The Total Economic Impact™ Of Microsoft SQL Server

Cost Savings And Business Benefits
Enabled By Microsoft SQL Server
2014 And SQL Server 2012 For
Mission-Critical Transaction-
Processing Applications

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ABOUT FORRESTER CONSULTING

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Executive Summary

Microsoft commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying Microsoft SQL Server 2014 and SQL Server 2012. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of SQL Server for mission-critical applications at their organizations.

To better understand the benefits, costs, and risks associated with a SQL Server implementation, Forrester interviewed six customers with multiple years of using SQL Server 2014 and SQL Server 2012, and collected nearly 50 survey responses from additional organizations. All organizations used SQL Server to support mission-critical applications, such as a customer relationship management (CRM) or point-of-sale (POS) application.

Microsoft SQL Server 2014 and SQL Server 2012 can help companies reduce management and resource costs, drive incremental revenue from improved performance and reliability of systems, and improve IT and end-user productivity.

The costs and benefits for a US retail composite organization of 30,000 employees with 300 SQL Server databases, based on customer interviews and survey responses, are:
- **Initial costs: $4,084,500.**
- **Annual net benefit: $5,152,156.**
- **Total three-year NPV: $8,728,150.**

Prior to SQL Server, for their mission-critical applications, customers had implemented alternative database solutions. However, SQL Server had not met all requirements for mission-critical applications, meaning that an alternative (and often more expensive) database solution was used or a fully functional application was not provided. Interviewed customers mentioned that with SQL Server 2014 and SQL Server 2012, improvements in management, scalability, and reliability are now at par or better than alternative solutions in mission-critical scenarios, particularly for retail transaction processing. Said one senior solutions architect at a large international retail chain, "We have 16,000 checkout registers at over 1,400 locations that we really need make sure are reliable to support our needs and run our applications in a distributed fashion that we determined was best suited to the Microsoft SQL platform."

MICROSOFT GENERATES NEW INCREMENTAL SALES

Forrester's interviews and responses from survey participants provided input data for a financial analysis that found that a representative organization experienced the risk-adjusted ROI, benefits, and costs shown in Figure 1. See Appendix A for a description of the representative organization.[1]

The representative organization analysis points to annual net benefits of $5,152,156 per year versus initial costs of $4,084,500, adding up to a three-year net present value (NPV) of $8,728,150.

For the representative organization, with 300 Microsoft SQL Servers connected to mission-critical applications, this translates to annual net benefits of more than $29,000 per server per year, initial costs of $13,615 per server, and a three-year NPV of $15,695 per server. With Microsoft SQL Server 2014 and SQL Server 2012, there was a 20% improvement in IT resource productivity and a 22% reduction in data errors and issues with mission-critical applications, improved profit from direct and sales-led revenue, reduction in customer churn, and cost reductions from improved data issues with security.

FIGURE 1
Financial Summary Showing Three-Year Risk-Adjusted Results

ROI: 113%	NPV per server: $29,084	Payback: 9.5 months	Total NPV: $8,728,150

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Source: Forrester Research, Inc.

› **Benefits.** The representative organization experienced the following risk-adjusted benefits after implementing Microsoft SQL Server 2014 and SQL Server 2012 that represent those experienced by the interviewed companies:

- **User productivity and error reduction improvements of $1,201,200 per year.** This is based on a 22% reduction in data entry errors caused by less and less reliable application connectivity with their legacy systems.

- **IT resource productivity and support reductions resulting in cost savings of $718,848 per year**. This is a result of a 20% improvement in IT resource time managing mission-critical applications with SQL Server and a 12% reduction in help desk calls.

- **Profit from direct and sales-led revenue of $3.18 million per year.** A reduction in downtime of mission-critical applications, an increase of 28% in ecommerce revenue, and a 25% improvement in sales efficiency were all benefits experienced with mission-critical applications connected to SQL Server.

- **Customer churn cost savings of $1,054,688 per year.** This is based on the representative organization's experience of seeing a 15% improvement in the customer churn rate after implementing SQL Server.

- **Cost reductions of improved security of $321,144 per year**. This is based on an 11% reduction of security issues related to data linked from applications to the server and a 14% decrease in resolution time for handling these issues.

- **Annual software and hardware savings of $141,027 per year.** This results from a 10% reduction of software licenses and a 7% reduction of hardware costs.

› **Costs.** The representative organization experienced the following risk-adjusted costs after implementing Microsoft SQL Server 2014 and SQL Server 2012:

- **Initial software licensing fees of $1,554,000 and annual software license fees plus cloud services costs of $588,000.** These are initial, one-time fees paid to Microsoft for access to SQL Server and other software, as well as the associated annual license and support costs of licensing these applications.

- **Initial hardware purchase costs of $682,500 and annual maintenance of hardware costs of $136,500 per year.** These include costs for purchasing, maintaining, and replacing hardware required to support SQL Server.

- **Total initial deployment costs of $1,848,000.** These include planning, training, data migration, implementation and transition, and third-party professional service costs.

- **Total ongoing support and management costs of $740,250.** These include support and help desk, training, cloud services, and ongoing third-party professional fees.

Disclosures

The reader should be aware of the following:

› The 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 SQL Server 2014 and SQL Server 2012.

› 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.

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TEI Framework And Methodology

INTRODUCTION

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing Microsoft SQL Server 2012 and/or Microsoft SQL Server 2014. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision.

APPROACH AND METHODOLOGY

Forrester took a multistep approach to evaluate the impact that Microsoft SQL Server 2014 and SQL Server 2012 can have on mission-critical applications for an organization (see Figure 2). Specifically, Forrester:

› Interviewed Microsoft marketing, sales, and/or consulting personnel, along with Forrester analysts, to gather data relative to Microsoft SQL Server 2014 and Microsoft SQL Server 2012 and the marketplace for SQL Server databases supporting mission-critical applications.

› Interviewed six organizations and collected surveys from 48 others currently using Microsoft SQL Server 2014 and Microsoft SQL Server 2012 to obtain data with respect to costs, benefits, and risks.

› Designed a representative organization based on characteristics of the interviewed organizations (see Appendix A).

› Constructed a financial model representative of the interviews using the TEI methodology. The financial model is populated with the cost and benefit data obtained from the interviews and surveys as applied to the representative organization.

› Risk-adjusted the financial model based on issues and concerns the interviewed organizations highlighted in interviews. Risk adjustment is a key part of the TEI methodology. While interviewed organizations provided cost and benefit estimates, some categories included a broad range of responses or had a number of outside forces that might have affected the results. For that reason, some cost and benefit totals have been risk-adjusted, and are detailed in each relevant section.

Forrester employed four fundamental elements of TEI in modeling Microsoft SQL Server 2014 and SQL Server 2012's service: 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 B for additional information on the TEI methodology.

FIGURE 2

TEI Approach

| Perform due diligence | › | Conduct customer interviews and surveys | › | Design Representative Organization | › | Construct financial model using TEI framework | › | Write case study |

Source: Forrester Research, Inc.

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Analysis

REPRESENTATIVE ORGANIZATION

For this study, Forrester conducted a total of six interviews with representatives from the following companies:

› A large retailer in Africa that covers a variety of retail formats.

› A data services firm supporting online and brick-and-mortar retailers with product and shopper data solutions.

› A marketing firm focused on customer loyalty programs in Latin America.

› A software and services company based in the US focused on big data solutions for pricing and sales analysis.

› A large, global digital entertainment company providing online games and entertainment.

› A US discount retail chain.

Forrester also collected surveys from 48 organizations based in the US and Canada from a variety of industries, including manufacturing, financial services and insurance, business services, healthcare, education and nonprofit, government, and retail.

Survey respondents were primarily IT managers, directors, or executives at organizations from small-midmarket to very large enterprise firms — though all have significant data infrastructure, a large number of databases and physical database servers, and a number of mission-critical applications now supported by SQL Server 2014 and/or SQL Server 2012.

Based on the interviews and survey responses, Forrester constructed a TEI framework, a representative company, and an associated ROI analysis that illustrates the areas financially affected by SQL Server for mission-critical applications. The representative organization that Forrester synthesized from these results represents an organization with the following characteristics:

"After a comprehensive assessment, we determined that the Microsoft SQL platform was best suited to address our complex organization with functionality required for our over 1,400 stores to run in a distributed fashion."

~ Senior solutions architect, international retail chain

› A US-based retailer with both online and physical store sales channels.

› 30,000 total employees, with about 6,000 that would be classified as information workers (including employees working in corporate offices as well as store managers).

› 300 Microsoft SQL Server databases, as part of a total infrastructure that includes 600 databases.

› Two-thirds of the company's mission-crucial applications (in some way) are linked to Microsoft SQL Server databases.

› More than 100 "tier one" applications that are deemed mission-critical.

The representative organization has upgraded and migrated databases to SQL Server 2014 and SQL Server 2012 for a variety of data needs and to support a variety of applications — though not usually for mission-critical scenarios. The costs are applied only to the percentage of new software licenses required. With the online transaction processing (OLTP),

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reliability, and scalability improvements in the latest versions of Microsoft SQL Server, and as legacy systems are due for upgrade or replacement, the organization chose SQL Server 2012 (as well as some SQL Server 2014) to support a number of mission-critical applications:

› The upgrade to SQL Server 2012 started in late 2011, primarily to upgrade older database versions. Some organizations also started the upgrade to SQL Server 2014 beginning in late 2013.

› The SQL Server 2014 and SQL Server 2012 deployment was expanded to migrate, upgrade, or newly install databases that support mission-critical applications. This included migrating from alternative database solutions, replacing legacy or homegrown applications, and/or installing new applications supported by Microsoft SQL Server.

"Our company's default position due to the efficiencies we realize is to put any new application onto SQL Server 2012."

~ Director of IT data systems, US discount retailer

INTERVIEW HIGHLIGHTS

All six of the interviewed organizations made a decision to move some or all of their critical applications to Microsoft SQL Server 2014 and SQL Server 2012. The key assessment requirements the interviewed organizations considered when making their decision to migrate or upgrade to SQL Server 2014 and SQL Server 2012 included:

› The performance and speed of applications running on the platform.

› Security and data privacy requirements.

› Reliability and minimization of downtime of applications.

› Ability to provide data access to the right people.

› The ability to integrate efficiently across other organization systems and applications.

› The ease of migration and expansion of cloud capabilities.

Situation

As alternative database solutions were coming up on necessary version upgrades and legacy systems were aging, the organization estimated significant upcoming software, hardware, and management costs, as well as some business limitations:

› Current applications driven by legacy and other databases didn't provide as much integration with other systems as the organization would have liked — especially newer cloud applications.

› Legacy applications did not provide as many features as newer alternatives, and they were more likely to experience outages or slowdowns, both of which affected customer and employee satisfaction (and could cause some customers to quit a purchase).

› Legacy applications were more expensive to manage because they required separate management tools and often required more expensive resources. Any outages or slowdowns added to management time, and these older systems were more likely to need extra security management time and were more likely targets for security issues.

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Solution

The representative organization selected Microsoft SQL Server as a cost-effective database solution that now meets the requirements for mission-critical OLTP applications. The organization deployed new and upgraded applications connected to SQL Server 2014 and SQL Server 2012, replacing a number of older legacy applications and migrating others from legacy and other database solutions.

Results

The interviews uncovered the following benefits for the representative organization after implementing SQL Server 2012 and some SQL Server 2014, based on individual interview and survey responses:

› **Employees are able to complete work faster and more accurately.** New and upgraded applications with SQL Server provide new features and greater connectivity options across data sources and applications that are accessible from mobile locations.

› **DBAs and IT administrators are able to manage SQL Server-based applications more efficiently.** New SQL Server databases use the same tools as their other (non-mission-critical) SQL databases, and they can leverage the same SQL Server skilled resources. The representative organization was able to increase DBA resource productivity by simplifying and increasing automation in processes such as tuning, backup, recovery, and installation functions. Additionally, the representative organization is able to speed up management time and avoid costs in the future by hiring more cost-effective SQL Server DBAs and managers.

› **Improved uptime for applications can help drive new revenue via greater direct online sales, as well as through more effective sales-led engagements.** The representative organization reported improved reliability and reduced downtime with SQL Server versus its previous applications. This has led to improved customer satisfaction and sales, as customers' online or store purchases are not blocked by system outages, and employee-led sales engagements are not blocked or delayed by similar system outages or a lack of full mobile access or integration between applications.

› **Improved customer-facing applications also help avoid customer replacement costs.** By reducing or completely eliminating application reliability caused by database issues, customers will also be less likely to go to a competitor, meaning the representative organization can avoid costs associated with retaining or replacing customers.

› **Newer database solutions help provide improved security.** Especially compared with older applications and databases, security issues are reduced with SQL Server. These are security issues that in legacy systems require patches to ensure that the data is secure between the database platform and your mission-critical applications. These reductions in patches result in avoiding significant costs in security management and remediation.

› **Newer technologies provide new cost-saving opportunities.** SQL Server is more cost-effective than many alternatives: SQL Server license costs are less than many others; can run on a variety of platforms, including cheaper commodity hardware; and can be managed with the same tools and resources as other SQL Server deployments.

"Before SQL Server 2014, downtime was not too bad, but our recovery time was what really hurt us. With SQL Server 2014, our recovery time went down from 6 to 8 hours to 30 minutes now."

~ IT director, loyalty program management company

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BENEFITS

The representative organization experienced a number of quantified benefits in this case study:

❯ Increase in user productivity and a reduction in data entry errors.

❯ IT resource productivity and support reductions.

❯ Profit enabled by reduced downtime of critical applications, which resulted in improved customer satisfaction leading to direct and sales-led revenue.

❯ Decrease in customer churn resulting in cost savings.

❯ Cost reductions from improved data security and patch requirements from legacy systems.

❯ Annual software and hardware cost savings.

✪ Increase In User Productivity And Error Reduction Improvements

The representative organization indicated that employee productivity and reduction in data entry and user error was a key benefit from the Microsoft SQL Server implementation. The organization has about 6,000 employees who spend an average of 2.5 hours a week handling mission-critical applications. This results in about 1,600 data entry errors

As Table 1 shows, this results in over $1.2 million a year in risk-adjusted productivity. Risk adjustment was applied since different organizations have different information worker processes that can influence the importance of data entry and resulting errors. See the section on Risks for more detail.

TABLE 1

User Productivity And Error Reduction Improvements

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
A1	Number of data entry errors per week on average			1,600				
A2	Number of minutes required to resolve each data entry error			75				
A3	Information worker hourly rate			$70				
A4	Reduction in data entry errors			22%				
At	User productivity and error reduction improvements		$0	$1,601,600	$1,601,600	$1,601,600	$4,804,800	$3,982,942
	Risk Adjustment	75%						
Atr	**User productivity and error reduction improvements (Risk-Adjusted)**		**$0**	**$1,201,200**	**$1,201,200**	**$1,201,200**	**$3,603,600**	**$2,987,207**

Source: Forrester Research, Inc.

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As more and more of the organization's employees handle critical applications, it is important to maximize user productivity. Both interviewed and surveyed organizations indicated that with integration with SQL Server 2012, their applications were easier to manage, required less manual effort, and resulted in lower data entry errors during transition.

Additionally, built-in business intelligence (BI) and new tools for analytics, data visualization, reporting, integration with other products such as SharePoint, and query performance increases will reduce the time to manipulate data. Business users will also be able to gain new insights into their data and have the ability to create their own reporting dashboards to collaborate with colleagues. "We need to be able to have our environment that allows access to a lot of people who are not skilled DBAs to get business insights, which SQL Server provides," noted a senior solutions analyst at the international retail chain.

✪ IT Resource Productivity And Support Reductions

The representative organization indicated that both the number of help desk calls and call resolution time were reduced as a result of implementing Microsoft SQL Server. DBAs and IT and help desk resources all benefit from this gain in productivity. As Table 2 shows, the representative organization experiences over $718,000 of risk-adjusted productivity gains each year due to implementing SQL Server. Compared with information worker processes, IT administrator processes are much less variable — though there are still some differences in tasks and salaries that necessitate a small risk adjustment. See the section on Risks for more detail.

The improved capabilities and features of SQL Server benefit DBAs and IT staff at all levels. For the representative organization, the automatic failover, availability group management, contained database login, automatic page repair, and other features result in considerable productivity savings. Additionally, SQL Server contains more new tools to help DBAs increase productivity by managing and visualizing the servers that reduce time to set up, manage, and troubleshoot databases.

Application developers and other IT staff also realize productivity gains. This is due to tools that SQL Server offers for managing database projects and change views (SQL Server Data Tools) and on-premises/cloud/hybrid flexibility, especially leveraging SQL Azure. Also, SQL Server offers clear separation of the OLTP and reporting (data warehouse) stores, with near-real-time data and query performance increases.

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TABLE 2

IT Resource Productivity And Support Reductions

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
B1	DBAs responsible for mission-critical applications and databases			15				
B2	Other IT resources responsible for mission-critical applications and databases			15				
B3	Percent of resource time spent managing mission-critical applications/databases			80%				
B4	Improvement in IT resource time with SQL Server 2014 and SQL Server 2012			20%				
B5	Help desk calls per week related to mission-critical applications			2,000				
B6	Minutes per help desk call			9				
B7	Reduction in help desk calls with SQL Server 2014 and SQL Server 2012			12%				
B8	DBA hourly rate			$80				
B9	IT resource hourly rate			$65				
B10	Help desk hourly rate			$40				
Bt	IT resource productivity and support reductions	(B1*40*B3*B4*B8*52) + (B2*40*B3*B4*B9*52)+ (B5*B6/60*B7*B10*52)	$0	$798,720	$798,720	$798,720	$2,396,160	$1,986,298
	Risk adjustment		90%					
Btr	IT resource productivity and support reductions (risk-adjusted)		$0	$718,848	$718,848	$718,848	$2,156,544	$1,787,669

Source: Forrester Research, Inc.

♻ Profit From Improved Direct And Sales-Led Revenue

Another key benefit that the representative organization experienced after implementing SQL Server was additional profit from improved direct and sales-led revenue due to less application downtime, improved application reliability, and integration with other applications that make them both more available but also much more user-friendly. The representative organization knows that as soon as its users or customers experience downtime, slow web pages, failures with shopping carts, servers that are not up, or registration forms that aren't working properly, they will often resort to another service provider, resulting in a loss of site visitors, leads, customers, and revenue. The representative organization uses applications on its sites from a number of different providers to provide functionality such as internal search engines, registration forms,

shopping carts, and payment solutions. It needs to ensure the applications effectively transfer data among each other and there is a seamless experience for the end customers. A key feature of SQL Server is that it offers AlwaysOn, which is a new integrated, flexible, cost-efficient high availability and disaster recovery solution. It can provide data and hardware redundancy within and across data centers, and improves application failover time to increase the availability of your mission-critical applications. AlwaysOn provides flexibility in configuration and enables reuse of existing hardware investments.

TABLE 3
Profit From Improved Direct And Sales-Led Revenue

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
C1	Revenue from eCommerce sources connected to SQL Server			$100,000,000				
C2	Improvement in eCommerce revenue with applications connected to SQL Server 2014 and SQL Server 2012			28%				
C3	Revenue from sales-lead efforts using resources connected to SQL Server			$100,000,000				
C4	Improvement in revenue from sales-led efforts G102 applications connected to SQL Server 2014 and SQL Server 2012			25%				
C5	Profit margin			8%				
Ct	Profit from improved direct and sales-led revenue	(C1+C2*C3+C4)*C5	$0	$4,240,000	$4,240,000	$4,240,000	$12,720,000	$10,544,252
	Risk adjustment		75%					
Ctr	**Profit from improved direct and sales-led revenue (risk-adjusted)**		**$0**	**$3,180,000**	**$3,180,000**	**$3,180,000**	**$9,540,000**	**$7,908,189**

Source: Forrester Research, Inc.

As shown in Table 3, the representative organization estimates $100 million in revenue from both ecommerce sources and sales-led efforts that are connected to SQL Server. The representative organization (based on interviews and survey responses) indicated a 28% improvement in ecommerce sales and 25% from sales-led transactions. With a net profit margin of 8%, this results in approximately $3.18 million in risk-adjusted revenue benefit that is directly linked to the implementation of SQL Server. The risk adjustment is included since profit margins and organization revenue will vary greatly based on industry and geography (and will still vary some even for similar organizations within each). See the section on Risks for more detail.

♻ Decrease In Customer Churn Resulting In Cost Savings

The representative organization can directly link revenue from a decrease in customer churn to its implementation of SQL Server 2012 and some SQL Server 2014. In today's age of the customer, organizations need to ensure they have a 360-degree understanding of their customers' behaviors, trends, purchase history, and additional insights they can get their hands on. SQL Server offers business intelligence tools and enterprise data management software that IT resources and engineers use to manage all business logic required to facilitate multidimensional online analytical processing (MOLAP). Data is stored in multidimensional cubes, which helps preserve detail and speed analysis. In addition, SQL Server makes it much easier for the applications to transfer data between each other. This allows the representative organization to get a more accurate view of its customers and address any pain points they have more effectively and efficiently, which reduces the customer churn rate.

The representative organization has 25,000 customers and estimates a rate of 5% in customer churn each year. This rate is improved by 15% from the data and insights the organization can efficiently gather through the applications it has connected to SQL Server. As a result, the representative organization estimates a three-year risk-adjusted NPV of over $2.6 million, as shown in Table 4 Customer counts and churn rates are unique to each organization, so a risk-adjustment factor has been included. See the section on Risks for more detail.

TABLE 4

Decrease In Customer Churn Resulting In Cost Savings

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
D1	Number of customers			25,000				
D2	Current customer churn rate			5%				
D3	Average cost to replace each customer			$7,500				
D4	Customer churn improvement with SQL Server 2014 and SQL Server 2012			15%				
Dt	Customer churn cost savings	D1*D2*D3*D4	$0	$1,406,250	$1,406,250	$1,406,250	$4,218,750	$3,497,136
	Risk adjustment		75%					
Dtr	**Customer churn cost savings (risk-adjusted)**		**$0**	**$1,054,688**	**$1,054,688**	**$1,054,688**	**$3,164,063**	**$2,622,852**

Source: Forrester Research, Inc.

♻ Cost Reductions From Improved Security

The representative organization wanted additional security features and enhancements to achieve the highest level of data protection and compliance, reduce its vulnerability, and reduce the number of security patches needed to maintain the system. Key security features of SQL Server that help reduce security costs include allowing companies to assign a default schema for Windows groups, which helps the representative organization simplify its database schema administration. Another key security feature of SQL Server that the representative organization considered was the use of user-defined roles that simplify administration by limiting access of authorized users according to segregations of duties. These key features assist the representative organization in reducing the number of security-related issues it had in its earlier server platform environment.

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The representative organization estimates about $321,000 in risk-adjusted cost savings from improved security of SQL Server, as shown in Table 5 A similar risk adjustment to IT cost savings from above has been applied. See the section on Risks for more detail. The organization has about 300 security-related issues on its mission-critical applications a year, and each issue, on average, takes 90 minutes to resolve. With the implementation of SQL Server, the number of issues has decreased by 11%, and the time to resolve security-related issues has been reduced by 14%.

TABLE 5

Cost Reductions From Improved Security

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
E1	Number of security-related issues per week related to SQL Server applications			300				
E2	Minutes to resolve each issue			90				
E3	Reduction in issues with SQL Server 2014 and SQL Server 2012			11%				
E4	Reduction time to resolve each issue with SQL Server 2014 and SQL Server 2012			14%				
E5	IT security FTE hourly rate			$65				
Et	Cost reductions from improved security	(E1*(E2/60)-(E1*(1-E3)*(E2/60)*(1-E4)))*52*E5	$0	$356,827	$356,827	$356,827	$1,070,480	$887,375
	Risk adjustment		90%					
Etr	**Cost reductions from improved security (risk-adjusted)**		**$0**	**$321,144**	**$321,144**	**$321,144**	**$963,432**	**$798,637**

Source: Forrester Research, Inc.

♻ Annual Software And Hardware Cost Savings

SQL Server 2014 and SQL Server 2012 offer the organization the ability to use secondary servers as part of its database infrastructure. The secondary servers no longer need to remain idle waiting for a failover. Instead, they can be used for backup, reporting, ad hoc queries, or other uses. This allowed the representative organization to avoid significant financial outlays for server hardware requirements. Additionally, software license costs of SQL Server are less than other alternatives.

The representative organization experienced a reduction in annual software and hardware costs as well as management costs from its initial state before implementing SQL Server. With SQL Server, the representative organization was able to move x64 servers with fewer sockets. This led to all its databases having reduced software costs from reducing license requirements by about 60%. Also, due to the Windows Azure integration, the representative organization reduced its staging server that it had in its original environment. As Table 6 shows, this results in over $141,000 in risk-adjusted cost savings per year.

TABLE 6

Annual Software And Hardware Cost Savings

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
F1	Annual SQL Server software costs for mission-critical application databases before SQL Server			$622,222				
F2	Annual other software costs for mission-critical application databases before SQL Server			$0				
F3	Annual hardware costs for mission-critical application databases before SQL Server			$139,785				
F4	Annual management costs for above software and hardware before SQL Server			$627,450				
F5	Reduced and avoided software costs with SQL Server 2014 and SQL Server 2012			10%				
F6	Reduced and avoided hardware costs with SQL Server 2014 and SQL Server 2012			7%				
F7	Avoided annual management costs with SQL Server 2014 and SQL Server 2012			11%				
Ft	Annual software and hardware cost savings	(F1+F2)*F5+F3*F6+F4* F7	$0	$141,027	$141,027	$141,027	$423,080	$350,712
	Risk adjustment		100%					
Ftr	**Annual software and hardware cost savings (risk-adjusted)**		**$0**	**$141,027**	**$141,027**	**$141,027**	**$423,080**	**$350,712**

Source: Forrester Research, Inc.

TOTAL BENEFITS

Table 7 shows the total of all benefits across the categories listed above, as well as present values (PVs) discounted at 10%. Over three years, the representative organization expects risk-adjusted total benefits to be a PV of over $16 million.

TABLE 7

Total Benefits (Risk-Adjusted)

Ref.	Benefit Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Atr	User productivity and error reduction improvements	$0	$1,201,200	$1,201,200	$1,201,200	$3,603,600	$2,987,207
Btr	IT resource productivity and support reductions	$0	$718,848	$718,848	$718,848	$2,156,544	$1,787,669
Ctr	Profit from improved direct and sales-led revenue	$0	$3,180,000	$3,180,000	$3,180,000	$9,540,000	$7,908,189
Dtr	Customer churn cost savings	$0	$1,054,688	$1,054,688	$1,054,688	$3,164,063	$2,622,852
Etr	Cost reductions from improved security	$0	$321,144	$321,144	$321,144	$963,432	$798,637
Ftr	Annual software and hardware cost savings	$0	$141,027	$141,027	$141,027	$423,080	$350,712
	Total Benefits (Risk-Adjusted)	**$0**	**$6,616,906**	**$6,616,906**	**$6,616,906**	**$19,850,718**	**$16,455,266**

Source: Forrester Research, Inc.

COSTS

The representative organization experienced a number of costs associated with purchasing, deploying, and managing the SQL Server 2014 and SQL Server 2012 solution:

› Software licensing fees.

› Hardware costs.

› Deployment, migration, and implementation costs.

› Ongoing management resource costs.

These represent the mix of hardware, software, and resource costs experienced by the representative organization for initial planning, implementation, and ongoing maintenance associated with the solution.

Ⓢ Incremental Software Costs

The total cost of a mission-critical application that includes SQL Server 2014 and SQL Server 2012 includes SQL Server license costs and other software costs (which could be made up from a variety of things, such as complementary management or analysis software, the application itself, or Windows Server and System Center licenses for installing and managing the SQL databases). Initial license costs are paid upfront and incurred during the initial implementation period; in subsequent years, annual maintenance fees, calculated as a percentage of the initial costs, are applied.

The representative organization deployed or migrated 115 applications to SQL Server 2012 or SQL Server 2014. SQL Server licensing costs add up to $1.23 million upfront and $307,500 per year; other software is estimated to be $250,000

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upfront and $62,500 per year, and cloud integration is estimated to be $190,000 per year in subscription costs. This adds up to $1,554,000 total at the time of deployment and implementation, and $588,000 per year after implementation, as shown in Table 7.

TABLE 7

Incremental Software costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
G1	SQL Server licensing		$1,230,000	$307,500	$307,500	$307,500		
G2	Other on premises software licensing		$250,000	$62,500	$62,500	$62,500		
G3	Cloud services			$190,000	$190,000	$190,000		
Gt	Total incremental software costs for migration		$1,480,000	$560,000	$560,000	$560,000	$3,160,000	$2,872,637
	Risk Adjustment	105%						
Gtr	**Total incremental software costs for migration (Risk-Adjusted)**		**$1,554,000**	**$588,000**	**$588,000**	**$588,000**	**$3,318,000**	**$3,016,269**

Source: Forrester Research, Inc.

Note that for the representative organization, only new SQL Server and other software licenses are included in the table 7. The organization's complete upgrade to SQL Server 2012 (including non-mission-critical workloads) led to significant database consolidation benefits. That consolidation (as well as some database retirement) meant that SQL Server 2012 or SQL Server 2014 licenses were available for mission-critical applications that had been migrated to SQL Server databases. So while many SQL Server Enterprise licenses may be needed to provision mission-critical applications, a large percentage of those licenses may be already owned.

Incremental Hardware Costs

In addition to software, the representative organization also purchased or upgraded a number of physical servers, as well as other hardware necessary for some applications (such as a storage appliance). The organization estimates that for its 115 applications, it purchased or upgraded all 250 servers at a $3,000 average cost per server, which adds up to $650,000 total in new server costs at implementation. Additional costs for upgraded servers and other devices were also included. As shown in Table 8, there is also a 20% of upfront costs — $130,000 — estimated as the annual support and maintenance contract costs.

Hardware costs can vary greatly depending on the application needs and the choice of hardware capabilities and vendors. To compensate, this cost was risk-adjusted by 5%. The risk-adjusted upfront costs are estimated to be $682,500 with $136,500 estimated per year in following years as shown in Table 8. See the section on Risks for more detail.

TABLE 8

Incremental Hardware Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
H1	Hardware costs		$650,000	$130,000	$130,000	$130,000		
Ht	Total hardware costs	H1	$650,000	$130,000	$130,000	$130,000	$1,040,000	$973,291
	Risk Adjustment		105%					
Htr	**Total hardware costs (Risk-Adjusted)**		**$682,500**	**$136,500**	**$136,500**	**$136,500**	**$1,092,000**	**$1,021,955**

Source: Forrester Research, Inc.

⊖ Deployment, Migration, And Implementation Resource Costs

The representative organization estimated employee resource time was required to plan deployment, migrate data from older systems, train on new features of SQL Server 2014 and SQL Server 2012, and deploy and configure databases and applications. It also brought in some consulting help to assist with many of these tasks, and estimated some small additional costs outside these categories. As shown in Table 9, the organization estimates deployment internal and outsourced resource costs to total a little more than $1.75 million. As resource costs can vary, this total has been risk-adjusted by 5%, for an adjusted total of about $1.85 million. See the section on Risks for more detail.

TABLE 9

Internal And Outsourced Deployment And Implementation Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
I1	Planning		$290,000					
I2	Training		$240,000					
I3	Data migration		$200,000					
I4	Deployment and implementation		$680,000					
I5	Third party professional services		$250,000					
I6	Other costs		$100,000					
It	Total deployment costs	I1 + I2 + I3 + I4 + I5 + I6	$1,760,000	$0	$0	$0	$1,760,000	$1,760,000
	Risk Adjustment		105%					
Itr	**Total deployment costs (Risk-Adjusted)**		**$1,848,000**	**$0**	**$0**	**$0**	**$1,848,000**	**$1,848,000**

Source: Forrester Research, Inc.

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⊖ **Annual Management Resource Costs**

The representative organization found that after deployment, employee resource time was required to manage and support the databases for mission-critical applications, continue training on SQL Server 2014 and SQL Server 2012, and manage cloud integration services. It has kept some consulting resources to augment these tasks. As shown in Table 10, the organization estimates annual internal and outsourced resource costs to total $705,000. As with deployment, resource costs can vary, and this total has also been risk-adjusted by 5%, for an adjusted total of a little more than $740,000. See the section on Risks for more detail.

TABLE 10

Ongoing Management Resource Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
J1	Support and helpdesk			$300,000	$300,000	$300,000		
J2	Training			$175,000	$175,000	$175,000		
J3	Cloud Services			$100,000	$100,000	$100,000		
J4	Third party professional services			$130,000	$130,000	$130,000		
Jt	Total ongoing management costs	J1 + J2 + J3 + J4	$0	$705,000	$705,000	$705,000	$2,115,000	$1,753,231
	Risk Adjustment		105%					
Jtr	**Total ongoing management costs (Risk-Adjusted)**		**$0**	**$740,250**	**$740,250**	**$740,250**	**$2,220,750**	**$1,840,892**

Source: Forrester Research, Inc.

Total Costs

Table 11 shows the total of all costs as well as associated present values, discounted at 10%. Over three years, the representative organization expects total costs to total a net present value of a little more than $7.72 million.

Table Total Costs (Risk-Adjusted)

Ref.	Cost Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Gtr	Total incremental software costs for migration	($1,554,000)	($588,000)	($588,000)	($588,000)	($3,318,000)	($3,016,269)
Htr	Total hardware costs	($682,500)	($136,500)	($136,500)	($136,500)	($1,092,000)	($1,021,955)
Itr	Total deployment costs	($1,848,000)	$0	$0	$0	($1,848,000)	($1,848,000)
Jtr	Total ongoing management costs	$0	($740,250)	($740,250)	($740,250)	($2,220,750)	($1,840,892)
	Total Costs (Risk-Adjusted)	**($4,084,500)**	**($1,464,750)**	**($1,464,750)**	**($1,464,750)**	**($8,478,750)**	**($7,727,116)**

Source: Forrester Research, Inc.

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FLEXIBILITY

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for some 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. There are multiple scenarios in which a customer might choose to implement SQL Server 2014 and SQL Server 2012 and later realize additional uses and business opportunities. Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix B).

These real options have been described to Forrester by study participants who outlined possible new routes on their technology road maps and some likely directions and next steps for their organizations. Although data for calculating the value of these flexibility options was insufficient when this study was conducted, especially at an early stage of deploying the product, our interviews identified several areas that will produce flexibility options based on next-stage real options that have been described by study participants.

Foundation For Cloud

Although study participants have not made great leaps to cloud computing in connection with their database environments, a number of interviewees saw the value of investing in cloud projects and pilot efforts as next steps once implementation of SQL Server 2014 and SQL Server 2012 is completed or closer to completion. Remote block storage and the ability to easily store data in the cloud and to point applications at the data are key features. Running some applications in the cloud is commonplace among participants via software-as-a-service (SaaS) packages.

Next, customers expect to experiment with non-mission-critical applications. Platform-as-a-service (PaaS) is a next step for some, especially those that see value in the ability to scale up or down quickly. Participants described next steps that include leveraging the flexibility of Windows Azure to accommodate for peak periods, and also shifting some applications, data, and development from on-premises to cloud or hybrid. The business case can be made by the hardware expenditures not made, while gaining advantage from newer cloud services. Several interviewed organizations have made progress in virtualizing and consolidating their database platform (bolstered by high availability and disaster recovery), thus making cloud initiatives easy next steps. All of which allows the enterprise to choose where to deploy — an on-premises data center, private or public cloud, or a hybrid.

Scaling Up And Out

One of the companies in the study described how Microsoft SQL is expected to support a major international expansion. For the representative organization, the option would be an expansion to encompass financial markets data from non-North American exchanges, while maintaining a database footprint that scales nonlinearly — and will only have to add a few resources to handle a business of size that is orders of magnitude larger than at present.

Initially, the upgrade to SQL Server brings about a decrease in overhead, as described above, freeing the data services team to plan and execute new initiatives, and adding only moderate levels of staff or infrastructure, or none, to support larger operations. "The biggest thing is a decrease in overhead that frees us to do other things," said the IT director of a retail chain, "It frees the development team to do new development, not just keeping the old system operational."

BI For Those That Lack It, And More For Those That Have Started

Not all customers are positioned to take advantage of the latest advances in BI if they have built no such capabilities to date. For these customers, the draw is unlocking potential that exists in data and has not been exploited so far. Other customers that have embarked toward some BI capabilities already will seek to expand their nascent initiatives and perhaps render obsolete some third-party tools or manual spreadsheet analyses and step up to modern, more powerful BI capabilities.

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Higher Security

Customers often use just a superficial set of the security capabilities in Microsoft SQL Server, whether 2005, 2008, or 2012. Some of these organizations will discover and deploy the enhanced auditing capability, certified compliance aids, and logging tools.

RISKS

Forrester defines two types of risk associated with this analysis: "implementation risk" and "impact risk." "Implementation risk" is the risk that a proposed investment in Microsoft SQL Server 2014 and SQL Server 2012 may deviate from the original or expected requirements, resulting in higher costs than anticipated. "Impact risk" refers to the risk that the business or technology needs of the organization may not be met by the investment in SQL Server 2014 and SQL Server 2012, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for cost and benefit estimates.

Further, some technical and business risks are reduced by the product; in this case, this includes the ability to provide seamless patching and software upgrades, and rebuild indices without affecting the business.

Quantitatively capturing implementation and impact risk by directly adjusting the financial estimates results in more meaningful and accurate estimates, and a more rigorous projection of the ROI. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates. The risk-adjusted numbers should be taken as "realistic" expectations since they represent the expected values considering risk.

TABLE 12
Benefit And Cost Risk Adjustments

Benefits	Adjustment
User productivity and error reduction improvements	↓ 25%
IT resource productivity and support reductions	↓10%
Profit from improved direct and sales-led revenue	↓ 25%
Customer churn cost savings	↓25%
Cost reductions from improved security	↓ 10%

Costs	Adjustment
Software costs	↑ 5%
Hardware costs	↑ 5%
Deployment resource costs	↑ 5%
Ongoing resource costs	↑ 5%

Source: Forrester Research, Inc.

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Quantitatively capturing implementation risk and impact risk by directly adjusting the financial estimates results provides more meaningful and accurate estimates and a more accurate projection of the ROI. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates. The risk-adjusted numbers should be taken as "realistic" expectations since they represent the expected values considering risk.

The following impact risks that affect benefits are identified as part of the analysis:

› Organizations have different information worker processes that can influence the importance of data entry and resulting errors.

› While not to the same scale as information worker tasks, some of the same variability can be found in IT administrator, database administrator, and help desk resource tasks as well.

› Profit margins and organization revenue will vary greatly based on industry and geography (and will still vary some even for similar organizations within each).

› Customer counts and churn rates are unique to each organization

The following implementation risks that affect costs are identified as part of this analysis:

› Software and hardware costs, as well as deployment and ongoing resource costs, can all vary based on the organization, where it's based, what volume license programs are contracted, etc. However, SQL Server deployment and management is a relatively well-known process, and data was collected from both interview participants and most survey respondents. All these costs were risk-adjusted, but at the relatively low factor of 5%.

Table 12 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.
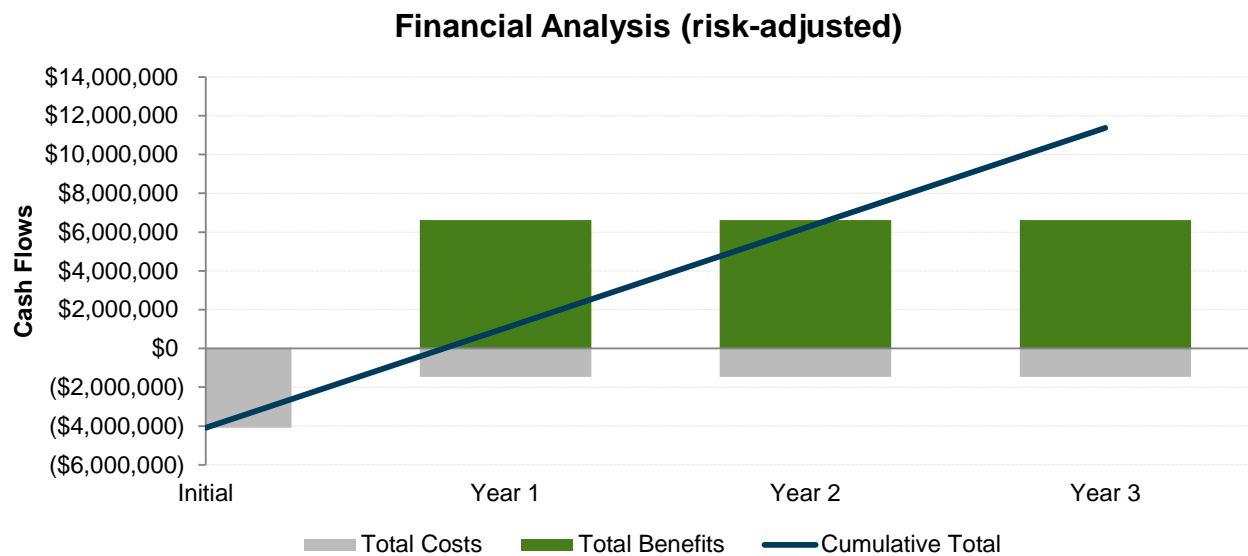
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Financial Summary

The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the organization's investment in SQL Server 2014 and SQL Server 2012.

Table 13 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from Table 12 in the Risks section to the unadjusted results in each relevant cost and benefit section.

FIGURE 3

Cash Flow Chart (Risk-Adjusted)

Source: Forrester Research, Inc.

TABLE 13

Cash Flow (Risk-Adjusted)

Summary	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total Costs	($4,084,500)	($1,464,750)	($1,464,750)	($1,464,750)	($8,478,750)	($7,727,116)
Total Benefits	$0	$6,616,906	$6,616,906	$6,616,906	$19,850,718	$16,455,266
Total	**($4,084,500)**	**$5,152,156**	**$5,152,156**	**$5,152,156**	**$11,371,968**	**$8,728,150**
ROI						**113%**
Payback Period (months)						**9.5**

Source: Forrester Research, Inc.

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Microsoft SQL Server 2014 And The Data Platform: Overview

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

Microsoft SQL Server Overview: Microsoft SQL Server 2014 delivers mission-critical performance across all workloads with in-memory built in, faster insights from any data with familiar tools, and a platform for hybrid cloud, enabling organizations to easily build, deploy, and manage solutions that span on-premises and cloud.

Mission-critical performance:

- **In-memory built-in:**
  - o *Up to 30x faster transactions with In-Memory OLTP.*
  - o *Over 100x query performance gains with In-Memory Column Store.*

- **Enhanced security and scalability:**
  - o *The database was ranked "least vulnerable" five years in a row.* Scalable across compute, networking, and storage with Windows Server 2012 R2.

- **High availability:**
  - o *The 9s you need.* Get greater high availability with AlwaysOn, now with even better availability and simplified management.

- **Mission-critical support:**
  - o *Highest-level coverage.* Microsoft SQL Server 2014 delivers mission-critical performance across all workloads with in-memory built in and faster insights from any data with familiar tools.

Faster insights from any data:

- **Easy access to data, big and small:**
  - o *Insights from any data.* Search, access, and shape internal and external data, and combine with unstructured data to broaden insights.

- **Powerful insights with familiar tools:**
  - o *Enhanced self-service BI.* Speed up analysis and time to insight with the familiarity of Excel in Office and Power Office 365 as well as access via mobile devices.

- **Complete BI solution:**
  - o *From data management to BI and analytics.* Scale your BI models, enrich and help secure your data, and ensure quality and accuracy with a complete BI solution.

Platform for hybrid cloud:

- **Hybrid cloud scenarios:**
  - o *The best of on-premises and cloud.* Enable new hybrid scenarios like cloud backup and cloud disaster recovery to reduce costs and improve on-premises business continuity.

- **Easy on-ramp to cloud:**
  - o *Fast time-to-benefit.* Easily and quickly migrate and run SQL Server on Windows Azure to get to the benefits of cloud computing faster.

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- **Complete and consistent:**
  - ○ *Comprehensive data platform.* Deploy a complete and consistent data platform that spans on-premises and cloud using a common set of tools across the entire application life cycle.

Mission-critical performance features:

- **In-memory built in:**
  - ○ *In-Memory OLTP:* Average 10x and up to 30x performance gains.
  - ○ *Enhanced In-Memory ColumnStore for DW:* Updatable, faster, better compression.
  - ○ *In-Memory BI with Power Pivot:* Fast insights.
  - ○ *Buffer Pool Extension to SSDs:* Faster paging.
  - ○ *Enhanced Query Processing*: Faster performance without any app changes.

- **Enhanced security and scalability:**
  - ○ *Redefined engineering security processes:* Least vulnerable DB.
  - ○ *CC certification at High Assurance Level:* Improved compliance.
  - ○ *Enhanced separation of duty:* Improved compliance and security.
  - ○ *Transparent Data Encryption:* Better data protection.
  - ○ *Encryption Key Management:* Store keys on a separate server.
  - ○ *Support for Windows Server Core:* Reduced surface area for attack.
  - ○ *Resource Governor adds IO governance:* Predictable performance.
  - ○ *SysPrep at cluster level:* Faster deployment.
  - ○ *Windows Server 2012 R2:* Predictable performance with tiering of compute network and storage.

- **High availability:** *SQL Server 2014:*
  - ○ *Enhanced AlwaysOn, 8 secondaries, Replica Wizard*: Greater HA, easier to manage and deploy.

- **High availability:** *Windows Server 2012 R2:*
  - ○ *Clustered Shared Volume support:* Enterprise HA with tiered storage.
  - ○ *VHDX support:* Resize VM with no downtime.

- **High availability:** *Windows System Center 2012 R2:*
  - ○ *Manage on-premises and cloud apps.*

Mission-critical support:

- **Premier:**
  - ○ *24x7 support and access to tech training.*

- **PMC:**
  - ○ *Solution validation, on-site expertise, and fastest response times.*

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Appendix A: Representative Organization Description

For this TEI study, Forrester has created a representative organization to illustrate the quantifiable benefits and costs of implementing Microsoft SQL Server 2014 and SQL Server 2012 for mission-critical applications. This organization is based on characteristics of the interviewed customers and is intended to represent a company with the following characteristics:

> A US-based retailer with both online and physical store sales channels.

> 30,000 total employees, with about 6,000 who would be classified as information workers (including employees working in corporate offices as well as store managers).

> 300 Microsoft SQL Server databases, as part of a total infrastructure that includes 600 databases.

> 15 Microsoft SQL Server database administrators (DBAs), as part of a DBA team of 30.

> 15 IT administrators focused on SQL database resources, as part of a team of 30 total IT administrators.

> Two-thirds of all Microsoft SQL Server databases support mission-critical applications (in some way).

> More than 100 "tier one" applications that are deemed mission-critical.

In purchasing and deploying Microsoft SQL Server 2014 and SQL Server 2012 for mission-critical applications, the representative organization has the following objectives:

> Improve application integration with other systems, including other on-premises applications and newer cloud applications.

> Provide new features and capabilities available from the latest Microsoft SQL Server 2014 and SQL Server 2012 databases and applications.

> Reduce database or application outages and slowdowns.

> Improve customer satisfaction (and avoid customers not purchasing a product or going to a competitor).

> Improve employee satisfaction and productivity.

> Reduce database and application management costs (and consolidate management tools).

> Reduce security management time and the number and cost of security issues.

For the purpose of the analysis, application migration to and deployment of Microsoft SQL Server 2012 R2 can vary greatly depending on the application, amount of queries, volume of transactions, and other metrics. But Forrester assumes that the per-application metrics outlined in the benefits above are averages based on a variety of mission-critical applications in the portfolio — some of which may require only light Microsoft SQL Server resources with databases that share a single server. Alternatively, a few applications likely require many SQL databases with dedicated servers, added services, storage, transaction processing, etc. to support production, development, and training requirements.

Framework Assumptions

Table 14 provides the model assumptions that Forrester used in this analysis.

The discount rate used in the PV and NPV calculations is 10%, and the time horizon used for the financial modeling is three years. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult with their respective company's finance department to determine the most appropriate discount rate to use within their own organizations.

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TABLE 14
Model Assumptions

Ref.	Metric	Calculation	Value
C1	Hours per week		40
C2	Weeks per year		52
C3	Hours per year (M-F, 9-5)		2,080
C4	Hours per year (24x7)		8,736
C5	SQL Server DBA		$80 per hour
C6	IT manager/administrator		$65 per hour
C7	Information worker		$70 per hour

Source: Forrester Research, Inc.

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Appendix B: Total Economic Impact™ Overview

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.

The TEI methodology consists of four components to evaluate investment value: benefits, costs, flexibility, and risks.

BENEFITS

Benefits represent the value delivered to the user organization — IT and/or business units — by the proposed product or project. Often, product or project justification exercises focus just on IT cost and cost reduction, leaving little room to analyze the effect of the technology on the entire organization. The TEI methodology and the resulting financial model place 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. Calculation of benefit estimates involves a clear dialogue with the user organization to understand the specific value that is created. In addition, Forrester also requires that there be a clear line of accountability established between the measurement and justification of benefit estimates after the project has been completed. This ensures that benefit estimates tie back directly to the bottom line.

COSTS

Costs represent the investment necessary to capture the value, or benefits, of the proposed project. IT or the business units may incur costs in the form of fully burdened labor, subcontractors, or materials. Costs consider all the investments and expenses necessary to deliver the proposed value. In addition, the cost category within TEI captures any incremental costs over the existing environment for ongoing costs associated with the solution. All costs must be tied to the benefits that are created.

FLEXIBILITY

Within the TEI methodology, direct benefits represent one part of the investment value. While direct benefits can typically be the primary way to justify a project, Forrester believes that organizations should be able to measure the strategic value of an investment. Flexibility represents the value that can be obtained for some future additional investment building on top of the initial investment already made. For instance, an investment in an enterprisewide upgrade of an office productivity suite can potentially increase standardization (to increase efficiency) and reduce licensing costs. However, an embedded collaboration feature may translate to greater worker productivity if activated. The collaboration can only be used with additional investment in training at some future point. However, having the ability to capture that benefit has a PV that can be estimated. The flexibility component of TEI captures that value.

RISKS

Risks measure the uncertainty of benefit and cost estimates contained within the investment. Uncertainty is measured in two ways: 1) the likelihood that the cost and benefit estimates will meet the original projections and 2) the likelihood that the estimates will be measured and tracked over time. TEI risk factors are based on a probability density function known as "triangular distribution" to the values entered. At a minimum, three values are calculated to estimate the risk factor around each cost and benefit.

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Appendix C: Glossary

Discount rate: The interest rate used in cash flow analysis to take into account the time value of money. Companies set their own discount rate based on their business and investment environment. Forrester assumes a yearly discount rate of 10% for this analysis. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult their respective organizations to determine the most appropriate discount rate to use in their own environment.

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.

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.

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.

Return on investment (ROI): A measure of a project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits minus costs) by costs.

A NOTE ON CASH FLOW TABLES

The following is a note on the cash flow tables used in this study (see the example table below). The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1. Those costs are not discounted. All other cash flows in years 1 through 3 are discounted using the discount rate (shown in the Framework Assumptions section) at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations are not calculated until the summary tables are the sum of the initial investment and the discounted cash flows in each year.

Sums and present value calculations in the total benefits, total costs, and cash flow tables may not exactly add up, as some rounding may occur.

TABLE [EXAMPLE]
Example Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3

Source: Forrester Research, Inc.

Appendix D: Endnotes

[1] Forrester risk-adjusts the summary financial metrics to take into account the potential uncertainty of the cost and benefit estimates. For more information, see the section on Risks.

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