

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

# The Total Economic Impact™ Of Google Chrome Kiosks And Digital Signage

Cost Savings And Business Benefits  
Enabled By Chrome Kiosks And Digital  
Signage For Enterprise

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**Project Director:**  
Anish Shah

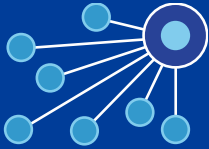
## ABOUT FORRESTER CONSULTING

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# Executive Summary

## Benefits And Costs



Increased revenue:  
**\$3,329,273**



IT resource savings:  
**\$1,007,175**



Implementation, hardware,  
software licensing, and ongoing  
resources costs:  
**\$977,477**

Customer experience can have enormous ramifications on an organization's bottom line. Positive experiences can foster loyalty, improve brand sentiment, and increase customer engagement while a single negative experience can turn customers away and erode trust. Providing customers with easy-to-access, self-service information about your product and pricing, along with options to quickly complete transactions, not only improves customer experience but drives organizational efficiencies and employee productivity.

Many organizations across industries are leveraging single-purpose Chrome OS devices for their customers and their employees. These devices are used both as kiosks to access a single application and as digital signage to easily share and display content without the hassles of relying on IT resources. According to Forrester's research<sup>1</sup>, 66% of customers want to self-serve for routine tasks and information and want this experience to be easy with minimal friction.<sup>1</sup> Chrome kiosks and digital signage add significant value to organizations by providing personalized assistance to customers that can be easily replicated and deployed at any location. In addition, Chrome kiosks augment operations, boosting employee productivity and experience.

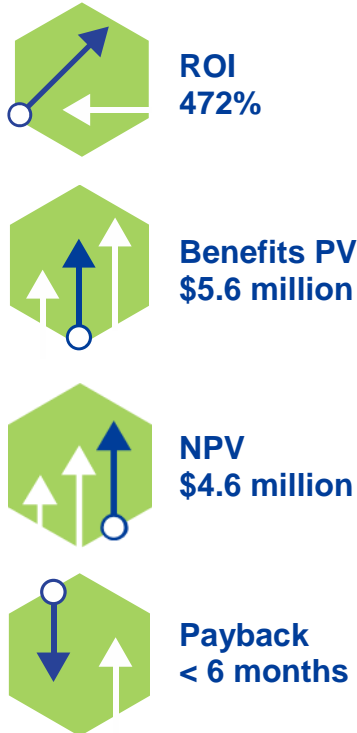
Google commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by leveraging Chrome devices for single-purpose kiosks and digital signage. The purpose of this study is to provide organizations with a framework to evaluate the potential financial impact of deploying Chrome kiosks and digital signage for their employees and customers.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed and surveyed several customers with multiple years of experience using Chrome kiosks and digital signage. Customers mentioned the following reasons for deploying these Chrome devices in their organizations:

- › Improve customer experience to drive sales, average order value, and faster service.
- › Offer an easy way for field employees, store employees, healthcare staff, and other workers to access web-based applications, conduct training, and quickly enter in information.
- › Drive employee engagement by providing employees with Chrome kiosks in breakrooms to access emails. With single sign-on features, it makes it easy for organizations to deliver this shared experience.
- › Allows organizations to easily create and push out content and marketing messages without relying on IT support and services.
- › Reduce IT capex spend by lowering the cost of acquiring, shipping, and deploying each device.
- › Reduce burden on IT teams by decreasing the time spent on hardware configurations, managing updates, re-imaging devices, and troubleshooting.
- › Increase the scale with which devices and new marketing material can be rolled out across locations.

## Key Findings

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



“When our customers come into our stores, they expect to have the same choices and options as they would online or on their smartphone. We have deployed Google Chrome kiosks across many of our retail locations, and our customers love it. It shows on our bottom line.”

*Systems engineer, retail company*



- › **Reduced burden on IT resources resulted in \$1.0M in savings.** With Chrome devices, IT teams spent much less time on deployment, device management, remediation of issues, re-imaging devices, and managing security updates. Surveyed companies estimated that prior to Chrome devices, IT teams would spend an average of 1 hour a week on these tasks. With Chrome devices, the companies estimated an 80% reduction in time for these tasks. These IT resource savings resulted in a three-year productivity benefit of \$1.0 million.
- › **Leveraging Chrome devices as customer self-service kiosks increased sales, resulting in \$3.3 million in additional bottom-line benefits.** Interviewed organizations noted that consumer expectations are no longer limited to just the digital shopping experience. Their customers expect physical stores to deliver the same product assortment, rapid delivery, and product information that they get online. Providing customers with self-service kiosks to browse products, review options, and make transactions significantly improved the customer experience, increased average transaction value, and drove additional sales. For each retail operation that rolled out a customer-facing Chrome kiosk, the interviewed organizations estimated a 3% overall lift in revenue, which resulted in a three-year benefit of over \$3.3 million.
- › **Chrome kiosks and digital signage drove over \$755K in employee productivity.** Chrome devices helped interviewed and surveyed organizations across retail, manufacturing, and healthcare industries improve employee productivity. Healthcare caregivers did not have to carry their personal devices to log in and track patient information. Manufacturing organizations could provide kiosks that allowed multiple floor workers access to business applications. In retail, employees could perform many day-to-day functions like logging inventory all by accessing a self-service Chrome kiosk in the back room. In addition, retail workers could leverage Chrome devices to push out marketing messages and content without the assistance of IT support and services.
- › **Chrome devices resulted in over \$495K of IT hardware and software cost savings.** By implementing Chrome devices for self-service kiosks and digital signage, interviewed customers saved on both hardware device costs and ongoing license costs. The customers noted that Chrome devices were priced less than 50% of other comparable options, and there were ongoing license costs savings as well. These IT capex and opex savings allowed the interviewed organizations to quickly roll out devices to many countries and enabled them to scale faster.

“We have deployed Google Chrome kiosks on our manufacturing floor where floor workers can input work logs, check email, and track time sheets. The devices are very reasonably priced, easy to configure and deploy, and they boost our employees’ productivity and job satisfaction.”

*Information systems manager,  
manufacturing company*



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

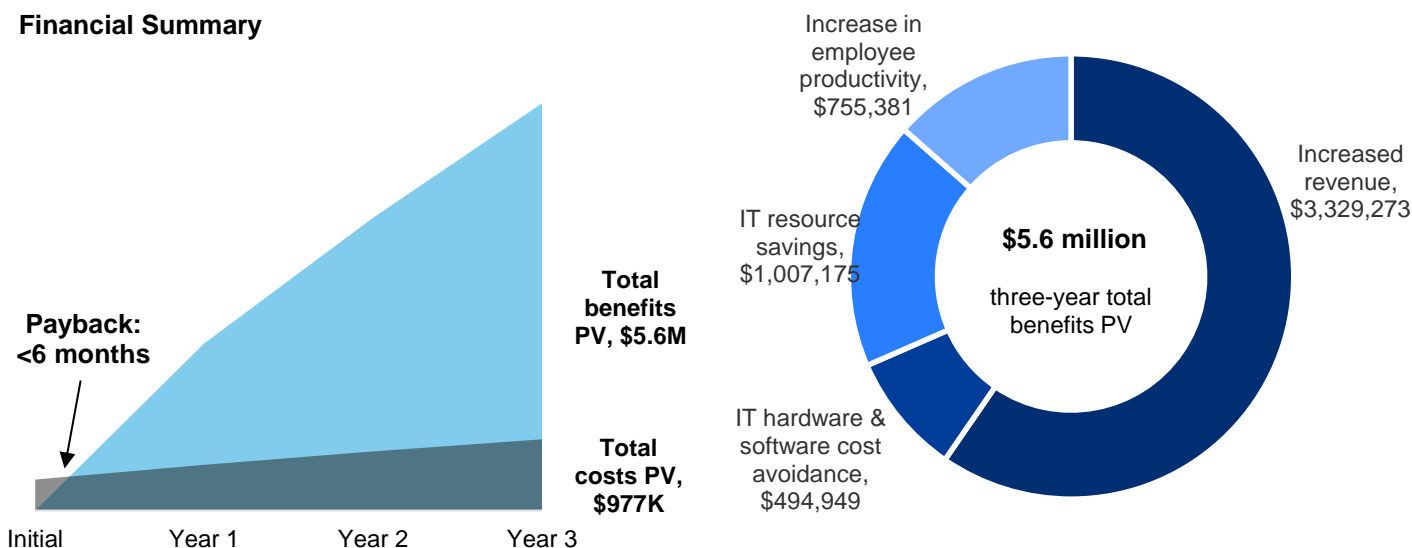
- › IT resources can redeploy time from reactive technical tasks to more value-added, strategic initiatives.
- › Organizations can reduce data and security breaches and related costs.
- › Chrome Enterprise has built-in reporting that streamlines compliance and audit processes. Google maintains and adheres to many industry security standards. As such, this ensures organizations stay compliant while reducing the effort needed for internal and external audits.

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

- › **Implementation and configuration lasted five months and cost \$275,000.** On average, five internal FTEs needed five months to implement, test, and deploy 450 Chrome devices across locations in the existing environment. These devices were both internal- and external-facing.
- › **Chrome devices and Chrome Enterprise annual licenses cost \$210,050.** The average cost per Chrome device for kiosks and digital signage was \$300 per unit and an annual license cost of \$50 per unit.
- › **Chrome kiosks and digital signage support cost approximately \$198,000 per year.** This included the annual internal marketing and IT resource costs to update content, manage security updates, ensure compatibility with new applications, and troubleshoot requirements from Chrome.

Forrester’s interviews with four existing customers and survey of 76 additional Chrome kiosks and digital signage users found that an organization based on these interviewed organizations experienced benefits of \$5.6 million over three years versus costs of approximately \$977K, adding up to a net present value (NPV) of \$4,609,331 and an ROI of 472%.

### Financial Summary



## 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 Google Chrome kiosks and digital signage.

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 Google Chrome kiosks and digital signage 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 devices.



### **CUSTOMER INTERVIEWS**

Interviewed four organizations and surveyed 76 more using Chrome devices as kiosks or digital signage 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 Google Chrome kiosks and digital signage'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 Google Chrome kiosks and digital signage.

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.

In some cases, Google provided the customer names for the interviews but did not participate in the interviews.

# The Chrome Kiosks And Digital Signage Customer Journey

## BEFORE AND AFTER THE CHROME KIOSKS AND DIGITAL SIGNAGE INVESTMENT

### Interviewed Organizations

For this study, Forrester surveyed 76 organizations and conducted four interviews with Google Chrome kiosks and digital signage customers. Interviewed customers include the following:

INDUSTRY	HEADQUARTERS	NUMBER OF EMPLOYEES	NUMBER OF USERS	REVENUE
Healthcare	United States	3,000	3,000	Private
Manufacturing	United States	50,000	30,000	\$7 billion
HR consulting	United States	5,000	5,000	Private
Retail	United States	200,000	35,000	\$15 billion

### Key Challenges

Customers are looking to buy experiences and not just simply products. Interviewed organizations wanted to provide new ways to engage customers while allowing employees to operate more efficiently with greater flexibility. Prior to their investment in Chrome devices, the interviewed customers had the following challenges:

- › Deliver the same product information, delivery options, product assortment, and transaction options as they can get online.
- › Improve customer experience by reducing wait times to increase average transaction volume and increase sales.
- › Improve employee productivity by providing a centralized Chrome kiosk where employees can quickly and easily leverage business applications, driving operational efficiencies.
- › Reduce hardware and software costs.
- › Provide reliable uptimes to ensure the highest customer satisfaction.
- › Reduce the burden on IT resources.

In addition, Forrester’s survey across 76 Chrome kiosk and digital signage customers revealed the following objectives for choosing Google Chrome devices.

“We are using Chrome devices in kiosk mode for our digital sign boards. With Chrome Sign Builder, we have the flexibility to have our regional teams roll out content quickly, and we can connect wirelessly to our corporate network to allow the mobility of our digital signs to different locations as needed.”

*Systems engineer, retail company*



## “What drove your organization to move to Chrome devices?”



Base: 76 Google Chrome kiosk/digital signage users

Source: A commissioned study conducted by Forrester Consulting on behalf of Google, February 2018

## Key Results

Eighty-four percent of survey respondents stated that they received a positive ROI from their investment. Key quantified results from the Chrome kiosks and digital signage investment for the composite organization include:

- › Increased revenue from improved customer experience and drove higher average transaction value and additional sales.
- › Increased IT productivity time savings from deploying Chrome devices and handling standard bug fixes and security issues.
- › Improved employee productivity by providing more flexibility to roll out content, reducing the reliance on IT to configure and deploy digital signage.
- › Reduced device hardware and software license costs.

In addition, Forrester’s survey across 76 Chrome customers found several key benefits from their Chrome kiosk and digital signage investment.

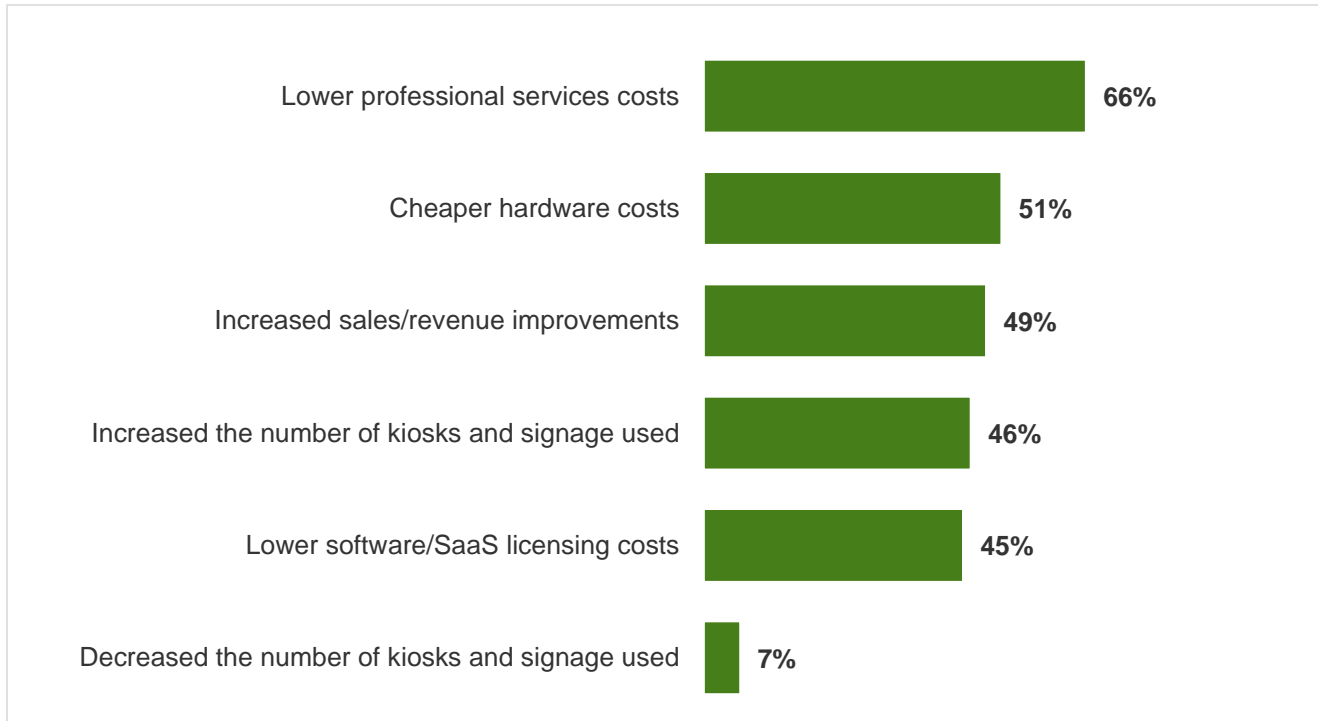
“Our doctors and nurses do not need to unnecessarily carry large hardware devices from room to room. They can now just log in with their credentials on our Google Chrome kiosks and quickly access and enter in patient data.”

*Desktop architect, healthcare company*





**“Which of the following benefits has your organization achieved due to your investment in Chrome signage and kiosks?”**



Base: 76 Google Chrome kiosk/digital signage users

Source: A commissioned study conducted by Forrester Consulting on behalf of Google, February 2018

## 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 four 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 sales through both online and retail stores. The organization has 50,000 total employees and has deployed 450 Chrome kiosks and digital signage across 75 locations.

The composite organization generates approximately \$7 million in annual revenue and has deployed 300 customer-facing Chrome devices and 150 internal employee use devices. The composite organization deployed Chrome devices to improve customer experience and reduce hardware, software, and IT resource costs.

**Deployment characteristics.** The composite organization’s customers and employees can leverage Chrome devices as a simple platform across various use cases from accessing product information, conducting transactions, checking inventory, and doing other back-end functions at scale. These devices are secured, can easily be deployed without a heavy burden on IT teams, and are connected the corporate network.



### Key assumptions

450 Chrome devices deployed as kiosks and digital signage

300 external customer-facing devices

150 internal employee-facing devices

\$7 million in annual revenue per retail location

# Analysis Of Benefits

## QUANTIFIED BENEFIT DATA AS APPLIED TO THE COMPOSITE

### Total Benefits

REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	IT resource savings	\$405,000	\$405,000	\$405,000	\$1,215,000	\$1,007,175
Btr	Increased revenue	\$1,338,750	\$1,338,750	\$1,338,750	\$4,016,250	\$3,329,273
Ctr	Increase in employee productivity	\$303,750	\$303,750	\$303,750	\$911,250	\$755,381
Dtr	IT hardware and software cost avoidance	\$470,250	\$42,750	\$42,750	\$555,750	\$494,949
	Total benefits (risk-adjusted)	\$2,517,750	\$2,090,250	\$2,090,250	\$6,698,250	\$5,586,778

### Benefit 1: IT Resource Savings

The interviewed organizations revealed that one of the goals in implementing Chrome devices was to reduce the burden on their IT teams by having hardware that could be easily deployed and configured in a secure platform. The composite organization realized that on legacy devices, on average, both corporate and field IT teams spent an hour a week imaging, troubleshooting, and deploying devices. In addition, IT teams were tasked with updating the network with new security patches and protocols. To roll out devices at scale and ensure that they would not have dead screens, which could impact customer experience, the organization needed a solution that would drive IT resource productivity.

Forrester assumes that:

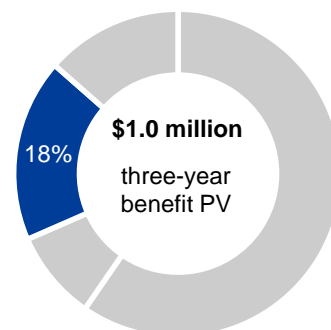
- › The composite organization had deployed 450 internal employee-use and external customer-facing devices across retail locations.
- › On average, corporate and field IT had previously dedicated 1 hour a week to deploy, maintain, and support each device.
- › By deploying Chrome devices, the organization reduced IT resource time by 80%.
- › An average fully loaded hourly labor rate for an IT resource was \$100,000 per year or \$48 an hour.
- › Fifty percent of the productivity savings could 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 Chrome devices that are deployed.

To account for this, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of \$1,007,175.

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of nearly \$5.6 million.



IT resource savings: **18%** of total benefits



80% reduction in IT time deploying, managing, and supporting Chrome devices

## Benefit 1: IT Resource Savings: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Number of Chrome kiosks and digital signage		450	450	450
A2	Average weekly IT hours spent per legacy device		1	1	1
A3	Number of weeks in a year		52	52	52
A4	Average fully burdened hourly salary for IT resources	\$100,000/2,080	\$48	\$48	\$48
A5	Percent reduction in IT time due to deploying Chrome kiosks and digital signage		80%	80%	80%
A6	Percent productivity captured by organization	Forrester assumption	50%	50%	50%
At	IT resource savings:	$A1 \times A2 \times A3 \times A4 \times A5 \times A6$	\$450,000	\$450,000	\$450,000
	Risk adjustment	↓10%			
Atr	IT resource savings: (risk-adjusted)		\$405,000	\$405,000	\$405,000

## Benefit 2: Increased Revenue

The largest benefit from deploying single-use Chrome kiosks and digital signage was improving sales by enabling customers to access the same information and complete the same types of transactions in the physical store as they could do online. Interviewed organizations could quickly deploy Chrome kiosks that allowed customers to search products and inventory, product options, and schedule delivery options. Organizations also used Chrome kiosks to efficiently complete transactions. This improved customer experience and drove an increase in average transaction value and sales.

Forrester assumes that:

- › The composite organization deployed customer-facing kiosks and digital signage powered by Google Chrome devices at 75 retail stores across different locations.
- › Average annual revenue was \$7 million per retail store.
- › The net profit margin on sales was at 10%.

Improved revenue benefit can be influenced by:

- › The type of business and the average profit margins.
- › The number of Chrome devices that are deployed per location.
- › The average annual revenue per retail store.
- › The type of self-service features that customers can access.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of \$3,329,273.

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.

## Benefit 2: Increased Revenue: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Number of retail stores with customer kiosks and digital signage deployed through Google Chrome devices		75	75	75
B2	Average annual revenue per retail store		\$7,000,000	\$7,000,000	\$7,000,000
B3	Percentage increase in sales due to Google kiosks		3%	3%	3%
B4	Profit margin		10%	10%	10%
Bt	Increased revenue	$B1*B2*B3*B4$	\$1,575,000	\$1,575,000	\$1,575,000
	Risk adjustment	↓15%			
Btr	Increased revenue (risk-adjusted)		\$1,338,750	\$1,338,750	\$1,338,750

## Benefit 3: Increase In Employee Productivity

Connected employee devices allowed interviewed organizations to improve productivity and drive operational efficiencies. Customers noted that freeing up associates' time from doing back-end functions allowed them to focus on their most important responsibility: engaging with customers. With Chrome devices, employees could access information and data quickly and securely.

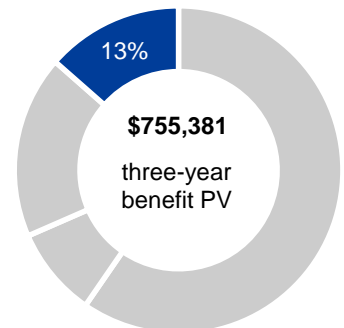
Forrester assumes that:

- › The composite organization deployed 150 internal employee Chrome devices across retail locations.
- › The organization achieved 3 hours of time savings per deployed Chrome device.
- › An average fully loaded hourly labor rate for an employee leveraging kiosk was \$60,000 per year or \$29 an hour.
- › Fifty percent of the productivity savings could be attributed to the bottom line of organizations.

Employee productivity gains can be influenced by:

- › The average annual cost per employee.
- › The type of tasks that require employees to access business applications.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk adjusted total PV of \$755,381.



Increase in employee productivity: **13%** of total benefits

### Benefit 3: Increase In Employee Productivity: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Number of Google Chrome kiosks for internal employees		150	150	150
C2	Hours saved per device every week due to reduced downtime and improved employee experience		3	3	3
C3	Number of weeks in a year		52	52	52
C4	Average fully burdened hourly salary for employees using shared devices	\$60,000/2080	\$29	\$29	\$29
C5	Percent productivity captured by organization		50%	50%	50%
Ct	Increase in employee productivity	$C1 * C2 * C3 * C4$	\$337,500	\$337,500	\$337,500
	Risk adjustment	↓10%			
Ctrl	Increase in employee productivity (risk-adjusted)		\$303,750	\$303,750	\$303,750

### Benefit 4: IT Hardware And Software Cost Avoidance

The interviewed organizations noted that Chrome device and annual Chrome Enterprise license costs were 50% less than other comparable options. This IT capex and opex cost avoidance made the organizations more inclined to deploy Chrome kiosks and digital signs across their retail operations.

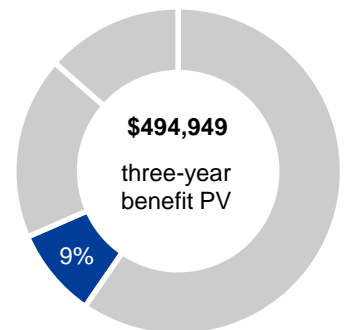
Forrester assumes that:

- › The composite organization initially needed to purchase 450 devices.
- › Legacy hardware costs per device averaged \$1,000.
- › Legacy annual software license costs per device averaged \$100.

IT hardware and software cost avoidance gains can be influenced by:

- › The number of devices that are deployed.
- › The type of device used for customer kiosks and digital signage.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year risk-adjusted total PV of \$494,949.



**IT hardware and software cost avoidance: 9% of total benefits**

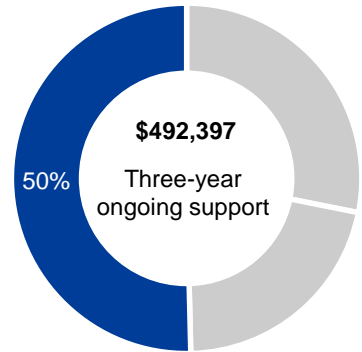
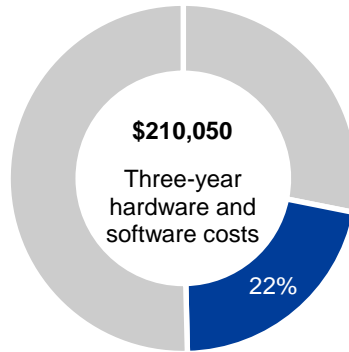
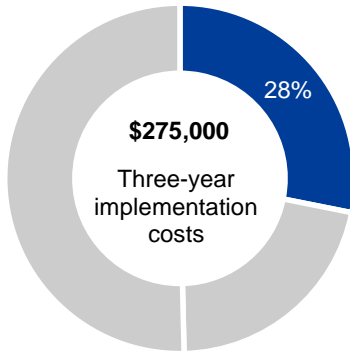
**Benefit 4: IT Hardware And Software Cost Avoidance: Calculation Table**

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
D1	Number of new Chrome devices for kiosks and digital signage		450	0	0
D2	Legacy hardware cost per device		\$1,000	\$0	\$0
D3	Legacy software license cost per device	Input	\$100	\$100	\$100
Dt	IT hardware and software cost avoidance	$(450 * D2) + (450 * D3)$	\$495,000	\$45,000	\$45,000
	Risk adjustment	↓5%			
Dtr	IT hardware and software cost avoidance (risk-adjusted)		\$470,250	\$42,750	\$42,750

# Analysis Of Costs

## QUANTIFIED COST DATA AS APPLIED TO THE COMPOSITE

Total Costs							
REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Etr	Implementation and configuration costs	\$275,000	\$0	\$0	\$0	\$275,000	\$275,000
Ftr	Total Chrome devices hardware and Chrome Enterprise software costs	\$148,500	\$24,750	\$24,750	\$24,750	\$222,750	\$210,050
Gtr	Ongoing support costs	\$0	\$198,000	\$198,000	\$198,000	\$594,000	\$492,397
Total costs (risk-adjusted)		\$423,500	\$222,750	\$222,750	\$222,750	\$1,091,750	\$977,447



## Cost 1: Implementation And Configuration Costs

The cost to implement depends on the size of the implementation and the number of devices. For the composite organization, Forrester assumes that implementation lasted five months. During this time, six full-time resources were dedicated to the deployment along with a Google-recommended third-party integrator.

For this study, Forrester assumes that:

- › Twelve internal resources across IT and marketing teams deploy, train, and communicate Chrome kiosks for customers and employees.
- › These 12 internal resources spent 50% of their time on Chrome kiosk and digital signage deployment over five months.
- › Average annual cost of an internal resource was \$100,000 or \$8,333/month.

The implementation and configuration costs will vary with:

- › The complexity of the deployment and the project timeline.
- › The cost of resources within an organization and the third-party integrator chosen, if necessary.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of \$275,000.

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of less than \$1 million.



**Five months**  
Total implementation and deployment time

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.

### Cost 1: Implementation And Configuration Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
E1	Number of full-time resources (IT, marketing, change management)		12			
E2	Number of months to fully roll out Chrome kiosks and digital signage		5			
E3	Percentage of time dedicated to Chrome kiosk and digital signage rollout		50%			
E4	Monthly fully burden rate of IT FTE		\$8,333			
Et	Implementation and configuration costs	$E1 * E2 * E3 * E4$	\$250,000	\$0	\$0	\$0
	Risk adjustment	↑10%				
Etr	Implementation and configuration costs (risk-adjusted)		\$275,000	\$0	\$0	\$0

### Cost 2: Total Chrome Devices Hardware And Chrome Enterprise Software Costs

Interviewed organizations had to purchase Chrome devices and incurred an annual Chrome Enterprise license fee for their Chrome kiosks and digital signage uses.

For the composite organization, these costs were modeled as:

- › Four hundred and fifty new Chrome devices at \$300 a unit.
- › A Chrome Enterprise license cost of \$50 per device.

The hardware and software costs for Chrome devices will vary with:

- › The type of Chrome devices that organizations plan to deploy.
- › The overall enterprise license agreements with Google.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of \$210,050.

### Cost 2: Total Chrome Devices Hardware And Chrome Enterprise Software Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
F1	Number of new Chrome devices for kiosks and digital signage		450	450	450	450
F2	Chrome hardware cost per device	Input	\$300	\$0	\$0	\$0
F3	Annual Chrome Enterprise software license costs per device	Input	\$0	\$50	\$50	\$50
Ft	Total Chrome devices hardware and Chrome Enterprise software costs	$(F1 * F2) + (F1 * F3)$	\$135,000	\$22,500	\$22,500	\$22,500
	Risk adjustment	↑10%				
Ftr	Total Chrome devices hardware and Chrome Enterprise software costs (risk-adjusted)		\$148,500	\$24,750	\$24,750	\$24,750



## Cost 3: Ongoing Support Costs

Interviewed organizations identified that a portion of IT admin time was required on an ongoing basis to support Chrome kiosks and digital signage.

For the composite organization, these ongoing costs were modeled as:

- › Six FTEs across IT and marketing who dedicated 30% of their time on updating policies, ensuring the devices were compatible with new business applications, data collection, and content creation.

These costs may vary due to the number of IT and marketing staff and the support that is required across each field retail location.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of \$492,397.

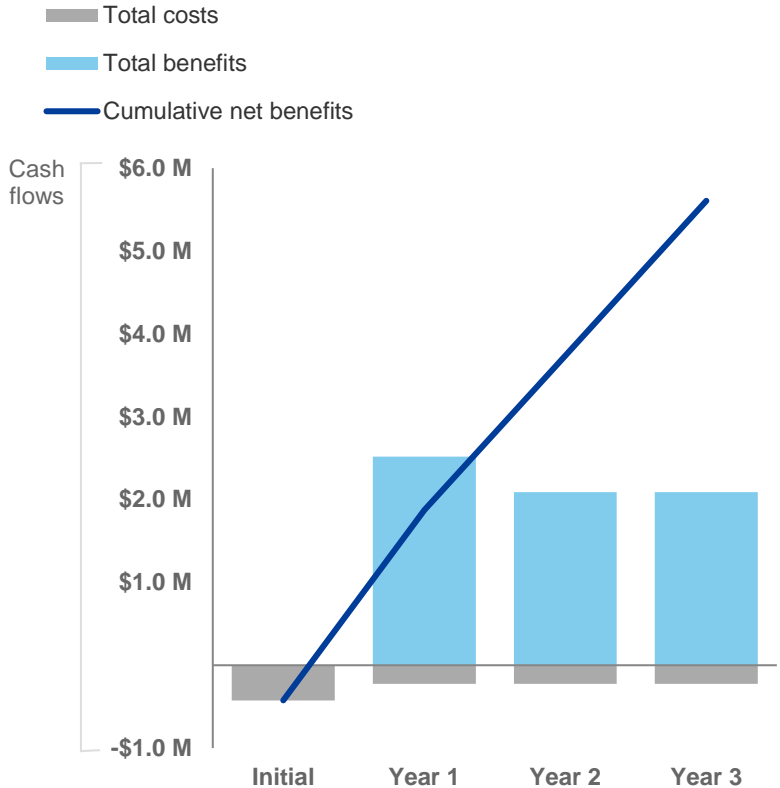
### Cost 3: Ongoing Support Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
G1	Number of full-time resources (IT, marketing)			6	6	6
G2	Percentage of time dedicated to supporting Chrome devices			30%	30%	30%
G3	Annual fully burdened rate of IT FTE			\$100,000	\$100,000	\$100,000
Gt	Ongoing support costs			\$180,000	\$180,000	\$180,000
	Risk adjustment	↑10%				
Gtr	Ongoing support costs (risk-adjusted)			\$198,000	\$198,000	\$198,000

# 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	(\$423,500)	(\$222,750)	(\$222,750)	(\$222,750)	(\$1,091,750)	(\$977,447)
Total benefits	\$0	\$2,517,750	\$2,090,250	\$2,090,250	\$6,698,250	\$5,586,778
Net benefits	(\$423,500)	\$2,295,000	\$1,867,500	\$1,867,500	\$5,606,500	\$4,609,331
ROI						472%
Payback period						< 6 months

# Chrome Kiosks and Digital Signage: Overview

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

## **CHROME ENTERPRISE**

Chrome Enterprise includes Google's managed Chrome OS offering for enterprise customers.

Chrome OS is a cloud-native operating system running on a variety of form factors including Chromebooks, Chromeboxes, and Chromebases. It features built-in security, and provides regular, automatic updates that run in the background to keep devices up-to-date. It boots quickly and provides a continuous experience across devices, and enables user access to enterprise applications via the web, managed Google Play store, or third-party virtualization providers.

Chrome OS can be paired with the Chrome Enterprise license which can be purchased for an annual, per device fee to manage Chrome devices in addition to enabling third party integrations with EMM and identity providers.

For more information, visit [chrome.com/os](https://chrome.com/os)

# 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.

## Appendix B: Endnotes

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<sup>1</sup> “Drive Revenue, Please Customers By Connecting Customer Journeys,” Forrester Research, Inc., April 19, 2017.