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The Total Economic Impact™
Of Microsoft Power Virtual Agents
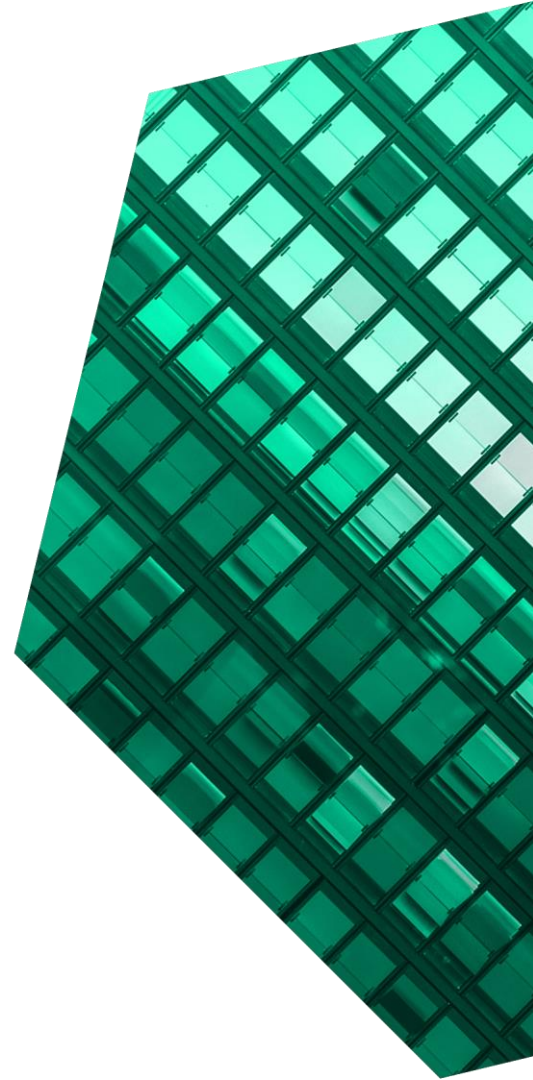
Cost Savings And Business Benefits
Enabled By Power Virtual Agents

October 2021

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Executive Summary

Many organizations are looking for a digital solution to help address common workplace challenges: more remote workers, higher workloads/capacity constraints, and increased customer and colleague demands. The solution must deliver high-quality experiences both for end users and makers. Microsoft Power Virtual Agents empowers everyone to create intelligent conversational bots to seamlessly build secure and scalable virtual agents that help drive efficiencies throughout an organization's business processes.

As digital interaction plays an increasingly important role in customer and employee support experiences, organizations must find ways to ensure that these interactions are of the highest quality. Previous efforts to build out virtual agents produced products that had limited capabilities and caused more harm than good to their customers.[1] A 2021 Forrester report found that 54% of US online consumers responding to Forrester consumer energy surveys expected interactions with customer service chatbots to negatively affect their quality of life.[2] Finding the correct solutions to help manage virtual interactions while providing an improved customer experience is key to long-term success for organizations.

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 Microsoft Power Virtual Agents (PVA).[3]

Power Virtual Agents empowers everyone to create intelligent conversational bots — from citizen developers to business users to professional developers — to seamlessly build secure and scalable virtual agents in an integrated building platform.

From simple FAQs to complex conversational requirements, organizations can accelerate bot building with an intuitive world-class designer to respond to both customer and employee needs. Users can extend bots with multilingual, multimodal,

KEY STATISTICS

Return on investment (ROI)
261%

Net present value (NPV)
$1.57M

and multichannel experiences — all in the cloud — alleviating concerns about managing the underlying infrastructure. AI self-learning features and analytics allow continuous improvement to the bot without users needing to lift a finger.

Native integration with other Microsoft tools, including Microsoft Teams, Dynamics 365 Customer Service, and the Power Platform, allows efficiency gains from anywhere. PVA is built on the Microsoft Bot Framework and enables developers to accelerate time-to-value with familiar tools like Microsoft Bot Framework Composer and Azure Cognitive Services. PVA supports fusion development throughout organizations.

The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Power Virtual Agents on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed five customers with experience using PVA. For the purposes of this study, Forrester aggregated the experiences of the interviewed customers and combined the results into a single composite organization.

Prior to using PVA, customers relied on highly manual workflows or simple chatbots to respond to internal and external support tickets. This often led to overwhelmed support employees, long response times for even the most basic questions, and eroded faith in the ability of chatbots to help make significant business improvements.

After the investment in Power Virtual Agents, the interviewed organizations were able to automate portions of their internal and external support

Reduced effort to build and maintain virtual agents by **80%**
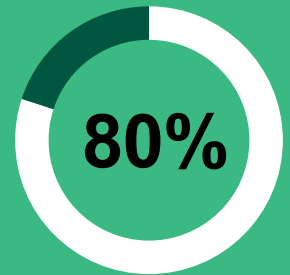
workflows with their bots, avoid the need to supplement support teams with additional employees, and drive fusion development workflows between subject matter experts (SMEs) and development teams. As a result, the organizations could provide a more satisfactory customer experience while maintaining a continually updated and helpful virtual agent.

"Microsoft PVA is creating a culture of self-sufficiency: It's allowing people to be resourceful on their own; it's about that consumerization of technology — what we're using in our personal lives is replicable within a business setting."

— Senior manager of end-user experience, transportation

KEY FINDINGS

Quantified benefits. Risk-adjusted present value (PV) quantified benefits include:

- **Reduced number of internal requests employees needed to address by 66%.** Interviewees described a major benefit of using PVA was its ability to automate responses to many internal inquiries. Employees no longer needed to wait on human agents to help them address simple questions, and support staff were not bogged down by simple or repeat questions — reducing the number of tickets they addressed by as much as 66%. Over three years, this reduction in tickets led to nearly $489,000 in savings.

- **Reduced the time required to handle customer support requests by 50%.** Many of the interviewees also noted that by connecting PVA with their customer-facing website, they were able to reduce the time that their customer service reps spent on individual customer inquiries. Their organizations were able to streamline customer support interactions by using PVA to offload many of customers' initial questions. This often led to faster calls for service reps or eliminated customer calls entirely, delivering an additional $521,000 in savings over three years.

- **Avoided cost of hiring and training an additional eight resources.** Organizations were able to meet increased demands without having to hire and train additional customer support representatives. The interviewees shared that they have seen unprecedented volume of internal and external support tickets since the beginning of the COVID-19 pandemic. Investing in PVA allowed them to deflect customer support calls from human agents and avoid hiring additional human agents to handle increases in inquiries. This amounted to a cost savings of more than $1 million over a three-year period.

- **Reduced the effort needed to build and maintain a bot by 80%.** Customers that had previously relied on chatbots often found that they required significant manual effort to build and maintain. These customers relied on IT to build the agents, leading to delays in the development process as these projects were not always a high priority for IT teams. With PVA, the line-of-business owners had the tools to own aspects of the bot-development lifecycle.

  Through partnership between business owners and developers during the building process, customers benefited from synergies and better communication to develop higher-quality virtual agents and drastically reduced development timelines. Additionally, interviewees were able to automate portions of bot maintenance through use of the provided analytics dashboard, which drove further efficiencies. This benefit led to nearly $149,000 in savings over three years.

Unquantified benefits. Benefits that are not quantified for this study include:

- **Increased customer satisfaction.** Customers who interacted with the Microsoft Power Virtual Agents resolved their inquires 50% faster, leading to a more positive customer experience. This has lasting effects on customer loyalty and could lead to increases in many key customer metrics such as NPS and CSAT.[4]

- **Increased analytics from integrating with the Microsoft product suite and other vendors.** Interviewees highlighted how integrating PVA with their existing Microsoft products as well as prebuilt integrations with other third-party vendors allowed them to increase the insights provided by the solution. This in turn allowed them to build more complex virtual agents and drive further efficiencies across their organizations.

Costs. Risk-adjusted PV costs include:

- **Microsoft licensing and subscription fees.** Interviewees paid an annual fee for the Power Virtual Agents solution.

- **Implementation and management costs.** The interviewees said that their organizations dedicated an average of 64 hours to implement Microsoft PVA. The organizations also dedicated individuals to manage the day-to-day operations of the platform.

The customer interviews and financial analysis found that a composite organization experiences benefits of $2.16 million over three years versus costs of $600,000, adding up to a net present value (NPV) of $1.57 million` and an ROI of 261%.
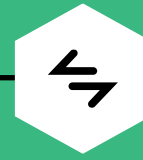
ROI
261%

BENEFITS PV
$2.16M

NPV
$1.57M

PAYBACK
<6 months

Benefits (Three-Year)

Time savings for internal tickets — $489.0K

Time savings for customer-facing tickets — $521.3K

Avoided additional headcount — $1.0M

Reduced effort to build and maintain virutal agents — $148.9K

TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in Power Virtual Agents.

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 Power Virtual Agents can have on an organization.

DISCLOSURES

Readers should be aware of the following:

This 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 study to determine the appropriateness of an investment in Power Virtual Agents.

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.

DUE DILIGENCE
Interviewed Microsoft stakeholders and Forrester analysts to gather data relative to Power Virtual Agents.

CUSTOMER INTERVIEWS
Interviewed five decision-makers at organizations using Power Virtual Agents 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 the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

Interviewed Organizations			
Interviewee	**Industry**	**Region**	**Revenue**
Supervisor of business intelligence and innovation	Energy infrastructure	Global	$2.5 billion
Project architect of IT	Professional sports	United States	$460 million
Chatbot development engineer	Transportation	Europe	$200 million
Senior manager of end-user experience	Transportation	Canada	$3.8 billion
Manager of customer support team	Technology hardware	Global	$56 billion

KEY CHALLENGES

The interviewed decision-makers stated that prior to investing in Microsoft PVA, they relied on highly manual workflows to address internal and external support tickets. IM, email, and phone calls were the predominate forms of communication. Some organizations had deployed chatbots but found that these legacy solutions were both difficult to build and could not handle more advanced questions. The interviewed organizations struggled with several common challenges, including:

- **Need to meet increased customer support demand during the COVID-19 pandemic.** The customer interviewees stated that digital interactions with their organizations became a requirement as the COVID-19 pandemic drove unprecedented demand. Organizations also needed a way to quickly respond to repeat questions and enable their support representatives to handle more-pressing inquiries. As the project architect of IT in the professional sports industry detailed: "Our phone lines needed to be transferred remotely — our ability to service people became far more digital. So when people couldn't find information online,

we needed a new avenue for them to get to that information."

- **Legacy solutions could not provide the insight needed to improve internal processes.** Previous attempts to build or use chatbots left line-of-business owners with little to no insight into what questions customers asked or how they were asking. This greatly limited their ability to update the bots to include questions that mattered to their customers, limiting the effectiveness of these solutions.

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an ROI analysis that illustrates the areas financially affected. The composite organization is representative of the five companies that Forrester interviewed and is used to present the aggregate financial analysis in the next section. The composite organization has the following characteristics:

Description of composite. The composite is a global, multibillion-dollar organization with approximately 5,000 employees and a support team of 100 members. Prior to investing in PVA, the organization had deployed a simple bot to help

manage incoming customer support inquiries. All internal support tickets were submitted via email or instant messaging.

Deployment characteristics. The organization builds two virtual agents with PVA. The first is used internally to help employees quickly locate and access documents. This agent sees an average of 91,000 annual interactions. The second is a customer-facing virtual agent that fields common customer questions, with 65,000 annual interactions. As the organization matures in its use of PVA, it is able to expand the deployment of the virtual agents to more complex use cases.

Key assumptions

- **Global, multibillion-dollar firm**
- **5,000 employees**
- **100-member support team**
- **2 virtual agents built with PVA**

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	Time savings for internal tickets	$196,628	$196,628	$196,628	$589,885	$488,985
Btr	Time savings for customer-facing tickets	$209,625	$209,625	$209,625	$628,875	$521,306
Ctr	Avoided additional headcount	$275,400	$413,100	$550,800	$1,239,300	$1,005,593
Dtr	Reduced effort to build and maintain virtual agents	$59,892	$59,892	$59,892	$179,677	$148,944
	Total benefits (risk-adjusted)	$741,546	$879,246	$1,016,946	$2,637,737	$2,164,828

TIME SAVINGS FOR INTERNAL TICKETS

The interviewed organizations all had various workflows designed to handle and resolve internal support tickets. Typically, these tickets involved requests for documents, questions related to employee benefits, or other general-knowledge questions that were tedious to answer. Legacy workflows often required an employee to manually respond to each incoming ticket. These efforts proved to be time-consuming for both the employee who made the inquiry and the support agent responding to it.

With PVA, the interviewees were able to deploy a virtual agent across their internal communications channels that could automate or supplement a response to these internal inquiries. This allowed the support employees to redirect their priorities to more-pressing business concerns and eliminated the time that employees spent waiting for answers. PVA has the added benefit of driving increased accuracy during these interactions.

As the supervisor of business intelligence and innovation for an energy infrastructure firm described: "The person with the question no longer has to wait for a human to respond. Similarly, the person who would be answering the question no longer has to have their inbox flooded with all of these repetitive questions, and they can focus on higher-value work. We have also seen an increase in accuracy with our responses as we have built centralized responses that have been reviewed and approved internally."

Modeling and assumptions. For the composite organization, Forrester assumes:

- The composite dedicates 35 employees to handle internal employee inquiries. Typically, these employees process 10 tickets daily. Each ticket takes these support employees 5 minutes of active work to address.

- Offloading these tickets to Microsoft PVA enables the organization to reduce the number of internal tickets employees resolve by 67%.

> **"There's a lot less emails and phone calls happening now and a lot more chat in chat box and access to instant information."**
>
> *Senior manager of end-user experience, transportation*

- The employees involved in these workflows have an hourly salary of $43.

Risks. The following risks may affect this benefit category:

- The number of employees dedicated to internal support tickets, the number of tickets processed daily, and the time each ticket takes to resolve will vary by industry, complexity, and organizational workflows.

- Existing internal support solutions will affect the extent to which Microsoft PVA can reduce internal support tickets.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a

three-year, risk-adjusted total PV (discounted at 10%) of nearly $489,000.

23%

$488,985

three-year
benefit PV
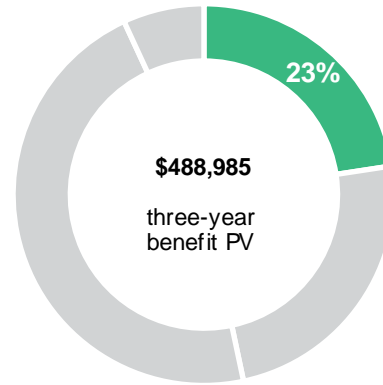
Time Savings For Internal Tickets					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
A1	Number of employees processing internal tickets prior to using Microsoft PVA	Assumption	35	35	35
A2	Number of internal tickets daily	Assumption	10	10	10
A3	Number of internal tickets processed annually	A1*A2*260	91,000	91,000	91,000
A4	Reduction in internal tickets with Microsoft PVA	A1*A2*260	67%	67%	67%
A5	Average time to process an internal ticket (minutes)	Interviews	5	5	5
A6	Hourly salary of employees handling internal tickets	Payscale.com	$43	$43	$43
At	Time savings for internal tickets	(A3*A4*A5*A6)/60	$218,476	$218,476	$218,476
	Risk adjustment	↓10%			
Atr	Time savings for internal tickets (risk-adjusted)		$196,628	$196,628	$196,628
	Three-year total: $589,885		**Three-year present value: $488,985**		

TIME SAVINGS FOR CUSTOMER-FACING TICKETS

Evidence and data. In addition to efficiencies associated with internal support tickets, the interviewed organizations also noted that deploying

Microsoft PVA to a customer support use cases allowed them to drive additional time savings.

Several of the interviewees used PVA to complement their existing customer support workflows to streamline processes and remove tedious steps. PVA

enabled customers to complete simple tasks (such as refilling a transit card or renewing a ticket) and could serve as a screening device to ensure that customers were quickly funneled to the correct representatives. This reduced the time that customer support representatives spent addressing menial tasks and even enabled them to reduce the number of tickets they responded to.
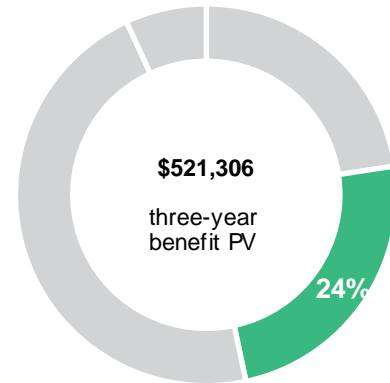
The interviewees saw these efficiencies as a means of improving customer interactions with their organizations. As the project architect of IT in the professional sports industry described: "It's given our customers an opportunity to connect with us. I think it just gives more options, while at the same time allowing us to communicate information more effectively. We are acting more efficiently, and our satisfaction rates show that."

Modeling and assumptions. For the composite organization, Forrester assumes:

- The composite organization deploys a PVA bot to a portion of its customer service staff. They use PVA to monitor and respond to a select portion of customer inquiries being generated through their customer-facing website.

- The composite organization has a team of 50 employees responsible for managing and responding to customer support inquiries. Typically, they respond to an average of five customer inquiries daily, and these inquiries take an average of 10 minutes of active work to resolve.

- The employees involved in these workflows have an hourly salary of $43.

- The automation and response capabilities provided by Microsoft PVA allows employees to reduce the time spent on these interactions by 50%.

Risks. Established customer support workflows will affect the total number of inquiries PVA affects and the total impact it can have on an organization

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of more than $521,000.

$521,306
three-year benefit PV

24%

Time Savings For Customer-Facing Tickets

Ref.	Metric	Source	Year 1	Year 2	Year 3
B1	Number of employees processing customer inquiries prior to using Microsoft PVA	Assumption	50	50	50
B2	Number of customer inquiries daily	Assumption	5	5	5
B3	Number of customer inquiries processed per year	B1*B2*260	65,000	65,000	65,000
B4	Reduction in time spent on internal tickets with Microsoft PVA	Interviews	50%	50%	50%
B5	Time to process a customer-facing ticket (minutes)	Interviews	10	10	10
B6	Hourly salary of employees handling internal tickets	Payscale.com	$43	$43	$43
Bt	Time savings for customer-facing tickets	(B3*B4*B5*B6)/60	$232,917	$232,917	$232,917
	Risk adjustment	↓10%			
Btr	Time savings for customer-facing tickets (risk-adjusted)		$209,625	$209,625	$209,625
	Three-year total: $628,875		**Three-year present value: $521,306**		

AVOIDED ADDITIONAL HEADCOUNT

Evidence and data. All the interviewed organizations saw increased interaction with remote support services as a result of the COVID-19 pandemic. Online interaction became the main way internal and external parties attempted to find answers for their questions.

In legacy workflows, this increase in interaction would require organizations to invest in additional resources. However, the interviewee's stated they were able to avoid making this investment by investing in PVA. Expanding and adapting the capabilities of the virtual agents allowed the interviewed organizations to create further efficiencies in their support inquiry processes. Additionally, as the organizations became more mature on the platform, they were able to use the analytic capabilities inherent to the agents to refine support workflows and expand to additional content. As one interviewee noted. "PVA has prevented us

from having to hire more folks. Previously our staff were bogged down with a mountain of support tickets. PVA allows those folks to continue focusing on their projects that are more fundamental to our future strategy."

Modeling and assumptions. This section explains how the modeling is done.

- Automating inquiry response while expanding PVA use allows the organization to avoid hiring 4 additional employees to support their current

Avoided the need to hire and train 8 additional employees

internal and external support teams. As the composite organization matures it avoids further hires, increasing the number of avoided employees to 6 in Year 2 of analysis and 8 by Year 3.

- The cost associated with hiring and training an additional support employee is $81,000.

Risks. The following risks may affect this benefit category:

- The volume of support inquiries will vary significantly by vertical. Customers may find that they are able to avoid additional employees during seasonal spikes in support outreach.

- Established workflows designed to handle periods of increases demand will mitigate the effects this benefit has on an organization.

- Cost associated with hiring will vary based on the location and seniority of employees hired.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of $1,005,593.

46%

$1.0 million

three-year benefit PV
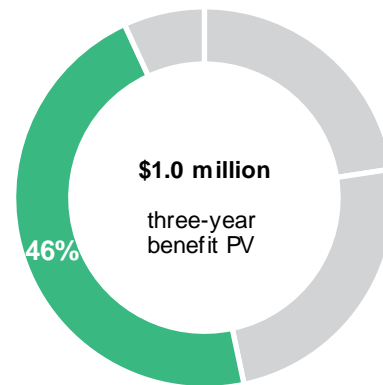
Avoided Additional Headcount					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
C1	Additional headcount needed to handle increased customer service questions	Interview	4	6	8
C2	Cost to hire new employees	Assumption	$81,000	$81,000	$81,000
Ct	Avoided additional headcount	C1*C2	$324,000	$486,000	$648,000
	Risk adjustment	↓15%			
Ctr	Avoided additional headcount (risk-adjusted)		$275,400	$413,100	$550,800
	Three-year total: $1,239,300		**Three-year present value: $1,005,593**		

REDUCED EFFORT TO BUILD AND MAINTAIN VIRTUAL AGENTS

Evidence and data. Interviewees who had attempted to build their own chatbots (either through competitive solutions or homegrown workflows) found that this required highly skilled individuals to spend significant time building out the virtual agents. These initiatives

were not always seen as a priority for IT teams, often causing delays in agent production process.

Additionally, line-of-business owners who maintained the virtual agents found that doing so was cumbersome and tedious. As a chatbot development engineer at a transportation organization virtual agent explained: "Previously, updating our virtual agent was much more laborious. You would have to anticipate

customer questions beforehand, and it was not [as] big of a natural language-processing component like we have in PVA. You had to really work to collect questions from customers, and sometimes questions were asked in a way that we didn't anticipate, which would cause significant issues."

Turning to a fusion development model with PVA, line-of-business owners can reclaim parts of virtual agent creation, maintenance, and governance. Development teams and line-of-business representatives could work in tandem to produce high-quality agents that were more effective and useful than previous bots. The project architect of IT at a professional sports organization described this by saying: "We had someone in the guest experience team who is not technically savvy and does not know any programming languages [for] designing conversations and building bots. It is low-code for conversation maintenance and keyword detection, so that's been a big benefit here."

Modeling and assumptions. Based on customer interviews, Forrester estimates the following for the composite organization:
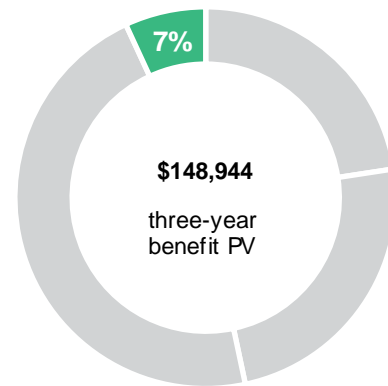
- Prior to investing in Microsoft PVA, the composite organization dedicated eight developers to building out virtual agents. They spent an average of 24 hours annually building out these virtual agents. The employees involved in these workflows have an hourly salary of $57.

- Additionally, 35 employees from the various lines of business within the composite organization

were tasked with maintaining the virtual agents. Their responsibilities included generating Q&A workflows to resolve tickets or redirect inquires. These employees spend 4 hours each month performing these tasks, and their hourly salary is $43.

- Transitioning virtual agents to Microsoft PVA allows the composite organization to streamline bot development and maintenance, reducing the effort to complete these tasks by 80%.

Risks. The extent to which companies have attempted to use virtual agents previously and how reliant they are on developers to complete these workflows will affect this benefit.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of almost $149,000.

7%

$148,944
three-year benefit PV

Reduced Effort To Build And Maintain Virtual Agents					
Ref.	Metric	Source	Year 1	Year 2	Year 3
D1	Employees involved in virtual agents' construction prior to investing in Microsoft PVA	Interviews	8	8	8
D2	Hours spent building virtual agents	Interviews	24	24	24
D3	Hourly salary for employees involved in building virtual agents	Payscale.com	$57	$57	$57
D4	Cost to build virtual agents prior to investing in Microsoft PVA	D1*D2*D3	$10,944	$10,944	$10,944
D5	Employees involved in virtual agents' management prior to investing in Microsoft PVA	Interviews	35	35	35
D6	Hours spent maintaining virtual agents (monthly)	Interviews	4	4	4
D7	Hourly salary of employees involved in virtual agents' maintenance	Payscale.com	$43	$43	$43
D8	Cost to maintain virtual agents prior to investing in Microsoft PVA	D5*D6*D7*12	$72,240	$72,240	$72,240
D9	Reduction in cost to build virtual agents with Microsoft PVA	Interviews	80%	80%	80%
Dt	Reduced effort to build and maintain virtual agents	(D4+D8)*D9	$66,547	$66,547	$66,547
	Risk adjustment	↓10%			
Dtr	Reduced effort to build and maintain virtual agents (risk-adjusted)		$59,892	$59,892	$59,892
	Three-year total: $179,677		Three-year present value: $148,944		

UNQUANTIFIED BENEFITS

Additional benefits that customers experienced but were not able to quantify include:

- **Increased customer satisfaction.** As previously mentioned, customers who interacted with the Microsoft Power Virtual Agents resolved their inquires faster, leading to a more positive customer experience. This has lasting effects on customer loyalty and could lead to increased customer lifetime value, higher Net Promoter Scores, and other customer-centric metrics.

- **Increased analytics from integration with additional Microsoft products.** The interviewed organizations also highlighted how integrating PVA with their existing Microsoft products increased the insights the solution provides. Many of the interviewees connected PVA with the Microsoft Power Platform to collect deeper insight into the various interactions with their PVA agents and improve these agents. As the project architect of IT for a professional sports organization described: "You can be very low-code still, but perhaps people more mathematically inclined can look for insight into how the real-language aspect works in order to improve our bot design. The Power Platform can help us see where customers are stuck or what questions they ask the bot [that] we don't have answers to."

Interviewees also highlighted that integrating PVA with Microsoft Teams for internal use was a way to drive user adoption and increase interaction with their tool across their organizations.

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might implement Power Virtual Agents and later realize additional uses and business opportunities, including:

- **Expanding the use of PVA to drive additional revenue.** The interviewees saw further integration with their customer-facing sites as an area of future benefit that could drive additional revenue. Building more advanced virtual agents with the capability of aiding customers in making repeat purchases or renewing annual memberships could allow these organizations to recognize revenue faster and potentially increase retention among their customers.

- **Build more complex customer service workflows.** The interviewees also sought to increase the complexity of the questions handled by their virtual agents. As these organizations mature on the PVA deployments, they believe they would be able to automate response to more complex questions, which would increase the efficiencies they have been seeing across customer and internal workflows.

- **Expand to mobile devices.** Lastly, the interviewees saw integrations with mobile devices as a way to drive adoption for internal use cases and an opportunity to reach more customers. As the project architect of IT for a professional sports organization explained, "PVA has the ability to integrate with our mobile app provider, and we see offering PVA on our mobile app as a very useful troubleshooting tool."

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

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	License and subscription cost	$0	$210,000	$210,000	$210,000	$630,000	$522,239
Ftr	Implementation and management costs	$20,160	$22,982	$22,982	$22,982	$89,107	$77,314
	Total costs (risk-adjusted)	$20,160	$232,982	$232,982	$232,982	$719,107	$599,553

LICENSE AND SUBSCRIPTION COST

Evidence and data. The composite organization pays an annual fee to Microsoft for use of the Power Virtual Agents platform and specific features. The price of this will vary on an organizational basis, and the cost is determined by myriad factors including the number of sessions addressed by the agents.

Modeling and assumptions. Based on customer interviews, Forrester estimates that the composite organization pays an annual fee of $200,000 for use of the platform.

Risks. Individual organizations will pay varying amounts for their use of PVA and should contact a Microsoft representative for specific details.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $522,000.

$522,239
three-year
cost PV

87%
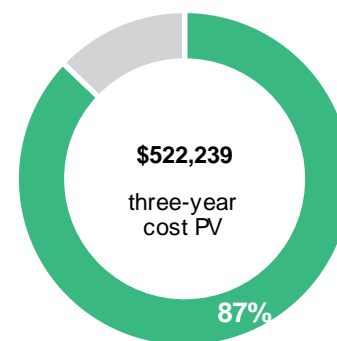
License And Subscription Cost

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
E1	PVA license and subscription cost	E1		$200,000	$200,000	$200,000
Et	License and subscription cost	E1	$0	$200,000	$200,000	$200,000
	Risk adjustment	↑5%				
Etr	License and subscription cost (risk-adjusted)		$0	$210,000	$210,000	$210,000
	Three-year total: $630,000			Three-year present value: $522,239		

IMPLEMENTATION AND MANAGEMENT COSTS

Evidence and data. The interviewed organizations saw indirect costs for internal labor to deploy and manage Microsoft PVA.

This cost is representative of the time spent planning and executing the PVA implementation, as well as the time spent managing the virtual agents.

Interviewees noted that ongoing management was typically minimal and only required a small percentage of employee time. These employees would spend time onboarding and training new users, communicating with their Microsoft representatives, and planning for and executing platform upgrades.

Modeling and assumptions. For the composite organization, Forrester assumes:

- A team of four employees plans and implements the various use cases of Microsoft PVA. Each employee dedicates 64 hours to these tasks. The hourly salary for the employees involved in these workflows is $75.

- A team of four employees will each spend 8 hours per month managing PVA. The hourly salary of the employees dedicated to managing PVA is $57.

Risks. Management and implementation will vary depending on each organization's internal processes regarding vendor onboarding.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of $77,000.

13%

$77,314
three-year
cost PV
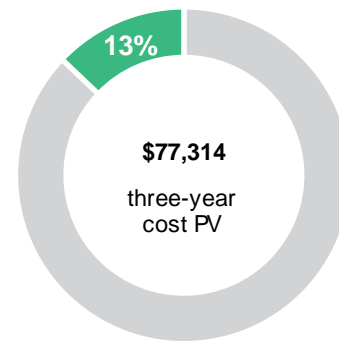
Implementation And Management Costs						
Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
F1	Number of resources involved in PVA planning and implementation	Interviews	4			
F2	Total time spent planning for and implementing PVA (hours)	Interviews	64			
F3	Hourly salary of employees involved in planning and implementation	Payscale.com	$75			
F4	Subtotal: cost to implement PVA	F1*F2*F3	$19,200			
F5	Number of employees involved in managing PVA	Interviews		4	4	4
F6	Monthly time spent managing PVA (hours)	Interviews		8	8	8
F7	Yearly time spent managing PVA (hours)	F6*12		96	96	96
F8	Hourly salary of employees involved in management	Payscale.com		$57	$57	$57
F9	Subtotal: management costs	F5*F7*F8		$21,888	$21,888	$21,888
Ft	Implementation and management costs	F4+F9	$19,200	$21,888	$21,888	$21,888
	Risk adjustment	↑5%				
Ftr	Implementation and management costs (risk-adjusted)		$20,160	$22,982	$22,982	$22,982
	Three-year total: $89,107			**Three-year present value: $77,314**		

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

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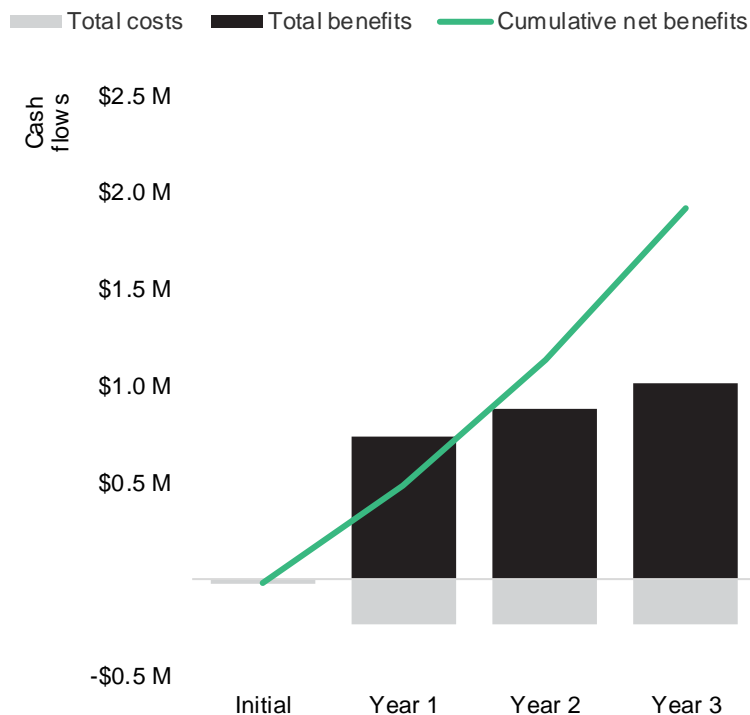
The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

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 Analysis (Risk-Adjusted Estimates)						
	Initial	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Total costs	($20,160)	($232,982)	($232,982)	($232,982)	($719,107)	($599,553)
Total benefits	$0	$741,546	$879,246	$1,016,946	$2,637,737	$2,164,828
Net benefits	($20,160)	$508,563	$646,263	$783,963	$1,918,630	$1,565,275
ROI						261%
Payback (months)						<6

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] For the purpose of this study, "virtual agents" can be used interchangeably with other popular terms such as "chatbots," "conversational AI," and "virtual assistants."

[2] Source: "Best Practices For Help Desk Chatbot Success," Forrester Research, Inc., March 29, 2021.

[3] 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.

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