The Total Economic Impact™ Of Microsoft Power BI

Cost Savings And Business Benefits Enabled At An Insights-Driven Organization

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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 Power BI. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Power BI on their organizations, to leverage the abundance of data and how the democratization of that data can lead to an insights-driven organization that is more capable of winning, serving, and retaining customers.

To better understand the benefits, costs, and risks associated with a Power BI implementation, Forrester interviewed several customers with multiple years of experience using Power BI. With Power BI as an intuitive front end for the vast swaths of data already stored within the organizational repositories, users were able to perform data exploration and generate insights on a wide scale to enhance and improve the business as a whole.

Microsoft Power BI converts data into actionable insights and, in turn, facilitates the movement to become an insights-driven organization.

Insights-driven organizations are faster and more efficient at using data to win, serve, and retain customers. The costs and benefits for our composite organization of 9,000 employees, based on customer interviews and survey, are:

- **Cost of ownership: $2,956,142.**
- **Benefits derived: $21,431,065.**
- **Total three-year NPV of costs and benefits: $18,474,923.**

Prior to Power BI, customers had implemented various BI solutions that were catered to serve only upper management and executives, with IT serving as the conduit to deliver that information. Organizations today, however, need to be more agile, innovate better, and key in on the demands of customers — something that can only be driven by data-rich insights. Many of the customers interviewed understand this and have made decisive migrations to become data- and insights-driven organizations. With Power BI, customers are able to automate BI functionality and provide a self-service center for data, which often leads to improvements in multiple business functions. Said one manager of business intelligence, "Power BI has put the power of data in the hands of our end users, and we're finally able to leverage all of that data."

POWER BI ENABLES DATA INSIGHTS CREATION FOR THE MASSES

Our interviews with six existing customers and survey of 201 organizations using Power BI led to our financial analysis. We found that a composite organization based on the interviews and survey experienced the risk-adjusted ROI, benefits, and costs shown in Figure 1.[1]

At the composite organization, where 3,000 employees are BI users, this translates to benefits of more than $2,381 per user per year, usage costs of less than $329 per user, and an NPV of $6,158 per user for a three-year period. With Power BI, the proliferation of data makes every user capable of deriving insights, creating a distributed insights-generation machine. No longer is this the job of only data scientists and executives; the organization becomes insights driven throughout.

FIGURE 1

Financial Summary Showing Three-Year Risk-Adjusted Results

Comprehensive ROI: 625%	TCO-level ROI: 413%	Increase in BI usage: ▲ 38%	BI developer reliance: ▼ 75% to 80%

Source: Forrester Research, Inc.

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› **Benefits.** The composite organization experienced the following risk-adjusted benefits that represent those experienced by the interviewed and surveyed companies:

- **There was a significant decrease in wasted end user productivity by providing contextually relevant data when needed in a timely fashion, which resulted in a three-year gain of $10,973,035.** Previously, with existing BI solutions, consumers of BI data wasted an average of 15 minutes per day searching for and waiting for the appropriate data. With the self-service nature of Power BI and the intuitive interface, data was able to be drawn with immediacy, resulting in a significant time savings for the nearly 3,000 users who consumed BI data.

- **Business users who collaborated with IT to produce reports and dashboards no longer spent multiple iterations and long times on calls to perfect the reporting outputs.** With a reduction of iterations to perfect data outputs by upwards of 75%, the business users (who already knew what they wanted from the reports) were able to craft outputs on Power BI significantly faster and reduce IT involvement in the process. IT resources were shifted to other activities, and the organization avoided the need to hire as it grew. The three-year present value gains totaled $312,397.

- **An improved product development cycle and optimization of resource allocation produced significant benefits, to the tune of $6.3 million.** By improving manufacturing processes and visibility into its production value chain, the organization was able to reduce product development cycles by 14%. The entire benefit that these products brought about was not counted; rather, only the estimated development time improvement from the use of Power BI was calculated as the net benefit. Additionally, the composite organization was able to realize a one-time staffing optimization savings of 12%. Underutilization for some personnel and overutilization of others was equalized and led to an avoidance of unnecessary hiring.

- **Following the movement to a self-service BI model, the organization was able to reallocate 80% of its BI developer staff to other value-add positions.** Overall gains over three years amounted to nearly $4 million due to the rise of citizen report and dashboard builders.

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

- **Software-as-a-service (SaaS) software licensing and support fees of $719,684 were incurred over three years.** These are costs accrued from three years of usage, accounting for user growth and a smaller first-year (pilot) implementation. Support costs are assessed and included in this total figure at a nominal cost.

- **Data preparation costs increased following the implementation of Power BI, but only because of an increase in appetite for data from users.** Data transformation, cleansing, and preparation amounted to $1,327,699, handled completely by IT and database administrators. The organization is currently investigating tools to automate and simplify the data preparation to further the self-service BI schema.

- **End user training costs totaled $649,218 over three years.** These include costs that are inclusive of two categories: 1) end users primarily consuming data and 2) end users who created a large amount of reports and data outputs. The figures are different for the two groups, but generally with the intuitive nature of the platform, training is fairly minimal.

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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/Power BI.

› Microsoft reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.

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

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TEI Framework And Methodology

INTRODUCTION

From the information provided in the interviews, Forrester has constructed a Total Economic Impact (TEI) framework for those organizations considering implementing Microsoft/Power BI. 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/Power BI can have on an organization (see Figure 2). Specifically, we:

› Interviewed Microsoft marketing, sales, and consulting personnel, along with Forrester analysts, to gather data relative to Power BI and the marketplace for Power BI.

› Interviewed six organizations currently using Microsoft/Power BI to obtain data with respect to costs, benefits, and risks.

› Surveyed 201 organizations currently using Microsoft/Power BI to supplement metrics relating to costs, benefits, and risks.

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

› Constructed a financial model representative of the interviews using the TEI methodology. The financial model is populated with the cost and benefit data obtained from the interviews and survey as applied to the composite 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/Power BI'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 A for additional information on the TEI methodology.

FIGURE 2

TEI Approach

Perform due diligence › Conduct customer interviews/ survey › Design composite organization › Construct financial model using TEI framework › Write case study

Source: Forrester Research, Inc.

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Analysis

INTERVIEWED ORGANIZATIONS

For this study, Forrester conducted a total of six interviews with representatives from the following companies, which are global Microsoft customers:

› A leading US-based engineering design firm with over 5,000 full-time equivalents (FTEs) across the international landscape. This organization uses Power BI to become quick to adapt and iterative in its strategic initiatives. Using Power BI has helped the organization to "drastically reduce the struggle to get the data that they need." As an example of the inefficiency prior to Power BI, construction projects required collaborative reviews that often required 5 to 6 hours for the respective data to be pulled and prepared. In the organization's current form, data is pulled with a single click and in a few minutes — enabling entire teams to work more efficiently and not be bottlenecked by data.

› A Fortune 500 North American energy producer with nearly 3 petabytes (PB) of BI data. It utilizes Microsoft Power BI to extend BI capabilities across its enterprise beyond the standard business user and into the hands of field engineers and operators. Tactical day-to-day operations as well as longer-term strategic initiatives are enhanced throughout the organization, including that of field operations due to availability and presentation of data to make insightful decisions. The dashboarding visualization provided by Power BI with its fresh data has made it possible for this energy producer to do the same amount of field operations as a similar organization with nearly twice the amount of field operators.

› A multinational conglomerate in the manufacturing space, with well over 100,000 employees globally. The organization runs a gamut of data warehousing solutions, with hundreds of ERP and other business applications feeding the global data lakes. Its goal has been to rationalize, structure, and provide users with a means to interpret the abundance of data on a self-service model. The IT organization within has been able to reduce its work effort by 70% since the advent of Power BI and the self-service model.

"There wasn't a good mechanism to deliver the data in a quick and effective manner. Empowering our end users to be able to access and interpret that data with Power BI is now critical to how we operate."

~ Analytics manager, major energy producer

› An American retail chain with over 200 physical locations. Using Power BI, over 25,000 business users across the enterprise organically increased data consumption without material upticks in IT involvement. Each of its stores became enabled to react significantly quicker – including inventory optimization and the capability to offer flash sales on an almost immediate and predictive basis. Sales flashes are offered by the hour, driven by fresh data, and stores are no longer reactionary by using days-old data.

› A European bank chain of 2,500 employees using Microsoft Power BI to lead a data-driven organization. This bank delivers predictive data that empowers banking associates to provide a positive customer experience. To do so, the bank uses visual dashboarding. This allows bankers to improve on metrics pulled from all aspects of the bank, including customer service call centers, risk management, and product affinity by customers. With Power BI being a single source of truth for the organization, the data outputs allowed the organization to improve and optimize areas that were running inefficiently and, as a direct result, improved customer satisfaction greatly.

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› A $6 billion-plus global industrial automation company. Driven by a top-down initiative to make data and information more accessible to improve organizational performance in multiple segments, this organization uses Power BI as a front-end interface to present insights from its SAP and Hadoop sources. Data was widely available — to the tune of multiple petabytes — but there was no easy way to present and make sense of it all prior to introducing Power BI. In total, nearly 8,000 business users are consuming data through Power BI today, ranging from simple queries to complex analyses, all with the intent of improving operational efficiency and driving innovation in their space.

In addition, Forrester fielded a US/UK survey to 201 current Microsoft Power BI customers, asking them of their experience and how multiple financially impactful levers were moved with their use of the BI solution. Survey respondents included managers, directors, and senior most leaders in business and IT. They represented organizations from a wide spectrum of verticals and often with global offices.

"Power BI gives us reports more rapidly and reports that are correct the first time because the business user developed it — not the IT resource. Coming from the standard of roughly four iterations to produce a proper data model previously, I'd say our ROI has been pretty good just on that alone."

~ Director of IT, American retail chain

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FIGURE 3

Survey Excerpts

Organization size by employee count

| | 100 to 499 employees | 500 to 999 employees | 1,000 to 4,999 employees | 5,000 to 19,999 employees | 20,000 or more employees |
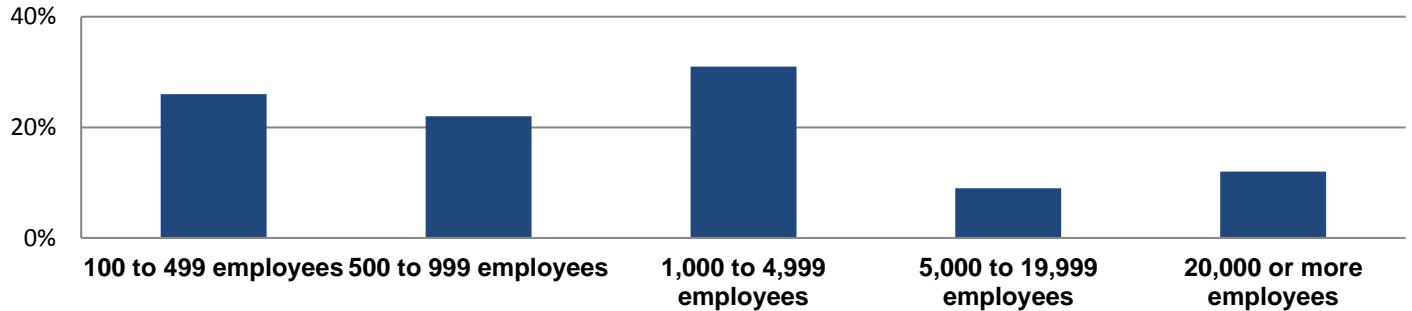
Organization size by revenue

| $5M to $99M | $100M to $199M | $200M to $299M | $300M to $399M | $400M to $499M | $500M to $1B | $1B to $5B | More than $5B |
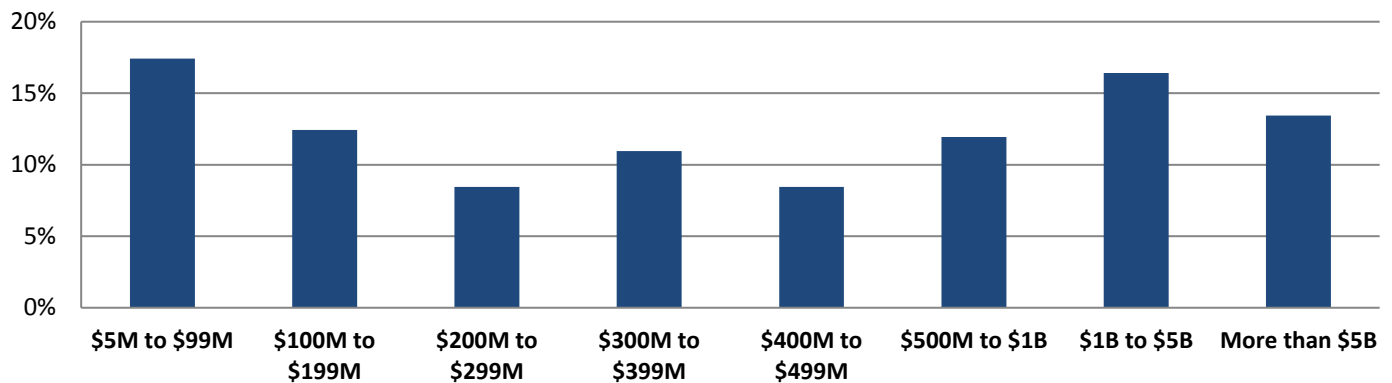
Organizational primary lines of business

Government and healthcare — 3%

Business and consumer services — 21%

Infrastructure — 13%

Retail / eCommerce — 15%

Financial Services / Insurance — 18%

Process-oriented Manufacturing — 30%
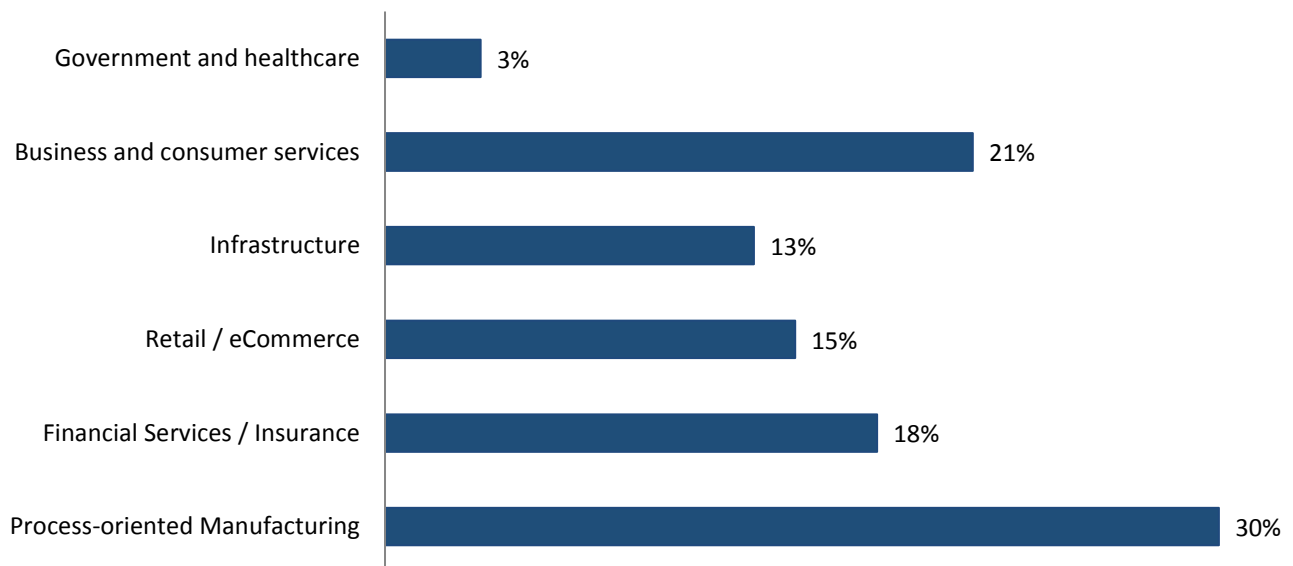
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Top areas of business benefit experienced from surveyed organizations

Improved operational processes	57%
Quicker insight/value generation	49%
Increased business user productivity	49%
Gained ability to provide more value to your customers	47%
Increased number of business users developing and consuming insights	35%

25%

Customer experience/service improvement

21%

Better personnel resource distribution savings
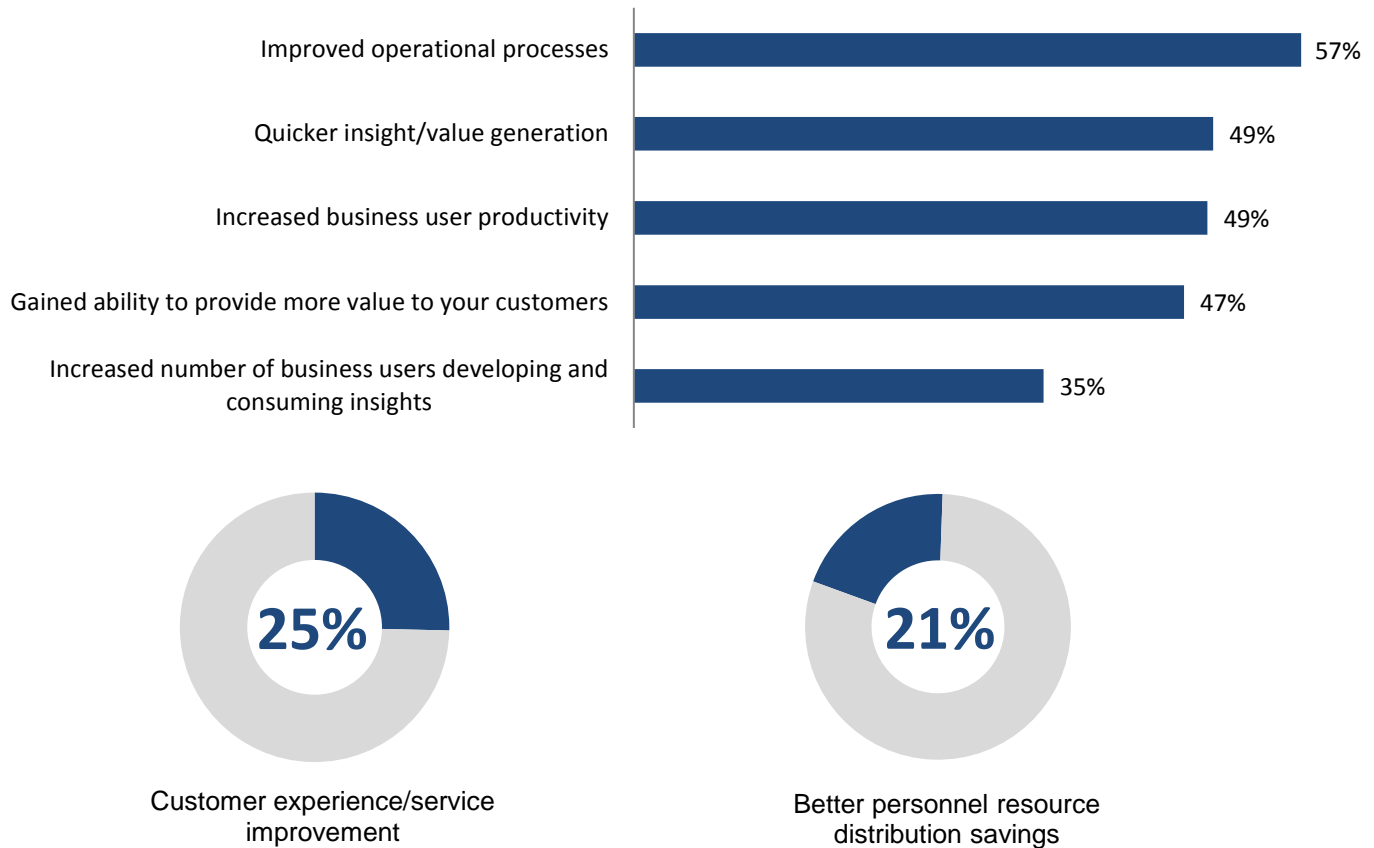
Base: 201 American and UK BI and analytics decision makers

Source: Forrester Research, Inc.

INDUSTRY SEGMENT ANALYSES

The 201 recorded survey responses enabled our analyses the opportunity to disseminate results as they pertain to industry segments. Figure 3 above illustrates the various industry segments. All industry-level responses have been factored into our analyses, with the exception of the slower-adopting government and healthcare sectors that provided fewer responses. All other segments are statistically relevant in quantity using double-blind surveys. The Forrester breakdowns of the industry segments are as follows:

› Financial services and insurance.

› Business and consumer services, encompassing most service-based industries but excluding financial services and insurance.

› Manufacturing, which includes consumer packaged goods (CPG), electronics, and other process-based manufacturing.

› Infrastructure, which includes energy utilities, telecoms, and construction.

› Retail and eCommerce.

Overall, primary benefits such as increased business user productivity, improved operational processes, and quicker insight development were widely experienced across the various industries. The data suggests that deviation was more discernable

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in business-level outputs that were enabled by the foundational benefits provided by Power BI. For example, a significantly greater number of financial services organizations were able to raise topline revenues as a result of increased, improved, and more frequent data representations. For some other organizations, such as those belonging to the infrastructure segment, product and engineering process efficiency increased dramatically. We suspect that these organizations are heavily reliant on precise processes to scale. Our conclusion from this is that industry differences in operational processes and revenue drivers, along with the general reliance on data outputs, all contribute to the variability in results attained. We encourage readers to discuss applicability with your vendor or solution provider to determine the likelihood that your organization will experience benefits.

TABLE 1
Results More Likely To Be Realized, By Industry Segment

Industry Segment	Notable Bottom-Line Benefit Area Realized	Organizations Realizing Benefit And Delta From Survey Avg.
Financial services and insurance	Topline sales growth	73% of orgs, ▲ 23%
Business and consumer services	Customer experience/service improvement	61% of orgs, ▲ 5%
Retail and eCommerce	Topline sales growth	67% of orgs, ▲ 17%
Retail and eCommerce	Human resource training processes	22% of orgs, ▲ 6%
Manufacturing	Personnel and resource planning/allocation	64% of orgs, ▲ 9%
Manufacturing	Human resource training processes	27% of orgs, ▲ 11%
Infrastructure	Product and engineering process efficiency	67% of orgs, ▲ 15%

Source: Forrester Research, Inc.

FIGURE 4
Bottom-Line Improvements, As An Aggregate

3.1% increase in topline revenue growth

21% increase in product development efficiency

36 minutes saved per IT FTE per day for BI support

Source: Forrester Research, Inc.

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THE 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 that Forrester synthesized from these results represents an organization with the following characteristics:

› It is a multinational electronics firm with offices throughout the world. Data is accumulated from all locations in structured and unstructured form into central repositories.

› A data-driven business culture plays a significant role in its overall forward-looking business strategy. The business in its current state consumes data, but the data is largely only made available to manager-level and up personnel. Changing or reshaping its data outputs to promote business agility necessitates significant effort input from IT.

› Primary activities for the organization involve design, manufacturing, and marketing of electronics throughout the world.

› It has 9,000 employees, a large portion of whom are business users who can potentially benefit from business intelligence data in the form of increasing operational efficiency within lines of business, keeping abreast of performance metrics, and making sense of data that would otherwise fall to the ground unused.

› Annual revenues total US$1.2 billion with skim operating margins. To ensure success, the organization is looking to improve operating margins through data-driven insights that range throughout its business units.

› It believes that beyond internal efficiencies, data insights can be utilized to make strides in improving customer satisfaction with its products, potentially leading to an improved bottom line.

After a business case process evaluating multiple vendors, the composite organization chose Microsoft and began deployment of Power BI Pro. Primary and secondary factors that factored into the decision-making process were the simplicity and intuitiveness of the self-service platform — highly touted by grassroots groups within the organization — as well as the relative ease of folding and integrating the tool into the existing Microsoft stack of business applications.

"We've absolutely driven the customer experience and, in turn, the bottom-line numbers with our data-focused culture. . . . Our Net Promoter Score (NPS) far outpaces our nearest competitor by a wide double-digit margin."

~ Chief data officer, European consumer bank

› A pilot of Power BI was performed within the organization with specific departments, soon resulting in a proliferation of data modeling due to the ease of usability.

› Implementation followed with the complete integration of existing data repositories, consisting of multiple databases and distributed computing architectures. Testing of Power BI as the front end for the data ensued.

› Initial feedback from users indicated that the platform was highly capable of delivering data in consumable formats to users without measurable training. All signs pointed to a high level of traction among the pilot user base, with indications that a full rollout would result in similar adoption rates, with users able to quickly derive and create insights from the already amassed data.

› Following the successful initial rollout, Power BI Pro was introduced to global offices and managed through the existing access controls on the Microsoft stack.

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› Expectations were set internally that Power BI Pro would become the single source of truth for data reporting/BI for future purposes, with IT providing background transformations to make the data available on the front end.

INTERVIEW HIGHLIGHTS

Situation

The existing BI reporting was capable of producing usable data for a select privileged few, while leaving petabytes of data as an unmined opportunity. The composite organization realized that without contextually relevant questions to ask of the data, it would take ages to mine and apply data science to it. The organization desired to democratize the data and use distributed thinking to make sense of the data, akin to how distributed computing like Hadoop processes the data. The missing link was to provide a simple and intuitive interface so that everyday users, and not just executives, could harness the data and produce insights that would bring about forward progression for the organization. Multiple challenges arose from this initiative:

> *"Five, 10 years ago, our IT was building our BI reporting and it simply wasn't giving us what we wanted. Reiterating these reports was cumbersome and time consuming, so the realization set in that we really needed to build these from the business side."*
>
> ~ Analytics manager, major energy producer

› The organization required a single front-end interface to bring together the data lakes/disparate repositories that exist within the organization.

› The front-end interface needed to be user friendly, to ensure user adoption/traction.

› Reporting needed to be primarily self-service. IT budgets were not expanding, and an increase in data consumption was likely to occur. To be truly effective, the organization wished to reallocate IT staff from reporting support to data preparation, transformation, and cleansing roles.

› The organization was unsure of the exact business-level benefits to be realized, but it understood that insights-driven organizations are the way of the future, netting higher employee productivity, improving the quality of decision making, and culminating into a healthier top and bottom line. [2]

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Data Shows A High Correlation Between Being Insights-Driven And Revenue Growth

Insights-Driven Businesses See Better Results

Firms' estimated 2014 YoY growth

20+%   14%   6%
15+%   28%   17%
1% to 14%   66%   73%
<1% or negative   4%   7%

Insights-driven companies dominate higher-growth categories

■ Insights-driven
■ Non-insights-driven*
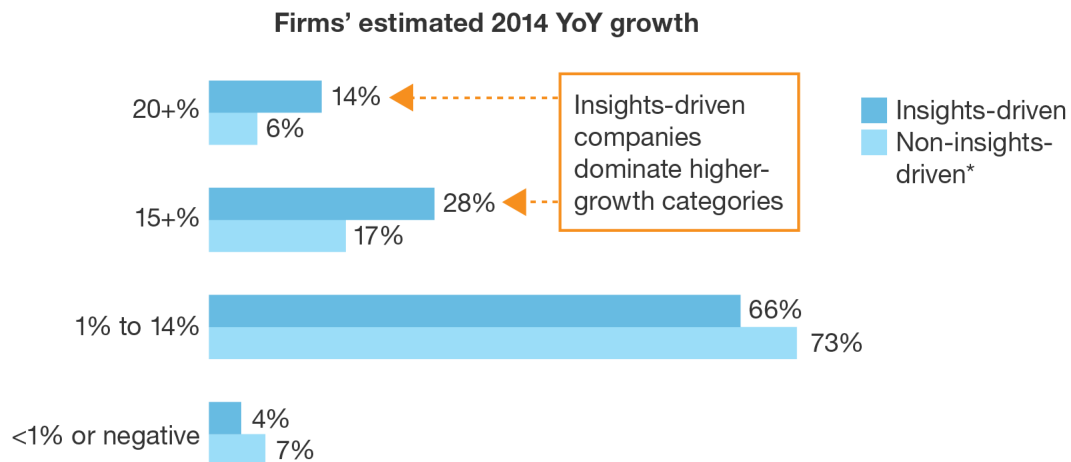
Base: 195 global data and analytics decision-makers who work for insights-driven firms
*Base: 1,565 global data and analytics decision-makers who work for non-insights-driven firms

Not shown: Data from those who responded "Don't know," "Prefer not to answer," or who fell in an intermediate category between "non-insights-driven" and "insights-driven."

Source: Forrester's Global Business Technographics® Data And Analytics Survey, 2015

Solution

The composite organization selected Power BI for its ability to provide a user-friendly yet highly capable front-end tool for its BI solution — realizing that user traction was crucial to transition into a data-driven organization. While there were other solutions on the market, many of them were of a level of complexity that: 1) inhibited a fast-learning curve for end users and 2) did nothing to reduce the strain on IT resources. Moving to the self-service Power BI model enabled the organization to truly become an insights-driven organization — where data is democratized to all users and becomes the primary driver of decision making.

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Results

The interview revealed that:

› **Availability of data from a single source presented in a very user-friendly manner brought efficiency to all end users who consumed BI data.** With the previous BI systems, the accessibility of information was cumbersome and often required long wait times to produce. Exploration into other data visualization products still demanded significant IT help, and thus did very little to reduce the time end users spent finding necessary data. With Power BI as a single source of data presentation, users found relevant and up-to-date data, freeing them to apply the time gained to other productive tasks.

› **Reductions in business user effort to create reports and dashboards with IT were immediately recognized.** As one interviewee stated: "Power BI gives us reports more rapidly and reports that are correct the first time because the business user developed it — not the IT resource. Coming from the standard of roughly four iterations to produce a proper data model previously, I'd say the ROI on that alone has been pretty good considering how many reports we now consume." Efficiency was achieved by removing the significant IT speedbump and amounted to a significant return on time to both business users as well as IT/developers.

› **Numerous lines of business were positively impacted by the newly proliferated data.** Some of these, which experienced time-to-value gains, are quantified in the Benefits section, but still more areas of gain exist. An analysis of the composite organization reveals a significant improvement in product development cycles, with reductions as high as 25% seen in some instances. Product managers and engineers collectively gained better visibility into the demands and needs of the organization and were able to steer development to match the top-level strategy. Beyond production, the organization was also able to improve resource planning and better allocate the workforce — bringing greater manufacturing efficiency by being able to have more insight on its production cycles at a more rapid interval.

› **IT staff and developers were no longer a bottleneck for reporting design with Power BI's self-service model.** The graphical nature of Power BI's GUI and natural language query brought about a wave of citizen developers/modelers to replace the task that had previously been bottlenecked by IT's limited resources. While data preparation was still necessary for IT to produce given the various disparate sources of data within the organization, the development work surrounding reporting and dashboarding was reduced by upwards of 80%. In turn, valuable IT developers were reallocated to value-add work such as progressing the organization's data science program.

› **The previously elaborate process of converting data to insights has been drastically simplified, creating a data-driven organizational culture.** Forrester's 2016 Business Technographics® data indicated that insights-driven organizations were still largely in the hands of senior management, the majority of whom had access to that data and could process it into insights. Effectively, after the introduction of Power BI, the organization as a whole became enabled to produce insights from the massive existing sets of data, ending a period where insights were only populated by senior management. Responses from the current survey indicate that organizations across almost all industries had increased the BI user base by an average of 50%.

BENEFITS

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

› End user time waste avoidance.

› Business user time saved on development of reports and dashboards.

› Time-to-value improvement on business outputs.

› IT/developer resource reallocation.

Another important benefit mentioned by the composite organization was an increase in customer satisfaction scores. While customer satisfaction depends on a number of factors, some organizations nevertheless regarded the opportunity to provide best-in-class customer service as a strong driver for implementing the solution. Readers should note that additional benefits of the solution are present, especially for different industry verticals where the drivers of value differ. The use cases are countless, as benefits follow the amount of data that can be usably translated into insights. Given that the purpose of the Power BI solution is to put the power of data in the hands of the everyday user, we are intrigued by the possibilities at various organizations. Some of the most common benefits that have been quantified are presented below.

End User Time Waste Avoidance

The composite organization improved BI-consuming end user productivity immediately following the deployment of Power BI. Efforts to increase BI availability to a larger user base with alternate BI solutions were met with latency issues and delays in providing contextually relevant and easily consumable data formats. In assessing the matter, the organization discovered that its users spent an average of 15 minutes per day to reach the desired outputs. The drivers attributable to Power BI that led to a reduction of wasted time were:

› Natural language querying, reducing the need for complex data pull syntax.

› Recency of data and more frequent refresh cycles for data presented through Power BI, reducing the need to cross check for the relevance of data to the associated time period.

› Increased dashboards and reports for specific contexts, reducing the need to perform data manipulation on more generic data outputs. Additionally, this diminished the need for users to involve additional internal resources (such as IT or a fellow colleague) to acquire data where it could not be found previously.

› The single source of data presentation, improving data accuracy and eliminating the need to put together data piecemeal on the end user's part.

The effective result of timely and contextually relevant data dashboards enabled users to spend less time to reach analytical conclusions. The total time saved by each BI user on an annual basis was 60 hours, or the equivalent of $2,940 in employee compensation. While significant productivity was returned to the BI users of the composite organization, our analysis suggests that time returned to the users is always used in a productive manner, leading us to reduce the value of the time returned by 60%. Common nonvalue-add activity includes coffee breaks, internal chitchat, and internet browsing. After accounting for the actual productivity capture rates, the benefit to the organization was a PV of $13,716,294.

The median of collected responses indicates the time savings that the composite organization realized, but interviewed organizations provided responses across a broad range. Due to the variance and the likelihood that these numbers change with organizations that have varying levels of existing BI infrastructure and reporting capability, we have compensated this benefit by risk-adjusting and, in effect, reducing the impact of this benefit by 20%. The risk-adjusted total of this benefit resulting from eliminating the majority of wait time associated with data acquisition results in a present value of $10,973,330, following three years of usage. See the section on Risks for more detail.

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TABLE 1

End User Time Waste Avoidance

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
A1	Number of BI users involved in developing reports, dashboards, and visualizations			3,000	3,000	3,150
A2	Compensation hourly average for users requesting BI data, fully loaded			$49	$49	$49
A3	Growth in BI-consuming users				5%	5%
A4	Average hours wasted yearly by BI data users to find relevant data, due to inefficiencies of existing BI	15 minutes daily * 240 working days / 60 minutes per hour		60	60	60
A5	Actual productivity capture			60%	60%	60%
At	End user time waste avoidance	(A1*A2*A4*A5)*(1+A3)	$0	$5,265,000	$5,528,250	$5,804,663
	Risk adjustment	↓20%				
Atr	**End user time waste avoidance (risk-adjusted)**		**$0**	**$4,212,000**	**$4,422,600**	**$4,643,730**

Source: Forrester Research, Inc.

Business User Time Saved On Development Of Reports And Dashboards

Prior to the introduction of Power BI, standard procedures to explore data and create reports dictated the collaboration of both the business users, who were mostly managers and executives, and the IT resources, who specialized in data preparation and modeling. To truly become data driven, the organization needed to proliferate data and then augment it into insights by citizen modelers who included even nonmanagerial types within the organization. With older BI solutions, user-friendly interfaces necessary for self-service data augmentation to scale to wider portions of the organization were nonexistent.

The analysis suggests that roughly 10% of BI consumers would eventually create reporting dashboards and models — and doing so on Power BI would reduce the need to involve IT for the iterative work required to achieve insightful outputs by 75%. Measuring the time saved by the self-service reporting and modeling for the business users, the organization is able to save $312,397 through three years, in PV.

TABLE 2

Accelerated New Business Initiation: Processing Time Improvements Lead To Time Savings

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
B1	Number of BI users involved in developing reports, dashboards, and visualizations			3,000	3,000	3,150
B2	Percent of BI users involved in developing reports, dashboards, and visualizations			10%	10%	10%
B3	Compensation hourly average for users requesting BI data, fully loaded			$69	$69	$69
B4	Reduction in iterations to create desired data output			75%	75%	75%
B5	Average time commitment for collaborative report building process through iterations, in hours			8	8	8
Bt	Business user time saved on development of reports and dashboards	B1*B2*B3*B4*B5	$0	$123,750	$123,750	$129,938
	Risk adjustment	0%				
Btr	**Business user time saved on development of reports and dashboards (risk-adjusted)**		**$0**	**$123,750**	**$123,750**	**$129,938**

Source: Forrester Research, Inc.

Time-To-Value Improvement On Business Outputs

The increase in data insights created from Power BI led to improved operational efficiency and, ultimately, greater business outcomes. As an electronics manufacturer, the composite organization accelerated its product development timelines using insights produced from its existing data pools; iterations between product updates became shorter, processes and resource allocation became more efficient, and goals became clearer.

On average, the organization reduced product development cycle periods by 14%, which is an average of 1.6 months faster per product iteration, by improving processes and gaining greater visibility into consumer preferences. Using a conservative estimate of $3 million in revenue gained per product iteration and an average of three products per year, the accelerated time-to-value resulted in a net gain of $1.26 million per year.

In addition to the efficiencies gained from consumer insight and process improvements, the composite was able to better determine resource optimization, specifically from more frequent and quicker data refresh intervals, indicating areas for allocation improvement. The improvements resulted in an overall 12% savings on the manufacturing equation while improving time-to-delivery. A one-time increase in efficiency amounting to over $11 million was realized after the first year of Power BI usage.

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Due to variances from one vertical to another and the different lines of business within, we have opted to express this benefit category with a significant amount of conservatism by applying a 50% risk adjustment. While the non-risk-adjusted figures are fully plausible for a manufacturing-centric organization like that of the composite, interviewed, and surveyed firms, this particular benefit can be skewed for a few organizations in specific industries. However, our analysis suggests that for *most* industries, including those that are service centric, similar levels of positive business outcomes are fully achievable. In applying a heavy risk adjustment of 50%, the present value of the time-to-value improvements is discounted to $6,433,161 over three years.

TABLE 3

Time-To-Value Improvement On Business Outputs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
C1	New product development cycle time reduction			14%	14%	14%
C2	Equivalent reduction in product development in months	12 months * 14%		1.68	1.68	1.68
C3	Expected new product developments aided by Power BI			3	3	3
C4	Expected additional contribution to annual revenue from each product			$3,000,000	$3,000,000	$3,000,000
C5	Personnel allocation optimization and resource planning savings			12%		
C6	Total manufacturing/ engineering FTE			4,000		
C7	Compensation of manufacturing and engineering FTE mix, fully loaded annually per FTE			$96,000		
C8	Reduction in months to identify			3		
Ct	Time-to-value improvement in business outputs	(C2*C3*C4)/12+(C5*C6*C7* C8)/12	$0	$11,625,000	$1,260,000	$1,260,000
	Risk adjustment	↓50%				
Ctr	**Time-to-value improvement on business outputs (risk-adjusted)**		**$0**	**$5,812,500**	**$630,000**	**$630,000**

Source: Forrester Research, Inc.

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IT/Developer Resource Reallocation

In moving to the self-service BI model, the composite organization was able to reallocate IT resources for the development and creation of reports and data visualizations. Typical report creation prior to Power BI was process laden, often requiring iterative collaboration between business users and IT or developer resources to produce desired data outputs. The intuitive user interface on Power BI enabled the rise of citizen data modelers and, in turn, reduced IT workload and time expenditure by 80%. The relative scarcity of IT resources proficient at data modeling meant that many of these individuals were rotated into roles such as big data support. Over the analysis period of three years, a total PV benefit of $3,867,552 was realized.

TABLE 4

IT/Developer Resource Reallocation

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
D1	Number of IT/developer FTEs responsible for database report, dashboard, visualization building			18	18	18
D2	Compensation of IT/developer FTE able to build reporting outputs, fully loaded annually			$108,000	$108,000	$108,000
D3	Decrease in percentage of IT/dev workforce necessary to create and modify reports			80%	80%	80%
Dt	IT/developer resource reallocation	D1*D2*D3	$0	$1,555,200	$1,555,200	$1,555,200
	Risk adjustment	0%				
Dtr	**IT/developer resource reallocation (risk-adjusted)**		**$0**	**$1,555,200**	**$1,555,200**	**$1,555,200**

Source: Forrester Research, Inc.

Total Benefits

Table 5 shows the total of all benefits across the four areas listed above, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of more than $21.4 million.

TABLE 5

Total Benefits (Risk-Adjusted)

Ref.	Benefit Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Atr	End user time waste avoidance	$0	$4,212,000	$4,422,600	$4,643,730	$13,278,330	$10,973,035
Btr	Business user time saved on development of reports and dashboards	$0	$123,750	$123,750	$129,938	$377,438	$312,397
Ctr	Time-to-value improvement on business outputs	$0	$5,812,500	$630,000	$630,000	$7,072,500	$6,278,080
Dtr	IT/developer resource reallocation	$0	$1,555,200	$1,555,200	$1,555,200	$4,665,600	$3,867,552
	Total benefits (risk-adjusted)	**$0**	**$11,703,450**	**$6,731,550**	**$6,958,868**	**$25,393,868**	**$21,431,065**

Source: Forrester Research, Inc.

COSTS

The composite organization experienced a number of costs associated with the Power BI solution:

› License and support costs.

› Data preparation costs.

› End user training costs.

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

License, Support, And Maintenance Costs

Licensing costs for Power BI Pro consist of a monthly fee of $10 per user per month, equating to $120 per year. No additional costs are necessary to include support, and maintenance patching, or functionality upgrades. The cost of licenses accounting for the initial pilot period and the growth encountered in the full production release in years 2 and 3 resulted in a total three-year cost of $719,684, PV. Existing licensees of Microsoft Office 365 will be able to test a lightweight version of the Power BI tool at zero cost.

TABLE 6
Software Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
E1	Power BI Pro license costs per user, inclusive of support, annual basis			$120	$120	$120
E2	Number of users			1,000	3,000	3,150
E3	User growth				5%	5%
Et	License and support costs	(E1*E2)*(1+E3)	$0	$120,000	$378,000	$396,900
	Risk adjustment	0%				
Etr	**License and support costs (risk-adjusted)**		**$0**	**$120,000**	**$378,000**	**$396,900**

Source: Forrester Research, Inc.

Data Preparation Costs

With the increased consumption of data on Power BI, the organization also saw increased demands for data cleansing, preparation, and transformation. Prior to adopting Power BI as a front facing-interface to deliver data outputs, the organization was limited in its scope on the reporting delivery to manageable amounts. To provide the data outputs that the organization desired for a larger base of data consumers, the IT team was tasked with an increasing workload of data preparation for output through Power BI. Readers should be advised that while the Microsoft offering is a self-service platform for end users that removes responsibilities from IT for developing

reports and visualizations, the added demands for data ultimately resulted in a net increase in IT resources required. The increase in IT costs over three years came to $1,327,699, PV.

Data cleansing, preparation, and transformation costs can vary greatly between organizations depending on the source and type of data, such as an unstructured versus structured relational database management system (RDBMS). The composite organization uses largely structured data with a few portions that are unstructured. Preparation to feed this data to Power BI in a consumable form will often greatly change the scope and, likewise, the cost. For this reason, we have chosen to apply a risk adjustment to this cost segment, increasing the segment total by 20% to a total of $1,593,239 over three years. See the section on Risks for more detail.

TABLE 7

Data Preparation Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
F1	Increase in data preparation due to increase in data consumption demands			40%	40%	40%
F2	Existing IT personnel dedicated to ETL/data preparation duties			8	10	10
F3	Compensation of senior database administrator, annually, fully loaded			$144,000	$144,000	$144,000
Ft	Data preparation costs	F1*F2*F3	$0	$460,800	$576,000	$576,000
	Risk adjustment	↑20%				
Ftr	**Data preparation costs (risk-adjusted)**		**$0**	**$552,960**	**$691,200**	**$691,200**

Source: Forrester Research, Inc.

End User Training Costs

End user training for the Power BI platform was provided across the organization in two phases — one for those who were regular consumers of data and another for those who were power users interested in the advanced visualizations and reporting. Due to the simplicity of Power BI, standard users were acquainted with usage quickly and mostly on their own time, with only 1 hour of training or self-learning required on a yearly basis. Users who desired to do more with Power BI engaged in an additional 12 hours of training on a yearly basis. The total costs of training through three years of use were $643,218, PV.

TABLE 8
End User Training Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
G1	Organizational users consuming Power BI data		0	1,000	3,150	3,308
G2	Training time to consume data, in hours per user			1	1	1
G3	Percent of users developing new dashboards and reports on Power BI			10%	10%	10%
G4	Additional training time for best practices on creation and optimization of reporting and visualizations, in hours per user			12	12	12
G5	Compensation hourly average for users of Power BI, fully loaded			$49	$49	$49
Gt	End user training costs	(G1*G2*G5)+(G1*G3*G4*G5)	$0	$107,250	$337,838	$354,729
	Risk adjustment	0%				
Gtr	**End user training costs (risk-adjusted)**		**$0**	**$107,250**	**$337,838**	**$354,729**

Source: Forrester Research, Inc.

Total Costs

Table 9 shows the total of all costs as well as associated present values (PVs), discounted at 10%. Over three years, the composite organization expects total costs to be a PV of slightly less than $3 million.

TABLE 9
Total Costs (Risk-Adjusted)

Ref.	Cost Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Etr	License and support costs	$0	$120,000	$378,000	$396,900	$894,900	$719,684
Ftr	Data preparation costs	$0	$552,960	$691,200	$691,200	$1,935,360	$1,593,239
Gtr	End user training costs	$0	$107,250	$337,838	$354,729	$799,817	$643,218
	Total costs (risk-adjusted)	**$0**	**$780,210**	**$1,407,038**	**$1,442,829**	**$3,630,077**	**$2,956,142**

Source: Forrester Research, Inc.

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FLEXIBILITY

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for some future additional investment. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so. There are multiple scenarios in which a customer might choose to implement Power BI 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 A).

Flexibility as it applies to the Power BI solution comes in multiple forms — and we expect nothing less, as insights-driven organizations are the future. They are more agile and do things more efficiently, while producing a healthier bottom line. The following points of consideration should also play into the consideration for adoption and long term returns:

› Hybrid deployment is a capability of Power BI, bridging the leap from on-premises to cloud-based operations. For many organizations that are still undergoing digital transformation, this becomes especially useful to bring data from local sources and make them available to cloud users elsewhere within the organization. Further still, EMEA organizations with data residency laws will find this helpful to keep data in a specific domicile while still being able to consume insights elsewhere in the world.

› Multiple device compatibility is offered with Power BI, and many interviewed organizations praise the ability to consume data on iOS ports.

› Natural query lends itself to data exploration. Being intuitive and highly available, all users are able to perform queries and use data in innovative new ways that otherwise would not have been possible.

› Open community support for visualizations furthers the power of Power BI — enabling the interpretation of data in a democratized way using methods from across organizational borders.

In all, Power BI is primed for the next phase of data consumption — the age where organizations are built foundationally as data-driven operations.

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

TABLE 10
Benefit And Cost Risk Adjustments

Benefits	Adjustment
End user time waste avoidance	↓ 20%
Time-to-value improvement on business outputs	↓ 50%

Costs	Adjustment
Data preparation costs	↑ 20%

Source: Forrester Research, Inc.

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

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

› End users often waited significant amounts of time to obtain the data necessary to develop insights and perform necessary day-to-day tasks, averaging 15 minutes daily. Due to a degree of regularity in the types of data requests in the existing environment, we found that some users had become accustomed to the prolonged data pulls for certain instances and adjusted their processes to be productive during wait times. As this varied between the various types of reports and has little bearing for quicker data pulls, we have down-adjusted this benefit category by 20% in the interests of conservatism.

› Time-to-value is a function of the overall value that organizations translate from data insights and availability. While the composite organization presented is a likely scenario based upon interviews and a survey across the US and the UK, it is just one possible scenario. Two factors can contribute to a wide range in the actual value realized: 1) specific verticals of the organization may realize different product value from the availability of data and 2) organizations have different expectations for internal rates of return on data-driven projects. With these possibilities in mind, this study has risk-adjusted the time-to-value benefit category down by 50%.

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

› Organizations showed a varying degree of adoption for data types and data sources to be presented in Power BI. In addition, organizations were in varying states of maturity in existing infrastructure. To compensate for some organizations that have varying types of data in their data pools, or ones that are less prepared for the data cleansing and preparation process for Power BI consumption, a risk adjustment of 20% to reflect a possible upswing in costs has been applied to this cost category.

Table 10 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates for the composite organization. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

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Financial Summary

The financial results calculated in the Benefits and Costs sections can be used to determine the ROI and NPV for the composite organization's investment in Power BI.

Table 11 below shows the risk-adjusted ROI and NPV. These values are determined by applying the risk-adjustment values from Table 10 in the Risks section to the unadjusted results in each relevant cost and benefit section.

FIGURE 6

Cash Flow Chart (Risk-Adjusted)
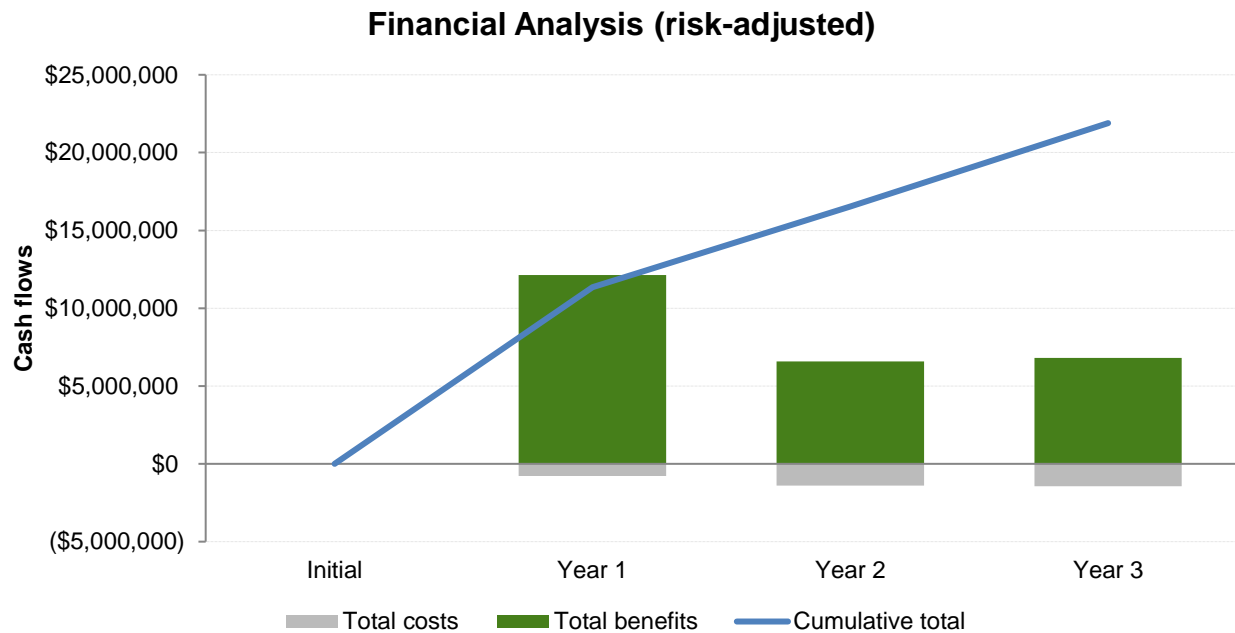
Source: Forrester Research, Inc.

TABLE 11

Cash Flow (Risk-Adjusted)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	$0	($780,210)	($1,407,038)	($1,442,829)	($3,630,077)	($2,956,142)
Total benefits	$0	$11,703,450	$6,731,550	$6,958,868	$25,393,868	$21,431,065
Net benefits	**$0**	**$10,923,240**	**$5,324,513**	**$5,516,038**	**$21,763,791**	**$18,474,923**
ROI						**625%**

Source: Forrester Research, Inc.

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Microsoft Power BI: Overview

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

Power BI is a business analytics service that enables you to see all your data through a single pane of glass. Live Power BI dashboards and reports show visualizations and KPIs from data residing both on-premises and in the cloud, providing a consolidated view across your business regardless of where your data lives. Power BI also provides native mobile apps for Windows, iOS, and Android, enabling access to live, real-time dashboards and reports from any device.

AT A GLANCE

› **Connect to all the data around you.** Quickly clean, transform, and mash up multiple data sources on-premises, in the cloud, or both to create powerful models and visually impactful, interactive reports.

› **Use live dashboards and reports.** Live dashboards provide a 360-degree view of your business. Track your data in real time with support for streaming data, and pin new visualizations and KPIs to monitor performance.

› **Use mobile apps.** With native apps for iPad, iPhone, Android, and Windows devices, stay up to date with data-driven alerts, and share live reports and dashboards directly from your mobile device.

› **Do powerful self-service analysis.** Build powerful models and then visually explore your data on a freeform canvas and through a drag-and-drop experience while creating visually impactful, interactive reports.

› **Experience your data in new ways.** Ask questions in natural language and get super-fast answers in the form of charts and graphs. Automatically discover predictive patterns, associations, and trends in your data.

› **Deploy quickly with a hybrid solution.** Get a cloud-based BI solution without having to move your data. Create a secure, authenticated, live connection to on-premises data sources.

› **Seamlessly integrate with other Microsoft services.** Create Office 365 Groups so that only the members of the group can view and edit specific reports and dashboards. Publish and connect to Power BI directly from Excel.

Analytics solutions for your whole organization

See your whole business on one dashboard

With Power BI on the web, monitor your important data from across your organization and from all of the apps you rely on.
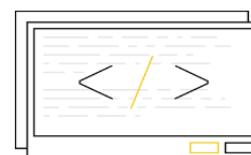
Create stunning interactive reports

Power BI Desktop gives you tools to transform, analyze, and visualize data. Share reports in seconds with your organization using Power BI on the web.

Do consistent analysis across your organization

With SQL Server Analysis Services on-premises and Azure Analysis Services in the cloud, you can easily build robust, reusable data models. Publish Power BI reports to SQL Server Reporting Services.

Easily embed BI and analytics in your app

Deliver stunning interactive reports in your app with the Power BI Embedded service.

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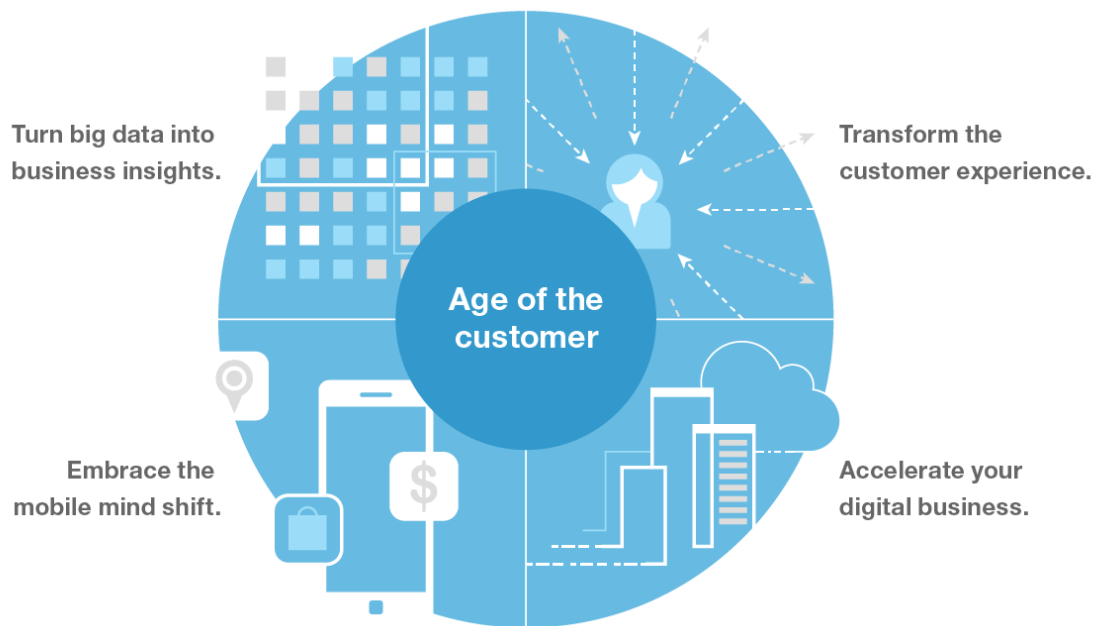
Forrester has a four-part blueprint for strategy in the age of the customer, including the following imperatives to help establish new competitive advantages:

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.

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Appendix C: Glossary

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

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

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

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

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

A NOTE ON CASH FLOW TABLES

The following is a note on the cash flow tables used in this study (see the example table below). The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1. Those costs are not discounted. All other cash flows in years 1 through 3 are discounted using the discount rate 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.

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Appendix D: Supplemental Material

Related Forrester Research

"The Insights-Driven Business," Forrester Research, Inc., July 27, 2016

"Better Content Insights From Better Dashboards," Forrester Research, Inc., December 8, 2016

"Insights-Driven Businesses See Better Results," Forrester Research, Inc., March 25, 2016

"What You Need To Go From Data Rich To Insights Driven," Forrester Research, Inc., November 14, 2016

Appendix E: Endnotes

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

[2] Forrester's research has indicted that insights-driven firms are 39% more likely to report year-over-year revenue growth of 15% or more. Source: "What You Need To Go From Data Rich To Insights Driven," Forrester Research, Inc., November 14, 2016.

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