A Forrester Total Economic Impact™
Study Commissioned By AppDynamics,
A Cisco Company
May 2018

The Total Economic Impact™ Of AppDynamics Application Performance Monitoring With Cisco

Cost Savings And Business Benefits

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Table Of Contents

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Key Benefits

IT operations and help desk time savings:
65% *reduction in MTTR aiding IT operations FTEs, and* **30%** *deflection of IT help desk calls*

Application development cycle reduction savings:
45% *reduction in application development time and effort*

Application monitoring and detection tool consolidation:
70% *reduction in monitoring tools stack*

Executive Summary

AppDynamics provides application performance management that helps its customers proactively solve application performance issues across the enterprise. AppDynamics, now a Cisco company, commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential benefits enterprises may realize by deploying its Application Performance Management (APM) solution and how it may create additional value in the future for customers also using Cisco infrastructure. The primary purpose of this study is to provide readers with a framework to evaluate the potential benefits that organizations may realize with the Application Performance Management solution.

To better understand the benefits and risks associated with this investment, Forrester interviewed several customers and surveyed additional customers with years of experience using the AppDynamics APM solution. Customers describe this as a tool that can quickly map out infrastructure, in particular on Cisco devices, as well as digital processes across the enterprise to identify application issues in order to resolve them before reaching and negatively impacting users. Our observations indicate that the solution reduces issues by as much as 95% in the production environment. One program manager reported, “Our mean-time-to-resolve has been reduced by 85%, but the single biggest impact to our business is that we now have no downtime on the application side.”

Prior to using AppDynamics, many of the customers were in a reactive state — fixing problems as they arose in the production environment. Prior attempts to mitigate application-related issues were mildly successful at best and resulted in wasted time triaging to find the root cause of issues. Often, the issues were not resolved but sapped the IT group of valuable hours that could have been spent bringing value to the enterprise. Following the deployment of AppDynamics, application development and application support groups eliminated multiple cycles of debugging and issue resolution; this allowed IT groups to be proactive in their approaches. One information systems manager said, “We proactively get down to the issues now so that we can avoid all the issues that affect the rest of the business downstream.” Many other interviewees echoed this sentiment.

Looking beyond the benefits of AppDynamics, interviewed customers expect the integration with Cisco technology to introduce added fidelity to the breadth of coverage while collapsing the holistic view into a single consolidated source. As correlated data is introduced from the full environment, models will get richer and enable operators from all segments of IT to monitor and act more effectively. Customers that use AppDynamics and Cisco infrastructure products can expect the monitoring of both hardware and software from a single agent, with correlations drawn between the two stacks for a more exact pinpointing of problematic areas.

Key Findings

Quantified benefits. The following risk-adjusted present value (PV) quantified benefits are representative of those experienced by the companies interviewed:

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Benefits PV $20.2 million

"The combination of Cisco hardware and AppDynamics becomes that much more valuable when we are able to see our business transaction flow on a singular big board. And to go beyond that with self-healing and automation – that's where we are headed with these solutions."

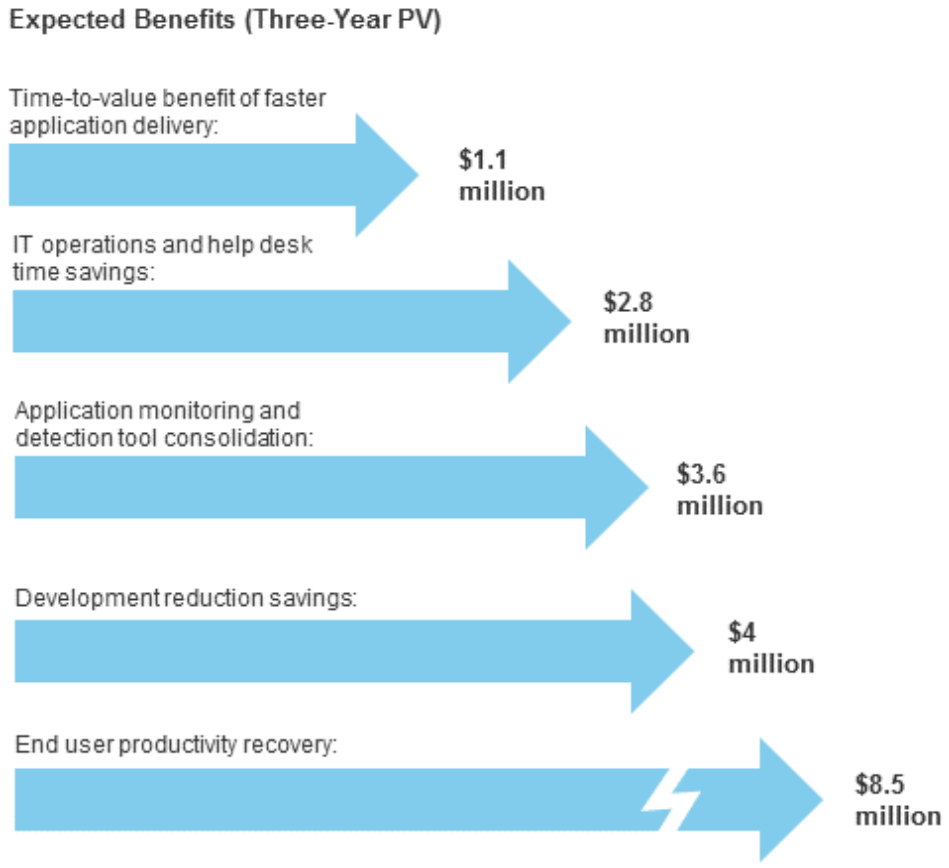
Senior manager of IT ops, apparel retailer

- **Faster root-cause identification enabled the IT groups to reduce mean-time-to-resolve (MTTR) by 65%.** In addition to a drastically reduced MTTR, members of different groups, such as DevOps, incident responders, IT ops, and network ops, were able to avoid war room triage sessions. At an average rate of 25 hours per application performance degradation, the groups drastically reduced their time expended on the 500-plus annual incidents. IT help desk personnel enjoyed lower call volumes due to quicker resolution and elimination of the issues from a preproduction development process using AppDynamics. Savings to IT groups amounted to $2.8 million PV over a span of three years.
- **Business end users enjoyed greater productivity.** Business users recovered on average 8 minutes of productivity per incident when uninterrupted by performance degradation or outages. Assuming an average of 12,000 users per organization, this easily equated to a savings of approximately $4 million per year.
- **Early AppDynamics detection capabilities reduced the amount of developer effort needed on projects.** As developers added capability and tools to the enterprise, the test and debugging cycles often required multiple cycles for proper operation within complex environments. Using AppDynamics, the developers could see at a code level where issues resided and quickly fix their errors before releasing their work into production. Estimated savings from cycle reduction amounted to nearly $4 million across a three-year span.
- **Organizations experienced time-to-value (TtV) benefits from accelerated application delivery.** Most enterprises assign an internal rate of return (IRR) to select projects. Using an IRR of 30%, the acceleration of deployment of applications can net an organization as much as $1.1 million PV over three years, excluding any revenue generation that these applications might provide. Customers of AppDynamics stated that, on average, they released natively coded projects as much as four months (or half of original expectations) faster than they otherwise would have been able to do without the granularity that AppDynamics provided.
- **Consolidation in monitoring, detection, and logging tools with the deployment of AppDynamics led to additional savings.** Many interviewed organizations stated that AppDynamics provided the level of insights in so much detail that they could reduce their stack by as much as 70%. In addition, support and maintenance of these tools typically resulted in 20% of the cost of the licensing (or production in the case of inhouse developed tools). When combined, the total value of tool rationalization was $3.6 million PV over a three-year period.

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

- **Negative customer experience and brand erosion protection.** Customers are often taken aback and balk when websites become unresponsive, especially those that operate in the retail space. Lasting effects include the loss in trust of a brand and the associated customer lifetime value. Forrester's Customer Experience Index (CX Index™) has determined that a decrease or increase of just a single point (out of 100) can result in a loss or gain, respectively, of $2.44 per customer.
- **Further tool consolidation and application performance improvement.** For those customers who use AppDynamics in conjunction with Cisco infrastructure, tools and capabilities to manage the entire IT stack converge. For customers, AppDynamics can identify software issues and point to issues in infrastructure with greater accuracy with monitoring data from Cisco appliances. The result is further simplification of management along with greater granularity in detection – directing IT operators to the root cause of issues even if the problems persist at the hardware level

Forrester's interviews with five existing customers and subsequent financial analysis found that a composite organization based on these interviewed organizations experienced benefits of $20 million over three years. This analysis does not consider the costs associated with licensing, implementing, and maintaining the solution. Readers are advised to approach AppDynamics for a customized value analysis to determine a projected return on investment (ROI).



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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 AppDynamics' Application Performance Management solution.

The objective of the framework is to identify the benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the benefits that AppDynamics Application Performance Management can have on an organization:

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

DUE DILIGENCE
Interviewed AppDynamics stakeholders and Forrester analysts to gather data relative to Application Performance Management.

CUSTOMER INTERVIEWS
Interviewed five organizations using Application Performance Management to obtain data with respect to 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 three of four fundamental elements of TEI in modeling AppDynamics Application Performance Management's impact: benefits, 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.

The Application Performance Management Customer Journey

BEFORE AND AFTER THE APPLICATION PERFORMANCE MANAGEMENT INVESTMENT

Interviewed Organizations

For this study, Forrester conducted five interviews with AppDynamics Application Performance Management customers, in addition to conducting online assessments with seven other customers. In-depth interviewed customers include the following:

INDUSTRY	REGION	REVENUE	PRIMARY APPLICATIONS MONITORED
Apparel retailer	Global	$3 billion, with $500 million from online business	Consumer retail app, internal-facing service apps
Financial services	Global	$40+ billion	Claims management and LOB apps
Technical and engineering services	North America	$2.5 billion	Customer management and internal-facing service apps
Healthcare	North America	$20+ billion	Claims management and LOB apps
Airline	Global	$30+ billion	Internal and external booking applications, LOB apps

Key Challenges

The age of the customer is upon us — where organizations must become customer-obsessed to win, serve, and retain customers. At the heart of the customer-obsessed strategy is the understanding that to better serve technology-savvy customers, an organization must accelerate its digital business efforts and deliver to customers what they want, when they want it. Applications and the dependent processes that serve this purpose are key to achieving this strategy.

Many of the assessed organizations echoed these sentiments; earning and retaining the business required providing a better customer experience. To deliver that experience, the organizations needed to provide consistent application performance that offered contextually relevant information when and where the consumer wanted it. And to further amplify user experience, internal applications and processes that fed data to the consumer applications also needed consistent performance and service-level agreements (SLAs). With complex dependencies between software components and infrastructure layers, gone are the days of being able to rely solely on software monitoring and logging. Monitoring tools for both the network and software needed to work in conjunction intelligently to facilitate a productive user experience.

Having relied on logging and other monitoring tools in the past, the organizations deemed the level of insight offered by their existing tools to be insufficient — especially as they experienced performance degradations and outages with their applications daily. Customers were not able to access their accounts online quickly enough. Accounts were

> "In less than two weeks out of the box, AppDynamics was already producing the code-level insight needed to immediately take action and make a measurable effect."
>
> *Senior program manager, professional services firm*

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updated slowly because internal users had issues with line-of-business (LOB) applications. When DevOps went to fix the problem, network operations center (NOC) engineers pointed fingers at the application code while developers pointed fingers at infrastructure. And this was only after multiple resources expended hours upon hours to disseminate usable information from logging tools and the existing APM tools. In a world where customers demand information on minute and even second intervals, delays of half an hour or more simply were not acceptable. In fact, as industries across a wide spectrum have progressively enhanced their customer-facing application capabilities, performance degradation has become a significant competitive disadvantage.

In short, the interviewed organizations faced these challenges:

- **Incident resolution at a tactical level was inefficient and was often unable to fully resolve issues.** Multiple operators from NetOps, DevOps, and the help desk were pulled in to tackle problems without resolving issues.
- **These larger enterprises relied on custom application development that was often slowed in the development process.** Testing and debugging made for strenuous processes that necessitated multiple iterations before moving to a production state.
- **End users and external users of applications saw poor performance, leading to lowered productivity and user satisfaction.** Business users lost critical productivity time while external consumers often abandoned their purchases and sought help from customer service.
- **Logging tools created an enormous amount of data that seldom led to identification of problems or actionable remediation steps.** While data was plentiful, it required an enormous amount of resources to pour over the logs and triage based on the root source of issues.
- **Employee productivity and customer satisfaction suffered.** Enterprises saw issues both in productivity to their IT staff and customer satisfaction from their end consumers. Organizations realized that the losses were substantial, but also difficult to quantify.

"With millions upon millions of lines of code, there [was] just no way we could effectively debug our applications issues. Yes, we had logging tools, but that took tens of hours just to look through to identify that a problem existed."

AVP of IS, healthcare organization

"Our customer experience was being hammered. Customers were calling left and right. We got all our people together to solve this, and 14 hours later, we still couldn't figure out what the issue was."

Senior manager of IT ops, apparel retailer

Solution Requirements

After reviewing several APM tools to tackle these problems and how each of the tools can potentially be used to tie-in hardware infrastructure, the organizations decided on a new APM solution — one that would empower IT operations to act swiftly and accurately. Organizations needed a solution that met multiple business imperatives, focusing on not only improving IT Ops efficiency in identifying and remediating performance issues, but also DevOps in shortening application delivery cycles to bring forth new feature sets and capabilities. In doing so, interviewed organizations hoped to become more agile, customer-obsessed, and capable of meeting the consumer wants of today and in the future. One interviewee had asked, "Is it possible to stop being reactive and finally become one step ahead?"

In summation, the organizations needed their new APM to do the following solution as a part of their greater customer-obsessed strategies:

"We finally have a tool that gives us insight into application health at the code level. Support and development teams have stopped the finger pointing, and we've made significant strides in our application reliability."

Application support manager, major airline

- Improve mean-time-to-know (MTTK) and mean-time-to-resolve (MTTR) so that application issues with degraded performance were minimized.
- Decrease software development life cycles (SDLC) through preemptive preproduction testing and debugging.
- Shrink overhead NOC/IT full-time equivalent (FTE) costs by decreasing reactive application performance tickets.
- Provide deep-level analysis — to the code level, for their existing base of applications.
- Enable visibility deep into the infrastructure layer, correlating application performance to infrastructure issues.
- Support .NET, Java, and potentially additional code bases.
- Scale for use for both on-premises applications and cloud offerings, as the organizations had data residency requirements in some regions, but not others.
- Flexible for future integrations to incorporate network and security monitoring data to further improve remediation processes.

> "Our team has been enabled with this tool. We're looking to doubling our business while using the same compact or even leaner applications delivery team."
>
> *AVP of IS, healthcare organization*

Key Results

Following the implementation of AppDynamics, the interviews revealed these key results from the APM investment:

- **The mean-time-to-know and mean-time-to-resolve immediately improved, reducing thousands of triage hours to properly identify issues.** IT personnel gained tremendous productivity when they no longer had to focus on remediating issues and instead focusing on delivering higher levels of user experience. Early identification of problematic areas and prioritized resolution based on business context allowed organizations to grow the business without needing to grow the IT cost center. In fact, multiple interviewees identified AppDynamics as the key reason that IT is now looked at as a crucial business-enabling group rather than a cost center.
- **External consumers and internal business users immediately reaped the benefit of higher productivity with properly functioning applications.** Internal and external users of organizational digital tools enjoyed a high level of satisfaction with fewer outages and performance degradations. Explained further in the Unquantified Benefits section, an increase in satisfaction for internal users could lead to higher productivity and an improved working experience. Many external users enjoyed a higher level of experience and in turn increased their spend and stayed loyal to organizations, creating a long-term benefit in the form of higher customer lifetime value (CLV).
- **Organizations accelerated value- and revenue-delivering application deployments, due to testing and debugging efficiencies created by AppDynamics.** With quicker development cycles, organizations rolled out value-delivering applications sooner, effectively bringing revenue or value to the organizations more quickly. Developers were no longer inundated with troubleshooting and could instead focus on value-creation initiatives. Furthermore, outsource development could now be rolled into the internal development teams given the newfound developer bandwidth.

> "Deploying AppDynamics was kind of like seeing a shining light. What would normally take us a solid month of sitting with the development team to understand the app was auto-discovered in minutes by AppDynamics. exposing some ridiculous issues. We were blown away."
>
> *Application support manager, major airline*

- **Enterprises scaled digital initiatives more effectively with newfound IT productivity.** As the IT workforce was rotated off remedial and resolution-based situations, these labor inputs were reallocated to help the business grow. For instance, developers moved on to new projects sooner rather than delve into code debugging as they had prior to AppDynamics. Skilled developers were and still are a scarce resource; using them for their intended purpose accelerates organizational growth.
- **Enterprises using Cisco infrastructure with AppDynamics gained the ability for future performance gains and tool consolidation.** Data moving across the enterprise can be prioritized intelligently – with network infrastructure delivering data prioritization based upon measured performance deviations detected by AppDynamics. Ultimately, performance degradation can be further mitigated without adding human effort.

Composite Organization

Based on the interviews, Forrester constructed a composite company that illustrates the potential benefits of an investment in AppDynamics. The composite organization is representative of the five 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:

Description of composite. The global, multibillion dollar business-to-business organization provides sales, customer support, and service for its products across multiple product lines. The organization has a strong brand, global operations, a large customer base in the tens of millions, and a strong online and offline presence. It had undertaken a digital transformation initiative that encompassed the delivery of digital assets to improve the experience of internal users as well as consumers. The intent of providing a more positive experience, however, was muddled by the inability to keep the applications and services running smoothly to provide the intended experience.

Key assumptions

- $5+ billion in revenues
- 12,000 business users
- 60 development team FTEs
- 220 IT help desk FTEs

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	IT operations and help desk time savings	$1,062,599	$1,115,462	$1,171,549	$3,349,610	$2,768,071
Btr	End user productivity recovery	$3,118,752	$3,436,625	$3,791,083	$10,346,460	$8,523,712
Ctr	Development reduction savings	$1,617,408	$1,617,408	$1,617,408	$4,852,224	$4,022,254
Dtr	Time-to-value benefit of faster application delivery	$460,961	$460,961	$460,961	$1,382,884	$1,146,342
Etr	Application monitoring and detection tool consolidation	$1,449,000	$1,449,000	$1,449,000	$4,347,000	$3,603,449
	Total benefits (risk-adjusted)	$7,708,720	$8,079,456	$8,490,001	$24,278,178	$20,063,828

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of more than $20.1 million.

Benefit 1: IT Operations And Help Desk Time Savings

Application failures leading to brownouts and — worse yet — blackouts can happen. Prior to the implementation of AppDynamics, all interviewed organizations experienced such situations, during which they were unable to service consumers of the digital services. Frequently, organizations hosted war room sessions to resolve the issues, only to end in slew of finger pointing.

One interviewee pointed out: “Our customer experience was being hammered. Customers were calling left and right. We got all our people together to solve this and 14 hours later, we still couldn’t figure out what the issue was. . . . The dev guys saw no issues with the application code while the database people were saying the same. Operations said it’s not a network problem — ‘let’s just reboot.’ Ultimately nothing was truly fixed while everyone went on to their weekends.”

Key to the resolution process is AppDynamics’ ability to pinpoint the root cause of failure and dependencies at a granular level, that led operators to hardware or lines of faulty code. Critical dependencies across business transactional flows are highlighted by the solution to provide added context and insight as to other possibly affected areas that should also be addressed. The visibility created gave organizations a direction of attack to quickly resolve the issue without needing to draw in engineers from multiple groups for war room sessions that traditionally led nowhere. Combined with machine learning driven dynamic baselining that gave earlier alerts to performance deviation, MTTK and the accompanying key performance indicator (KPI) of MTTR improved significantly. For the interviewed customers:

> “We were really fed up in the years before AppDynamics because we kept on coming to answer of ‘I don’t know why this is happening,’ with nothing really being resolved.”
>
> *Application support manager, major airline*

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- MTTK has been reduced by as much as 75% while MTTR has been reduced in the range of 50% to 70%.
- War room triage sessions are now largely avoided as singular incident responders can identify the issue with AppDynamics and allocate remedial work to the appropriate parties. In cases where triage is still necessary, the amount of time spent to analyze incidents are reduced by tens of hours per incident.

When asked how the AppDynamics solution was implemented in their environment, one interviewee stated, “I’ve implemented AppDynamics in all of our critical environments so that we can effectively orchestrate and engineer quality sooner.” As these moves are largely preemptive/proactive in nature, IT help desk personnel received significantly fewer calls related to application performance. Forrester estimated from interviews approximately 30% fewer calls to help desk and support services for the composite organization.

With the reduction in labor inputs, organizations can reassign their workforce to other value-producing segments. Cumulatively adding the time for IT operations, network operations, developers, and incident responders, the composite organization saved nearly 9,000 hours in the first year of AppDynamics usage alone. Accounting for growth in applications of 5% yearly, this savings grew to nearly 10,000 hours by the third year of operations. The IT help desk was able avoid over 130,000 calls per year, or the equivalent of nearly 22,000 hours in the first year. Over a three-year span, Forrester estimates the value of IT operations and help desk savings to be $2,768,071 PV.

While not calculated in this study, the combined use of AppDynamics and Cisco infrastructure is expected to provide added value in this benefit category. Possible contribution factors include:

- Decreased effort for root-cause analysis and MTTR, as infrastructure visibility and monitoring become integrated with the AppDynamics engine.
- Greater deflection of performance related issues with automatic self-healing and self-learning technology covering the entire landscape.
- Consolidation of IT roles due to a rationalization of tools to manage performance.

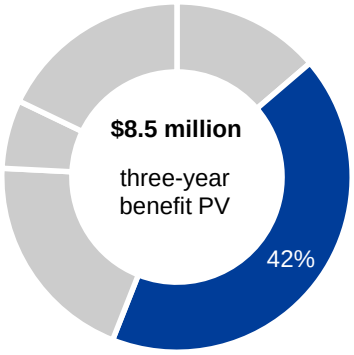
The mean-time-to-resolve performance-related situations is reduced by 65% with AppDynamics.

IT Operations And Helpdesk Time Savings: Calculation Table					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
A1	Application performance incidents in production environment, yearly (5% annual growth)	10.5 per week* 52 weeks	546	573	602
A2	Operations group personnel hours needed for triage per incident, pre-AppDynamics on average		25	25	25
A3	Reduction in time-to-resolve		65%	65%	65%
A4	Average hourly wage of network operations, incident responders, and developers	$91,000*1.2x benefits multiplier/2,000 hours	$54.60	$54.60	$54.60
A5	IT operations time savings	A1*A2*A3*A4	$484,439	$508,394	$534,125
A6	IT help desk calls deflected per year, inclusive of internal and external users	30% decrease overall, from 24 calls handled per FTE/day	131,400	137,970	144,869
A7	Time spent per application performance-related help desk call, in minutes		10	10	10
A8	Average hourly wage of IT help desk	$44,000*1.2x benefits modifier/ 2,000 hours	$26.40	$26.40	$26.40
A9	IT help desk time savings	A6*A7/60*A8	$578,160	$607,068	$637,424
At	IT operations and help desk time savings	A5+A9	$1,062,599	$1,115,462	$1,171,549
	Risk adjustment	0%			
Atr	IT operations and help desk time savings (risk-adjusted)		$1,062,599	$1,115,462	$1,171,549

Benefit 2: End User Productivity Recovery

Interviewed organizations needed to reduce the downtime and performance degradation for internally facing applications. The causes were numerous, but organizations could never pinpoint them. One interviewee explained: “We had an influx of help desk calls but just could not pinpoint why the performance issues were happening. A reboot of certain systems was done in many cases, but we were never able to put a finger on what the root cause of the issue was.” The effect of these issues spread widely across the enterprises, resulting in wasted time for end users as well as IT help desk and IT operations personnel.

Our observation of end user downtime revealed that, on average, the typical user experienced 8 minutes of downtime per incident, although the incidents often lasted much longer. As a consolation, many of the users were able to set aside the task at hand and move on to other productive tasks — but not before spending 8 minutes on the problematic application. As application performance issues and outages were precluded to only certain apps at any given time, only a conservative estimate of 10% of business users were affected at any one given time.



End user productivity recovery: 42% of total benefits

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In the new AppDynamics environment where situations like this rarely occurred, if at all, this would-be wasted time is fed back into productivity. For the composite organization, we calculated this to be approximately $4 million per year.

Readers should note that the criticality of business applications and the need to use a particular application that is affected on the operability front can affect the overall benefit returned to the business user. As such, Forrester has adjusted this benefit downward by 15% to account for less important app activity that can usually be conducted later. Following the risk adjustment, the time returned to end users yields a three-year business benefit of $8,523,712 PV. Readers should also note that the effect of external users like that of retail consumers has not been applied into our calculations, as these figures fluctuate greatly depending on the industry in which the organization operates.

Readers should note that while unquantified, the combined usage of both Cisco infrastructure and AppDynamics can accelerate end-user productivity. Self-learning as well as administrator set prioritization of data packet delivery across infrastructure for those applications that are mission critical and higher value. Infrastructure utilization and performance are both expect to improve concurrently.

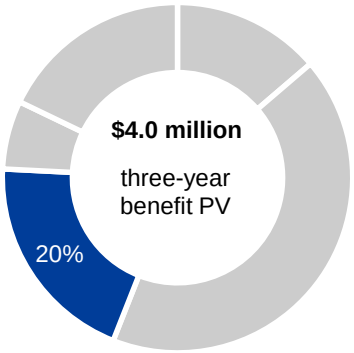
Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

End User Productivity Recover: Calculation Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
B1	Degraded app performance incidents, per year	A1	546	573	602
B2	Internal users affected by outages at given time of incidents (5% annual growth)	10% of 12,000 total business users	1,200	1,260	1,323
B3	Estimated time lost due to poor app performance per incident per user, in minutes		8	8	8
B4	Average hourly wage of internal business user	$70,000*1.2x benefits modifier/ 2,000 hours	$42	$42	$42
Bt	End user productivity recovery	B1*B2*B3*B4/60	$3,669,120	$4,043,088	$4,460,098
	Risk adjustment	↓15%			
Btr	End user productivity recovery (risk-adjusted)		$3,118,752	$3,436,625	$3,791,083

Benefit 3: Development Reduction Savings

Interviewed enterprises all had complex application and infrastructure stacks serving internal and external users. Sizeable development teams supported productivity and business initiatives. The organizations utilized AppDynamics heavily in their development process, with heavy emphasis on the test and QC stages. Traditionally these organizations coded and then tested applications numerous times. With AppDynamics mapping out the infrastructure and affected points across the network, developers had a holistic view of the environment and could more easily plot out and design efficient applications. Issues with coding are identified down to the code level to pinpoint areas needing adjustment. As these development efforts progressed, AppDynamics was able to



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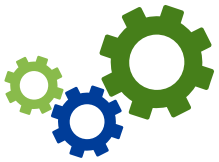
identify problems in the interdependencies and code across multiple coding languages. One customer stated: “Our testing is much faster now. I would say that it’s improved light years.”

For the composite organization, the following metrics were applied:

- The organization effectively reduced testing and QC stages, resulting in an overall development time reduction of 45% of the entire SDLC. Interviewed organizations estimated reductions in the range of 30% to 65% for their application development with AppDynamics.
- Utilization rates of software engineers — for development or remedial tasks — were set at 80% of available hours.
- A total of 60 internal developers were employed by the composite.
- External developers and consultancies were not factored into the financial model in line with the interviewed organizations that predominantly used internal resources. Note that utilization of external resources with AppDynamics would raise the expected benefit shown in the table below.

Aggregated over three years, the total benefit of developer savings with the reduction in SDLC amounts to a PV of approximately $4 million.

Development savings from reduced development and test cycles: **20%** of total benefits



Application development time decreased by 45% with AppDynamics.

Development Reduction Savings: Calculation Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
C1	Development time spent annually in hours, pre-AppDynamics	60 developers, committing 60% of time to new development	72,000	72,000	72,000
C2	Utilization modifier to account for downtime	80% of total time available	80%	80%	80%
C3	Average hourly wage of internal developer	$104,000*1.2x benefits modifier/ 2,000 hours	$62.40	$62.40	$62.40
C4	Reduction in development time as a percentage		45%	45%	45%
Ct	Development reduction savings	C1*C2*C3*C4	$1,617,408	$1,617,408	$1,617,408
	Risk adjustment	0%			
Ctr	Development reduction savings (risk-adjusted)		$1,617,408	$1,617,408	$1,617,408

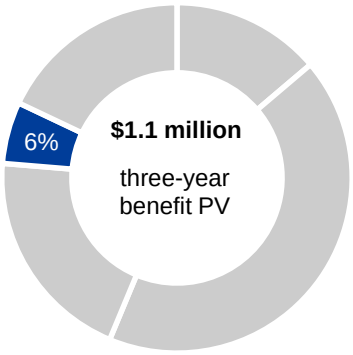
Benefit 4: Time-To-Value Benefit Of Faster Application Delivery

As previously noted, AppDynamics has created significant efficiencies for software engineers to create and deliver applications. The value of delivering bug-free applications and capabilities more quickly, excluding those applications that are revenue producing (read the section Unquantified Benefits), can be determined by multiplying the accelerated time basis by the internal rate of return (IRR) set by organizations before launching projects.

- Interviewed and surveyed organizations place a value on developers and their output, beyond what is paid in compensation.
- Required internal rate of return for projects at the interviewed organizations is 30%.
- The average acceleration for project delivery was four months.

Taking the wage cost of the developers and applying a 30% IRR to the time value saved, we calculated a TtV value of $1.2 million over three years.

Given the variability of organizational IRR requirements to undertake projects, we have also applied a risk adjustment of 5% to reduce the final three-year benefit of TtV to $1,146,342. Readers can further fine-tune the benefit value by assessing the utilization rate of developers and the usage of internal versus external developers.



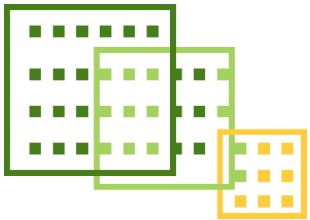
Time-to-value benefit of faster application delivery: **6%** of total benefits

Time-To-Value Benefit Of Faster Application Delivery: Calculation Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
D1	Cost of development pre-AppDynamics	C1*C2*C3	$3,571,200	$3,571,200	$3,571,200
D2	Acceleration in app or functionality rollout, counted in percentage decrease in development time	C4	45%	45%	45%
D3	Expected internal rate of return (IRR) for development projects	Assumption	30%	30%	30%
Dt	Time-to-value benefit of faster application delivery	(D1*D2*D3)	$485,222	$485,222	$485,222
	Risk adjustment	↓5%			
Dtr	Time-to-value benefit of faster application delivery (risk-adjusted)		$460,961	$460,961	$460,961

Benefit 5: Application Monitoring And Detection Tool Consolidation

Interviewed organizations had a wide variety of methods to fight application performance degradation. Organizations universally took the approach of throwing people resources at the issues — leading only to extenuated war room sessions. Most organizations also leveraged logging tools for software and infrastructure, while a few even had older application monitoring tools. When asked, the organizations that used a multitude of tools to solve the application issues stated that they were able to reduce the use of existing tools by 75% or eliminate them altogether.



Traditional tools used to combat application performance degradation can be consolidated by as much 75%.

- To account for tools that are sunken capital expenditure costs, we have reduced the savings of the tools that can be retired by 30%, with the assumption that most of the monitoring and logging agents are priced to scaled depending on usage and deployment.
- Additionally, costs of support and servicing of these existing tools have been counted as a 20% annual cost of the expected annual license cost.
- A 70% reduction in tools has been used to err on the side of conservatism.

With these assumptions, the composite organization saved $1.6 million annually. Considering that there is some variability in the amount of costs undertaken to develop homegrown solutions, we have also applied a downward risk adjustment on these savings of 10%, resulting in a risk-adjusted benefit of $1.45 million annually. Over the course of a three-year analysis, the organization experienced an estimated PV benefit of $3.6 million.

Several organizations also stated that the integration of AppDynamics into Cisco would lead to additional savings with consolidated monitoring tools that combine network and security monitoring capability on Cisco infrastructure products with AppDynamics. With Cisco, a holistic view of transactional flow and digital operations is enabled. This creates deeper and richer levels of insight and enables visibility and actionable measures much faster. Monitoring tools would effectively be further rationalized into a unified tool, saving not only licensing fees, but also human effort.

As a secondary benefit, these interviewed organizations cited that automation and orchestration enabled by the integration would be able to further quicken the MTTR across the enterprise, effectively reducing the people resources required to monitor the various segments of the IT stack.

Application Monitoring And Detection Tool Consolidation: Calculation Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
E1	Monitoring, logging, and detection tool consolidation reduction		70%	70%	70%
E2	Cost of existing tool licensing		$1,800,000	$1,800,000	$1,800,000
E3	Cost of existing tool support, internal costs and those paid to vendors	20% of paid licenses + support for homegrown tools	$500,000	$500,000	$500,000
Et	Application monitoring and detection tool consolidation	E1*(E2+E3)	$1,610,000	$1,610,000	$1,610,000
	Risk adjustment	↓10%			
Etr	Application monitoring and detection tool consolidation (risk-adjusted)		$1,449,000	$1,449,000	$1,449,000

Unquantified Benefits

Beyond the quantified benefits stated thus far, Forrester believes there to be additional value to be gained from an AppDynamics investment — specifically, this includes time-to-value gains for quicker revenue delivery and revenue protection through maintaining or uplifting the customer experience.

Forrester estimates a one-point uptick in CX Index score (on a 100-point scale) results in additional revenues of $2.44 per customer, per year.

- **Organizations protected their brands with the implementation of AppDynamics by ensuring uninterrupted experiences for consumers.** As one manager put it: “We used to have a number of severe incidents per week affecting our users. I can’t think of a single incident in the last year that we’ve had AppDynamics.”

  Poor experiences with the services and apps that enterprises offer drive negative perceptions of organizations. Short-term effects could reflect lower immediate revenues while longer-term results typically are associated with brand erosion and a reluctance for these affected consumers to try the brand again. Deploying AppDynamics helps organizations avoid declines in customer satisfaction due to poor digital service delivery.

  Forrester estimates that an uptick of just one point on the CX Index results in an additional revenue of $2.44 per customer per year and a further boost on the customer lifetime value. For a large retailer that serves 20-plus million consumers in a year, the ramifications of gaining or losing a single point on the CX Index could mean as much as a $50 million swing in revenues.

- **Forrester also expects there to be a time-to-value benefit to applications that are revenue generating.** As an example, one organization was able to roll out a self-service application for self-sign up to revenue-producing policies. By deploying these applications bug-free in a short period of time, the organization captured a greater number of consumers and thereby earned revenues sooner than it otherwise would have been able to. Due to the variability of the revenues that can be gained in various industry verticals, we have excluded this TtV benefit from our quantifiable analysis. Readers are encouraged to use the application deployment reduction time factor of 45% and determine what that might mean in terms of business value impact.

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 Application Performance Management and later realize additional uses and business opportunities, including the following:

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.

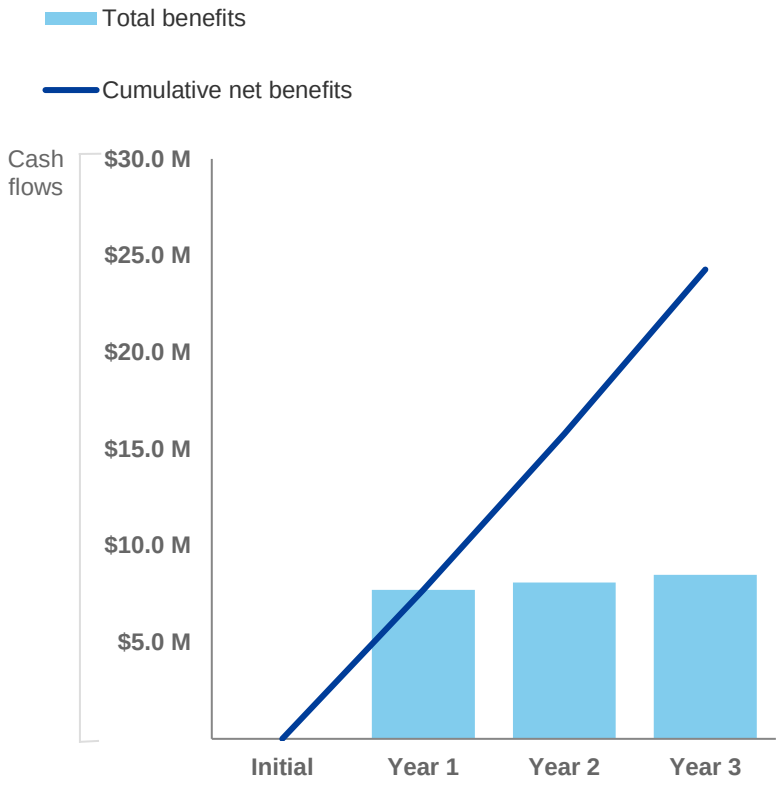
- **AppDynamics offers multiple deployment options to suit the needs of enterprises — regardless of where they are in the digital transformation initiative.** Organizations move to the cloud at different speeds. Some even avoid the cloud for specific purposes, such as regulatory constraints like data residency requirements in the EU. AppDynamics can be deployed on-premises, in the cloud, or even as a hybrid approach, giving unlimited flexibility to cover application monitoring needs. Further, as these enterprises mature across the curve on cloud adoption, it is relatively seamless to switch deployment to SaaS-based (software-as-a-service) AppDynamics should they choose so.
- **AppDynamics is now a part of Cisco, and two-way communication or consolidated software-driven tool sets to manage both the hardware and software stack can simplify IT management.** Cisco is a leading force in the infrastructure sector, and AppDynamics is a standout in application performance management. This creates the unique opportunity for additive benefits on the management side of both segments. AppDynamics' real-time data platform will be correlated with Cisco's data platforms over time and provide customers with a deeper and broader end-to-end visibility as to where issues arise across the whole IT spectrum. Businesses can expect improved remediation and automation, and the ability to make smarter business decisions. Network monitoring tools, remediation processes, and application monitoring tools will also be consolidated, blending human roles and creating a more effective IT workforce that removes the vast majority of blackouts or brownouts.

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

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



These risk-adjusted net benefits values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit section.

Cash Flow Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total benefits	$0	$7,708,720	$8,079,456	$8,490,001	$24,278,178	$20,063,828

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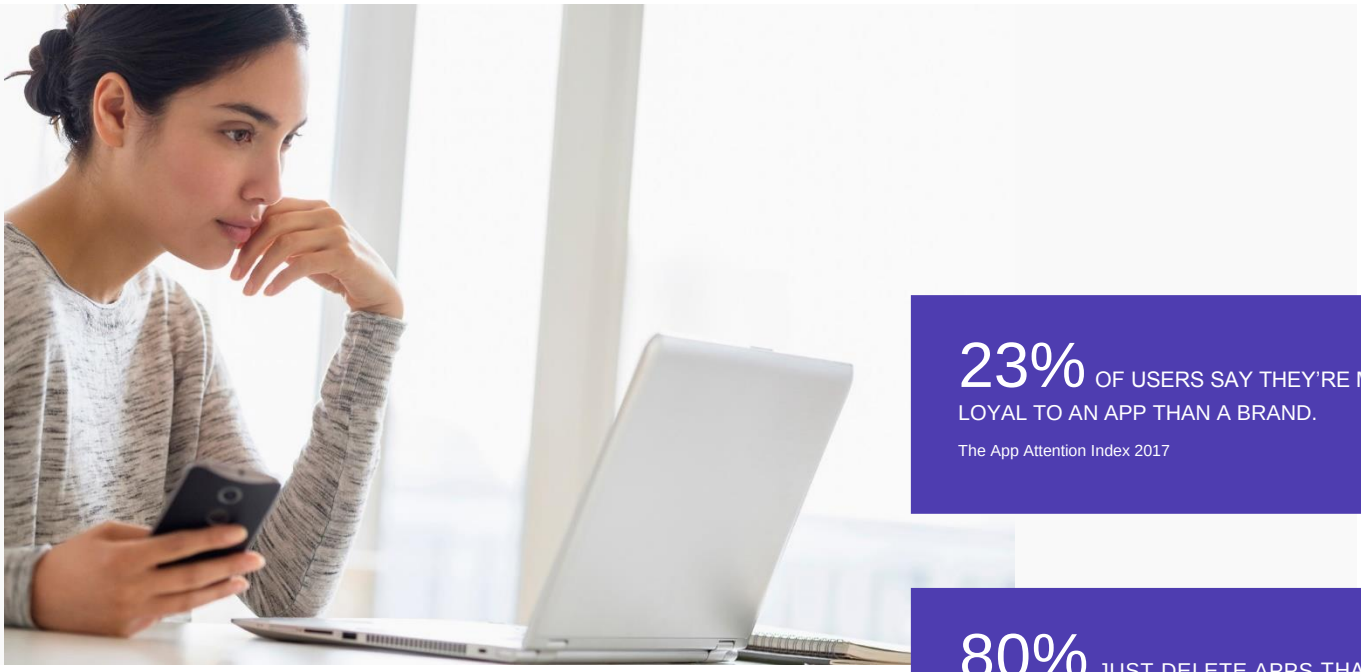
AppDynamics Application Performance Management: Overview

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

Transform the way modern business is built and run.

Performance Management from every line of code to every line of business.



23% OF USERS SAY THEY'RE MORE LOYAL TO AN APP THAN A BRAND.

The App Attention Index 2017

80% JUST DELETE APPS THAT DON'T PERFORM AS EXPECTED.

The App Attention Index 2017

Customers demand flawless performance and they're loyal to the brands that deliver it. That's the new reality. AppDynamics helps businesses deliver consistently flawless digital experiences by connecting end-user experience and application performance to business outcomes.

AppDynamics monitors, correlates, analyzes, and acts on application and business performance data in real time. This automated, cross-stack intelligence enables developers, IT ops, and business owners to make the mission critical and strategic improvements that win customers at every moment.

FORRESTER®

It’s all about the business

The health of your business is inseparable from the health of your applications. So, the modern application team must include dev, ops and business owners. To deliver actionable, contextual answers for all stakeholders, this team requires end-to-end performance monitoring and management.

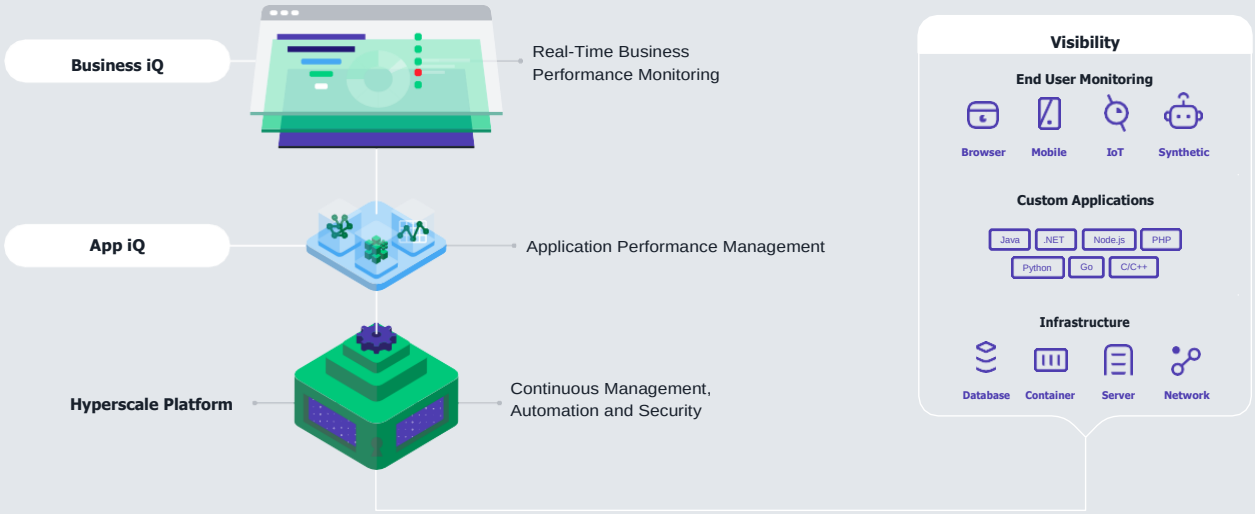
We deliver on all levels:

Business iQ: Makes clear, actionable correlations between application performance, user experience, and business outcomes.

App iQ: Auto-discovers every customer journey, dynamically baselines performance, and delivers code-level diagnostics.

Hyperscale Platform: Simplifies enterprise deployment, configuration, management, security, and more.

Cross-Stack Visibility: Monitors every component of your application environment.



How does AppDynamics change my world?

Evaluating customer journeys holistically is critical. AppDynamics helps the modern application team proactively prevent problems, validate and prioritize IT investments, and understand exactly how application code impacts business outcomes.

Dev and Test

Release with confidence—every time. Our self-learning, real-time analytics detect anomalies well before production, so you can deliver quality code with complete confidence.

IT Ops

Turn your war room into a break room. We automate end-to-end flow and observability for faster remediation, significantly reducing mean time to innocence.

Business

You’re not just interested in containers and APIs, you’re interested in revenue and customer value. We deliver highly contextualized data to help you drive customer loyalty.

AppDynamics is now part of Cisco.

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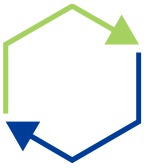
Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

Total Economic Impact Approach

Benefits represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.

Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.



Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

Present value (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

Net present value (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

Return on investment (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.

Discount rate

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.

Payback period

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.