

A Forrester Total Economic Impact™ Study
Commissioned By Google
July 2018

The Total Economic Impact™ Of Chrome Browser

Business Benefits And Cost Savings
Organizations Can Achieve By Deploying
Chrome Browser For Enterprise

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ABOUT FORRESTER CONSULTING

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Executive Summary

Organizations across industries are realizing that their employees increasingly rely upon web-based applications to help them gain access anytime, from anywhere, and on any device to support their work. IT organizations are scrambling to not only make sure they are providing their workforce with the flexibility to access business applications (with the browser becoming a central entry point), but also to ensure that security, speed, and user experience are not compromised as a result. According to Forrester's research, most knowledge workers spend much of their day using browser-based business applications across various devices, and their ability to access information from any location is crucial to their productivity. Eighty-one percent of the organizations that use cloud services are prioritizing the cloud for any new applications. This highlights the importance of having a fast, secure, and reliable browser to enable business productivity.¹

Google commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by leveraging Chrome as their default browser. The purpose of this study is to provide organizations with a framework to evaluate the potential financial impact of deploying the Chrome Browser across all devices in their business.

Across all devices, including desktops, laptops, and mobile, Chrome is the world's most used browser. While it's most known for its use by individuals, Chrome is now being deployed more by organizations due to the additional business solutions and features that it offers. With Chrome Browser, organizations can provide IT teams with more control to govern their employees' internet use, to standardize processes that can be managed centrally, and to increase security in protecting the company data from malware and phishing attacks. In addition, employees can improve their productivity through faster performance of websites and business applications as well as saving and syncing preferences across devices.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed several customers with years of experience using Chrome Browser. Customers participating in the study have deployed Chrome Browser across all their devices to improve efficiency and reduce the burden on IT. The interviewed customers mentioned the following reasons for deploying Chrome Browser in their organization:

- › Consolidate the versions, and number, of web browsers across stores and corporate, retail, and remote offices, for better control and easier manageability.
- › Enable a cloud-first strategy for new applications so employees access information from anywhere without high investment in on-premises servers.
- › Reduce the need to deploy and manage updates regionally, and automatically update across the company's global presence of 80 countries.
- › Drive customer experience by ensuring that data is secure and new product features work without glitches or slowdowns.



Improved IT resource productivity:
\$504K



Improved remediation times:
\$1.1M



Improved end-user productivity:
\$5.8M



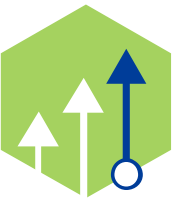
Recognize benefits:
6 months



ROI
1,344%



Benefits PV
\$7.4 million



NPV
\$6.9 million



Payback
<6 months

“Our business has evolved and now employees need to have instant connection and information access, to be able to share data and collaborate from any place. Chrome provides us with the necessary tools to help us achieve this without compromising our security.”

IT advisor, retail company



- › Drive customization of home pages across segments of employees and have pre-built policies eliminating manual-work effort.

Forrester interviewed five customer-facing global enterprises across a range of industries from healthcare, manufacturing, and retail. These organizations have deployed Chrome as a part of their journey to move to the cloud. To create the total economic impact the Chrome Browser could have on an organization’s business, Forrester developed a composite organization based on benefit and cost data gathered from customer interviews. The composite organization is representative of the companies that Forrester interviewed and is used to present the aggregate financial analysis in this study. While the study aims to quantify direct cost savings and incremental benefits related to an investment in Chrome Browser, organizations may achieve additional benefits such as the ability to increase scale, reduce data breaches, and attain rich customer and user analytics data, which were not quantified as part of this study.

Key Findings

Forrester’s interviews with five existing Chrome Browser customers and subsequent financial analysis found that an organization with 50,000 employees and 75,000 endpoint devices (across desktops, laptops, and mobile) would experience benefits of over \$7.4 million over three years versus costs of \$515,000 adding up to a net present value (NPV) of \$6.9 million. Over three years, the composite organization could achieve a 1,344% return on their investment in Chrome Browser (ROI). The interviewed organizations also noted that they were able to get a payback on their investment within six months of full implementation. Payback is based on companies recovering their costs of deploying and integrating Chrome Browser into their business environment.

Quantified benefits. The following risk-adjusted quantified benefits are representative of those experienced by the organizations surveyed and interviewed and reflect the financial analysis associated with the composite organization. All values are reported in three-year net present value (NPV):

- › **Improved IT resource productivity resulting in ~\$504K of savings.** Customers interviewed for this study noted an increase in efficiency by making Chrome their official browser company-wide. Chrome makes the IT team’s job much easier by giving administrators the ability to define more than 300 policies and quickly set device-level and user-level policies from a central admin console in the cloud. In addition, developers have a single, easy-to-use browser to build, test, and deploy business applications and manage extensions across the organizations. For any legacy applications that are not compatible, Chrome offers extensions that will redirect websites to legacy browsers, further giving reason for organizations to deploy Chrome throughout their entire company.

“Chrome has made the transition through a merger with operations now in 80 countries easier, faster, and most cost-effective. Chrome Browser helped us keep business continuity as we integrated two large IT systems and we could easily deploy desktops and mobile devices with standard policies across regions.”

*Head of collaboration,
manufacturing company*



- › **Improved remediation by avoiding security issues by 97% over three years.** Chrome Browser is equipped with features that proactively detect advanced malware and phishing techniques that can easily be pushed out to ensure that the organizations' ecosystem has the latest updates. These updates are also automatically deployed to reduce the burden on IT teams to deploy, test, and ensure performance. Chrome strengthens security by using best-in-class technologies, such as safe browsing, tab sandboxing and site isolation, to mitigate any potential security issues. Interviewed customers all noted that over three years the number of malware and phishing attacks and other browser-based security issues had reduced by 97%.
- › **Improved end-user productivity by 30 minutes a week per knowledge worker.** Customers found that Chrome not only helped business applications to run faster, but it also drove employee productivity by keeping consistent the employee's preferences across devices in bookmarks, history, and extensions. The customers noted that knowledge workers throughout the organization would see at least 30 minutes of productivity savings each week due to the better performance, increased flexibility, and enhanced business features. When annualized, this benefit results in over 3 full-time days of additional productivity per employee.

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

- › **Improved productivity gains from non-knowledge worker employees.** Customers noted that all employees benefit from having the flexibility of Chrome Browser. Forrester has only quantified the benefits for end users who primarily rely on browser-based applications to conduct their daily business operations.
- › **With Chrome Browser, customers saw a reduced number of help-desk calls** from employees regarding performance issues with business applications.
- › **IT resources can redeploy time** from reactive technical tasks to more value-added, strategic initiatives.
- › **Reduced data and security breaches and related costs.**
- › **Accessing 24x7 phone and email support for Chrome Browser.** As a paid add-on, Google can help with troubleshooting, deployment, management, and configuration through its enterprise support offering.

Costs. The following risk-adjusted costs are representative of those experienced by the companies interviewed and reflect the financial analysis associated with the composite organization. All values are reported in the three-year NPV.

Please note that in the analysis, Forrester did not include an enterprise upgrade charge for Chrome Browser. For the organizations interviewed, the Chrome Browser came as a package with their Chrome Enterprise upgrade and no additional cost for the browser was allocated. Enterprises can purchase support services for Chrome Browser for a per-user, per-year fee, but none of the organization's interviewed had opted for that option. Highlighted below are only the internal implementation and ongoing resource costs associated with managing Chrome Browser.

- › **Chrome Browser implementation and integration costs totaling approximately \$230K.** Customers noted that during implementation about eight full-time IT resources from administrators, management, developers, and desktop engineers spent 50% of their time across five months deploying Chrome Browser onto all their endpoints. This time included planning and testing of all legacy applications, developing and executing policies, setting up profiles and accessibilities, and change management time to make Chrome the default browser.
- › **Chrome Browser annual support costs of approximately \$115K per year.** This includes the annual internal IT resource cost to manage policies and updates, compatibility with new and legacy applications, and troubleshooting requirements from Chrome.

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 Chrome Browser.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that Chrome Browser 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 Google stakeholders and Forrester analysts to gather data relative to Chrome Browser.



CUSTOMER INTERVIEWS

Interviewed five organizations using Chrome Browser to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

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



FINANCIAL MODEL FRAMEWORK

Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewed organizations.



CASE STUDY

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

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by Google 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 Chrome browser.

Google 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.

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

The Chrome Browser Customer Journey

BEFORE AND AFTER THE CHROME BROWSER INVESTMENT

Interviewed Organizations

For this study, Forrester interviewed five customers using Chrome Browser. Interviewed customers include the following:

Industry	Headquarters	Number of employees	Number of devices (endpoints)	Revenue
Healthcare	United States	3,000	4,000	Private
Retail	Europe	60,000	80,000	\$19 billion
Manufacturing	United States	50,000	30,000	\$7 billion
Retail	United States	200,000	100,000	\$15 billion
Manufacturing	Europe	80,000	120,000	\$30 billion

Composite Organization

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization is representative of the 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 composite organization is a global business with regional offices and locations across multiple countries. The organization has 50,000 total employees, of which 35% or 17,500 are considered knowledge workers, who need to be on a connected device and access company data and information to conduct day-to-day business activities. In total, the composite organization has 75,000 total endpoints which consists of desktops, kiosks, tablets, laptops, and mobile devices. The composite organization deployed Chrome Browser as its default browser three years ago to support its corporate objective of a cloud-first strategy.
- › **Deployment characteristics.** The composite organization's employees leverage Chrome Browser as its main point of entry into all its cloud-based web applications. Chrome is defaulted across all types of operating systems and devices within the organization. There are certain legacy applications that are not compatible with Chrome, and the organization has deployed extensions that allow those applications to run on legacy browsers and automatically redirect. The IT teams control the browsers behavior through either a centralized Chrome admin console or pre-built Google templates where they can deploy custom rules, settings, and policies across their employee base. In addition, IT teams can leverage either the console or the over 300 pre-built polices and templates with Chrome to configure permissions, automatically update versions, and deploy extensions. The composite organization has implemented single sign-on feature in addition to Chrome Browser that allows employees to automatically log into their browser accounts across devices and access their preferences.



Key assumptions:

- › 50,000 employees
- › 17,500 knowledge workers
- › 75,000 total endpoint devices
- › Chrome default browser on all devices

Key Challenges

Prior to their investment in Chrome Browser, the composite organization had the following challenges:

- › Various versions of web browsers were deployed in the organization which resulted in inconsistent performance issues for the employees.
- › IT teams would be spending a lot of time ensuring applications were compatible with browsers and securing their environment by updating different versions of browsers.
- › Business users were demanding access to company information and data from any location, at any time, and on all of their devices which existing technology couldn't effectively provide.
- › Global operations made it a challenge for IT teams to manage updates and policies from a central location. This put unnecessary stress on regional IT teams and resulted in inconsistent processes.

Solution Requirements

The composite organization searched for a solution that could:

- › Provide enterprise control to deploy custom rules and policies across devices through a centralized administrative console or through Group Policy.
- › Reduce the burden on IT teams with pre-built policies, templates, and automated security updates.
- › Allow for connected devices and save preferences from bookmarks, settings, extensions, and browsing history across all devices for better user experience and increase in productivity.
- › Ensure that devices are equipped with the latest security protections that are easy to update to mitigate threats from advanced malware, malicious sites, and other attacks.
- › Provide a single browser solution that would allow employees to access both new and legacy applications without compromising speed and performance.
- › Provide a solution that is consistent across all desktop and mobile platforms.

Key Results

Key quantified results from the Chrome Browser investment for the composite organization include:

- › Increased both IT admin and developer time savings from increase in control and developing and managing existing applications.
- › Reduction in remediation time from reduced security attacks by deploying latest security technologies.
- › Improved end-user productivity by providing more flexibility, faster speed, and better performance.

“We have seen a dramatic reduction in malware and phishing attacks after deploying Chrome as the default browser in our company. Our security teams have now freed up bandwidth to focus on more value-added and proactive initiatives to keep our organization’s data safer.”

Global information systems manager, manufacturing company



“We have decided to build all our applications so that they are compatible with Chrome. Now that our entire organization is on the same version of the browser, our employees do not have to worry if their everyday applications will work with the browser anymore.”

Systems engineer, retail company



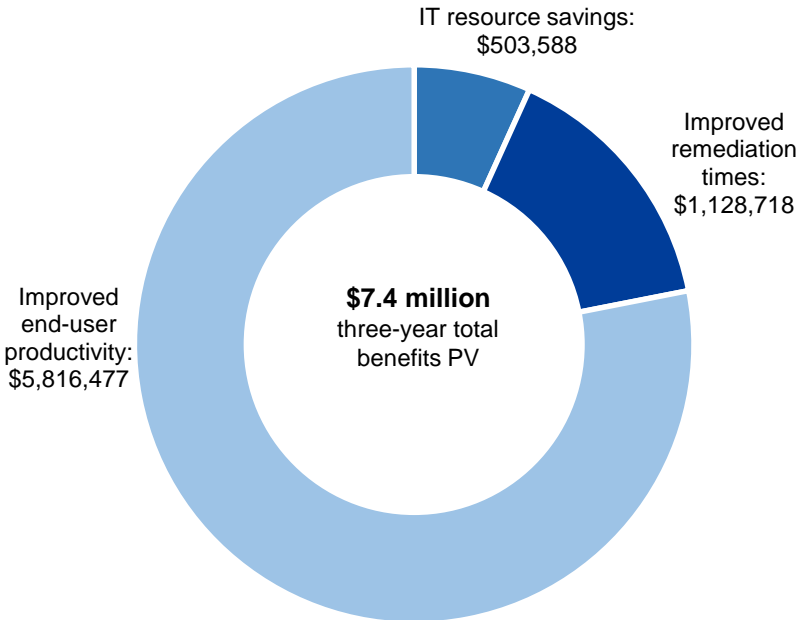
Financial Analysis

QUANTIFIED BENEFIT AND COST DATA AS APPLIED TO THE COMPOSITE

Total Benefits

REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	IT resource savings	\$202,500	\$202,500	\$202,500	\$607,500	\$503,588
Btr	Improved remediation times	\$349,920	\$466,560	\$565,704	\$1,382,184	\$1,128,718
Ctr	Improved end-user productivity	\$1,817,308	\$2,423,077	\$2,877,404	\$7,117,788	\$5,816,477
Total benefits (risk-adjusted)		\$2,369,728	\$3,092,137	\$3,645,608	\$9,107,472	\$7,448,783

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 have a PV of \$10.1 million.



Benefit 1: IT Resource Savings

The interviewed organizations revealed that one of the goals in implementing Chrome Browser was to reduce the burden on their IT teams by standardizing both processes and web experience across the organization. The composite organization realized time savings for both IT administrators and developers by implementing Chrome as the default browser across their organization.

- › **Improved IT admin productivity.** With Chrome, the composite organization was able to standardize a single version of the browser across the organization. The Chrome deployment comes with an enterprise admin console where IT administrators can control settings, deploy extensions, and customize rules from over 300 pre-built policies to customize access and web experience across all their 75,000 endpoints. IT teams can also leverage pre-built templates to manage policies through Group Policy.
- › **Improved developer productivity.** Chrome Browser includes a set of pre-built developer tools that can quickly help developers identify and diagnose problems and performance issues to help IT deliver better websites, applications, and faster speeds across both corporate and regional locations. Now developers do not have to test websites and application performance on different browser versions and they have an easy to use platform to monitor performance, resolve issues, and deploy extensions.

Customers interviewed for this study noted an increase in productivity for both IT admins and developers from their decision to deploy Chrome as the default browser across all of their organization's endpoints.

For the composite organization, Forrester assumes:

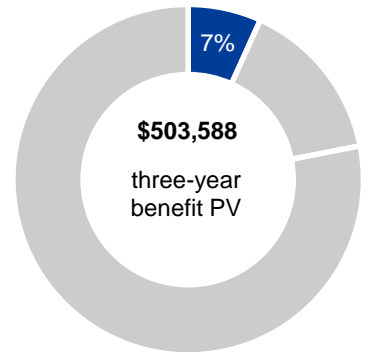
- › Five IT administrators responsible for governing the browser experience and managing policies and settings for all their 75,000 endpoints.
- › Thirty-five developers responsible for developing and deploying business applications and websites that are compatible with the browser.
- › Average annual fully burden rate of IT resource across various positions set at \$100,000 per year.
- › After implementing Chrome Browser, the composite organization realized 25% productivity efficiencies across these five IT admin resources.
- › After implementing Chrome Browser, the composite organization realized 10% productivity efficiencies across these 35 IT developers.
- › Fifty percent of the productivity savings can be attributed to the bottom line of organizations.

IT resource savings can be influenced by:

- › The geographic markets where operations and IT teams reside
- › The number of new applications and websites an organization creates and launches each year.

To account for this, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of \$504,000.

Incremental benefit through IT resource savings: 7% of total benefits



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.

IT Resource Savings: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Number of IT admins that have responsibilities to govern the browsing experience and manage policies		5	5	5
A2	Percentage of improved efficiency for IT admins		20%	20%	20%
A3	Number of developers with responsibilities of building and deploying applications		35	35	35
A4	Percentage of improved efficiency for developers with Chrome browser		10%	10%	10%
A5	Annual fully burden rate of IT resource		\$100,000	\$100,000	\$100,000
A6	Percent productivity captured by organization		50%	50%	50%
At	IT resource savings	$(A1 \cdot A2 \cdot A5 \cdot A6) + (A3 \cdot A4 \cdot A5 \cdot A6)$	\$225,000	\$225,000	\$225,000
	Risk adjustment	↓10%			
Atr	IT resource savings (risk-adjusted)		\$202,500	\$202,500	\$202,500

Benefit 2: Improved Remediation Times

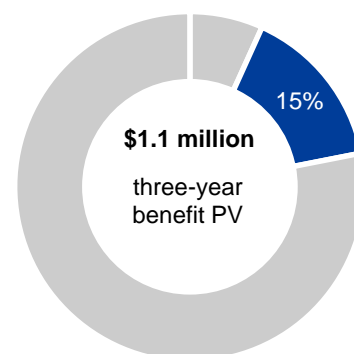
In addition to increasing IT admin and developer productivity, the composite organization was able to improve their security posture by standardizing Chrome as the organization's default browser. In effect, a reduced number of malicious sites, advanced malware threats, and phishing attacks in their environment was experienced.

Chrome comes with Safe Browsing technology that protects the organization from a range of attacks and is used by other Google products. Employees are quickly notified of a warning page if a website is deemed to be potentially dangerous. In addition, Chrome will ensure that the organization always has the latest security fixes by automatically updating the browser policies. This allows Chrome Browser and the employees to stay one step ahead of any new threats or bugs that may penetrate the environment. Tab sandboxing and site isolation detects malware, halting the spread of some security threats to devices.

For the composite organization, Forrester assumes:

- › There are 75,000 endpoints across desktops, laptops, tablets, and mobile devices.
- › Prior to Chrome Browser, about 1% of endpoint devices would get affected by a security threat in a given month.
- › Average time of 1.5 hours to remediate a security threat. This is an average of both small bugs to large malware attacks.
- › Ninety-seven percent reduction of security threats across a three-year period.

Improved remediation times:
15% of total benefits



Reductions in average cost per contact can be influenced by:

- › The number of malware, phishing, and malicious security attacks that can penetrate your environment.
- › Other tools and systems in place to prevent security attacks.

To account for this, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of \$1.1 million.

Improved Remediation Times: Calculation Table					
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Number of endpoint devices		75,000	75,000	75,000
B2	Percentage of endpoint devices that experience a security issue per month		1%	1%	1%
B3	Number of months		12.0	12.0	12.0
B4	Time to remediate security issues (hours)		1.5	1.5	1.5
B5	Percentage of security issues avoided		60%	80%	97%
B6	Average hourly cost to remediate	\$100,000/2080	\$48	\$48	\$48
Bt	Improved remediation cost savings	$B1*B2*B3*B4*B5*$ B6	\$388,800	\$518,400	\$628,560
	Risk adjustment	↓10%			
Btr	Improved remediation cost savings (risk-adjusted)		\$349,920	\$466,560	\$565,704

Benefit 3: Improved End-User Productivity

The largest quantified benefit for the organization was the improved productivity that their employees experienced after implementing Chrome Browser. The composite organization was able to provide its employees access to information and data at any time, in any location, and on any device, which provided ample amounts efficiency and productivity. The interviewed customers noted the following drivers of productivity for its employees after implementing Chrome:

- › Seamlessly access information and data from the cloud across connected devices.
- › Once an employee signs into Chrome, their bookmarks, passwords, and history are all saved and synced across devices.
- › Employees can save pages and start work from exactly where they left off when opening the browser.
- › Reduced downtime due to security issues, fixes, and updates on employee devices.
- › Chrome allowed for better business continuity while integrating two IT systems during a merger.

For the composite organization, Forrester assumes:

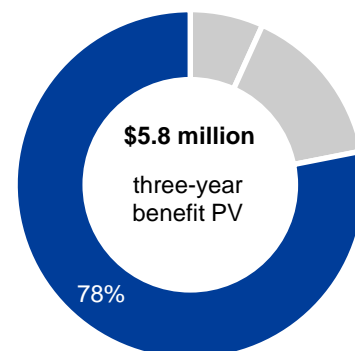
- › The total employee base of 50,000 knowledge workers and field workers.
- › Thirty-five percent, or 17,500, of the total employee base are knowledge workers who require access to business applications for more than 4 hours a day to perform day to day business operations.
- › Thirty minutes in time savings per week for knowledge workers based on interviewed customer feedback.

The magnitude of this benefit may vary for other organizations due to:

- › Number of knowledge workers in your organization.
- › The ability to calculate productivity gains for field workers.
- › Number of versions and downtime organizations experienced prior to implementing Chrome Browser.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of \$5.8 million.

Improved end-user
productivity:
78% of total benefits



Improved End-User Productivity: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Number of employees		50,000	50,000	50,000
C2	Percentage of employees that are knowledge workers		35.0%	35.0%	35.0%
C3	Number of knowledge workers	$C1 \times C2$	17,500	17,500	17,500
C4	Adoption rate to Chrome browser		60%	80%	95%
C5	Average time savings per week (hours)		0.5	0.5	0.5
C6	Average hourly cost of knowledge worker	$\$80,000/2080$	\$38	\$38	\$38
C7	Number of working weeks		50	50	50
C8	Percentage of user productivity captured by organization		20%	20%	20%
Ct	Improved end-user productivity from improved speed and performance	$C3 \times C4 \times C5 \times C6 \times C7$	\$2,019,231	\$2,692,308	\$3,197,115
	Risk adjustment	↓10%			
Ctr	Improved end-user productivity from improved speed and performance (risk-adjusted)		\$1,817,308	\$2,423,077	\$2,877,404

Flexibility

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

- › Adding new applications and extensions to boost productivity.
- › Utilizing as Chrome OS devices and G Suite applications to other Google solutions and products to increase collaboration and productivity in the organization.
- › Improved data capture and facilitated user analytics to understand and optimize web performance and utilization.
- › Reduced cost of lost records due to significant data and security breaches.

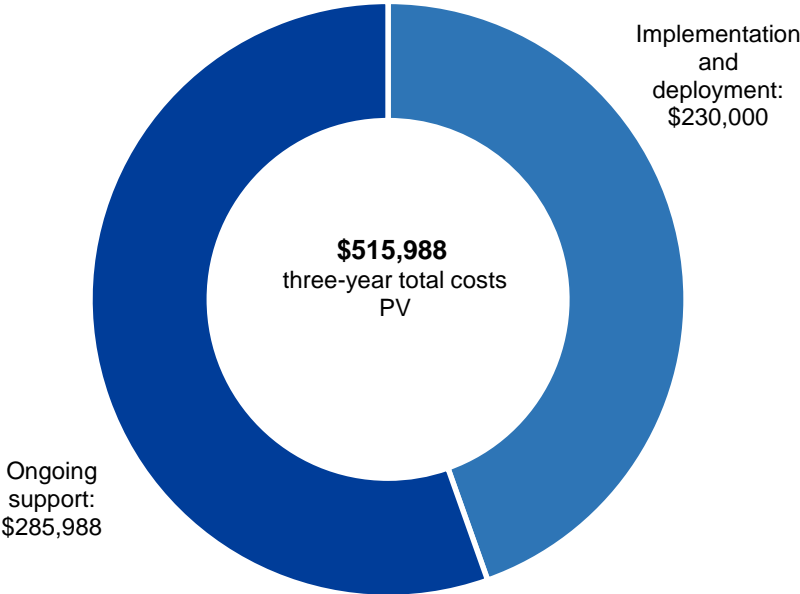
Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

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 so.

Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Dtr	Implementation and deployment	\$230,000	\$0	\$0	\$0	\$230,000	\$230,000
Etr	Ongoing support	\$0	\$115,000	\$115,000	\$115,000	\$345,000	\$285,988
Total costs (risk-adjusted)		\$230,000	\$115,000	\$115,000	\$115,000	\$575,000	\$515,988

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to have a PV of \$515K.



Cost 1: Chrome Browser Implementation And Deployment Costs

The implementation and integration costs for the composite organization is based on the number of business applications, available IT resources, and defining requirements and policies across the organization.

- › These costs may vary based on the scope of the business, complexity of integration, and internal IT resources.

To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year risk-adjusted total PV of \$230,000.

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

Implementation And Integration Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
D1	Number of IT FTEs (admins and developers)		8			
D2	Number of months to fully roll out Chrome browser to all devices		6			
D3	Percentage of time dedicated to Chrome browser roll-out		50%			
D4	Monthly fully burden rate of IT FTE	\$100,000/year	\$8,333			
Dt	Implementation and integration costs	$D1 \cdot D2 \cdot D3 \cdot D4$ (rounded)	\$200,000	\$0	\$0	\$0
	Risk adjustment	↑15%				
Dtr	Implementation and integration costs (risk-adjusted)		\$230,000	\$0	\$0	\$0

Cost 2: Ongoing Support Costs

Interviewed organizations identified that there was a portion of IT admin time that was required on an ongoing basis to support Chrome Browser. For the composite organization, these ongoing costs were modeled as:

- › Five IT admins and developers spending 20% managing and governing the browser experience, monitoring performance, ensuring compatibility with legacy applications, and building new applications.
- › These costs may vary due to the number of IT admins and the support that is required across global locations.

To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year risk-adjusted total PV of \$286,000.

Ongoing Support Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
E1	Number of IT FTEs (admins and developers)			5	5	5
E2	Percentage of time dedicated to supporting Chrome browser (updates, compatibility with new apps, performance)			20%	20%	20%
E3	Annual fully burden rate of IT FTE			\$100,000	\$100,000	\$100,000
Et	Ongoing support	$E1 * E2 * E3$		\$100,000	\$100,000	\$100,000
	Risk adjustment	↑15%				
Etr	Ongoing support (risk-adjusted)		\$0	\$115,000	\$115,000	\$115,000

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



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



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

Cash Flow Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	(\$230,000)	(\$115,000)	(\$115,000)	(\$115,000)	(\$575,000)	(\$515,988)
Total benefits	\$0	\$2,369,728	\$3,092,137	\$3,645,608	\$9,107,472	\$7,448,783
Net benefits	(\$230,000)	\$2,254,728	\$2,977,137	\$3,530,608	\$8,532,472	\$6,932,795
ROI						1,344%
Payback period						<6 months

Chrome Browser: Overview

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

Chrome Browser provides secure, trusted access to data, apps, and cloud services, connecting employees on any device. Proactive security measures protect users, and they get a consistent, customizable experience whenever and wherever they want to work. IT administrators can easily manage permissions and policies across every user, device, and platform in the enterprise.

With Chrome Browser, IT teams can:

Stay secure: Safeguard customer and business data across the enterprise, as employees do more in the cloud. Chrome Browser warns users of malicious sites while they browse and isolates processes to prevent potential threats from spreading.

Support user productivity: Give employees the freedom and flexibility they need—and expect. With Chrome Browser, users can access the full power of the web, customize their browsing experience for the way they work, and access their corporate bookmarks, extensions, history and other settings from any device.

Centralize management: Maintain tight oversight across the different devices and platforms employees use for working in the cloud now and in the future. Chrome Browser offers 300+ plus policies in a single, easy-to-manage console, or through Active Directory. IT gets precise, enterprise-wide control over which websites, apps, and extensions users can access, including apps that require legacy browsers.

Chrome Browser also simplifies enterprise deployments through optional support services, giving IT 24/7 access to experts and resources.

For more information on Chrome Browser for your organization, visit www.chrome.com/enterprise.

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.

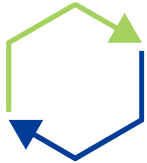
Total Economic Impact Approach



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.

Endnotes

¹ Source: “Rethink Technology In The Age Of The Cloud Worker,” a commissioned study conducted by Forrester Consulting on behalf of Google, July 2018.