conglomerate, but he highlighted that many are planned for later migration.

## Composite Organization: MultiGlobal, Inc.

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization is representative of the six companies that Forrester interviewed and is used to present the aggregate financial analysis in the next section. The composite organization that Forrester synthesized from the customer interviews has the following characteristics:

- › It is a global conglomerate with 25,000 employees.
- › It has about \$4 billion in annual revenue.
- › Its industry focus leans toward manufacturing but also includes services and software related to manufacturing.

As a multinational conglomerate, it leverages Azure IaaS technologies in different ways, such as improving development and test for software development, internal application operations, management and flexibility, and customer-facing website management and scale during

“Azure helps to provide this new service without adding a fee. This really helps our business.”

*CIO, textiles manufacturer*



## Key assumptions

- 25,000 employees
- \$4 billion in annual revenue
- Multinational conglomerate
- Standardized IT on Azure from both on-premises and outsourced implementations
- Many workloads available for “lift and shift” migration
- Other workloads require more development or re-architecting for migration planned in later years.



busier or slower times.

**Deployment characteristics.** To help demonstrate the potential savings for both on-premises data center costs and outsourcing contracts, MultiGlobal is assumed to have undergone a recent merger, with one organization having on-premises IT and the other outsourcing much of its core application development, operations and management of software, and hardware resources. MultiGlobal has primarily implemented Azure IaaS compute and storage workloads, including virtual machines, storage, compute, and enterprise integration services.

# Financial Analysis

## QUANTIFIED BENEFIT AND COST DATA AS APPLIED TO THE COMPOSITE

### Total Benefits

	BENEFIT	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL	PRESENT VALUE
Atr	Avoided data center costs	\$2,531,250	\$2,868,750	\$3,375,000	\$3,712,500	\$3,712,500	\$16,200,000	\$12,048,549
Btr	Avoided IT outsourcing costs	\$1,350,000	\$2,025,000	\$3,375,000	\$3,375,000	\$3,375,000	\$13,500,000	\$9,837,294
Ctr	Avoided manufacturing prototype costs	\$726,750	\$726,750	\$726,750	\$726,750	\$726,750	\$3,633,750	\$2,754,954
Dtr	Income from new B2B orders	\$229,500	\$382,500	\$535,500	\$612,000	\$612,000	\$2,371,500	\$1,725,089
Etr	New income from more and larger web transactions	\$216,750	\$277,950	\$372,938	\$408,000	\$408,000	\$1,683,638	\$1,238,955
	<b>Total benefits (risk-adjusted)</b>	<b>\$5,054,250</b>	<b>\$6,280,950</b>	<b>\$8,385,188</b>	<b>\$8,834,250</b>	<b>\$8,834,250</b>	<b>\$37,388,888</b>	<b>\$27,604,842</b>

### Reduced Data Center Sites And Avoided Costs

MultiGlobal was able to easily migrate server workloads to the Azure cloud and reduce or even shut down some data center space in its own offices or leased from hosting vendors. Many workloads were easily migrated using a lift-and-shift strategy. “Really, we just took all of those environments and moved it directly into the cloud,” said the project director at a software and services vendor.

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over five years, the composite organization expects risk-adjusted total benefits to be a PV of more than \$27.6 million.

### Avoided Data Center Costs

	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
A1	Total data centers required for on-premises solution matching Azure performance		30				
A2	Data centers kept along with Azure		15	13	10	8	8
A3	Cost per data center (average)		\$500,000				
A4	Percent of data centers included in outsourcing fees (below)		50%				
A5	Percent of avoided data center buildout due to Azure		75%				
At	Reduced data center costs	$(A1-A2) * A3 * A4 * A5$	\$2,812,500	\$3,187,500	\$3,750,000	\$4,125,000	\$4,125,000
	Risk adjustment	↓10%					
<b>Atr</b>	<b>Reduced data center costs (risk-adjusted)</b>		<b>\$2,531,250</b>	<b>\$2,868,750</b>	<b>\$3,375,000</b>	<b>\$3,712,500</b>	<b>\$3,712,500</b>

The organization could scale globally without having to invest in additional data center space (either opening a new data center or significantly building out an existing space). In some cases, these were large projects that cost millions of dollars; other locations needed only a few servers to support a smaller client base or specific solution. “When someone says, ‘We need another 100 gigs,’ we can just add it,” said the manager of web technologies for a sporting goods manufacturer. For some services it provides, the organization required significant local resources to be available in specific regions, to maintain speed and reliability and also adhere to data and compliance requirements within certain regions or countries.

The organization estimated:

- › Thirty total data centers were in operation or would have needed to be built out, either at an on-premises location or through a local hoster.
- › With Azure IaaS, the organization can leverage Azure hybrid capabilities to provide seamless access to data and applications, whether on Azure or on-premises. Therefore, it only needs to support data centers to deliver worldwide access, reliability, and speed for a much smaller set of data and applications — such as parts of its ERP system or some private client data.
- › Each data center reduction (whether a site that was completely closed or avoided, or a site that will remain — for now — but with a significant size reduction) is estimated to cost an average of \$500,000 to build out or lease (with several closer to or above the \$1 million mark).

“Not only could we quickly turn on a workload, but on the flipside, we are able to spin down a workload when we’re through with it. As opposed to a traditional on-premises, where you’re stuck with an asset, we can simply turn it off when we’re finished,” said the chief architect at a global manufacturer, highlighting the scalability of Azure, as well as the ability to pay as you go down to the minute.

Half of these data centers included or would have included outsourced IT resources, so they are included in the next benefit section. Also, it is assumed that other factors, such as server consolidation and other best practices, also helped reduce data center space requirements. Therefore, 75% of the build or lease cost is considered a result of Azure IaaS.

Finally, given that data center lease or buildout costs can vary greatly based on costs in that region, computing power required, employees or clients nearby, and other factors, a 10% risk adjustment has been applied. This adds up to a five-year present value of about \$12 million.

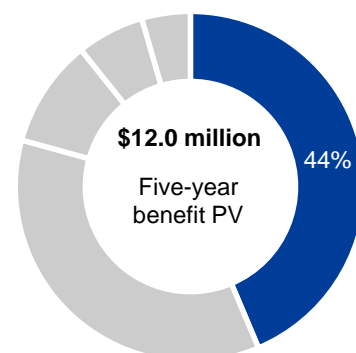
## Reduced IT Outsourcing Costs

For other parts of the organization, data center and IT resources are outsourced to an IT services provider. This means that the organization pays an annual fee for the outsourcer to physically host all hardware and manage all IT tasks, including software, hardware, and even support. With Azure IaaS, MultiGlobal could reduce outsourcing needs while also bringing management of IT back in house. “Basically everything that I shut down in a data center gives me an immediate cost saving,” said the executive director of IT operations at a professional services firm.

The organization estimates:



- Data centers reduced 50% by Year 1
- Eight data centers (from original 30) remaining by Year 5
- Outsourcing costs reduced between 33% and 83%



Reduced data center costs

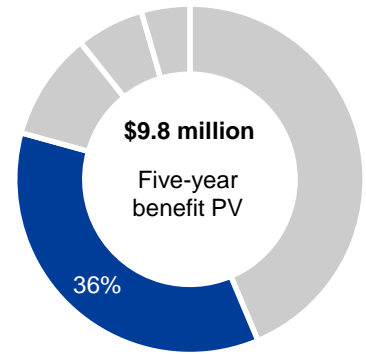
“Basically everything that I shut down in a data center gives me an immediate cost saving.”

*Executive director of IT operations, professional services firm*



- › It spent \$6 million per year on worldwide outsourcing services.
- › The first year after implementing Azure IaaS, this was reduced to \$4 million. This is still high because it took time for the organization to reduce its outsourcing contract, and also because that contract includes a significant fixed fee amount.
- › By the second and third year, outsourcing costs are expected to continue to drop significantly. While the organization may soon completely close out the contract, it expects that some IT outsourcing costs will remain for some locations, for desktop devices or support of servers not migrated to Azure.
- › It is estimated that 25% of outsourcing cost reductions are due to other initiatives or best practices, such as server consolidation efforts. Like avoided data center costs, 75% of the total outsourcing cost reduction is allocated to the implementation of Azure IaaS.
- › It is assumed that many of the tasks managed by outsourced IT resources did not require a significant number of replacement hires. Management of workloads on Azure can be handled by the resources already in-house, reallocated from the teams that managed on-premises workloads now also migrated to Azure. For example, these resources can quickly self-provision compute and storage needs.

Like data center reductions, it is hard to estimate the exact outsourcing cost to be saved by migrating server workloads to Azure, and it is also difficult to measure the exact impact of Azure on total outsourcing cost savings. A 10% risk adjustment has been applied, which adds up to a five-year present value of about \$9.8 million.



## Reduced IT outsourcing costs

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

### Reduced IT Outsourcing Costs

	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
B1	Outsourcing costs for on-premises IT before Azure		\$6,000,000				
B2	Outsourcing costs for on-premises IT since Azure		\$4,000,000	\$3,000,000	\$1,000,000	\$1,000,000	\$1,000,000
B3	Percent of outsourcing cost reduction due to Azure		75%				
Bt	Reduced IT outsourcing costs	(B1-B2) * B3	\$1,500,000	\$2,250,000	\$3,750,000	\$3,750,000	\$3,750,000
	Risk adjustment	↓10%					
Btr	Reduced IT outsourcing costs (risk-adjusted)		\$1,350,000	\$2,025,000	\$3,375,000	\$3,375,000	\$3,375,000

## Process Re-Engineering Improvements

Azure IaaS enabled the organization to more quickly and easily take advantage of business process reengineering opportunities possible with a global infrastructure, as Azure supports a global presence with data centers in 38 regions. One specific workload that was newly enabled for MultiGlobal by Azure IaaS was a streamlined, B2B collaboration system. One division of the business manufactures textiles, which come in multiple styles, weaves, and colors that require review and approval. In the past, the organization would have to manufacture 20 or more

"Within two days, a customer can get the two samples that they have chosen."

CIO, textiles manufacturer



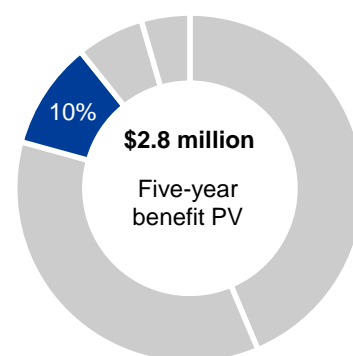
samples for every order. The customer would spend two weeks reviewing, discussing, and testing before finally deciding on one that the organization could start producing. That's a lot of samples and production setups that need to be managed and kept ready.

With Azure IaaS, the division could develop a simple, secure application where it could digitally mock up samples that a customer could review and typically whittle down to a top two or three. Using the cloud solution, the division could develop a simple registration and login interface for business partners, while keeping some connections with back-office applications (also on Azure, or on-premises and seamlessly connected with Azure hybrid features), such as the design software to easily upload digital samples and arrange them for customer review.

The division then physically produced just those two or three samples, and the customer could make a much quicker final decision. By reducing the amount of prototype manufacturing and production setups that need to be stored, the organization saved significant costs. "Within two days, a customer can get the two samples that they have chosen," said the CIO of a textiles manufacturer — instead of the two weeks it might have taken before.

The organization estimates:

- › There is an average of 10 new customer order discussions requiring prototyping each month.
- › Twenty samples are produced for each discussion. Only three are required now.
- › Each sample costs \$500 to produce, on average.



Process re-engineering  
cost savings



- 20 samples produced before
- Only three needed per order since Azure IaaS

#### Process Re-Engineering Cost Savings

	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
C1	Presales prototyping processes for customer order decisions, number per month		10				
C2	Prototype mockups manufactured before Azure		20				
C3	Prototype mockups manufactured since Azure		3				
C4	Prototyping costs per mockup		\$500				
C5	Percentage of B2B benefits enabled by Azure		75%				
Ct	Process re-engineering cost savings	$C1*(C2-C3)*C4*C5*12$	\$765,000	\$765,000	\$765,000	\$765,000	\$765,000
	Risk adjustment	↓5%					
Ctr	Process re-engineering cost savings (risk-adjusted)		\$726,750	\$726,750	\$726,750	\$726,750	\$726,750

- › Seventy-five percent of these improvements are attributed to Azure IaaS. Some improvements were also due to sales and production best practices that reduced the number of samples needed and reduced production costs.

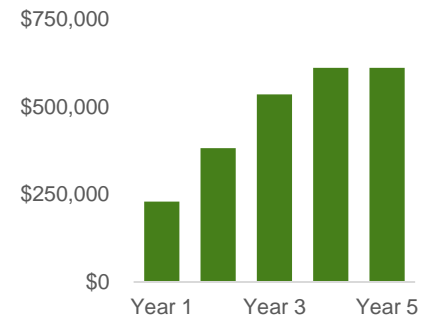
A 5% risk adjustment has been applied, as the number of sales discussions, number of samples, and the average cost per sample may be overestimated. The risk-adjusted five-year present value is about \$2.8 million.

## Profit From New Enterprise Sales

Because of improved prototyping and faster time-to-market for textiles manufacturing, as well as improved scale, availability, and reliability across other divisions such as manufacturing, product development, or sales, MultiGlobal has seen improved enterprise sales, leading to increase profit (income). “We have a solution that we developed that is a good example of one new offering we deliver on Azure,” said the executive director of IT operations for a professional services firm.

For the organization, it estimates benefits in its manufacturing department:

- › Three to seven new orders each year are enabled by greater global reach and reliability from workloads hosted on Azure IaaS.
- › Each new order brings in an average of \$100,000 in revenue.
- › Like other benefits, not every dollar from every sale is attributable to Azure, so a benefit factor has been applied.



New annual enterprise sales income

Income From New Enterprise Sales							
	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
D1	New enterprise client orders each month		3	5	7	8	8
D2	Value of each order (average)		\$100,000				
D3	Income margin for enterprise sales		10%				
D4	Percentage of new client orders enabled by Azure		75%				
Dt	Income from new enterprise sales	$D1 \times D2 \times D3 \times D4 \times 12$	\$270,000	\$450,000	\$630,000	\$720,000	\$720,000
	Risk adjustment	↓15%					
Dtr	Income from new enterprise sales (risk-adjusted)		\$229,500	\$382,500	\$535,500	\$612,000	\$612,000

Since it is difficult to predict new sales related to increased global scale and speed, a 15% risk adjustment has been applied. The risk-adjusted five-year present value of income from new enterprise sales is about \$1.7 million.



## Profit From New And Larger Customer Sales

In addition to the several B2B cost savings and income gains described above, another MultiGlobal division took advantage of the Azure IaaS platform to re-architect its customer-facing website, including the eCommerce platform where it can directly sell finished products, to provide better online customer service. Hosting the site on Azure returned immediate results. "When we moved, we saw some page loading time improvements in the US. But in China, we had huge improvements. We went from about 18 seconds on the previous site down to about 6 to 8 when we went live on Azure," said the manager of web technologies for a sporting goods manufacturer.

This, along with Azure's global reliability and scale, plus the ability to instantly grow (or shrink) the service to meet demand with Azure's per-minute billing, led to significant improvement in performance and a growth in both direct-to-customer sales transactions and the size of these transactions.

The organization estimates:

- › Thirty thousand website orders each year before Azure.
- › Fifty-eight thousand to 80,000 annual orders with Azure IaaS.
- › A \$40 average order size before Azure.
- › A \$50 to \$55 average order size since Azure.

Like other benefits, not every dollar from every sale is attributable to Azure, so a benefit factor has been applied.

Since it is difficult to predict how customers will react related to increased global scale and speed, a 15% risk adjustment has been applied. The risk-adjusted five-year present value of new customer-direct sales is about \$1.2 million.

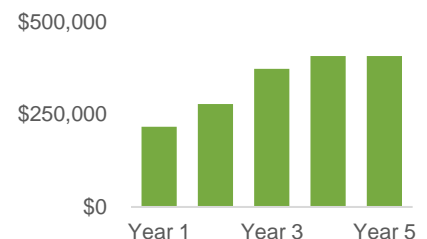
30,000 orders  
before

80,000 since  
Azure

Annual website orders and  
order size before and since  
Azure IaaS

\$40 per order  
before

\$55 per order  
since Azure



New annual customer  
sales income

### Income From New And Larger Customer Sales

	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
E1	Customer website orders before Azure per month		30,000				
E2	Average order size before Azure		\$40				
E3	Customer website orders since Azure per month		58,000	65,000	75,000	80,000	80,000
E4	Average order size since Azure		\$50	\$52	\$55	\$55	\$55
E5	Percentage of new and larger website orders due to Azure		75%				
E6	Income margin for B2C web sales		20%				
Et	Income from new and larger customer sales	(E1-E2)* (E3-E4)*E5 *E6*12	\$255,000	\$327,000	\$438,750	\$480,000	\$480,000
	Risk adjustment	↓ 15%					
Etr	Income from new and larger customer sales (risk-adjusted)		\$216,750	\$277,950	\$372,938	\$408,000	\$408,000

## Unquantified Benefits

Some benefits are not able to be quantified financially, either because they are not directly related to financial results or they are areas that the interviewed organizations have not yet measured. For the composite organization, MultiGlobal, the following unquantified benefits should be considered to add additional weight to the ROI analysis focus of this study:

- › **Access to new technologies and faster time-to-market.** The organization is now able to more flexibly and easily pilot new technologies with little or no upfront investment. For example, one division wanted to try out Hadoop, so it turned on that Azure service and started using it almost immediately. “One that would have been hard to stand up onsite would be Hadoop clusters, to try out some new potential business endeavors around big data,” said the senior network engineer at a global professional services firm. “To try out something on-premises would have been too cost prohibitive to go down that path,” said the director of IT at a global conglomerate.
- › **Development and testing process improvements.** Some developer and QA improvements are included above, in the cost savings enabled by migrating on-premises and outsourced servers to Azure IaaS. Much of that was for developer and QA workloads. But developer and QA benefits go beyond simple server changes:
  - **Developers and testers can set up environments much more quickly.** They can create an environment that exactly matches production in just a few clicks.
  - **Developers can take advantage of Azure integrations more easily.** They can also avoid issues that can come up when production and development environments are not identical, to complete tasks more quickly. “Now we can easily spin up a number of different environments,” said the project director at a software and services vendor.
  - **Developers can self-provision assets.** For example, they can turn on a specific testing environment, meaning less time waiting for servers to install or for requests to be completed, or even for physical servers to be ordered and set up.
  - **Applications and modules can be completed more quickly and more accurately.** This means that time-to-market can be reduced for client projects, and employees can take advantage of improvements sooner for internal projects.
  - **The organization can realize even more IT resource productivity improvements.** MultiGlobal has not reduced or reallocated any full-time IT resources. It did, however, significantly reduce outsourcing services, as many of those workloads have moved to Azure. But it didn’t need to replace those outsourced resources, and the full-time IT resources at MultiGlobal are able to manage all the workloads they used to, *plus* all the new workloads brought back in-house (and onto Azure). Only a few additional IT resource hires have been needed and are planned to be needed in later years. However, if the organization had moved all outsourced workloads to on-premises data centers instead of

“To try out something on-premises would have been too cost prohibitive.”

*Director of IT, global conglomerate*



Additional benefits:

- Ability to easily pilot new technologies, without making large upfront investments
- Developer and test productivity
- Only a few new resources needed, even though many outsourced resources were not replaced
- Service right-sizing and turning off when not in use

using Azure, it estimates it would have had to double its IT resource headcount.

- › **Workload and service right-sizing and right-timing.** Some services can be turned off during quiet hours, such as the dev/test environment. “From about 10 p.m. until 6 a.m., we shut the environment down,” said the manager of web technologies for a sporting goods manufacturer, highlighting the benefits enabled by services such as Azure virtual machines and dev/test labs. Some of these costs are incorporated in the cost savings highlighted above, as well as the cost of ongoing Azure subscriptions, but additional opportunities to right-size services and turn them off when not in use are expected.

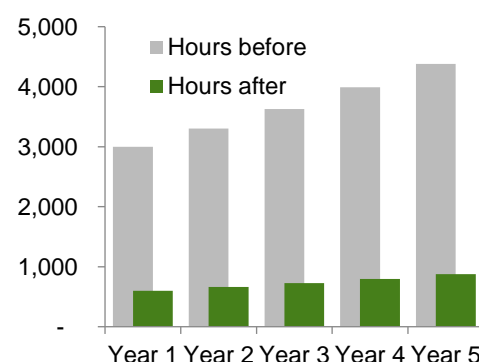
## Flexibility

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

- › **The organization can use Azure PaaS.** The lift-and-shift migration of many server workloads to Azure IaaS has created new opportunities and significantly saved on IT costs. Like the improvement of its website, MultiGlobal will start to consider what services and applications can be moved to Azure PaaS, as an opportunity to take advantage of additional Microsoft services, simplify IT, and provide employees, partners, and customers with additional opportunities to access and share information and services. Potential benefits are detailed in “The Total Economic Impact Of Microsoft Azure PaaS.”<sup>3</sup> They include:

- **Eighty percent less IT administration time was required for applications on PaaS, allowing the organization to focus on application innovation, not administrative tasks.** The organization used to spend significant time on server patching, networking setup, firewall configuration, and many other server-related tasks now included with Azure PaaS.
- **IT teams can reallocate or avoid hiring five IT administrators and two database administrators (DBAs) to other teams or more value-added tasks.** The organization would have needed to hire five new IT administrators and two DBAs within the first year to meet the demand and service otherwise enabled by Azure PaaS.
- **The organization improved application delivery time-to-market by 50% with Azure PaaS.** The organization could deliver applications running on Azure in half the time, meaning revenue could be earned more quickly.
- **The organization saved 25 hours in application testing and development time per application created or updated, improving developer productivity.** With Azure PaaS, developers can take advantage of integrated tools and, with the push of a button, testers can create new testing environments that exactly match the organization’s development and production environments.

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



Annual IT hours saved managing applications on Azure PaaS

- **The organization saw employee issue identification and repair resource cost savings in the first year.** The representative organization deployed an employee-facing mobile application on Azure PaaS to meet a specific need related to facilities issue identification and repair, saving significant time and resource costs compared with the earlier paper-based processes.
  - **Improved sales rep performance and direct customer sales resulted in new profit.** Both customer self-service and sales enablement apps are easier to develop and contribute to new revenue and profit for the organization.
- › **As the organization moves more workloads to Azure**, it can take advantage of the accounting and financial opportunities of moving even more capital expenditures to operational costs.
- › **The organization can also tune and optimize infrastructure more effectively.** For example, one interviewed organization has enabled and tested multiple Azure configurations. (For example, does it really need eight cores per instance? Or do four-core or two-core instances meet its needs?) This organization has tested its Azure infrastructure configuration to find the best combinations of server numbers, size, and other operational characteristics, with the goal of delivering the best performance at a reasonable cost.
- › **While only small SAP applications and related services (like SAP backups and disaster recovery) have been migrated to Azure so far, all interviewed organizations that use SAP expressed interest in migrating most or all of their SAP applications and data to Azure.** They anticipate that this will lead to significant improvements in application use and adoption (especially for mobile workers), as well as data center and IT management savings. With SAP on Azure, organizations look forward to migrating their applications to purpose-built hardware “large instances” or virtual machines on Azure. Organizations are also interested in SAP HANA support on Azure to gain the benefits from cloud scale and mobile access but maintain performance and support for their large enterprise applications.

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

## Total Costs

	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL	PRESENT VALUE
Ftr	Initial costs	\$170,000	\$0	\$0	\$0	\$0	\$0	\$170,000	\$170,000
Gtr	Annual costs	\$0	\$876,750	\$1,102,500	\$1,365,000	\$1,594,688	\$1,881,797	\$6,820,734	\$4,991,388
	<b>Total costs (risk-adjusted)</b>	<b>\$170,000</b>	<b>\$876,750</b>	<b>\$1,102,500</b>	<b>\$1,365,000</b>	<b>\$1,594,688</b>	<b>\$1,881,797</b>	<b>\$6,990,734</b>	<b>\$5,161,388</b>

## Implementation Costs

For MultiGlobal, the first workloads deployed were primarily lift-and-shift (with the customer-facing website exception already discussed). The organization estimates that it required three full-time equivalents (FTEs) over 20 weeks for initial migration, for tasks including:

- › Planning, particularly around any impact that migrating a workload may have on IT resources, applications, or business processes.
- › Training for IT resources to learn how to manage Azure as well as the workloads running on it.
- › Data migration and preparation for workloads and/or data sources being migrated or connected to an Azure service.
- › Implementation effort to finally migrate each workload.

Some added costs were incurred for some additional consulting assistance.

Note that once the initial period has ended, additional workloads continue to be migrated in years 1 through 3. While the training and planning time is no longer needed, migration best practices can help save time, and some resource time is required to move and monitor those workloads on Azure IaaS. These costs are included in the Annual Costs section.

The implementation costs add up to \$170,000.

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over five years, the composite organization expects risk-adjusted total costs to be a PV of less than \$5.2 million.

## Implementation Costs

	METRIC	CALC.	INITIAL
F1	FTEs involved in Azure IaaS planning, migration, and pre-launch implementation		3
F2	Planning, migration, and implementation weeks		20
F3	Average Azure IT salary (hourly)		\$50
F4	Other initial costs		\$50,000
Ft	Implementation costs	$F1 \times F2 \times F3 \times 40 + F4$	\$170,000
	Risk adjustment	↑10%	
<b>Ftr</b>	<b>Implementation costs (risk-adjusted)</b>		<b>\$170,000</b>

## Annual Costs

MultiGlobal has implemented several workloads on Azure IaaS, including compute, storage, networking, management, and security. The organization is a customer of other Microsoft solutions and services; therefore, based on its size and other licensing needs, it qualifies for Azure pricing for enterprise organizations. Additionally, there are some Microsoft Azure offers that can deliver some additional options or discounts to some organizations, including:

- › **Azure Compute Pre-Purchase Plan.** This provides significant discounts for compute services for organizations that purchase a year of service in advance.
- › **Azure Hybrid Use Benefit.** This allows organizations to leverage on-premises licenses already purchased.
- › **Enterprise Agreement (EA) program.** This also provides large discounts off public list prices.

While individual organizations' needs and licensing agreements differ, these programs have been considered when estimating the price of Azure IaaS licensing for the composite organization. Azure licensing is estimated to be about \$560,000 in the first year for the composite organization, which includes:

- › Sixty core virtual machines, primarily at the D4 v2 level.
- › Block blob storage of 100 TB.
- › Additional bandwidth and StorSimple configurations.
- › Professional Direct support.

Additional workloads are migrated in later years, and Azure service licensing needs are also expected to grow. Migration effort is also included (as outlined above, with costs reducing each year as fewer workloads need migration, and best practices helping to speed up the process).

Given that Azure licensing, migration tasks, and expected new hires are all estimated, Forrester risk-adjusted these costs upward by 5%, yielding a five-year risk-adjusted total PV of about \$5.2 million.

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

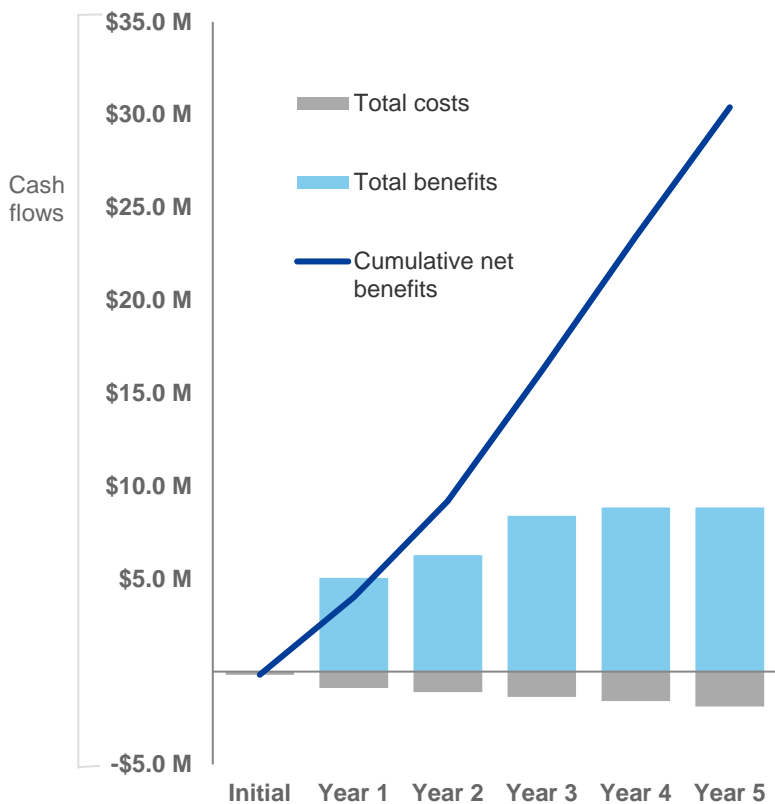
Annual Costs							
	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
G1	Azure licensing costs		\$560,000	\$700,000	\$875,000	\$1,093,750	\$1,367,188
G2	Additional workload migration costs		\$75,000	\$50,000	\$25,000	\$25,000	\$25,000
G3	FTEs hired to support Azure (cumulative)		2	3	4	4	4
G4	Average Azure IT salary		\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Gt	Annual costs	$G1 + G2 + G3 * G4$	\$835,000	\$1,050,000	\$1,300,000	\$1,518,750	\$1,792,188
	Risk adjustment	↑5%					
Gtr	Annual costs (risk-adjusted)		\$876,750	\$1,102,500	\$1,365,000	\$1,594,688	\$1,881,797



# Financial Summary

## CONSOLIDATED FIVE-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 and NPV, for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.



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

	INITIAL	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL	PRESENT VALUE
Total costs	(\$170,000)	(\$876,750)	(\$1,102,500)	(\$1,365,000)	(\$1,594,688)	(\$1,881,797)	(\$6,990,734)	(\$5,161,388)
Total benefits	\$0	\$5,054,250	\$6,280,950	\$8,385,188	\$8,834,250	\$8,834,250	\$37,388,888	\$27,604,842
Net benefits	(\$170,000)	\$4,177,500	\$5,178,450	\$7,020,188	\$7,239,563	\$6,952,453	\$30,398,153	\$22,443,454
ROI								435%

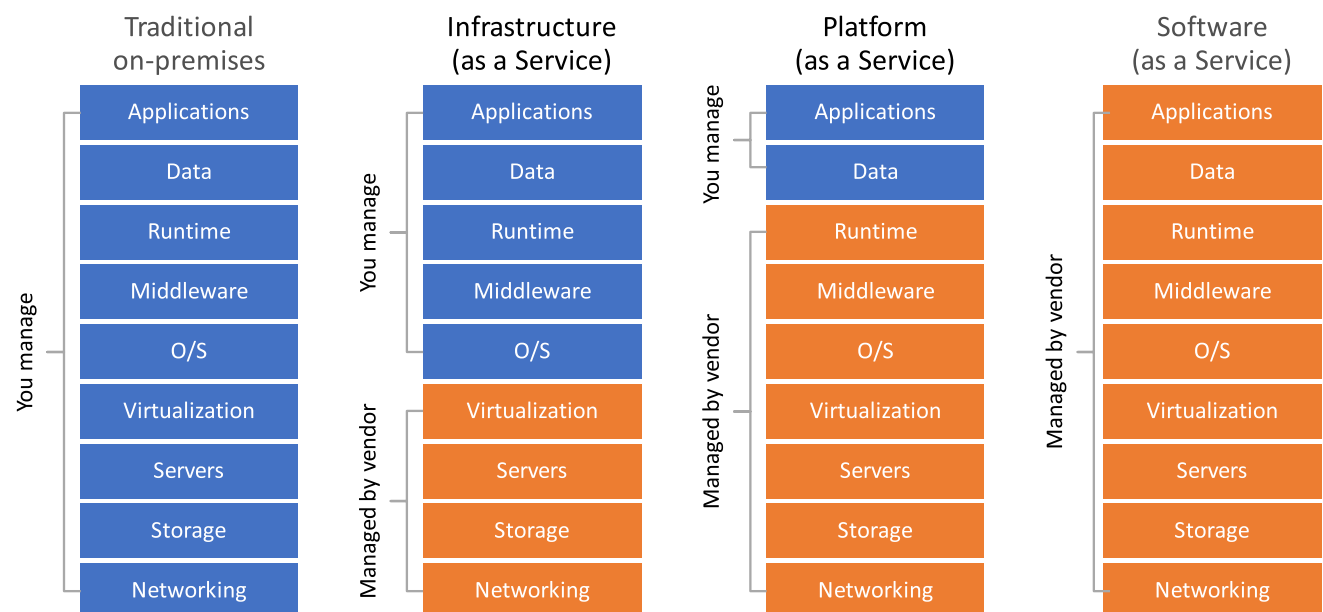
# Microsoft Azure IaaS: Overview

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

Microsoft Azure is a global, trusted, and hybrid cloud platform that enables organizations to quickly build, deploy, and manage applications across a large network of Microsoft-managed data centers, supporting migration and deployment of applications in close proximity to customers and supporting geo redundancy. In addition to having the largest global scale, Azure is a trusted cloud with the largest compliance portfolio with certifications and security attestations. Azure is the only cloud provider that provides a comprehensive and consistent hybrid platform with capabilities like Azure Stack and Azure Active Directory.

Microsoft Azure enables organizations to build and run applications without focusing on the infrastructure. It provides automatic OS and service patching, built-in network load balancing, and resiliency against hardware failures. It supports a deployment model that enables customers to upgrade applications without downtime.

Microsoft Azure IaaS comprises core services such as compute, storage, networking, security, and related management capabilities. It facilitates large scaling of applications with features like scalesets and managed disks. It is an automated self-service platform with services like Azure Resource Manager that allow for fast and



Source: Microsoft

templatized resource provisioning. It supports a flexible billing model where customers are charged for the virtualized machines (VMs) used by the minute.

Microsoft Azure provides open source, flexible, and cross-platform support across a broad selection of programming languages, frameworks, tools, databases, and architectures, including .NET, Node.js, Java, PHP, and Python. It allows organizations to reliably host and scale out application code, storing data using relational SQL databases and NoSQL data stores, as well as advanced data analytics services, to extract value from all types of data and devices.

For more information, visit [www.azure.com](http://www.azure.com).

# 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.



### 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.

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

---

<sup>1</sup> See the glossary in the right-hand column of Appendix A for a definition of present value, or PV.

<sup>2</sup> See the glossary in the right-hand column of Appendix A for a definition of net present value, or NPV.

<sup>3</sup> Source: “The Total Economic Impact Of Microsoft Azure PaaS,” a commissioned study conducted by Forrester Consulting on behalf of Microsoft, June 2016 (<https://azure.microsoft.com/en-us/resources/total-economic-impact-of-microsoft-azure-paas/>).