

A Forrester Total Economic Impact™
Study Commissioned By IBM
March 2020

The Total Economic Impact™ Of IBM Watson Assistant

Cost Savings And Business Benefits
Enabled By Watson Assistant

Table Of Contents

Executive Summary	1
Key Findings	2
TEI Framework And Methodology	4
The Watson Assistant Customer Journey	5
Interviewed Organizations	5
Key Challenges	5
Why IBM Watson Assistant?	6
Use Cases	6
Composite Organization	7
Analysis Of Benefits	8
Customer Conversation Containment Savings	8
Consolidation Of Internal Help Desk, IT, And HR Agents	10
Increased Efficiency From Agent Assist	11
Correct Conversation Routing Savings	12
Unquantified Benefits	14
Flexibility	16
Analysis Of Costs	17
IBM Licenses	17
Internal Labor Costs	18
Conversation Analysts	19
Professional Services Fees	20
Financial Summary	22
Appendix A: Total Economic Impact	23
Appendix B: Endnotes	24

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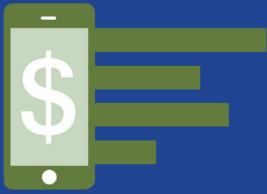
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Executive Summary

Key Benefits



Savings of \$5.50 per contained conversation:

\$13.0 million



Correct routing savings:

\$6.7 million



Internal help desk consolidation:

\$3.2 million



Increased agent efficiency

\$1.0 million

Conversational artificial intelligence (AI) is no longer science fiction, but an increasingly mainstream capability with which consumers interact daily in their homes, workplaces, and on the go. Usually known as bots, chatbots, or virtual assistants, this conversational AI makes up a crowded and confusing enterprise market, leading buyers with many “bot” versions that may not talk to each other effectively.

Watson Assistant is IBM’s chatbot that allows users to interact with business systems using natural human language. IBM has married a technically robust conversational platform with developer and line-of-business-friendly tools with the breadth of the broader Watson portfolio.¹ Enterprises can build and train the AI solution to serve a wide range of use cases across applications, devices, and channels.

IBM commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying Watson Assistant. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Watson Assistant on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed several customers with years of experience using Watson Assistant across three use cases: customer self-service, employee self-service, and agent assist. Prior to using Watson Assistant, the customers provided traditional human-serviced chat, email, and call services. These methods were slow, clunky, and costly. The interviewed organizations struggled with routing questions efficiently to appropriate agents, high volumes of simple queries, and long response times. These factors coalesced into poor customer and employee experience. Interviewees invested in Watson Assistant with the goals of reining in costs with lower cost digital channels, empowering agents with a knowledge assistant, and enabling self-service for employees and customers — all without negatively impacting experience.

Composite. Forrester developed a composite organization based on data gathered from customer interviews to reflect the Total Economic Impact that Watson Assistant could have on an organization. The composite represents organizations that Forrester interviewed and is used to present the aggregate financial analysis in this study. All values are reported in a risk-adjusted, three-year present value (PV) unless otherwise indicated.

The composite organization in this study has these characteristics:

- › Revenue: \$10 billion.
- › Geography: Headquartered in Europe with worldwide operations.
- › Employees: 40,000.
- › Monthly conversations: 1 million.

Key Findings

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

- › **The organization achieves cost savings of \$5.50 per contained conversation with Watson Assistant.** Continual training of Watson drives increasing containment rates each year, providing growing cost savings. Over three years and a conservative 25% containment rate, the cost savings is worth more than \$13.0 million to the organization.
- › **Employee self-service drives 40% containment and reassignment of 40 HR and IT help desk agents.** Watson helps contain internal questions, enabling the organization to consolidate internal help desk agents and saving \$3.2 million over three years.
- › **Chatbot-augmented agents reduce handle time by 10%.** Customers measured agent productivity improvements in several ways, such as the ability to handle greater volumes of chats with the same number of agents and avoiding the costs of additional hires. One organization used Watson Assistant to augment its sales team, providing greater capacity to the agents and driving incremental revenue. After a single year of deployment, the improvement is worth over \$1.0 million to the composite organization.
- › **Correctly routed conversations save \$7.75 per correctly routed call.** By using chatbots to gather upfront information, Watson Assistant routes calls to the appropriate human being, when escalation is required, more effectively, reducing transfers and time-to-resolution. The improved routing is worth nearly \$6.7 million over three years.

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

- › **Creating a self-serve, digital-first experience provides a competitive advantage.** Early adoption of chatbot technology allows early testing and improvements, leading to more sophisticated use cases and a competitive advantage for an organization that does it well.
- › **Agent experience improves.** When a brand provides tools to help its agents, the agents recognize it, and it improves their performance. And happier customer service agents mean happier customers and happier shareholders. Employers can reduce burnout and employee turnover when they help employees balance their job demands with technology and training.² But the improved experience comes not just from the agent-assist use cases: If customers are correctly routed, they are less frustrated or angry; that, in turn, produces a better agent experience.
- › **Watson Assistant can be integrated into the channels most used by customers.** Customers prefer to engage with Watson Assistant on mobile because of the ease and convenience. However, Watson can integrate across multiple channels: web, phone, messaging, text, and more.
- › **Watson adds capacity worth “easily 20 to 30 people.”** One organization was able to add additional chat channels without hiring additional headcount to handle the increased volumes.



“The continued investment that IBM is making in Watson and improving the capability is huge. It has helped us keep pace with a rapidly changing market.”

*Head of digital supply chain innovation,
financial services*



ROI
337%



Benefits PV
\$23.9 million



NPV
\$18.4 million



Payback
<6 months



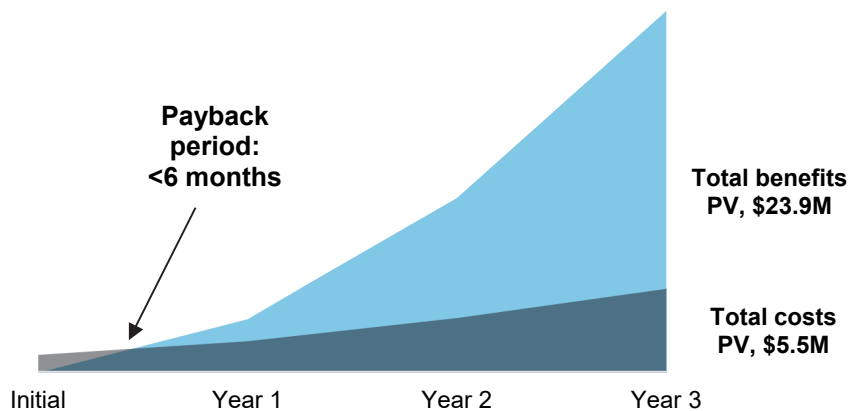
“I think there have been massive benefits for everyone involved. It’s a win for customers; they get [a] more consistent, faster response. It’s good for us and our staff and ultimately good for the industry.”

*Head of digital supply chain innovation,
financial services*

- › **Constant, 24x7x365 automated coverage reduces time-to-resolution and provides help to customers when they need it.** The organizations improved their customer experience by providing automated assistance to customers during off-hours for agents.
 - › **Brand perception improves when combined with AI.** Marketing campaigns highlighting technological advancement and AI use can shift public sentiment, driving the public to identify the companies as more innovative.
- Costs.** The best way to determine actual cost is to speak with a Watson Assistant sales representative. The interviewed organizations experienced the following risk-adjusted PV costs, as modeled by the composite:
- › **IBM licenses.** The composite organization uses the standard Watson Assistant pricing plan. Each year, the license grows to suit the additional use cases and increased conversation volume. The three-year present value of IBM licenses is \$188,791.
 - › **Internal labor costs for implementing workflows.** Internal application and QA engineers dedicate 40% of their time to workflow implementation for several months. The three-year present value of internal labor costs is \$306,861.
 - › **Conversation analysts.** Dedicated conversation analysts maintain and improve Watson Assistant and identify new opportunities and channels for additional use case deployment. Salaries are staggered due to a ramp-up in staff over the three-year period and are tailored to the needs of the composite organization. Over three years and a total of 15 conversation analysts, the cost is worth \$4.3 million.
 - › **Professional services fees.** The organization maintains a close partnership with IBM as it continues to expand its use cases each year. IBM “trains the trainer” with expert labs and support resources. The three-year cost of IBM professional services to the organization is \$660,883.

Synopsis. Forrester’s interviews with four existing customers and subsequent financial analysis found that an organization based on these interviewed organizations experiences benefits of \$23.9 million over three years versus costs of \$5.5 million, adding up to a net present value (NPV) of \$18.4 million and an ROI of 337%.

Financial Summary



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 Framework And Methodology

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing Watson Assistant.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that Watson Assistant can have on an organization:



DUE DILIGENCE

Interviewed IBM stakeholders and Forrester analysts to gather data relative to Watson Assistant.



CUSTOMER INTERVIEWS

Interviewed four organizations using Watson Assistant to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

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



FINANCIAL MODEL FRAMEWORK

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



CASE STUDY

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

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by IBM 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 IBM Watson Assistant.

IBM 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.

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

The Watson Assistant Customer Journey

BEFORE AND AFTER THE WATSON ASSISTANT INVESTMENT

Interviewed Organizations

For this study, Forrester conducted four interviews with Watson Assistant customers. Interviewed customers include the following:

INDUSTRY	HEADQUARTERS	INTERVIEWEE	SIZE
Software	North America	Senior product manager	\$2 billion, 10,000 employees
Financial services	Europe	Head of digital supply chain innovation	\$12 billion, 71,000 employees
Financial services	South America	AI manager, research and innovation	\$74 billion, 109,000 employees
Automotive	Europe	Product owner	\$185 billion, 300,000 employees

Key Challenges

Before the investment in Watson Assistant, interviewees relied on human engagement to answer queries through traditional call, chat, email, and face-to-face channels. These methods created the following challenges:

- › **Limited service hours created a poor customer experience.** In the absence of global contact centers, interviewees noted that their customers' experiences suffered when agents were not on duty. The senior product manager of a software organization said, "With the chat, the challenge is that it's not 24x7." The head of digital supply chain innovation noted, "Everyone calls at midnight when the telephony service is not available, and that is a pain point."
- › **Multistep routing journeys and long wait times created a frustrating customer experience.** Everyone has experienced the dreaded "let-me-transfer-you" response —sometimes repeatedly. With each new agent, customers must reexplain their questions, and frustration soars. The senior product manager of a software company said, "Depending on how customers reach the agent, then there's a transfer issue for cases and generally there is a long turnaround to get answers." Interviewees emphasized how unfortunate this is, especially because most of the content customers ask for is readily available online. Not only does this create a poor experience for customers, but it also drives up costs to the business.
- › **Traditional call centers were costly and difficult to scale to new channels.** One of the many challenges facing traditional call centers is that humans can only handle one call at a time, making phone interactions one of the most expensive service channels.³ The head of digital supply chain innovation explained: "It's very costly for us to have branches and have staff and telephone centers managing simple queries. And so that's one pain point." Other cost drivers include high agent turnover, necessary trainings, and the complexity of existing data discovery processes.

"If customers are calling, if our queues are long in telephony, then that's not good customer experience".

Head of digital supply chain innovation, financial services



- › **Agents did not have the right knowledge and data.** Delayed access to knowledge caused frustrations for both agents and customers and increased the time-to-resolution. Agents needed access to information more quickly to reduce wait times.

Why IBM Watson Assistant?

Interviewees evaluated artificial intelligence assistant solutions and noted the following reasons for choosing Watson Assistant:

- › **Freedom to tailor Watson Assistant to multiple use cases.** Interviewees valued the ability to tailor Watson Assistant to a variety of use cases deployed in any sequence.
- › **Digital experience and cost savings.** The head of digital supply chain innovation at a financial services organization said: “First and foremost, our decision to go with Watson was about customer experience and having a digital experience of our customers to create that better experience. Secondly, with Watson, we could reduce costs through better tooling and less infrastructure. Those were the two key drivers to deliver Watson Assistant.”
- › **Features and technical product capabilities.** Interviewees highlighted IBM’s technical abilities, feature deployment options, and integrations as decision drivers. They emphasized features such as dialogue tree management, Watson’s ability to use natural language to trigger dialogue, and the ability to offer multiturn dialogue design.
- › **Ability to deploy agilely.** The head of digital supply chain innovation shared: “We didn’t have a lot of time, and [alternatives] didn’t align to our philosophy of testing, learning, building, scaling, and then activating as we went. So, we selected IBM based on that criteria.”

“Watson came a time when we were looking to disrupt our sales and when open banking was disrupting the industry and the fintechs were emerging. Our CEO recognized that we needed to innovate to continue existing in a world where change is constant.”

Head of digital supply chain innovation, financial services



Use Cases

The interviewed organizations had similar, though somewhat varied Watson Assistant deployments. The artificial intelligence research and innovation manager of a financial services organization was an early adopter of Watson Assistant. He shared with Forrester: “The conversations began with IBM to understand Watson and see if we could find a use case. And because artificial intelligence was such a new technology, we didn’t want to have a use case that would be exposed directly to customers. So, we found the internal use case for employees.” Other interviewees focused their initial deployments on externally facing use cases. The three main categories of use cases covered in this study are as follows:

- › **Agent assist.** In the report “Stop Trying To Replace Your Agents With Chatbots,” Forrester highlights agent assist as a preferred method for blending customer service automation and humans: “Using chatbots internally first is a good starting point for many firms just setting out on their chatbot journey. Your agents make an ideal and captive test bed for a bot before you expose it to your customers.”⁴
- › **Customer self-service.** This use case deploys a customer-facing chatbot that can respond and contain simple queries, search for complex answers from content or a knowledge base, and properly route to a human.

“We were really looking for a scalable business model that can interact with our customers.”

Senior product manager, software



- › **Employee self-service.** This use case is also an internally facing utilization of Watson and is aimed at answering employee questions. The organizations interviewed for this study used Watson to augment HR and IT help desks.

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 by the Watson Assistant investment. The composite organization is representative of the four companies that Forrester interviewed and is used to present the aggregate financial analysis in the next section. The composite organization that Forrester synthesized from the customer interviews has the following characteristics:

Description of composite. The global enterprise is headquartered in Europe, generates \$10 billion in revenue, and has 40,000 employees. The organization is in a highly regulated industry with nuanced products.

Deployment characteristics. The first Watson Assistant use case deployed by the organization is for customer-self-service. The organization handles 1 million customer conversations each month about its products and services. In the second year of the Watson Assistant investment, the composite deploys its secondary use case, an employee-assist bot for HR and IT questions, augmenting its internal help desk team of 100 agents. The composite deploys its third use case in the third year of the investment to provide knowledge to a subset of 150 internal agents.



Key assumptions

1M monthly conversations
\$6.00 avg. cost per call
\$13.75 cost of redirected call
100 HR/IT helpdesk agents
150 agents

Objective Of Investment

- › Enable a digital-first experience.
- › Improve customer experience.
- › Drive companywide innovation.
- › Provide real-time, scalable customer service and enable self-service.
- › Improve routing.
- › Reduce costs with better tooling and less infrastructure.

Analysis Of Benefits

QUANTIFIED BENEFIT DATA AS APPLIED TO THE COMPOSITE

Total Benefits						
REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	Customer conversation containment savings	\$1,584,000	\$4,989,600	\$9,900,000	\$16,473,600	\$13,001,653
Btr	Consolidation of internal help desk, IT, and HR agents	\$0	\$2,040,000	\$2,040,000	\$4,080,000	\$3,218,633
Ctr	Increased efficiency from agent assist	\$0	\$0	\$1,350,000	\$1,350,000	\$1,014,275
Dtr	Correct conversation routing savings	\$2,276,640	\$2,656,080	\$3,225,240	\$8,157,960	\$6,687,951
	Total benefits (risk-adjusted)	\$3,860,640	\$9,685,680	\$16,515,240	\$30,061,560	\$23,922,512

Customer Conversation Containment Savings

Organizations invested in Watson Assistant to drive cost efficiencies and improve customer experience (CX) by providing real-time scalable customer service and self-service options. Interviewees used Watson Assistant to help reach this goal by using Watson as the initial touchpoint for customers through digital channels. Enterprises trained Watson to answer simple queries, direct customers to knowledge content, clarify intent, or hand off the interaction to the appropriate human agent.

Interviewees measured the success of these efforts through containment rates. The head of digital supply chain innovation of a financial services organization commented: “If you take Watson in terms of answering customers’ questions, we would measure containment as the number of conversations that are answered satisfactorily without any human involvement, and we’re around 40% in Watson. We probably get around 800,000 to a million conversations a month, primarily in the mobile app.”

Digital channels are a more affordable way for companies to interact with their customers because, while a single agent can handle one call at a time, a chat agent can handle more than two interactions at the same time. A chatbot, like Watson, can handle hundreds of customer interactions simultaneously.⁵ The head of digital supply chain innovation told Forrester: “Customers can now handle most things through either the mobile app or chat. And people prefer chat for many reasons. One, it’s more convenient because they can use it on the train, or they can use it while they’re at work. And two, it’s not intrusive like if you were on the phone and disturbing other people.”

To capture the experiences of the interviewees, Forrester assumes for the composite organization:

- › Customer self-service is the composite’s primary use case and is deployed in its first year of investment.
- › The composite fields 1 million questions monthly from its customers.
- › The composite begins its AI journey by starting with simple questions and limited use cases, so 20% of product lines are covered in Year 1, 35% in Year 2, and 50% in Year 3.

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of more than \$23.9 million.

“All the generic questions are answered; around 94% to 95% of them are kept within the Watson solution.”

Head of digital supply chain innovation, financial services



- › Within the trained product lines, Watson is trained to respond to an increasing number of intents each year. The percentage of conversations trained is 30%, 45%, and 50% in Years 1, 2, and 3, respectively.
- › Of the deflected conversations, Watson effectively answers 50%, 60%, and 75% in Years 1, 2, and 3, respectively.
- › The average cost of a human response is \$6.00 while a digital response is \$0.50.

The savings from conversation containment will vary:

- › Deflection can be very difficult to measure. One way organizations measure deflection is by analyzing repeat contact (does a customer connect with a chatbot and then connect again?). This measurement is highly nuanced and can change based on recontact windows (24 hours, a week, etc.), channel, or case type.
- › Organizations may choose to train Watson on all product lines, which would increase the containment rate and subsequent benefit figure.
- › Forrester calculates annual customer conversations as static year over year to remain conservative. It is likely that annual conversations would increase year over year.

To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year risk-adjusted total PV of \$13,001,653.

“The sooner you start, the sooner you get to a relevant call deflection number. Watson Assistant has a huge impact on that.”

Product owner, automotive



Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

Customer Conversation Containment Savings: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Total annual customer conversations	1M per month	12,000,000	12,000,000	12,000,000
A2	Percentage of conversations regarding product lines covered by Watson	Interviews	20%	35%	50%
A3	Percentage of conversations trained	Interviews	30%	45%	50%
A4	Conversation volume deflected to Watson	$A1 * A2 * A3$	720,000	1,890,000	3,000,000
A5	Effective rate for Watson response	Interviews	50%	60%	75%
A6	Conversation volume successfully contained by Watson	$A4 * A5$	360,000	1,134,000	2,250,000
A7	Cost difference between human response and automated response	\$0.50 for digital, \$6 for human	\$5.50	\$5.50	\$5.50
At	Customer conversation containment savings	$A6 * A7$	\$1,980,000	\$6,237,000	\$12,375,000
	Risk adjustment	↓20%			
Atr	Customer conversation containment savings (risk-adjusted)		\$1,584,000	\$4,989,600	\$9,900,000

Consolidation Of Internal Help Desk, IT, And HR Agents

As interviewees realized the success of the customer self-service component of Watson, they explored additional uses for chatbots, including training a chatbot for employee self-service for technology issues and human resources questions. The head of digital supply chain innovation of a financial services organization shared, “We have Watson Assistant not only deployed for customers; we have it deployed more broadly where it’s also helping our HR and IT staff as well.” The interviewed automotive company created an internal use for Watson in its HR department, placing Watson as the first line of defense for 40,000 HR questions each year; as a result, the company reassigned 10 agents to other value-added tasks.

To capture the impact of these experiences, Forrester assumes for the composite organization:

- › The organization deploys the employee self-service use case in the second year of the Watson investment.
- › The containment rate for internal requests is 40%, allowing for the reallocation of 40 FTEs who can focus on more difficult problems and strategy.
- › The burdened annual salary for an internal help desk resource is \$60,000.

The savings from consolidating internal help desks will vary with:

- › Containment rates of internal help requests.
- › Number and cost of resources supporting internal help desk requests.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of \$3,218,633.

Consolidation Of Internal Help Desk, IT, And HR Agents: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Number of internal help desk agents for IT and HR	Composite	-	100	100
B2	Containment of internal requests	Interviews	-	40%	40%
B3	Number of FTEs reallocated	B2*B1	-	40	40
B4	Burdened salary of HR/IT resources	Composite	-	\$60,000	\$60,000
Bt	Consolidation of internal help desk, IT, and HR agents	B4*B3	\$0	\$2,400,000	\$2,400,000
	Risk adjustment	↓15%			
Btr	Consolidation of internal help desk, IT, and HR agents (risk-adjusted)		\$0	\$2,040,000	\$2,040,000

Increased Efficiency From Agent Assist

Forrester describes four approaches to augmenting agents with AI in “Stop Trying To Replace Your Agents With Chatbots.”⁶ One of the recommendations is to arm agents with an internally facing chatbot that serves up tailored knowledge and customer context, which allows agents to answer complex questions more quickly and more consistently. The agents provide a personalized experience while the bot provides data — all without the customer ever realizing the presence of a chatbot.

This use case was critical for the success of the interviewed financial services organizations’ agents in a highly regulated industry. The artificial intelligence research and innovation manager shared: “Norms and regulations are very complex, and there are details that the employees and managers don’t have. We have over a thousand different products and services or variations. So it’s very hard for the individual to know everything.”

Prior to using Watson Assistant, the agents turned to an internal call center to ask regulatory questions. Customers would be placed on hold while the agent turned to the internal help desk, which then searched for the information to answer customer questions. The AI research and innovation manager noted: “The number of calls to the internal call center reached about 10,000 calls a day. That led up to 10-minute wait times just for simple answers.” This was a time-consuming process that created a poor experience for both the agent and the customer. The artificial intelligence research and innovation manager stated, “So, that was a perfect use case for our new Watson interface, which would be a chat interface on the agent’s desktop, so they could ask any kind of question that’s generic enough that Watson could answer.”

To capture these experiences, Forrester assumes for the composite organization:

- › The composite deploys the agent assist use case in the third year of its Watson deployment.
- › The composite has 150 agents using the internal chatbot.
- › Average handling time for a call was initially 60 minutes. The lengthy calls are due to the highly regulated nature of the industry.
- › Agents decrease their handling time by 10%.
- › The burdened annual cost of these agents is \$100,000.

The performance improvements of agents will vary by organization:

- › Organizations may choose to deploy an internal-facing chatbot as their initial use case, realizing these benefits sooner.
- › With the average handling time of interactions before Watson and the complexity of information agents must gather to answer a customer query.
- › With the burdened cost of agents.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of \$1,014,275.

“I think it’s very important to have a human that people are talking to. But no matter how much you train a person; they would not be familiar with 100% of the nuance that’s involved to sell a mortgage. Watson has been very helpful to our frontline person who’s dealing with the customer on a potential mortgage to answer these questions immediately as opposed to telling the customer, ‘Let me look into that; I’ll get back to you.’”

Artificial intelligence research and innovation manager, financial services



Increased Efficiency From Agent Assist: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Number of agents	Composite	-	-	150
C2	Average handling time for interaction	Initially 60 mins	-	-	54
C3	Performance improvement of interaction	$(60-54)/60$	-	-	10%
C4	Impact on agent productivity (avoided FTEs)	$C1 * C3$	-	-	15
C5	Burdened cost of internal agent	Composite	-	-	\$100,000
Ct	Increased efficiency from agent assist	$C4 * C5$	-	-	\$1,500,000
	Risk adjustment	↓10%			
Ctr	Increased efficiency from agent assist (risk-adjusted)		\$0	\$0	\$1,350,000

Correct Conversation Routing Savings

A key challenge for interviewees in their prior environments was costly and inefficient routing. The senior product manager of a software company told Forrester: “The challenge is really about routing. For instance, the customer might say, ‘Oh, you know, I have a login issue.’ But the login issue can be the login issue before you purchased and then can be login issue after you purchase, and then those are actually handled by different teams because the process is very different. So, customers don’t necessarily categorize or self-select into the right queue.”

Forrester describes the value of front-end chatbots when it comes to aiding with routine tasks: “The chatbot gathers all relevant information, authenticating the customer, determining the customer’s goal, and then handing the interaction off to a human agent to resolve.”⁷ The senior product manager of a software company noted this front-end data gathering has had a significant impact on relieving the routing issue challenges of the prior environment.

The software organization uses Watson to gather the upfront information and clarify intent and then correctly routes the customer to the appropriate human. The senior product manager noted the most value his organization has incurred is through Watson Assistant’s ability to route calls to the proper person. He said: “Having them answer a single question then brings them closer to either content, to human, anything that can shorten their turnaround. This brings big values because it means that it reduces the internal transfer cost. That’s the biggest value we’ve gained so far.”

To capture the value of proper routing of customer queries noted by interviewees, Forrester assumes for the composite:

- › The impact on the organization for proper routing begins in Year 1.
- › Prior to Watson Assistant, 20% of calls were improperly routed.
- › The average cost of a misrouted call is \$13.75 while a properly routed call is \$6.00.

“For some of our support agents, they are super expensive; their hourly rate could be \$200. And if they spend time on looking into the details and then have to retransfer, that can easily be \$50 for that particular ineffective case.”

Senior product manager, software



- › As Watson’s training improves, the success rate of transferred calls increases. The success rate is 60%, 70%, and 85% in Years 1, 2, and 3, respectively.
- › As the investment in Watson does not occur in a vacuum, it is possible that other technology investments, process changes, and improvements occur that could impact the cost savings of proper routing. For this reason, Forrester assigns 30% of the value of this benefit to Watson Assistant.

The value of proper routing will vary by organization for several reasons:

- › Rates of conversation misrouting in the prior environment may be much higher than 20% depending on the customer service structure and complexity. Interviewees noted misrouting calls of up to 40%.
- › The average cost to resolve calls will vary greatly by organization and will have a significant impact on the outcome of the calculation.
- › Proper routing success rates will also vary by organization depending specifically on the sophistication of Watson Assistant programming and the complexity of customer questions.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of \$6,687,951.

Correct Conversation Routing Savings: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
D1	Total annual customer conversations	Composite	12,000,000	12,000,000	12,000,000
D2	Percentage of conversations through calls	Composite	80%	80%	80%
D3	Total annual customer conversations made through calls	D1*D2	9,600,000	9,600,000	9,600,000
D4	Percentage of conversations misrouted before Watson	Interviews	20%	20%	20%
D5	Number of conversations requiring transfer	D3*D4	1,920,000	1,920,000	1,920,000
D6	Average cost to resolve misrouted call by human	Interviews	\$13.75	\$13.75	\$13.75
D7	Average cost to resolve correctly routed call by human	Interviews	\$6.00	\$6.00	\$6.00
D8	Incremental savings from routed contacts	D6-D7	\$7.75	\$7.75	\$7.75
D9	Transfer success rate	Assumption	60%	70%	85%
D10	Attribution rate	Assumption	30%	30%	30%
Dt	Correct conversation routing savings	D5*D8*D9*D10	\$2,678,400	\$3,124,800	\$3,794,400
	Risk adjustment	↓15%			
Dtr	Correct conversation routing savings (risk-adjusted)		\$2,276,640	\$2,656,080	\$3,225,240

Unquantified Benefits

In addition the benefits quantified above, interviewees cited additional positive impacts on their organizations that were not quantified for this study.

- › **Watson provides a competitive advantage.** The head of digital supply chain innovation at a financial services organization was an early adopter of Watson Assistant and observed: “First to market always tends to give you a competitive advantage. I think that’s probably worth noting. I think creating a self-serve, digital-first experience gets us a competitive advantage.”
- › **Fewer repetitive tasks mean happier employees.** By decreasing repetitive tasks and providing technology that makes an agent’s life easier, interviewees noted higher employee engagement and happiness. The senior product manager of a software company said, “Employees are actually the most excited about Watson because they don’t have to do the repetitive stuff anymore.” When Watson handles the simple, repetitive questions from customers, agents can focus on the complex questions. The head of digital supply chain innovation mentioned: “The people we have now are helping with the more complex questions, and they love their jobs because they are not dealing with the routine stuff. It’s very boring to keep answering a question over and over again. Now they solve problems that are more challenging. People love that, as opposed to the rudimentary work.”

Interviewees measured this improved satisfaction through annual surveys. The head of digital supply chain innovation told Forrester: “The scores have been going up dramatically. We’ve seen double-digit increases across all the categories...how much of that is due to Watson, it’s hard to pinpoint. But clearly, employees are feeling better about working in the environment they are in.”

- › **Watson enables expansion to digital channels that customers want to use.** Interviewees integrated Watson Assistant into digital channels like mobile apps, social media messaging apps, and websites to let their customers interact through their preferred channels. The head of digital supply chain innovation commented: “We have more people using our mobile app than our online web pages since we serviced IBM Watson and the chat functionality on the mobile app. So our customers are able to reach us when they’re sitting on the bus or the train on the way home from work or in the evening, when they’re sitting in the house — rather than having that disruption of calling someone or having to take some time off to go and see someone. They’re able to utilize Watson anytime, anywhere from their mobile devices, which is never far from their hand.”
- › **Global 24x7x365 coverage reduces time-to-resolution.** The senior product manager at a software company told Forrester: “Having an automated solution definitely makes the solution turnaround much faster. It used to be that if a local customer from another country tried to reach out to support, because of the time zone difference, they would need to wait longer because it’s in an hour that’s not working for us.”

› **Enterprises can handle greater volumes without additional hiring.**

The head of solutions hypothesized that the additional capacity that agents can handle with the help of Watson Assistant was worth “easily 20 to 30 people.” His organization was able to add additional chat channels without hiring additional headcount to handle the increased volumes. He noted: “Chat is a bit more efficient than phone because a typical person can handle multiple chats at the same time. . . . Phone is one at a time, so chat is a more efficient channel than phone, but you still need people to handle it.” The head of digital supply chain innovation shared: “The largest cost for our organization is people cost. That’s by far where we spend the majority of our money. What Watson is allowing us to do is to reduce growth in terms of people growth while being able to service customers consistently. If we did not have Watson, we would be spending millions in training and hiring additional people to support customers across the growing number of channels.”

- › **Watson enables brand awareness as a tech leader.** The manager of artificial intelligence research and innovation highlighted the impact to public perception driven by his company’s promotion of Watson. He said: “We’ve seen our company being identified a lot more with innovation than it was in the past. And we believe that Watson is behind that, because it was in TV commercials in the past year or so. People now see us as a more innovative company. They enjoy having this interaction with artificial intelligence.” This experience could potentially be measured by new customer acquisition growth, new revenue, and increased customer satisfaction ratings. This benefit also comes with the cost of advertising.



Organizations can reduce reliance on outsourced support and focus on internal call centers, which are more involved and create a better experience.

Flexibility

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

- › **Nimble time-to-market that motivates new use case development.** The manager of artificial intelligence research and innovation at a financial services organization told Forrester, “Implementations after the first one were sped up because of our expertise and the tools that IBM built for us.” The ease of deploying new use cases and workflows motivated customers to continue expanding their Watson Assistant use cases across their organizations.
- › **Voice compatibility.** In addition to digital channels like chat, Watson can also be deployed as an automated telephony system or interactive voice response (IVR). This allows customers to ask questions in natural language while avoiding robotic call center menus and long wait holds.
- › **Ability to extend reach across channels.** Customers have the flexibility to deploy Watson Assistant on a website, in a mobile app, on the phone, in messaging channels, and to customer service tools. The product owner of an automotive company said: “Building a bot is cheap, so with Watson Assistant we were able to let the business units be more brave and build more bots, faster, with less money. With every single bot we add to our platform, there are two additional business units in the background that consider also building a bot. We’ve had a huge number of requests.”
- › **Additional languages.** Watson Assistant supports 13 languages, so customers can communicate more effectively across the globe.
- › **Integration with third-party tools.** Watson Assistant can be integrated with a variety of third-party tools like file-sharing sites and CRMs.
- › **Ability to choose how and where Watson is deployed.** Hosting options are not limited to the IBM Cloud. Customers have the option to host Watson Assistant on any major cloud player, like Google Cloud Platform, AWS, and Azure or in an on-premises environment.

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

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a future additional investment. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so.

“We are able to build bots much cheaper and faster because of IBM Watson. I am very confident that we can take the numbers we have at the moment and double them.”

Product owner, automotive



Analysis Of Costs

QUANTIFIED COST DATA AS APPLIED TO THE COMPOSITE

Total Costs							
REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Etr	IBM licenses	\$0	\$20,700	\$80,213	\$138,000	\$238,913	\$188,791
Ftr	Internal labor costs	\$124,200	\$93,150	\$62,100	\$62,100	\$341,550	\$306,861
Gtr	Conversation analysts	\$742,500	\$742,500	\$1,485,000	\$2,227,500	\$5,197,500	\$4,318,326
Htr	Professional services fees	\$287,500	\$120,750	\$208,150	\$121,900	\$738,300	\$660,883
	Total costs (risk-adjusted)	\$1,154,200	\$977,100	\$1,835,463	\$2,549,500	\$6,516,263	\$5,474,861

IBM Licenses

The head of digital supply chain innovation at a financial services firm told Forrester, “Watson is scalable and low cost because we are paying per interaction.” At the time of this study, IBM offers five pricing tiers: Lite, Standard, Plus, Premium, and Deploy Anywhere. Descriptions of each tier can be found at <https://www.ibm.com/cloud/watson-assistant/pricing/>.

Forrester worked with IBM to build a licensing structure for the composite organization. The license structure assumes:

- › The composite organization uses the Watson Assistant Standard plan, which charges \$0.0025 USD per message.
- › In Year 1, the composite deploys the customer self-service use case; in Year 2, it adds the employee self-service use case; and in Year 3, it adds the agent assist use case.
- › Messages have direct answers. There are no optical character recognition (OCR) or complex document requirements.
- › The composite does not have CRM, recommendation engine, or other third-party integrations.

The best way to estimate IBM licensing costs is to speak directly with an IBM representative. The license costs will vary by organization with:

- › Number of use cases and volume of conversations.
- › Complexity of conversations and responses.
- › Additional integrations (CRM, recommendation engine, third-party integrations).

To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year risk-adjusted total PV of \$188,791.

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of nearly \$5.5 million.

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

IBM Licenses: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
E1	Customer self-service use case	Composite	-	\$18,000	\$47,250	\$75,000
E2	Employee self-service use case	Composite	-	\$0	\$22,500	\$22,500
E3	Agent assist use case	Composite	-	\$0	\$0	\$22,500
Et	IBM licenses	E1+E2+E3	-	\$18,000	\$69,750	\$120,000
	Risk adjustment	↑15%				
Etr	IBM licenses (risk-adjusted)		\$0	\$20,700	\$80,213	\$138,000

Internal Labor Costs

Customers incurred indirect costs for internal labor to deploy the Watson Assistant use cases. The first use case deployed required on average four months of implementation. Each use case, or “workflow,” deployed subsequently took less time than previous iterations. The head of digital supply chain innovation at a financial services organization explained, “It is fair to say it was 10x less expensive to deploy our second use case than it was for the first use case because of what we learned the first time around.”

To capture the interviewees’ implementation experiences, Forrester assumes for the composite organization:

- › The first implementation takes four months, secondary use case implementation takes three months, and further use case expansion takes two months.
- › For each workflow implementation, six application and QA engineers spend approximately 40% of their time on the Watson Assistant deployment.
- › The burdened annual cost of engineers is \$135,000.

Internal labor costs for implementation will vary by organization based on several factors, like sophistication of existing AI engineers, number and complexity of workflows implemented, and costs of labor. It is possible that implementation times may vary from the assumptions above. To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year risk-adjusted total PV of \$306,861.



Between 2 and 4 months
for workflow implementation

“The initial learning curve was steep. Now, it really depends on the complexity of the workflow, but if it is simple one, it’s generally several weeks or one month to deploy, and it’s not complex anymore.”

Senior product manager, software



Internal Labor Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
F1	Workflow implementation (months)		4	3	2	2
F2	Number of application and QA engineers		6	6	6	6
F3	Application and QA engineers' dedicated time		40%	40%	40%	40%
F4	Application and QA engineers' burdened salary	\$135,000/12 months	\$11,250	\$11,250	\$11,250	\$11,250
Ft	Internal labor costs	$F1 * F2 * F3 * F4$	\$108,000	\$81,000	\$54,000	\$54,000
	Risk adjustment	↑15%				
Ftr	Internal labor costs (risk-adjusted)		\$124,200	\$93,150	\$62,100	\$62,100

Conversation Analysts

Customers were split on how they formed their teams of conversation analysts: Some hired a team to support the new AI efforts while other customers reassigned existing agents into the newly created roles. The conversation engineers or analysts are tasked with ongoing response improvements and exploring new use cases for Watson.

- › The artificial intelligence research and innovation manager of a financial services organization told Forrester: "We have a team of people for our AI center excellence. The majority of them are focused on forward-looking opportunities for expanding Watson's use case more broadly across the multiple channels."
- › The head of digital supply chain innovation for a financial services firm shared how his team works: "Our conversation analysts were trained in terms of how to review and augment answers to ensure that we improve containment rates and improve the customer experience. And what was wonderful about the IBM Watson Assistant deployment was that a number of employees who were contact center agents actually became part of the Watson team to train Watson."

As Watson Assistant expands to new product areas or use cases, the number of conversation analysts also increases. To capture the customer experiences for the composite organization, Forrester assumes:

- › In the first year, there are five conversation analysts. This increases by five each year. Forrester includes 5 analysts in the initial period to conservatively account for the involvement of the conversation analysts prior to the workflow implementations.
- › The fully burdened cost of a conversation analyst is \$135,000.

The cost of conversation analysts will vary by organization, particularly by the number of resources and their burdened costs. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of \$4,318,326.

Conversation Analysts: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
G1	Number of conversation analysts	Interviews	5	5	10	15
G2	Salary of conversation analyst	Composite	\$135,000	\$135,000	\$135,000	\$135,000
Gt	Conversation analysts	G1*G2	\$675,000	\$675,000	\$1,350,000	\$2,025,000
	Risk adjustment	↑10%				
Gtr	Conversation analysts (risk-adjusted)		\$742,500	\$742,500	\$1,485,000	\$2,227,500

Professional Services Fees

Customers utilized the professional services of IBM both for implementation and on an ongoing basis. The head of digital supply chain innovation for a financial services firm said: “Our biggest cost in deployment of Watson Assistant was professional services from IBM, i.e., consultant, i.e., people who use the tool, had experience of deploying it in different parts of other industries. That was how we got going — working hand in hand with IBM. We didn’t hire anyone outside of IBM.” IBM strives to “train the trainer” with expert labs. As a result, the cost for maintaining the original deployment should drop over time.

Forrester worked with IBM to conduct a best-practices recommendation for the composite organization. Any time a customer is adopting a capability as an enterprise, the assumption is that they build a competency within their organization. IBM assumes that AI is no different and therefore assumes self-sufficiency after Year 1.

USE CASE	YEAR 1	YEAR 2	YEAR 3
Customer Self-Service	Watson Business Solution <ul style="list-style-type: none"> - Initial engagement (2 months) - Expertise Connect Standard (3 months): Unlimited access to experts for Q&A. Expertise Connect Advanced <ul style="list-style-type: none"> - Receive 10 hours/week of support. \$15k a month for 7 months. 	Expertise Connect Standard <ul style="list-style-type: none"> - Unlimited online education. \$5k a month for 12 months. 	
Employee Self-Service		Architecture workshop <ul style="list-style-type: none"> - Workshop begins with building the foundations of the new solution, beginning solution design, etc. Weeklong, \$16k. Learn session <ul style="list-style-type: none"> - IBM enablement on Watson services, tools and methodology. 4 days, \$60k. Expertise connect advanced <ul style="list-style-type: none"> - Receive 10 hours of support. \$15k a month for 3 months. 	Expertise Connect Standard <ul style="list-style-type: none"> - Unlimited online education. \$5k a month for 12 months.
Agent Assist			Architecture Workshop <ul style="list-style-type: none"> - Investigate and Plan Speech Integrations and application enhancement requirements Learn session <ul style="list-style-type: none"> - IBM enablement on Watson Speech to Text / Text to Speech services, tools and methodology. 2 days, \$30k.

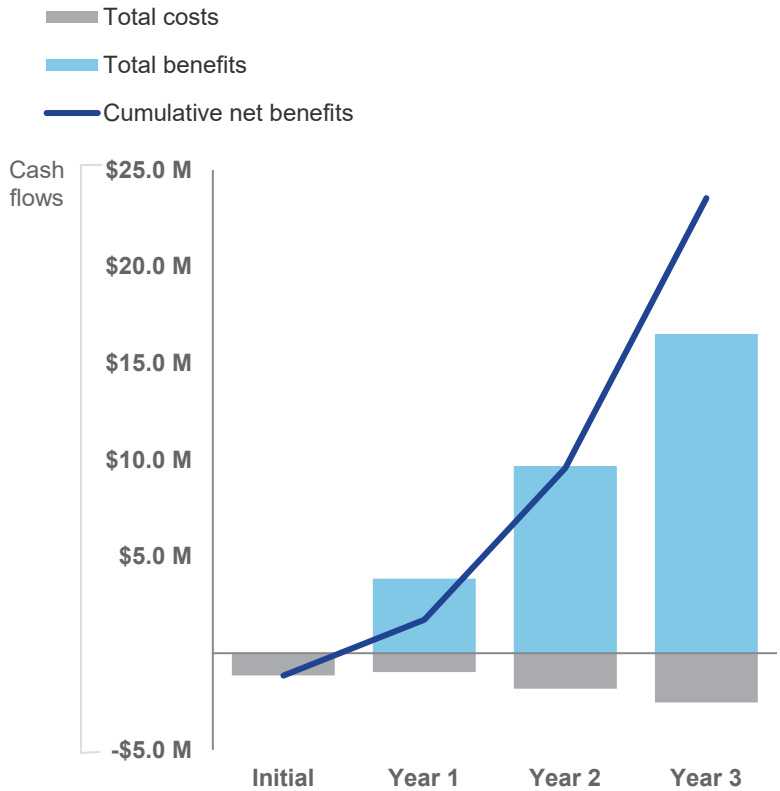
Customers may choose to adhere to the recommended best practices or may find they need additional or less professional services assistance from IBM. To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year risk-adjusted total PV of \$660,883.

Professional Services Fees: Calculation Table						
REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
H1	Watson Business Solution		\$250,000	-	-	-
H2	Expertise Connect Advanced		-	\$105,000	\$45,000	-
H3	Architecture Workshop		-	-	\$16,000	\$16,000
H4	Learn Session		-	-	\$60,000	\$30,000
H5	Expertise Connect Standard		-	-	\$60,000	\$60,000
Ht	Professional services fees	H1+H2+H3+H4+H5	\$250,000	\$105,000	\$181,000	\$106,000
	Risk adjustment	↑15%				
Htr	Professional services fees (risk-adjusted)		\$287,500	\$120,750	\$208,150	\$121,900

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



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



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

Cash Flow Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	(\$1,154,200)	(\$977,100)	(\$1,835,463)	(\$2,549,500)	(\$6,516,263)	(\$5,474,861)
Total benefits	\$0	\$3,860,640	\$9,685,680	\$16,515,240	\$30,061,560	\$23,922,512
Net benefits	(\$1,154,200)	\$2,883,540	\$7,850,218	\$13,965,740	\$23,545,298	\$18,447,651
ROI						337%
Payback period						< 6 months

Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

Total Economic Impact Approach



Benefits represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.



Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.



Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.



Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.



Present value (PV)

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



Net present value (NPV)

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



Return on investment (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.



Discount rate

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.



Payback period

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

Appendix B: Endnotes

¹ Source: “The Forrester New Wave™: Conversational Computing Platforms, Q2 2018,” Forrester Research, Inc., April 12, 2018.

² Source: “How To Build A Modern Agent Desktop And Transform Customer Service Experiences”, Forrester Research, Inc., January 28, 2019.

³ Source: “Five Methods For Measuring Call Deflection From Experiences That Begin With Digital,” Forrester Research, Inc. March 5, 2018.

⁴ Source: “Stop Trying To Replace Your Agents With Chatbots,” Forrester Research, Inc., April 17, 2019.

⁵ Source: “Five Methods For Measuring Call Deflection From Experiences That Begin With Digital,” Forrester Research, Inc. March 5, 2018.

⁶ Source: “Stop Trying To Replace Your Agents With Chatbots,” Forrester Research, Inc., April 17, 2019.

⁷ Ibid.