

A Forrester Total Economic  
Impact™ Study  
Commissioned By  
Microsoft

Project Director:  
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# The Total Economic Impact™ Of Microsoft Lumia

Cost Savings And Business Benefits  
Enabled By Lumia Mobile Devices

FORRESTER®

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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 Lumia mobile devices. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Lumia on their organizations, to leverage mobile devices beyond just email and calendaring, integrating mobile devices with business systems and daily processes such as sales to win, serve, and retain customers.

**“Lumia and the Windows Phone OS just works.”**  
**— Mobile operations manager at a large US nonprofit**

To better understand the benefits, costs, and risks associated with a Lumia implementation, Forrester interviewed four organizations using Lumia and surveyed 30 more. Respondents reported using a variety of Lumia devices, from the large 1520 “phablet” to smaller 800, 700, and 600 series devices. Overall, organizations reported improvements in user productivity, increased sales, and reduced IT costs.

Prior to Lumia, customers had implemented other mobile devices from a variety of manufactures across a mix of platforms. However, the variety of mobile devices meant IT managers needed to manage and support multiple platforms, leading to increased support and infrastructure costs. Additionally, multiple platforms (or even one mobile platform requiring different application development skills and processes) meant application costs were higher and fewer mobile applications and mobile access tools were provided. These limitations meant mobile device users didn’t always have the right tool for the job. Organizations reported occasional issues with email and calendaring, corporate limitations to network resources, and limited choices for line-of-business (LOB) app integration or integration with any app connected to corporate systems. Organizations reported having a strong desire to make improvements quickly. With Lumia, organizations could provide a more cost-effective solution that already integrated with most management and development tools, and mobile device users were able to take advantage of improved productivity tools; greater access to network resources; and a larger library of integrated, third-party, and custom-developed applications.

### LUMIA HELPS COMPANIES GENERATE NEW INCREMENTAL SALES AT A LOWER COST

The financial analysis based on Forrester’s interviews and surveys found that a representative organization based on the interviewed and surveyed organizations experienced the risk-adjusted ROI, benefits, and costs shown in Figure 1.<sup>1</sup> See Appendix A for a description of the representative organization.

The representative organization analysis points to benefits of \$620,842 to \$899,552 per year versus implementation costs of \$159,170 and annual costs of \$124,045 to \$133,420, adding up to a net present value (NPV) of \$1,363,614. With Lumia, new device costs are estimated to be \$50 less per device provisioned (versus previous average non-Lumia device costs), and Lumia users are able to get more tasks done more quickly. Sales representatives in particular are able to close more deals, leading to new revenue and profit.

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

**ROI:**  
**285%**

**NPV:**  
**\$1,363,614**

**Device cost:**  
**▼ \$50 per new user**

**Deals closed:**  
**▲ 5%**

Source: Forrester Research, Inc.

› **Benefits.** The representative organization experienced the following risk-adjusted benefits:

- **User productivity benefits related to more and faster task completion.** The representative organization targeted common, time-consuming tasks that were often handed off to colleagues or assistants, such as expense reporting. With Lumia, users are able to take advantage of in-between times, such as waiting for a meeting, to start to get 50% more tasks done compared with before, and they can complete each task 20% more quickly. This adds up to \$109,242 in Year 1; \$136,553 in Year 2; and \$170,782 in Year 3 as more users get Lumia devices.
- **An increased number of closed sales deals, leading to new revenue and profit.** The organization provides Lumia devices that are integrated more effectively with business systems and can leverage existing Windows Store applications (or applications that it develops). Sales reps armed with Lumia devices are able to provide better information and support to their customers, leading to an estimated 5% improvement in sales close rates. As more reps receive Lumia devices, this adds up to \$336,600; \$419,760; and \$526,680 for years 1, 2, and 3, respectively.
- **Avoided costs related to non-Lumia device purchases.** The representative organization estimates it spent \$175 per device for non-Lumia devices. This is offset by new Lumia device costs, but with Lumia's high-quality construction and standard Windows Phone operating system, the organization can provide more expensive flagship devices for those who need powerful smartphones, and it can provide lower-end devices to other users without sacrificing overall quality or security. The organization estimates it spends an average of \$125 per Lumia device, for a \$50 net savings per device. (Note these are US prices; other markets may be different, but net results are similar.)
- **One-time provisioning as well as ongoing management cost savings.** Lumia devices integrate more effectively with the Windows-based management and security solutions the organization already has, such as Intune. The representative organization estimates it saves about 3 hours in setup time per new device, spends about 50% less time on Lumia device management, and has seen a 50% reduction in security issues that each take less time to resolve, compared with the time it would have spent on non-Lumia device users. This adds up to \$122,500 to \$159,390 per year as more users receive Lumia devices (at device refresh time) and there are more Lumia users.

› **Costs.** The representative organization experienced the following risk-adjusted costs:

- **Lumia device purchase costs.** As mentioned above, the representative organization estimates it spends \$125 per new Lumia device, on average, or an average of \$50 less than it did for non-Lumia devices.
- **Deployment costs.** The representative organization estimates it spent \$159,170 on planning, training, deployment, and application development/integration.
- **Ongoing costs.** The organization estimates it spends \$95,920 per year on ongoing application development and management to support Lumia devices.

## 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 Microsoft Lumia.
- › 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.

## 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 Lumia. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision, to help organizations understand how to take advantage of specific benefits, reduce costs, and improve the overall business goals of winning, serving, and retaining customers.

### APPROACH AND METHODOLOGY

Forrester took a multistep approach to evaluate the impact that Microsoft Lumia can have on an organization (see Figure 2). Specifically, Forrester:

- › Interviewed Microsoft marketing, sales, and/or consulting personnel, along with Forrester analysts, to gather data relative to Lumia and the marketplace for Lumia.
- › Interviewed four organizations and surveyed 30 more currently using Microsoft Lumia 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 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 Lumia'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



Source: Forrester Research, Inc.

## Analysis

### REPRESENTATIVE ORGANIZATION

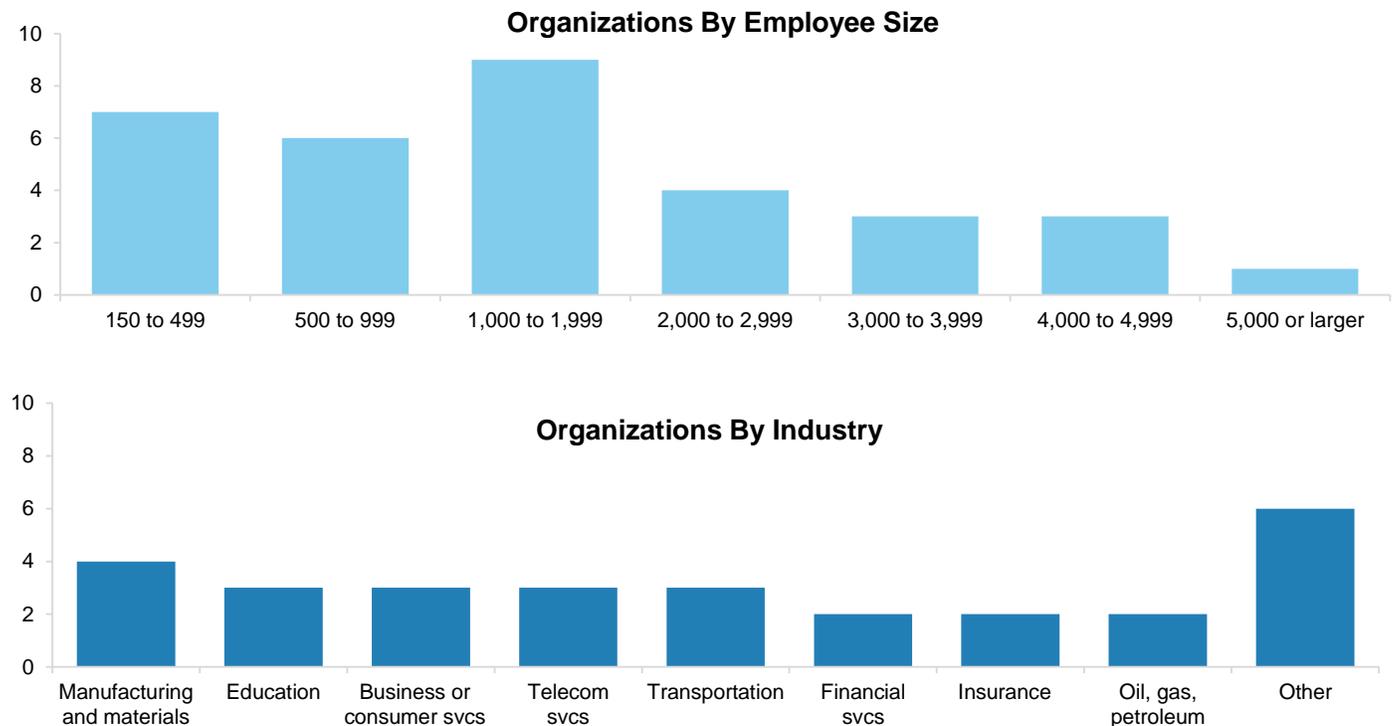
For this study, Forrester conducted a total of four interviews with representatives from the following companies, which are Microsoft customers based in the US:

- › A global airline based in the US.
- › A large nonprofit based in the US with a global reach.
- › A major US professional sports team.
- › A midmarket independent software vendor (ISV) focused on mobile navigation solutions.

Forrester also collected survey responses from 30 more organizations — about one-third were based in the US and the rest were based in the UK.

Surveyed and interviewed organizations covered the size and industry categories as shown in Figure 3. Organizations from “other” industries include software development, nonprofit, media, chemicals and metals, agriculture (including food and beverage), and retail.

**FIGURE 3**  
**Surveyed And Interviewed Organizations By Employee Size And Industry**



Source: Forrester Research, Inc.

Based on the interviews, Forrester constructed a TEI framework, a representative company, and an associated ROI analysis that illustrates the areas financially affected. The representative organization that Forrester synthesized from these results represents an organization with the following characteristics:

- › It is a US organization focused on business-to-business (B2B) products or services.
- › It has 1,500 employees, all or nearly all of whom have a phone that they use at work.
- › Most employees have a phone they own and manage themselves. These bring-your-own-device (BYOD) phones are provided for simple work email access and require necessary security policies (such as a PIN lock code) but are otherwise not supported.
- › The remaining 300 employees receive a corporate-managed device. For the representative organization, all corporate-managed devices have been migrated to Lumias. While not every organization migrated all corporate users to Lumia, the representative organization modeled here has made that full change, to illustrate some of the cost savings and cost avoidance benefits covered later in this study. These devices are provided, paid, and managed by the organization (they are corporate-managed devices).
- › About one-third of Lumia devices are in the hands of sales reps.

After identifying a variety of missed opportunities and business pains related to mobile device use and management (described below), the representative organization chose to focus its mobile device management and development on Lumia:

- › The organization started including Lumia devices in its device catalog in late 2013, and through incentives focused on providing greater network and LOB access, Lumia became a significant portion of its corporate-managed mobile devices.
- › At this time, all 300 Lumia users are past the pilot phase and are fully in production.

## INTERVIEW HIGHLIGHTS

Interviewed and surveyed customers identified several key pains and missed opportunities that led them to focus on Lumia mobile device provisioning.

### *Situation*

Surveyed and interviewed organizations used mobile devices, but they were starting to see a number of issues and missed opportunities:

- › User productivity was not optimized.
- › They felt that occasional sales opportunities could have been closed with better mobile access to data and information.
- › They thought that mobile device setup and management costs were too high and required too many special software options and processes.
- › For organizations that develop applications, the cost of developing an application for the desktop, and then for a second mobile platform, was expensive.

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*“We like the continuity between the desktop experience and the mobile experience.”*

~ Program manager at a global airline based in the US

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**Solution**

A majority of surveyed and interviewed organizations selected Lumia phones as the mobile device (or one of the main mobile devices) they would provision to their employees. The representative organization modeled in this study selected Lumia for its ability to deliver added value to employees, while helping reduce device acquisition and ongoing management costs.

*“You can't get a better battery life than this.”*

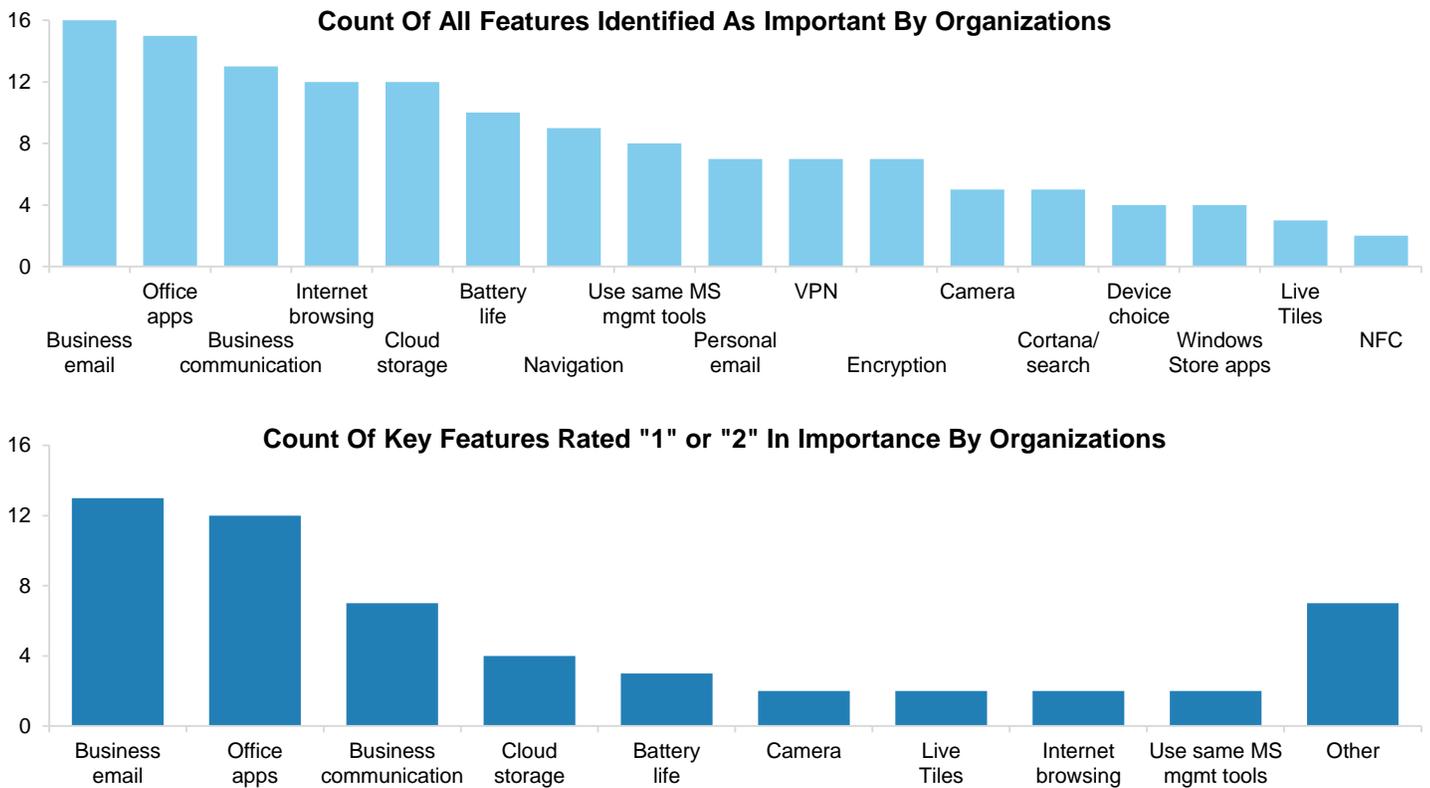
~ Mobile operations manager at a large US nonprofit

**Results**

The surveys and interviews revealed:

› **User productivity improvements.** A significant benefit identified and measured was the impact of Lumia devices on user productivity. Users were able to get more done and take advantage of the “in-between” times than with their previous mobile devices. A number of key features of Lumia devices were identified by surveyed and interviewed organizations as helpful and of key importance to the organization, as shown in Figure 4. The total of the “other” choice in the second chart is made up of items from the first list that only one organization highlighted as important, such as accessing personal email, navigation, Cortana (or search), and VPN.

**FIGURE 4**  
Key Features Identified By Surveyed And Interviewed Organizations



Source: Forrester Research, Inc.

› **Sales improvements.** Beyond improving individual task productivity, users in sales (and other client-facing roles) can improve client communication and information accuracy with Lumia devices, because organizations are able to deliver greater mobile network access as well as a greater number of integrated mobile applications.

› **Reduced device acquisition and management costs.**

Organizations that focus on Lumia mobile devices identified three cost savings and cost avoidance areas:

- **Reduced purchase costs.** Lumia devices come in a variety of options based on size, features and carrier. While some higher-end Lumia devices are priced higher, not everyone needs or wants a Lumia 1520, and on average organizations identified a significant savings in the purchase cost of each device.
- **Reduced setup costs.** Along with lower purchase costs, organizations also saw significant savings in device setup, adding up to several hours saved per device.
- **Ongoing lower device management and security support costs.** Along with lower setup costs, ongoing maintenance and support costs were also lower, as reported by interviewed and surveyed organizations.

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*“We are able to conduct transactions more quickly now, with far greater accuracy and real-time credit card validation.”*

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~ Program manager at a global airline based in the US

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## Benefits

As summarized in the Results section above, interviewed and surveyed organizations identified three key benefit areas related to the deployment and adoption of Lumia devices:

- › Improved user productivity.
- › Increased sales.
- › Reduced IT costs.

These benefits have been modeled for the representative organization, with details related to specific processes, key metrics, and financial results.

Note that for most of these benefits (particularly the first and second sections, user productivity and sales); other mobile platforms could achieve similar benefit results. However, based on input from survey and interview respondents, before Lumia, many if not all of these organizations limited or completely restricted mobile access — even from corporate-provisioned devices. This was due to issues such as the cost of developing applications on a different platform; the investment in other mobile management software and/or hardware (and the time required to manage those special solutions); and the security testing required for each application on each platform. Most organizations decided to limit mobile access to just email and calendaring, perhaps adding one or two mobile applications but not supporting other apps. Full network access over cloud solutions or VPN was not explored or very limited. But with Lumia, the organizations found a platform that integrated well with their existing Windows environment, ran more applications with less redevelopment (or new Lumia apps could be quickly redeveloped for desktop use), and could be managed with the same IT administration tools. The representative organization's benefit enablement and financial modeling include these assumptions: Benefit improvements in user productivity and sales are included because Lumia helped unlock these areas, which were previously seen as difficult or required high investment, and the representative organization has invested some resources for internal application development. While these assumptions are modeled here, other organizations may have different hurdles, such as those organizations that have no need for internal application development. Or, they may have made some investments in one area, such as a mobile sales enablement application. Those readers should keep that in mind and focus on new areas of productivity or sales improvement that Lumia may enable.

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*“The success that we have in acquiring players is directly related to how we started to use Lumia and Windows Phone.”*

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~ Director of information systems at a major US professional sports team

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### Improved User Productivity

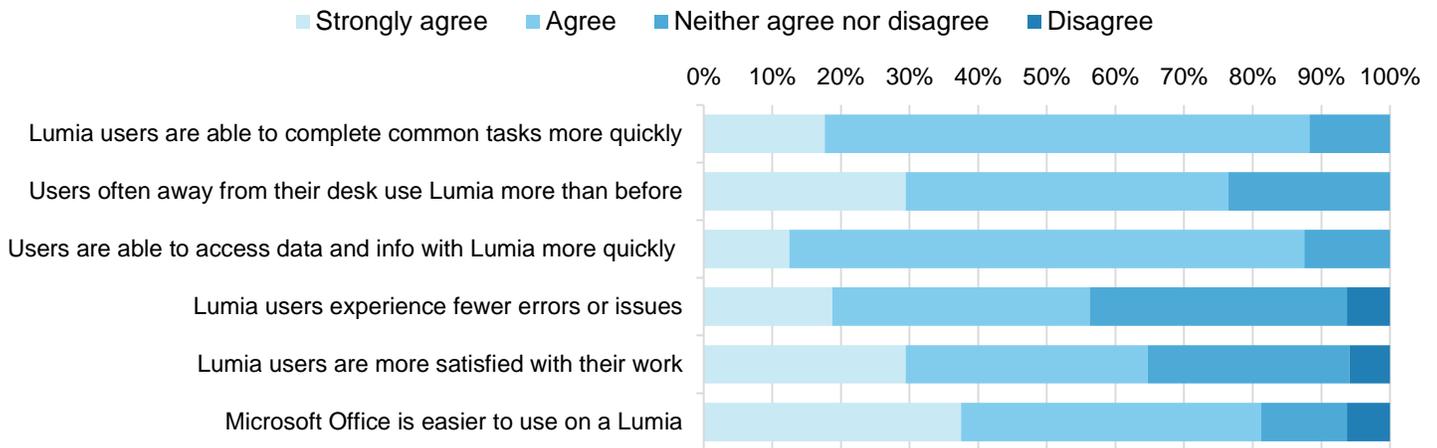
The representative organization, based on survey and interview responses, identified user productivity improvements as a key benefit, particularly related to specific, repeated processes. Instead of handing off these processes to a colleague or an assistant, employees can complete them during normal downtime periods, such as while waiting for a meeting, commuting, or travelling, and they can also complete tasks a little faster. While Lumia can enable improvements throughout the day, respondents were asked to focus on a common, measureable task. As shown in Figure 5, almost 90% of surveyed and interviewed organizations said they could get tasks done more quickly and that information could be accessed more easily, and more than 70% agreed or strongly agreed that Lumia devices were more useful away from their desks than previous mobile phones. More than 50% agreed or strongly agreed that errors were reduced.

To measure financial benefits, each organization identified a specific task; for the representative organization, that task is regular expense report filing. For everyone at the organization, an expense report took about 85 minutes to complete, and each employee who accrued expenses filled out an expense report about one time per month, though employees sometimes handed off expense reports to a colleague or assistant to fill out.

These organizations highlighted specific features of Lumia that enabled these benefits. As shown in Figure 4, business email, Office apps, and business communications were identified as the three most important (and

most cited) features that helped them choose the platform overall. These were also important specifically to user productivity, along with battery life, price choice (in the sense of getting more devices in the hands of more users, including those in non-US locations), and screen size. “You can't get a better battery life than this,” said the mobile operations manager at a large US nonprofit.

**FIGURE 5**  
User Productivity Has Improved For Most Surveyed And Interviewed Organizations



Base: 17 surveyed and interviewed organizations that use Microsoft Lumia devices  
(not every organization answered every question)

Source: Forrester Research, Inc.

Users who were provisioned Lumia devices are assumed to all be among this population of expense reporters, as employees who are, by definition, more mobile. With their Lumia devices, they were able to take advantage of more in-between times, such as travelling to a meeting or waiting for one to start, or (perhaps more relevant for an expense report) while on the road. Lumia provides a platform the organization could confidently secure and integrate into existing systems. Entering data on the Lumia connects to the right systems and doesn't require additional time rekeying data or initiating the expense review. Each Lumia user is now able to fill out all their own expense reports, about 1.5 times per month, meaning they aren't interrupting other busy colleagues to do it for them. They can fill out those reports about 20% more quickly, or about 17 minutes faster than before. This adds up to a total of \$121,380 in productivity improvements in the first year, increasing to \$151,725 and \$189,757 in years 2 and 3, as shown in Table 1. A 10% risk adjustment has been applied, considering that not every minute saved is used for new work tasks. The annual risk-adjusted benefits for years 1 to 3 are \$109,242, \$136,553, and \$170,782.

Keep in mind that most surveyed and interviewed organizations focused on a single task, with measurable improvement. Also, as noted in Figure 4, many organizations identified other areas of improvements, including using Office on a mobile device, sharing files, reviewing documents, and communicating. For example, the program manager of a global airline based in the US said, “We like the continuity between the desktop experience and the mobile experience.” These other areas were not included in the financial modeling because they were a too-broad set of topics, more likely to include a high variance of results not as useful for financial modeling. For most, it is hard to measure the benefit of a mobile device versus an alternative device on, say, communication. So while the results in Table 1 are significant (even after risk-adjustment), readers might consider adding together multiple processes or adding in time they expect to save on the other tasks listed.

**TABLE 1**  
**Users Are Able To Complete More Task More Quickly With Lumia**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
A1	Number of Lumia users			300	375	469
A2	Tasks per month per user before Lumia			1.0		
A3	Improvement in number of tasks completed with Lumia			50%		
A4	Tasks per month with Lumia			1.5		
A5	Time to complete each task before Lumia (minutes)			85		
A6	Reduction in task time with Lumia			20%		
A7	Time to complete each task with Lumia (minutes)			68		
A8	Lumia user standard hourly rate (information worker)			\$34.00		
At	User productivity	$\frac{A1 \cdot A2 \cdot A5}{60} + A6 \cdot A8 \cdot 12 + A1 \cdot (A4 - A2) \cdot \frac{A5}{60} \cdot A8 \cdot 12$	\$0	\$121,380	\$151,725	\$189,757
	Risk adjustment	↓ 10%				
<b>Atr</b>	<b>User productivity (risk-adjusted)</b>		<b>\$0</b>	<b>\$109,242</b>	<b>\$136,553</b>	<b>\$170,782</b>

Source: Forrester Research, Inc.

Some interviewed organizations identified and described other specific, interesting experiences with Lumia devices:

- › A major US professional sports team provisioned Lumias to its scouting department and invested in some custom job- and event-specific applications. Even in today's wired society, with a myriad of sports bloggers writing about virtually every athlete and breaking down every statistic, scouting is still done primarily in person to make sure the team knows everything it wants to about each athlete before rookie drafts to build the best team for future years. The team also wants information about every possible free agent and other players deep on other teams' depth charts so they can identify and acquire the best possible replacement in case one of their own players goes down with an injury. The team utilized a variety of Lumia applications:
  - One of the most frequently used apps was a schedule, travel, and navigation mash-up that summarized each scout's schedule with colleges or other destination locations, practice schedules, and up-to-date player information. Scouts could see where they were headed, make sure the coach hadn't closed practice, and see that the player they wanted to see wasn't injured. Once the scouts arrived in their rental car, they could tap on the location to start navigation. Said the director of information systems for the team: "We put in practice times, the game schedule; all that information is right on their phone. They look it up, tap on the address, and then it takes them to the navigation app."

- Other event-specific applications replace big, heavy, and proprietary three-ring notebooks of player scouting information. These notebooks are costly to print, are out of date virtually the moment they are printed, and could mean losing a leg up on competitors if they are misplaced and found by someone else.

Overall, the team sees direct financial benefits related to player research, travel, and reduced logistics. This includes calling the office to confirm travel or to reschedule a trip, and printing and updating scouting materials. Indirect benefits include improved team performance. “The success that we have in acquiring players is directly related to how we started to use Lumia and Windows Phone,” said the director of information systems for the team.

› A global airline based in the US also achieved significant benefits with large Lumia devices:

- Like the sports team, the airline uses printed binders of materials. In its case, it uses these binders to organize policies and procedures. The airline has an even more convoluted process because flight attendants don’t work in an office or even have easy access to one. Attendants would have to find a workstation in the airport lounge, print off any updates, and replace the proper sheets in their binder. “Imagine one of those big notebooks and managing all of that, getting that done, as opposed to hitting download, one little arrow on your device,” said a program manager of the airline. With their large Lumia screens, they can replace the whole binder and read materials right from their phone.

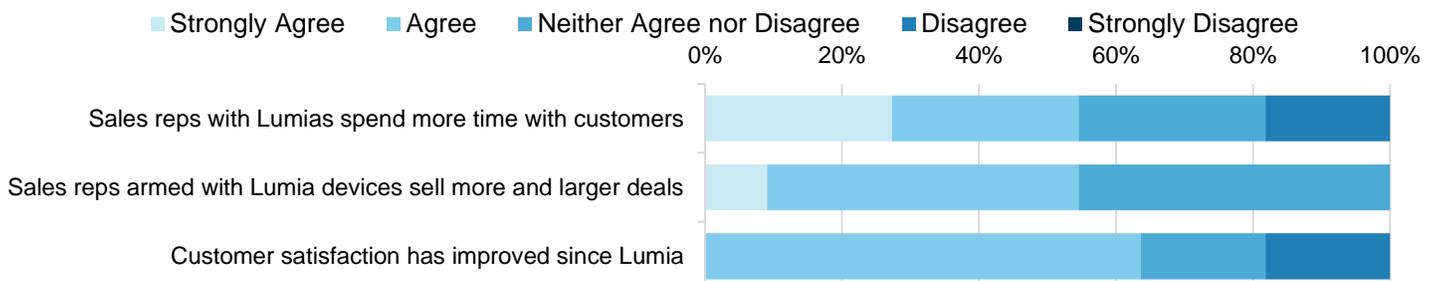


### Improved Sales

The second key benefit enabled by Lumia devices is sales improvement. Organizations that have armed sales representatives with Lumia, invested time and resources to deliver greater mobile network access, and invested in the purchase or development of integrated mobile Lumia applications can consider significant benefits. Sales reps can take advantage of these tools and resources to answer customer questions more quickly, look up data faster (and from real-time sources), and provide better overall service and support to their customers. As highlighted in Figure 6, 50% or more of interviewed and surveyed organizations agreed that sales are up and customer satisfaction has improved. A similar number agreed or strongly agreed that sales reps are able to spend more time in front of customers. “It’s really changing the way that flight attendants are able to interact with customers. It just empowers them to make more informed decisions about who they are dealing with, and it gives them the opportunity to really deliver an exceptional customer experience,” said the program manager at the global airline based in the US.

**FIGURE 6**

### Many Surveyed And Interviewed Organizations Agree Sales Have Improved



Base: 11 surveyed and interviewed organizations that use Microsoft Lumia devices  
(not every organization answered every question)

Source: Forrester Research, Inc.

Most organizations saw an improvement in sales, mainly in the number of deals or transactions closed. For organizations in a retail setting, this means a lot more small transactions, enabled by mobile point of sale (POS), and the ability to quickly look up stock and order information. For larger organizations, such as the representative organization, this means an increase in B2B sales that are each significantly large deals. For the representative organization, sales reps averaged four closed deals per month at an average deal size of \$27,500 before Lumia.

Table 2 shows that the representative organization estimates a 5% improvement in the deal close rate for sales representatives who have been armed with Lumia devices, which adds up to \$448,800 in additional sales profit in Year 1, with additional growth in years 2 and 3 (\$559,680 and \$702,240) as more sales reps switch to Lumia. (Also see the Flexibility section for a discussion of how the representative organization could unlock even more value by deploying Lumia devices to all sales reps.)

Since sales is a metric affected by a broad variety of influences, these benefits have been risk-adjusted down by 25% to more conservatively measure the impact of Lumia devices. For example, some of the additional sales deals closed by sales reps using Lumias may have been affected more by some new sales processes Lumia users also implemented; this is related to but not necessarily a direct result of Lumia use. The risk-adjusted values are \$336,600 in Year 1; \$419,760 in Year 2; and \$526,680 in Year 3.

**TABLE 2**  
Sales Reps With Connected Lumia Devices Can Increase Deals and Deal Size

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
B1	Sales representatives using Lumia			85	106	133
B2	Deals per month per rep before Lumia			4		
B3	Improvement in deal close since Lumia			5.0%		
B4	Revenue per deal			\$27,500		
B5	Profit margin			8%		
Bt	Sales improvements	$B1*B2*B3*B4*B5*12$	\$0	\$448,800	\$559,680	\$702,240
	Risk adjustment	↓25%				
<b>Btr</b>	<b>Sales improvements (risk-adjusted)</b>		<b>\$0</b>	<b>\$336,600</b>	<b>\$419,760</b>	<b>\$526,680</b>

Source: Forrester Research, Inc.

Interviewed organizations identified and described some specific sales improvements enabled by Lumia devices:

- › A global airline based in the US also achieved significant and interesting benefits with large Lumia devices:
  - With an integrated food service solution that connects their back-end POS system with the Lumia devices via the in-flight Wi-Fi, flight attendants are able to conduct food sales more quickly, which also means food is delivered sooner. The faster system means sales have gone up; attendants can get through the cabin more quickly to take orders, so customers in the back of the plane aren't dissatisfied due to frustration and don't miss the service because they decided to skip the wait and go to sleep.

- “Flight attendants report that customers were so impressed with the technology [of Lumia devices]. Very impressed with the look, very impressed with the casing, and the cool display,” said a program manager with the airline.
- Lumia devices also reduce business risk: The earlier system was a slow, offline system, meaning credit card swipes were stored but not verified — this would be done once the flight ended and the system connected to the network. So any missed, garbled, denied, or (occasionally) fraudulent transactions were all taken as a loss. “We are able to conduct transactions more quickly now, with far greater accuracy and real-time credit card validation,” said the program manager.



### Technology Cost Savings

The representative organization identified several cost savings opportunities related to lower per-device costs and lower setup and ongoing management requirements:

- › Because Lumia offers a variety of devices with different sizes, features, and prices, organizations are not required to buy “flagship” devices for every user. This is especially important for global organizations where some devices may not be available or may be prohibitively expensive.
- › Secondly, organizations reported that Lumia devices are easier to set up and provision. Setting up a Microsoft account is straightforward, as is Exchange email and other setup tasks.
- › Finally, the ongoing management requirements are also reduced. As the mobile operations manager at a large US nonprofit put it: “With Windows phones, it just works. They are the easiest device to set up out of the box, to get the person up and going on their content with their accounts they need.”

**Device purchase cost avoidance.** The representative organization estimates it spent an average of \$175 per device before it switched to Lumia. Since switching to Lumia devices, it estimates it is spending only \$125 per device, for a net savings of \$50 per new Lumia user, because Lumia offers more lower-cost devices that are lighter on some features (such as camera or screen size, which may not be necessary for everyone) while not sacrificing others (such as the Windows Phone OS, processing capabilities, or integration with Microsoft management and cloud solutions). Note that these values primarily reflect costs in the US mobile device market, which are heavily subsidized by carriers or paid over several years; however, while organizations in Europe likely pay higher per-device costs, the average net savings seen when switching to Lumia is about the same.

**TABLE 3**  
Previous Mobile Device Avoided Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
C1	Lumia devices provisioned			300	225	244
C2	Average cost per non-Lumia device			\$175	\$175	\$175
<b>Ctr</b>	<b>Device purchase cost avoidance</b>	C1 * C2	<b>\$0</b>	<b>\$52,500</b>	<b>\$39,375</b>	<b>\$42,700</b>

Source: Forrester Research, Inc.

- › Table 3 shows the annual total device costs saved from avoided non-Lumia mobile device purchases, which are based on the number of new Lumia users added each year, starting with the 300 users in Year 1. In years

2 and 3, new Lumia users are provided new Lumia devices. Current Lumia users are also provided new devices based on the representative organization's standard 18-month refresh rate.

- › Table 4 shows both the cost avoidance and the new, lower cost of Lumia devices, to show the net savings per new Lumia user.

**TABLE 4**  
**Net Mobile Device Savings Per New Lumia User**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
R1	Average cost per non-Lumia device			\$175	\$175	\$175
R2	Average cost per Lumia device			\$125	\$125	\$125
<b>R3</b>	<b>Net cost savings per user</b>	R1 - R2		<b>\$50</b>	<b>\$50</b>	<b>\$50</b>

Source: Forrester Research, Inc.

**Device setup cost savings.** The representative organization estimates it saves about 3 hours every time it sets up a new Lumia device, compared with how long the same tasks took before. Lumia's standard setup screens across devices, easy Exchange email setup, and quick setup with organization management tools (such as System Center and Intune) all contribute to these savings. Using the same new Lumia user estimates from Table 3, we found that the estimated annual savings add up to \$23,625 to \$31,500 per year, as shown in Table 5.

**TABLE 5**  
**Net Mobile Device Savings Per New Lumia User**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
D1	Lumia devices provisioned			300	225	244
D2	Time to set up new non-Lumia mobile device			4.5	4.5	4.5
D3	Time to set up new Lumia mobile device			1.5	1.5	1.5
D4	IT hourly rate			\$35	\$35	\$35
<b>Dtr</b>	<b>Mobile device setup cost savings</b>	D1 * (D2-D3) * D4	<b>\$0</b>	<b>\$31,500</b>	<b>\$23,625</b>	<b>\$25,620</b>

Source: Forrester Research, Inc.

- › For a nonprofit, price is important. "Our budget is: Don't spend excessive amounts of money," said the mobile operations manager at the US nonprofit. That nonprofit has seen savings in mobile device setup as well as ongoing management and security, and any cost and time savings are crucial for an organization that part of its goal is to do as much as it can with its few resources.

**Ongoing mobile device management cost savings.** For many of the same reasons for its device setup cost savings, the representative organization estimates it saves at least 15 hours every week managing Lumia devices, compared with how long the same tasks took before. It also experiences about half as many security issues and a faster security issue resolution time of about 2 hours per issue. Integration with existing Windows device management tools such as Intune the estimated annual savings add up to \$91,000 to \$133,770 per year, as shown in Table 6. This is a cumulative benefit, so instead of measuring improvement with every new device provisioned, we based this on the number of Lumia users per year, which is estimated to grow 25% per year.

**TABLE 6**  
**Net Mobile Device Savings Per New Lumia User**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
E1	Total hours per week to manage devices before Lumia			31	39	49
E2	Total hours per week to manage devices with Lumia			16	20	25
E3	Security issues per week related to mobile, before Lumia			8	10	13
E4	Security issues per week related to mobile, with Lumia			4	5	6
E5	Hours to deal with each issue, before Lumia			3.5	3.5	3.5
E6	Hours to deal with each issue, with Lumia			1.5	1.5	1.5
E7	Hours per week managing MDM/EMM solutions			5	5	5
E8	Hours per week managing virtualization/VDI solutions			8	8	8
E9	IT hourly rate			\$35	\$35	\$35
<b>Etr</b>	<b>Mobile device management and security cost savings</b>	$(E1-E2)*E9*52 + (E3*E5-E4*E6)*E9*52 + (E7+E8)*E9*52$	<b>\$0</b>	<b>\$91,000</b>	<b>\$108,290</b>	<b>\$133,770</b>

Source: Forrester Research, Inc.

## Total Benefits

Table 7 shows the total of all benefits across the areas 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 more than \$1.7 million.

**TABLE 7**  
**Total Benefits (Risk-Adjusted)**

Ref.	Benefit Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Atr	User productivity	\$0	\$109,242	\$136,553	\$170,782	\$416,576	\$340,475
Btr	Sales improvements	\$0	\$336,600	\$419,760	\$526,680	\$1,283,040	\$1,048,612
Ctr	Device purchase cost avoidance	\$0	\$52,500	\$39,375	\$42,700	\$134,575	\$112,350
Dtr	Mobile device setup cost savings	\$0	\$31,500	\$23,625	\$25,620	\$80,745	\$67,410
Etr	Mobile device management and security cost savings	\$0	\$91,000	\$108,290	\$133,770	\$333,060	\$272,727
	<b>Total benefits (risk-adjusted)</b>	<b>\$0</b>	<b>\$620,842</b>	<b>\$727,603</b>	<b>\$899,552</b>	<b>\$2,247,996</b>	<b>\$1,841,573</b>

Source: Forrester Research, Inc.

## Costs

The representative organization experienced a number of costs associated with provisioning Lumia devices:

- › Lumia device purchase costs.
- › Deployment costs.
- › Ongoing Lumia device management costs.

These represent the mix of internal and external costs experienced by the representative organization for initial planning, implementation, and ongoing maintenance associated with Lumia devices.



### Lumia Device Purchase Costs

As mentioned above on page 16 in the Benefits section, the representative organization estimates each Lumia device costs about \$125. These devices are provided to each new Lumia user, as well as refreshed every 18 months per the organization's standard refresh schedule. Table 8 shows the number of employees provided a Lumia device each year, with total annual costs between \$28,125 and \$37,500.

**TABLE 8**  
**Software Costs**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
F1	Lumia devices provisioned			300	225	244
F2	Mobile device cost (per device)			\$125	\$125	\$125
<b>Ftr</b>	<b>Mobile device costs</b>	$F1 * F2$	<b>\$0</b>	<b>\$37,500</b>	<b>\$28,125</b>	<b>\$30,500</b>

Source: Forrester Research, Inc.



### Deployment Costs

Deployment costs are based on a number of factors, primarily the resource costs for planning, testing, and approving Lumia device management and use processes and policies. The representative organization estimates this took about five and a half people (or their equivalent) about 11 weeks. Additionally, costs were added for third-party training, off-the-shelf software or outsourced software development, and in-house mobile application development and integration. Organizations may see different totals relative to their company and Lumia deployment size, but the representative organization invested in some Lumia device training for its employees to help drive quick adoption, and it also invested effort in developing and integrating several mobile applications. These applications were primarily focused on sales enablement, helping increase the sales benefits detailed in the Benefits section, such as integration with CRM systems, and providing real-time, secure data access to necessary systems. These application costs are also reflected in the ongoing management costs highlighted in the next section, Annual Costs.

Overall, these costs add up to \$144,700, as shown in Table 9. Since many of these are broad estimates, a 10% risk adjustment factor has been applied to avoid any underestimating. The risk-adjusted deployment cost total is \$159,170.

**TABLE 9**  
**Deployment Costs**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
G1	Deployment weeks		11			
G2	Resources involved (FTE)		5.5			
G3	IT hourly rate		\$35			
G4	Deployment resource costs		\$84,700			
G5	Training and other costs		\$15,000			
G6	Third-party software costs		\$10,000			
G7	Custom app development costs		\$35,000			
Gt	Deployment costs	G4+G5+G6+G7	\$144,700	\$0	\$0	\$0
	Risk adjustment	↑ 10%				
<b>Gtr</b>	<b>Deployment costs (risk-adjusted)</b>		<b>\$159,170</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

Source: Forrester Research, Inc.



### Annual Costs

While general mobile device management costs have reduced, as detailed in the Benefits section, interviewed and surveyed organizations reported some new mobile device management costs, which are reflected in Table 10 for the representative organization. But of higher importance are ongoing application development resources tasked to develop, support, and update Lumia apps, also known as Windows Store or Microsoft Universal apps. (See the Flexibility section for more detail on how the representative organization can leverage these apps developed for Lumia on other Windows platforms: Windows 8.1 — and soon Windows 10 — desktops, laptops, and tablets.)

Application development is a key cost for many organizations, to enable the secure mobile access that can enable the improvements detailed in the Benefits section. For the director of information systems at a major US professional sports team, the Windows Phone platform was an easy choice: “We have a lot of experience in Windows development, specifically, so it was kind of an easy transition for us. We asked ourselves, what is the fastest way for us to [provide mobile apps], and how can we leverage things that we already have developed? Unless we want to hire another developer, we can't do all these things that we need to do [on another mobile platform] without hiring additional staff.”

The representative organization plans on allocating three developers for Lumia mobile application development and support. These three developers will spend about one-third of their time on this; in other words, they are equivalent to one FTE. Along with the minimal incremental mobile device management costs, this adds up to \$87,200 per year. Though Lumia usage will grow during the three-year analysis period, we don't expect any growth in the number of developers (as shown in Table 10) or management resources (as shown by the constant costs). Similar to with deployment costs, a 10% risk adjustment has been applied, for a risk-adjusted \$95,920 annual cost.

**TABLE 10**  
**Ongoing Costs**

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
H1	New mobile device management costs			\$8,000	\$8,000	\$8,000
H2	Developers working on Lumia apps			3	3	3
H3	Time spent on Windows Phone apps			33%	33%	33%
H4	Developer annual salary			\$80,000	\$80,000	\$80,000
Ht	Ongoing costs	$H1+H2*H3*H4$		\$87,200	\$87,200	\$87,200
	Risk adjustment	↑ 10%				
<b>Htr</b>	<b>Ongoing costs (risk-adjusted)</b>		<b>\$0</b>	<b>\$95,920</b>	<b>\$95,920</b>	<b>\$95,920</b>

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 \$475,000.

**TABLE 11**  
**Total Costs (Risk-Adjusted)**

Ref.	Cost Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Ftr	Mobile device costs	\$0	\$37,500	\$28,125	\$30,500	\$96,125	\$80,250
Gtr	Deployment costs	\$159,170	\$0	\$0	\$0	\$159,170	\$159,170
Htr	Ongoing costs	\$0	\$95,920	\$95,920	\$95,920	\$287,760	\$238,539
	<b>Total costs (risk-adjusted)</b>	<b>\$159,170</b>	<b>\$133,420</b>	<b>\$124,045</b>	<b>\$126,420</b>	<b>\$543,055</b>	<b>\$477,959</b>

Source: Forrester Research, Inc.

## 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 Lumia 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).

The representative organization has several areas of further improvement that it will consider exploring, focused on expanding its current Lumia deployment and adoption:

- › Expanding Lumia adoption to cover new users who regularly conduct other tasks. While not every employee fills out expense reports (as in the example provided in the user productivity Benefits section), everyone has tasks to complete and often those tasks can be handled on a mobile device, if users are provided the right device and the right tools and applications. The representative organization plans to research more groups of users beyond sales and information workers to identify those groups that can benefit from an improved mobile device solution.
- › Providing Lumia devices to all sales representatives. When measuring the benefits above, we do not expect that every sales rep will start using a Lumia device. This analysis projects that even after the third year, a little less than half of all sales reps will be using Lumia devices. The organization could expect significantly more revenue and profit if it could accelerate Lumia deployment or plan for full deployment to all sales reps soon after Year 3. There are some ramp-up and risk mitigation costs it might need to consider, and it may need to adjust for lower benefits on an average, per-user basis, since it assumes the early adopters will take advantage of Lumia more, while laggards might resist or at least take more time to ramp up. However, the organization could expect hundreds of thousands of dollars in additional benefits if every sales rep was included in Lumia deployment.

In addition to the representative organization’s consideration of key flexibility benefits, interviewed organizations highlighted several specific areas that the representative organization or other organizations might consider:

- › The global airline based in the US has already deployed Lumia devices to its flight attendants to take advantage of productivity savings and sales improvements. The airline looks forward to expanding the value it provides to its customers through greater service, such as knowing a customer’s meal preference or bringing a blanket before the customer has to ask, or quickly identifying and providing any special assistance required for an unaccompanied minor or person with special needs. “Being able to add up occasions that allow a deeper customer engagement, as we fold in greater levels of CRM, it’s really changing the way that flight attendants are able to interact with customers. It just empowers them to make more informed decisions about who they are dealing with, and it gives them the opportunity to really deliver an exceptional customer experience,” said the program manager at the airline.
- › The ISV is in a somewhat different situation than the representative organization. The representative organization has avoided providing mobile access across all platforms, because of the management and development costs required to support multiple platforms. With Lumia, application development is a new investment. The ISV, however, has been developing applications on multiple platforms and sees Lumia and Windows Phone as an opportunity to significantly save application development costs and provide its customers greater value. “There are certain things in terms of design and development we were able to do on Windows Phone and Lumia. It’s really about you need fewer resources, so you don’t need to have three separate teams, you don’t have to do as much QA, [and] the project schedules are much faster, so it adds up to a large number of implications: Instead of one or two major releases per year, we can actually do four or five, and then we can also respond to our customer feedback faster,” said the program manager at the ISV. The director of information systems at the major US professional sports team concurred, “Unless you want to hire another developer, we can’t do all these things that we need to do without hiring additional staff.”

## 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 Lumia 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 Lumia, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for cost and benefit estimates.

**TABLE 12**  
**Benefit And Cost Risk Adjustments**

<b>Benefits</b>	<b>Adjustment</b>
User productivity	↓ 10%
Sales improvements	↓ 25%
<b>Costs</b>	<b>Adjustment</b>
Deployment costs	↑ 10%
Ongoing costs	↑ 10%

Source: Forrester Research, Inc.

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:

- › User productivity has been adjusted to reflect that not every moment of time saved will be used on work tasks.
- › Sales improvement has been adjusted because customer purchase decisions are made based on a number of factors, and while overall sales may have increased for sales reps using Lumia devices, some of those sales may be a result of more mature sales process changes that were implemented by Lumia users at the same time — changes that could be taught to all sales representatives.

The following implementation risk that affects costs is identified as part of this analysis:

- › Deployment and ongoing costs are both adjusted the same amount to ensure resource expectations are not underestimated.

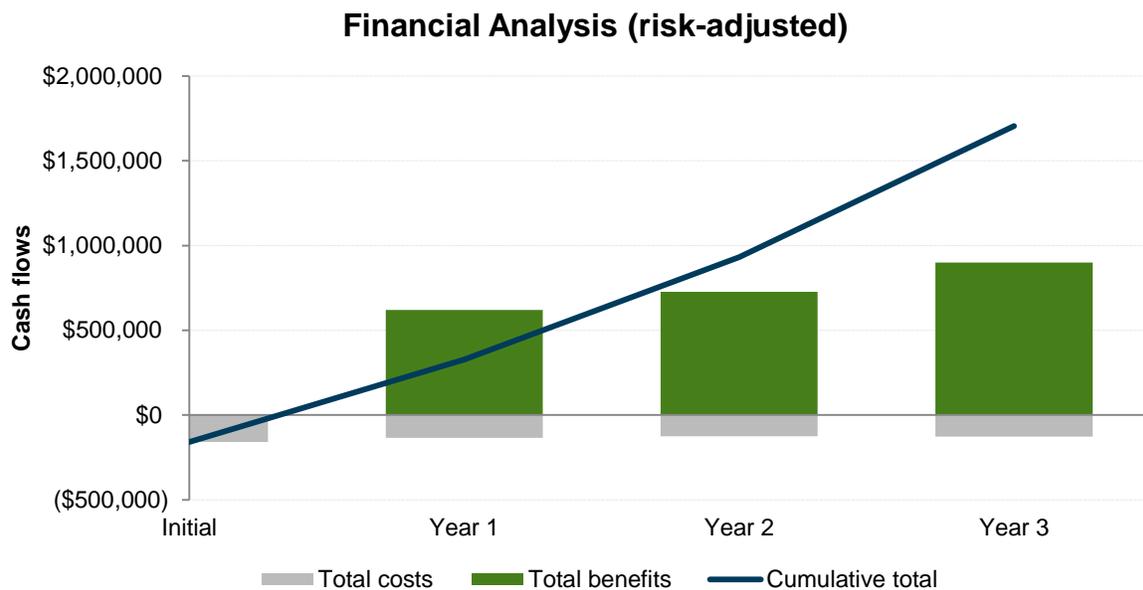
Table 12 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates for the representative organization. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

## 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 representative organization's investment in Lumia.

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 7**  
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	(\$159,170)	(\$133,420)	(\$124,045)	(\$126,420)	(\$543,055)	(\$477,959)
Total benefits	\$0	\$620,842	\$727,603	\$899,552	\$2,247,996	\$1,841,573
<b>Total</b>	<b>(\$159,170)</b>	<b>\$487,422</b>	<b>\$603,558</b>	<b>\$773,132</b>	<b>\$1,704,941</b>	<b>\$1,363,614</b>
<b>ROI</b>						<b>285%</b>
<b>Payback period (months)</b>						<b>3.9</b>

Source: Forrester Research, Inc.

## Microsoft Lumia: Overview

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

### MICROSOFT LUMIA — THE RIGHT CHOICE FOR BUSINESS

Businesses around the world are choosing Microsoft Lumia to empower their employees with a no-compromise mobility solution. Lumia is uniquely positioned in the market, offering an enterprise-grade operating system that comes to life across all devices in the range, no matter the size or price.

Lumia offers the right user experience for today's working and living. Instead of customers using containers of "work" and "personal," with Lumia, they can decide what to prioritize on their home screens. Some projects are personal and some are work-related. Businesses can secure and manage the work content while leaving the personal content like photos untouched.

Lumia brings high value for businesses of all sizes. No other smartphone integrates as seamlessly with Microsoft solutions as Lumia. Whether your business runs Exchange, Lync, or SharePoint on-premises, or subscribes to these services in the cloud with Office 365, your employees can instantly set up and easily continue using your IT investments on their Lumia smartphone.

Lumia comes with advanced mobile security to meet the needs of organizations and IT departments alike. Multilayered security defenses help protect against malware (malicious software), data leaks, and other threats. Secure Boot ensures that the phone only runs with authentic software. And device lock policies and data encryption further protect sensitive business data. All apps are "sandboxed," helping to reduce the risks of unwanted interaction between apps or phone functions. Only certified apps are allowed, which means powerful protection against malware.

Lumia smartphones integrate with the leading mobile device management (MDM) solutions, such as Windows Intune, AirWatch, MobileIron, and Citrix. Security policy management, enterprise wipe, VPN configurations, application management, and remote inventory management are just a few of the capabilities supported with Lumia smartphones.

Microsoft provides expert advice on business mobility deployments. Business Mobility Center is a free-of-charge service for IT and mobility support organizations on Lumia smartphones. It provides assistance through the Lumia smartphone's life cycle, whether the smartphone is ready to deploy, upgrade, or already in service.

Today is the best time to evaluate Lumia for business. The Lumia vision is to offer a full portfolio of products at multiple price points. Now a range of Lumia phones are available that offer a double benefit — a great experience today with Windows Phone 8.1 and an exciting upgrade to the Windows 10 operating system in the future. The goal is for the majority of the Lumia phones running Windows Phone 8.1 to join the Windows ecosystem by receiving the Windows 10 software update.

### LEARN MORE ABOUT LUMIA FOR BUSINESS:

[microsoft.com/en/mobile/lumia-for-business](http://microsoft.com/en/mobile/lumia-for-business)

[businessmobilitycenter.microsoft.com](http://businessmobilitycenter.microsoft.com)

[microsoft.com/en/mobile/windows10](http://microsoft.com/en/mobile/windows10)



## Appendix A: Representative Organization Description

For this TEI study, Forrester has created a representative organization to illustrate the quantifiable benefits and costs of implementing Lumia. The representative company is based on characteristics of the interviewed customers and has the following characteristics:

- › It is a US organization focused on B2B products or services.
- › It has 1,500 employees, all or nearly all of whom have a phone that they use at work.
- › It has revenue of \$300 million per year with an 8% profit margin. Its sales deals average about \$27,500 per closed deal.
- › Most employees have a phone they own and manage themselves. These BYOD devices are provided simple work email access and require necessary security policies (such as a PIN lock code) but are otherwise not supported.
- › The remaining 300 employees receive a corporate-managed device. For the representative organization, all corporate-managed devices have been migrated to Lumia. While not every organization migrated all corporate users to Lumia, the representative organization modeled here has made that full change, to illustrate some of the cost savings and cost avoidance benefits covered later in this study. These corporate-managed devices are provided, paid, and managed by the organization.
- › About one-third of Lumia devices are in the hands of sales reps. There are 300 total sales reps in the organization, some of whom will receive Lumia devices in Year 2 and Year 3.
- › The organization has a standard 18-month schedule for refreshing corporate-managed mobile devices.
- › The organization started including Lumia devices in its device catalog in late 2013, and through incentives focused on providing greater network and LOB access, Lumia became a significant portion of its corporate-managed mobile devices.
- › At this time, all 300 Lumia users are past the pilot phase and are fully in production.

### 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.

**TABLE 14**  
**Model Assumptions**

Ref.	Metric	Calculation	Value
I1	Hours per week		40
I2	Hours per year (M-F, 9-5)	$C1 * 52$	2,080
I3	Information worker hourly rate	$\$70,000/C2$	\$34
I4	IT hourly rate	$\$72,000/C2$	\$35
I5	Developer hourly rate	$\$80,000/C2$	\$38

Source: Forrester Research, Inc.

## 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. TEI assists technology vendors in winning, serving, and retaining customers.

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

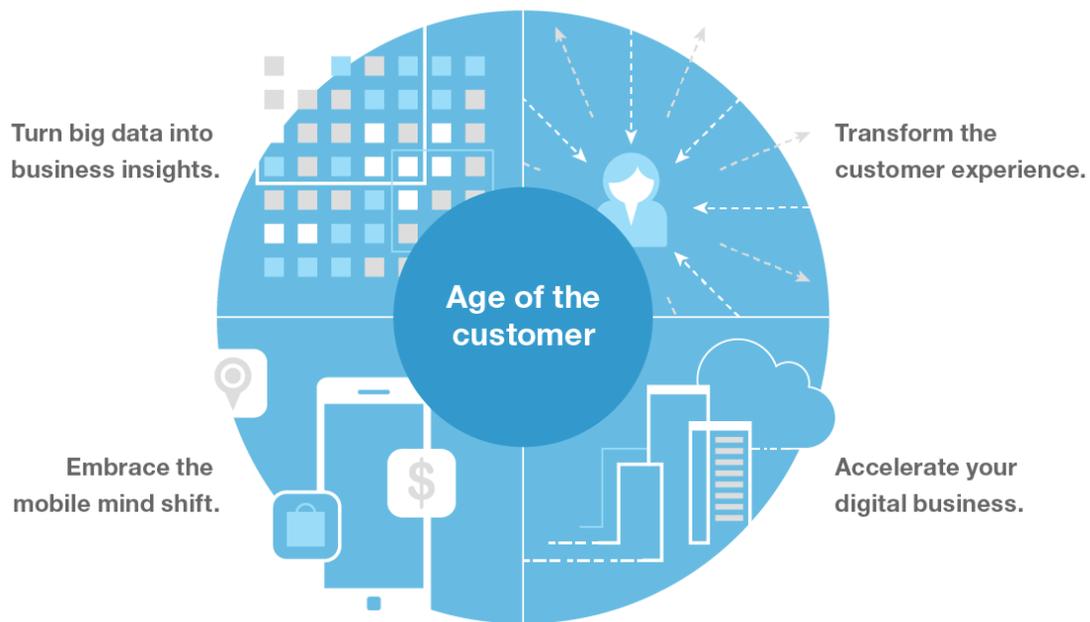
Risks measure the uncertainty of benefit and cost estimates contained within the investment. Uncertainty is measured in two ways: 1) the likelihood that the cost and benefit estimates will meet the original projections and 2) the likelihood that the estimates will be measured and tracked over time. TEI 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.

## Appendix C: Forrester And The Age Of The Customer

Your technology-empowered customers now know more than you do about your products and services, pricing, and reputation. Your competitors can copy or undermine the moves you take to compete. The only way to win, serve, and retain customers is to become customer-obsessed.

A customer-obsessed enterprise focuses its strategy, energy, and budget on processes that enhance knowledge of and engagement with customers and prioritizes these over maintaining traditional competitive barriers.

**CMOs and CIOs must work together to create this companywide transformation.**



Forrester has a four-part blueprint for strategy in the age of the customer, including the following imperatives to help establish new competitive advantages:



Transform the customer experience to gain sustainable competitive advantage.



Accelerate your digital business with new technology strategies that fuel business growth.



Embrace the mobile mind shift by giving customers what they want, when they want it.



Turn (big) data into business insights through innovative analytics.

## Appendix D: 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 of 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 E: Endnotes

<sup>1</sup> 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.