Chatbot Watson is IBM’s conversational AI platform that allows users to interact with business systems using natural human language. IBM has combined an advanced conversational platform with developer and line-of-business-friendly tools with the breadth of the broader Watson portfolio.1 Enterprises of all sizes can build and train the AI solution to serve a wide range of use cases across applications, devices, and channels. IBM’s low-code/no-code interface brings these capabilities to a broader audience, enabling a new group of nontechnical employees to create and improve conversational AI skills. 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. 2 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 four representatives with experience using Watson Assistant in a variety of customer self-service and agent-assist use cases. All interviewees had experience in developing new skills/intents using the visual builder low-code/no-code interface for creating chatbots, but they also utilized nontechnical resources such as business analysts to create and update skills. Forrester also conducted a survey of 30 C-level executives and managers in North America whose organizations use Watson Assistant. For the purposes of this study, Forrester aggregated the interviewees’ and survey respondents’ experiences and combined the results into a single composite organization that is a financial and insurance services company with revenue of $7 billion per year. Prior to using Watson Assistant, the interviewees provided traditional human-serviced chat, email, and call services. These methods were slow, clunky, and costly. The interviewees’ organizations struggled with efficiently routing questions to appropriate agents, high volumes of simple queries, and long response times. These factors coalesced into a poor customer experience marked by a lack of automation in customer service operations. Prior attempts to implement conversational AI yielded limited success, leaving them with systems that were hard to train on new use cases. After the investment in Watson Assistant, the interviewees were able to lower costs through the expanded use of digital channels for customer

support and automation of processes that improved agent efficiency. The investment also empowered agents to drive increased revenue because they had higher-quality leads through the availability of more complete and accurate customer information, while the integration of knowledge management tools helped increase customer satisfaction. Developers improved their efficiency in creating new skills, while development of standard chatbots (performing actions such as “Check order status” or “Make a payment”), customer information forms, and business analytics were shifted to business analysts and customer support managers. KEY FINDINGS Quantified benefits. Three-year, risk-adjusted present value (PV) quantified benefits for the composite organization include: • The organization achieves cost savings of $6.00 per contained conversation with Watson Assistant. The ability to rapidly train and refine Watson Assistant drives increasing containment rates each year, providing growing cost savings. The organization is able to realize cost savings of $22.2 million as it refines its Watson implementation, increasing its containment rate from 60% in Year 1 to 90% in Year 3. • Correctly routed conversations save $7.75 per correctly routed call. By using chatbots to gather information, Watson Assistant routes calls more effectively to the appropriate human being when escalation is required, reducing transfers and time to resolution. The improved routing is worth nearly $4.7 million over three years. • Chatbot-augmented agents reduce interaction handle time by up to 30%. Customers measure 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. The composite organization uses Watson Assistant to augment its sales team, increasing qualified customers for agents and driving incremental revenue. The improvement is worth more than $2.4 million over a three-year period. • Developers and nontechnical employees use the low-code/no-code visual builder to accelerate new chatbot development. The organization experiences productivity gains as developers use the visual builder tool to create skills 20% more quickly than if done from scratch. Business analysts can develop chatbots using templates and other skills using the tool, enabling the organization to avoid future developer hires in a tight job market. Unquantified benefits. Benefits that provide value for the composite organization but are not quantified in this study include: • Creating a self-serve, digital-first experience that provides a competitive advantage. Adoption of conversational AI technology enables organizations to improve customer satisfaction scores, while workflow efficiencies enable call center agents to serve customers more quickly, resulting in increased revenue. • Improving the agent experience (and employee retention). When a brand deploys advanced technology to help its agents, the agents see that it improves their performance by giving them the information they need at the right time. 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. Employers can reduce burnout and employee turnover when they help employees balance their job demands with technology and training.3 • Creating skills more quickly compared to previous chatbot solutions while also saving on the cost of development and professional

Interviews Role Industry Region Employees Chief risk and innovation officer Financial services North America 650 Head of global insurance Financial services and insurance North America >15,000 ML engineer, senior conversational analyst Financial services North America >20,000 VP, executive leader AI, ML, analytics Engineering services North America 40,000

1. **Costs**:
   * **Development Costs**: These include expenses related to developing the chatbot. This can include the cost of software and tools, as well as the compensation for developers and data scientists working on the project.
   * **Deployment Costs**: Expenses associated with deploying the chatbot, such as server hosting, cloud computing resources, and any necessary infrastructure.
   * **Maintenance Costs**: Ongoing expenses for maintaining and updating the chatbot, including monitoring, fixing bugs, and keeping the chatbot up to date.
   * **Training Costs**: If the chatbot uses machine learning, there might be training data acquisition and model fine-tuning costs.
   * **Integration Costs**: Costs related to integrating the chatbot with other systems or applications.
   * **License or Subscription Fees**: If you're using a third-party platform like IBM Watson Assistant, there might be licensing or subscription fees.
2. **Benefits**:
   * **Cost Savings**: A chatbot can help automate tasks that were previously performed by humans, leading to potential cost savings in customer support and other areas.
   * **Improved Efficiency**: Chatbots can handle multiple customer inquiries simultaneously, reducing wait times and improving customer service efficiency.
   * **24/7 Availability**: Chatbots can provide support around the clock, which can lead to increased sales and customer satisfaction.
   * **Data Insights**: Chatbots can collect valuable data on customer interactions, which can be used for business intelligence and decision-making.
   * **Enhanced Customer Experience**: A well-implemented chatbot can improve the overall customer experience, leading to increased customer loyalty and repeat business.

Here's a simple example of Python code for using IBM Watson Assistant for text input and output. Keep in mind that you need to set up your Watson Assistant instance and obtain API credentials before using this code:

import json

from ibm\_watson import AssistantV2

from ibm\_cloud\_sdk\_core.authenticators import IAMAuthenticator

# Set up your IBM Watson Assistant credentials

assistant\_api\_key = 'YOUR\_API\_KEY'

assistant\_url = 'YOUR\_ASSISTANT\_URL'

assistant\_id = 'YOUR\_ASSISTANT\_ID'

# Create an IAM authenticator

authenticator = IAMAuthenticator(assistant\_api\_key)

# Create an instance of Watson Assistant

assistant = AssistantV2(

version='2021-06-14',

authenticator=authenticator

)

# Set the service URL

assistant.set\_service\_url(assistant\_url)

# Start a conversation with Watson Assistant

response = assistant.create\_session(assistant\_id=assistant\_id).get\_result()

session\_id = response['session\_id']

# User input

user\_input = 'Hello, Watson!'

# Send user input to Watson Assistant

response = assistant.message(

assistant\_id=assistant\_id,

session\_id=session\_id,

input={

'message\_type': 'text',

'text': user\_input

}

).get\_result()

# Get Watson's response

watson\_response = response['output']['generic'][0]['text']

# Print Watson's response

print(watson\_response)

# End the conversation

assistant.delete\_session(assistant\_id=assistant\_id, session\_id=session\_id)

**Algorithm for Evaluating Economic Impact of Watson Assistant:**

1. **Gather Data**:
   * Collect data on the costs associated with developing, deploying, and maintaining your Watson Assistant. This includes development costs, deployment costs, maintenance costs, and any other relevant expenses.
2. **Collect Data on Benefits**:
   * Gather data on the benefits that your Watson Assistant provides. This can include cost savings, improved efficiency, increased revenue, and other relevant metrics.
3. **Define Metrics**:
   * Define the key performance metrics and KPIs that will be used to evaluate the economic impact. For example, you might track metrics like customer support costs before and after implementing the chatbot, customer satisfaction ratings, or conversion rates.
4. **Calculate Costs and Benefits**:
   * Calculate the total costs and benefits associated with your Watson Assistant. This can involve summing up the expenses and the value of the benefits over a specific time period.
5. **ROI Analysis**:
   * Perform a Return on Investment (ROI) analysis to determine if the benefits outweigh the costs. The ROI formula is typically:

ROI = (Net Benefit / Total Cost) \* 100

1. Where:
   * Net Benefit = Total Benefits - Total Costs

A positive ROI indicates that the Watson Assistant is generating a positive economic impact.

1. **Sensitivity Analysis**:
   * Assess the sensitivity of the economic impact to changes in key variables. For example, how would the economic impact change if customer support costs increased or if conversion rates improved further?
2. **Present Findings**:
   * Present the findings of your economic impact analysis to stakeholders. Use visualizations, reports, and presentations to convey the results effectively.
3. **Optimization**:
   * Use the insights from your analysis to optimize the use of Watson Assistant. This could involve tweaking the chatbot's behavior, expanding its use to other areas of the business, or fine-tuning its performance.
4. **Continuous Monitoring**:
   * Continuously monitor the economic impact to ensure that it remains positive and adapts to changing business conditions.

The specific code required to implement this algorithm would depend on the tools and software you use for data collection, analysis, and reporting. You might use Python, Excel, or specialized business intelligence software. Additionally, integrating Watson Assistant usage data and economic data into your analysis will be necessary.

To provide specific code for your economic impact analysis, it would be helpful to know more about your data sources and the tools you plan to use for the analysis.

Is this conversation helpful so far?

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