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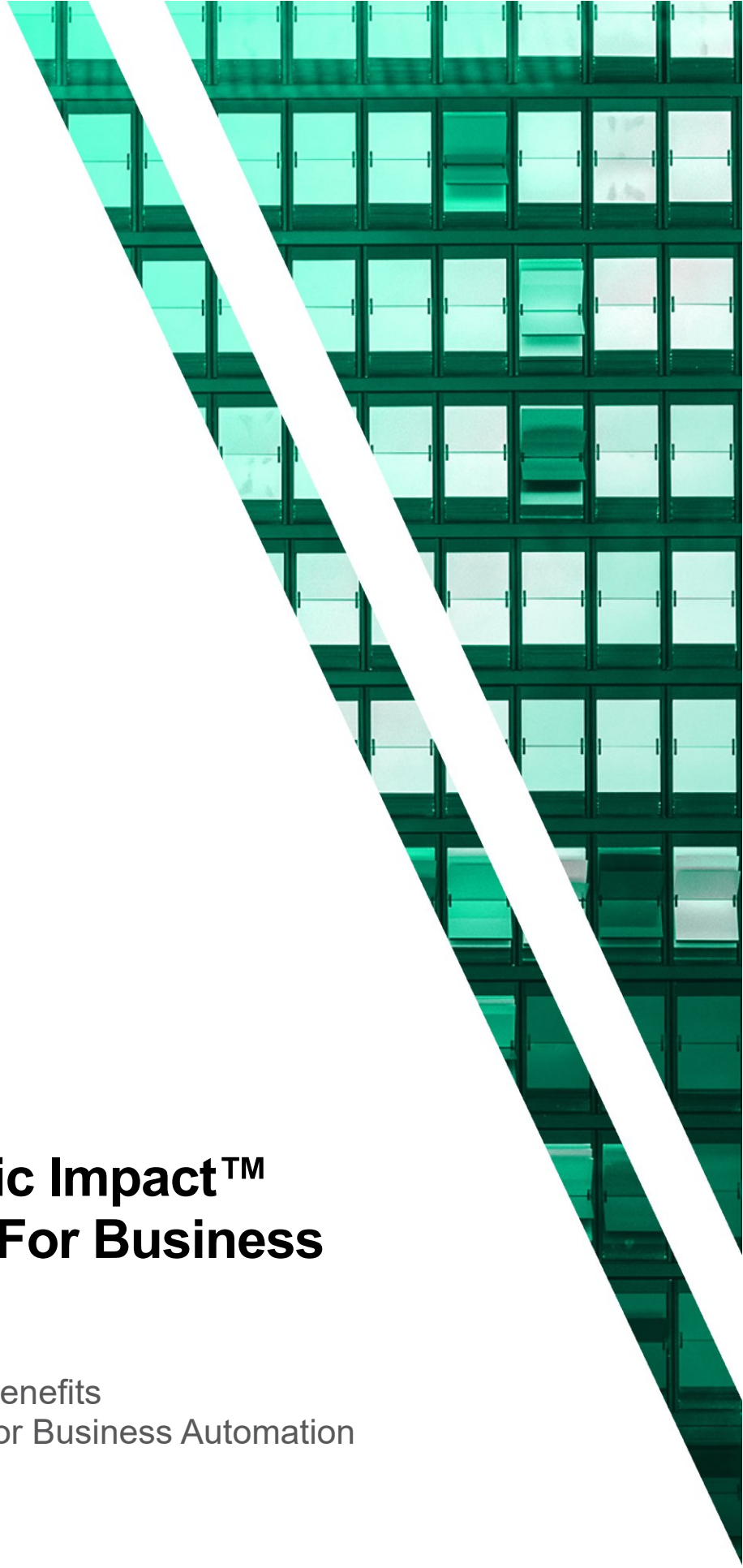

The Total Economic Impact™ Of IBM Cloud Pak For Business Automation

Cost Savings And Business Benefits Enabled By IBM Cloud Pak For Business Automation

JULY 2022

A FORRESTER TOTAL ECONOMIC IMPACT™ STUDY COMMISSIONED BY IBM

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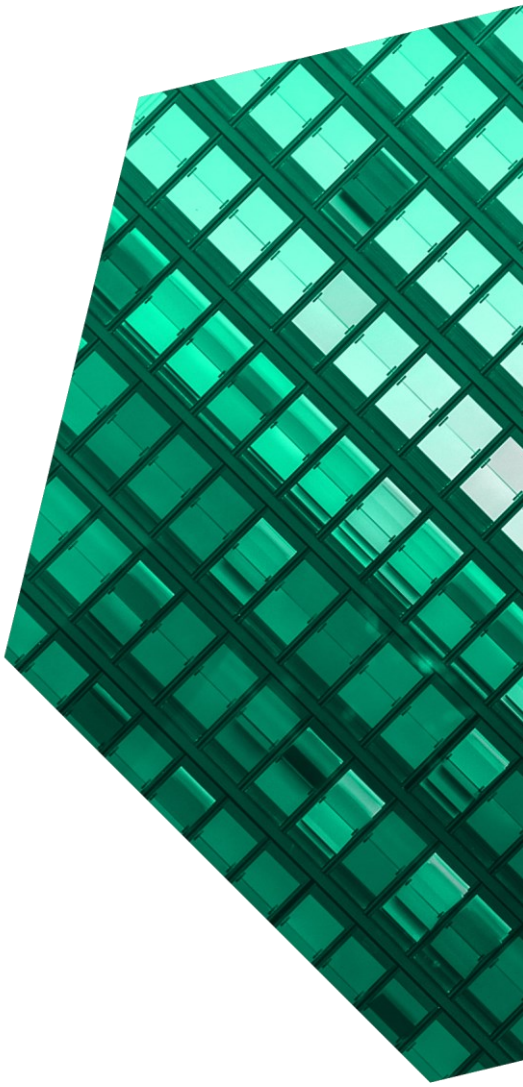
Consultant: *Mary Anne North*



Executive Summary

IBM Cloud Pak for Business Automation enables companies to increase their operational efficiency and improve their customer experience by providing a platform for simplifying, automating, and streamlining various processes. It helps improve the productivity of application developers, IT staff, clerical workers, call center staff, and other knowledge workers through capabilities that include content capture and management, document processing, workflow automation, decisioning, and robotic process automation.

IBM Cloud Pak for Business Automation is a comprehensive platform that enables organizations to improve their operational efficiency by automating a wide range of processes. Its integrated software components include content capture, content services, document processing, decision management, workflow automation, robotic process automation (RPA), and data visualization. It can be deployed in the cloud, on-premises, in any hybrid cloud, or as software as a service (SaaS).

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 IBM Cloud Pak for Business Automation.[1] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of IBM Cloud Pak for Business Automation on their organizations.

Productivity improvement

Up to 80%

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed six decision-makers at a total of five organizations with experience using IBM Cloud Pak for Business Automation. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single composite organization that is a global provider of services to businesses and individuals.

KEY STATISTICS

Return on investment (ROI)
395%

Net present value (NPV)
$18.66M

Prior to using IBM Cloud Pak for Business Automation, the interviewees' organizations had many manual and nonstandardized processes. As a result, the organizations struggled with a costly lack of operational efficiency; substantial expense for paper, printing, postage, and storage; and excessive call center wait times.

After the investment in IBM Cloud Pak for Business Automation, the interviewees' organizations streamlined many processes, which reduced their operating costs and improved their customer experience.

KEY FINDINGS

Quantified benefits. Three-year, risk-adjusted present value (PV) quantified benefits for the composite organization include:

- **Improved productivity for application development and deployment staff, valued at $2.9 million.** By enabling developers to work more efficiently and enabling "citizen developers" to handle simple development projects using its low-/no-code capabilities, IBM Cloud Pak for Business Automation frees up time for developers and expands their impact. The cumulative productivity improvement is 50% in Year 1 and 80% by Year 3.
- **Automation and streamlining of repetitive clerical tasks, valued at $3.2 million.** With IBM Cloud Pak for Business Automation, the composite organization automates and streamlines a wide array of repetitive clerical tasks across multiple functions. It allocates the freed-up staff time to other priorities. The cumulative productivity improvement increases from 50% in Year 1 to 80% by Year 3.
- **Automation and streamlining of call center efforts, valued at $11.1 million.** The composite organization uses IBM Cloud Pak for Business Automation to automate some of the efforts previously handled by its call center workers. The technology identifies incoming customer requests and addresses many of them with automated processes, enabling call center staff to focus on complex inquiries or other support efforts. The cumulative percentage of staff time freed up ranges from 45% in Year 1 to 75% in Year 3.
- **Savings on paper, printing, postage, and physical storage, valued at $6.2 million.** By replacing paper-based customer transactions with digital transactions, the composite organization cuts its expenses for paper, printing, postage, and physical storage. Its per-page cost of documentation drops by 95%.

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

- **Better customer experience.** With IBM Cloud Pak for Business Automation, organizations accelerate customer-facing operations, decrease call center response time, and provide more customer-specific information online.
- **Improved revenue recovery.** Switching from paper-based to largely automated digital transactions enables organizations to readily provide the comprehensive paper trail that customers may expect before paying amounts billed to them.
- **Resiliency to accommodate business disruption.** Having operational and customer service information accessible via desktops enables organizations to continue operating despite disruptions like a pandemic.
- **Increased agility for pursuing new business opportunities.** By enabling developers to work more efficiently, IBM Cloud Pak for Business Automation improves organizations' agility at pursuing new business opportunities.
- **Reduction in expenses from errors and fraud.** Automating workflows (including verifications and validations) and thus decreasing human effort helps organizations reduce their expenses from accidental errors and deliberate fraud, particularly in financial functions.

Costs. Three-year, risk-adjusted PV costs for the composite organization include:

- **IBM software fees of $1.2 million.** IBM software fees include initial license fees and subsequent annual maintenance fees, with a standard level of support.
- **Internal effort valued at $1.9 million to deploy, manage, and support IBM Cloud Pak for Business Automation.** Initial internal effort includes implementation support from IT staff and

business managers and time spent in training for developers and clerical and call center workers. Ongoing costs include management and support from IT staff and business managers.

- **Professional services from IBM and third parties of $716,700.** Professional services firms accelerate implementation, ensure user needs are met, and augment the capacity and expertise of the companies' internal resources.
- **Infrastructure expenses of $932,100.** Infrastructure expenses include the upfront and ongoing costs (including support) for servers used in the composite organization's on-premises installation of IBM Cloud Pak for Business Automation.

The representative interviews and financial analysis found that a composite organization experiences benefits of $23.39 million over three years versus costs of $4.73 million, adding up to a net present value (NPV) of $18.66 million and an ROI of 395%.

"Our employees were working in silos, and nothing was standard. We needed a set of tools that could help standardize and automate our workflows."

— Director of IT, healthcare

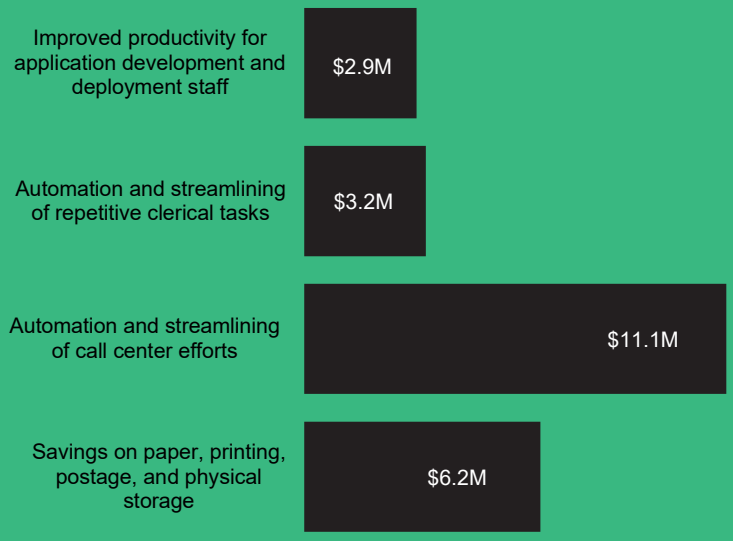
ROI
395%

BENEFITS PV
$23.39M

NPV
$18.66M

PAYBACK
<6 months

Benefits (Three-Year)



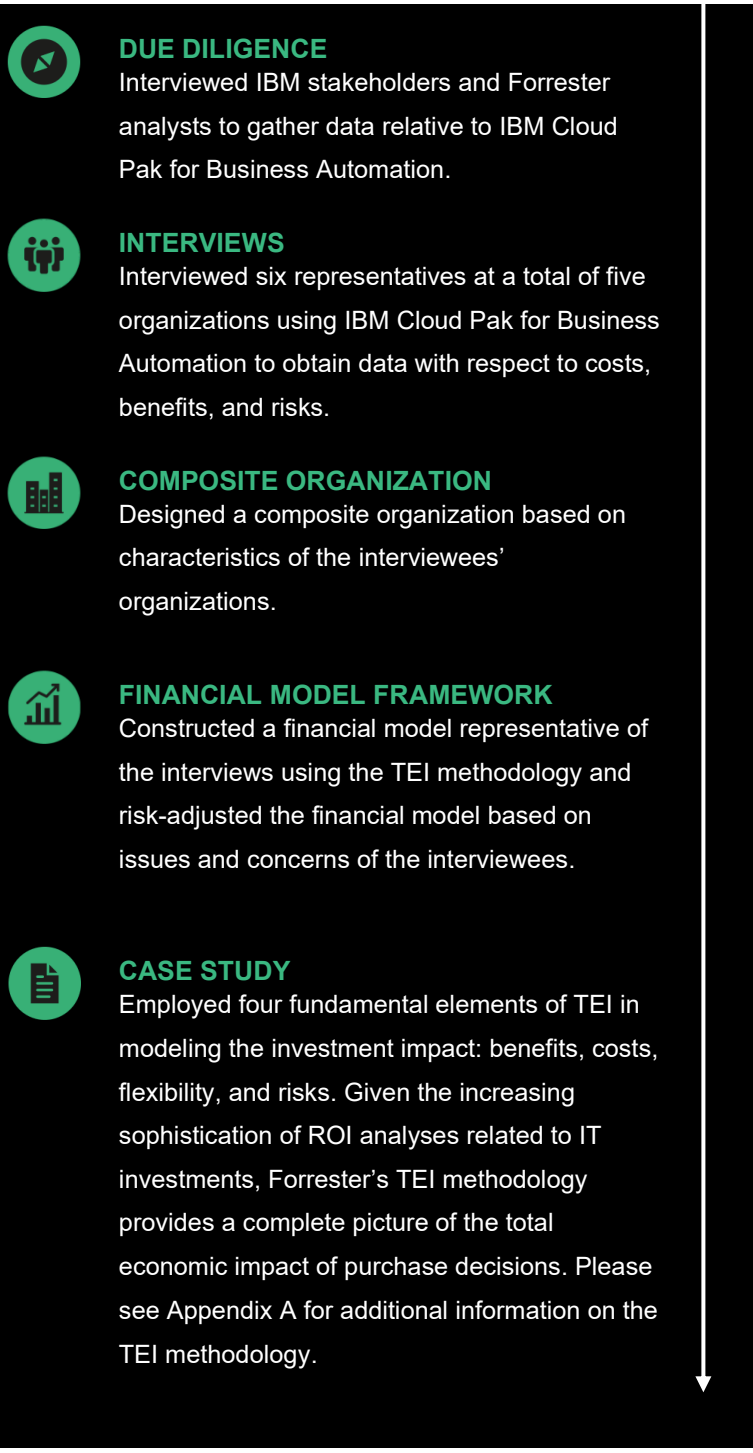
“We have so many business units dependent on the platform that they can’t function without it.”

— Principal systems engineer, telecommunications

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 IBM Cloud Pak for Business Automation.

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 IBM Cloud Pak for Business Automation can have on an organization.



The IBM Cloud Pak For Business Automation Customer Journey

Drivers leading to the IBM Cloud Pak for Business Automation investment

Interviews

Role	Industry	Region	Nature of customers
Head of content management	Logistics	Headquartered in North America; global operations	Businesses and individuals
Technology manager	Telecommunications	Headquartered in North America; global operations	Businesses and individuals
Principal systems engineer	Telecommunications	Headquartered in North America; global operations	Businesses and individuals
VP, IT Infrastructure	Financial services	Headquartered in North America; global operations	Businesses and individuals
Director of IT	Healthcare	Headquartered in North America; regional operations	Individuals
IT professional	Retail	Headquartered in Europe; global operations	Individuals

KEY CHALLENGES

Prior to deploying IBM Cloud Pak for Business Automation, the interviewees' organizations faced ongoing productivity headwinds due to their numerous highly manual processes.

The interviewees noted how their organizations struggled with common challenges, including:

- **Costly lack of operational efficiency.** Interviewees described cumbersome and nonstandardized workflows across a wide range of tasks, including application development and deployment, clerical tasks in financial and human resources groups, and call center operations. Their organizations lacked technology that could help simplify, automate, and streamline processes, and reduce operating costs, by automating and integrating workers' efforts.

  At a telecommunications company, a principal systems manager said, "Everything was standalone from an operations standpoint." A head of content management at a logistics company said, "To document our customers' shipments, somebody would have to go to a scanner, scan the documents in, and then email those scanned documents to the customer."

- **Substantial expense associated with paper-based processes.** Many of the organizations' manual processes were paper-based and generated hefty expenses for paper, printing, postage, and storage. A head of content management at a logistics company said, "We needed to provide our customers with copies of documents from the milestones during the shipping process. Since that all happened on paper, sometimes our distribution centers had stacks of paper taller than people. And we were paying for warehouse space to store those documents."

  An IT professional at a retail company described a paper-based workflow for checking currency: "If there was a bill coming in in a foreign currency, there was a person who went to the internet, checked the price, and wrote it down in the current exchange rate. And then that paper was sent to the next person who calculated the costs of the bill in our own currency. Then that paper was sent to a third person who verified if

everything was correct. We shuffled a lot of paper."

The retail company had a similarly manual process for working with its suppliers to adjust invoices when a delivery didn't match the original order.

- **Suboptimal customer experience.** Because call center interactions relied solely on live staff, customers of the interviewees' organizations often faced excessive wait times to connect. Their many manual processes made it difficult for the organizations to deliver a timely and competitive experience that met customer expectations.

"We did so many mundane tasks manually, and that consumed a lot of time and effort."

VP, IT infrastructure, financial services

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 six decision-makers 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 organization is a North America-based global provider of services to businesses and individuals. The organization strives to continually improve its operational processes and technology to meet its customers' evolving needs, strengthen its competitive position, reduce repetitive and mundane tasks for its employees, standardize its operations, and decrease its operating costs. Prior to deploying IBM Cloud Pak for Business Automation, most of its processes were paper-dependent and manual.

Deployment characteristics. The composite organization implements IBM Cloud Pak for Business Automation using internal resources and third-party professional services. Its implementation is on-premises, although it anticipates moving at least partially to the cloud over time. Each automated process leverages one or multiple capabilities of IBM Cloud Pak for Business Automation, including content capture, content services, document processing, decision management, and robotic process automation (RPA/digital labor). Although IBM Cloud Pak for Business Automation features are available upon installation, to fully capitalize on those features the organization spends additional time on an ongoing basis to expand its use of those features and to capitalize on new features as IBM introduces them. As a result, its benefits from using IBM Cloud Pak for Business Automation increase over the three years captured in this case study.

Key Assumptions

- **Global provider of services to businesses and individuals**
- **Highly manual legacy processes, often paper-based**

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	Improved productivity for application development and deployment staff	$850,500	$1,314,023	$1,443,672	$3,608,195	$2,943,803
Btr	Automation and streamlining of repetitive clerical tasks	$945,000	$1,362,690	$1,604,081	$3,911,771	$3,190,451
Ctr	Automation and streamlining of call center efforts	$3,280,500	$4,505,220	$5,800,410	$13,586,130	$11,063,529
Dtr	Savings on paper, printing, postage, and physical storage	$2,422,500	$2,495,175	$2,570,030	$7,487,705	$6,195,303
	Total benefits (risk-adjusted)	$7,498,500	$9,677,108	$11,418,193	$28,593,801	$23,393,086

IMPROVED PRODUCTIVITY FOR APPLICATION DEVELOPMENT AND DEPLOYMENT STAFF

Evidence and data. Interviewees described two ways in which IBM Cloud Pak for Business Automation improved productivity for application development and deployment staff: 1) by enabling developers to work more efficiently and 2) by enabling citizen developers to handle simple development projects using its low-/no-code capabilities.

IBM Cloud Pak for Business Automation automated certain aspects of creating, testing, deploying, and maintaining applications, which saved time for developers at the interviewees' organizations. A VP of IT infrastructure at a financial services company explained how developers can create a bot or other automation quickly since they need to write little or no code to do so.

A principal systems engineer at a telecommunications company noted efficiencies that result from having diverse applications across the organization use the same platform to address their content management workflow needs. For instance, that engineer indicated that building a repository previously required 48 hours of developer time, but with IBM Cloud Pak for Business Automation required just 1 hour because a new repository could be set up in a shared environment instead being addressed as a standalone effort. That organization's developers used IBM Cloud Pak for Business Automation to streamline and accelerate not only the actual development and management of applications, but also their administrative process around managing business units' development requests (using workflows and eForms).

> **"Using IBM Cloud Pak for Business Automation frees up our developers to do more, because we've been able to automate a lot of what they previously did manually."**
>
> *Principal systems engineer, telecommunications*

A VP of IT infrastructure at a financial services company indicated that hours per build for application deployment projects had dropped from 15 to 6, and that developers spent less time on maintenance of bots and automations because IBM Cloud Pak for Business Automation automates collection and reporting of data on the automation application's performance.

That VP said, "It provides us with a detailed report of which automated tasks were successfully completed and which weren't, and our developers can see why those tasks were not completed. So once an application is active, there's less time spent monitoring and managing its performance. Developers don't need to collect and record the same information every day. We've reduced the developer time required for bot maintenance by about 90%."

In addition, developers at interviewees' organizations no longer needed to execute straightforward development projects, since business staff could address those using IBM Cloud Pak for Business Automation's low-/no-code capabilities. This freed up developer capacity for the interviewees' organizations' more complex development challenges.

A director of IT at a healthcare company indicated that developer time was no longer needed to automate many manual tasks. Instead non-IT employees, usually in business roles, could tackle those automations with IBM Cloud Pak for Business Automation's no-/low-code capabilities. That swap from IT staff to citizen developers freed up an estimated 15% of the development staff's time.

An IT professional at a retail company described having 40% of the organization's development projects now handled almost entirely by its business staff, with developer involvement in those projects cut by 90%. For the remaining 60% of its development projects, developers needed 50% less time, on average, to complete the project.

"For projects that citizen developers can handle, our business units get results faster because they no longer have to wait in our IT department's development queue."

Director of IT, healthcare

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

- IBM Cloud Pak for Business Automation improves productivity for 40 application developers who develop, deploy, and maintain applications.
- The developers' productivity increases by 50% in Year 1, by a cumulative 75% in Year 2, and by a cumulative 80% in Year 3.
- Half of the developers' saved time is productively applied.

Risks. Improved productivity for application development and deployment staff will vary based on:

- The number of developers using IBM Cloud Pak for Business Automation.
- Nature of an organization's development and deployment needs.
- Experience and expertise of the developers.
- Prevailing local compensation rates.

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 $2.9 million.

Improved Productivity For Application Development And Deployment Staff					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
A1	Number of application developers for whom IBM Cloud Pak for Business Automation reduced manual effort	Interviews	40	40	40
A2	Cumulative productivity improvement for application developers	Interviews	50%	75%	80%
A3	Percentage of time savings that is productively applied	TEI standard	50%	50%	50%
A4	Application developer fully burdened compensation (annual)	TEI standard	$94,500	$97,335	$100,255
At	Improved productivity for application development and deployment staff	A1*A2*A3*A4	$945,000	$1,460,025	$1,604,080
	Risk adjustment	↓10%			
Atr	Improved productivity for application development and deployment staff (risk-adjusted)		$850,500	$1,314,023	$1,443,672
	Three-year total: $3,608,195			**Three-year present value: $2,943,803**	

AUTOMATION AND STREAMLINING OF REPETITIVE CLERICAL TASKS

Evidence and data. The interviewees' organizations used IBM Cloud Pak for Business Automation to automate and streamline a wide array of repetitive clerical tasks across multiple functions. This freed up staff time that could be reallocated to other priorities.

A technology manager at a telecommunications company said, "When departments found out what we could do for them, they were elated because it created opportunities for their personnel to do their jobs more efficiently by quickly finding information without having to leave their desks. We use it to streamline management of multiple levels of a department's information." That manager noted 10 different areas within just the payroll department for which IBM Cloud Pak for Business Automation provided workflows and content management, saving 70% of the staff's time on the affected tasks. The manager said, "Because everything now comes in digitally, they don't need to scan it and manually process the data. All they must do is pull it up on the screen and then act on it if further actions are needed." Accounts payable and accounts receivable groups freed up 86% of their staff time, because paper they previously had to find and touch was instead processed and delivered to the staff digitally.

An IT professional at a retail company estimated that their organization saved an hour each week at each of its locations, and 160 hours each week of corporate staff time because of its more efficient workflow for processing invoices in foreign currencies. That improved efficiency also streamlined its supply chain.

A director of IT at a healthcare company described its ability to automate many aspects of onboarding a new supplier, including registering suppliers and uploading their information. In addition, that healthcare company reduced the time that a 10-person team spent manually processing rebates on purchased items from 20% of their workdays to just 1%, because they were able to automate nearly all that process and manually do only spot-checks.

That IT director said, "We previously had a complicated manual way of getting rebates. We

created a bot that would trigger notifications that captured all the info about the purchase itself. It would then schedule — as a task — to send out an email with all the necessary information. It would check after two weeks to see if the money had been returned to our account or credited, and mark the item as closed. Then it would update the financials to say, okay, we may have spent a thousand dollars on gloves, but actually it was $750 because of the credit we got. This new automated process has been one of our biggest advancements from using IBM RPA."

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

- IBM Cloud Pak for Business Automation reduces manual effort for 70 clerical workers who focus on repetitive tasks.
- The clerical workers' productivity increases by 50% in Year 1, by a cumulative 70% in Year 2, and by a cumulative 80% in Year 3.
- Half of the saved time is productively applied.

Risks. Automation and streamlining of repetitive clerical tasks will vary based on:

- The number of workers with less manual effort.
- The nature of the repetitive clerical tasks.
- The workers' comfort with technology.
- Prevailing local compensation rates.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $3.2 million.

Automation And Streamlining Of Repetitive Clerical Tasks

Ref.	Metric	Source	Year 1	Year 2	Year 3
B1	Number of clerical workers with reduced manual effort	Interviews	70	70	70
B2	Productivity improvement for those workers	Interviews	50%	70%	80%
B3	Percentage of saved time that is productively applied	TEI standard	50%	50%	50%
B4	Clerical worker fully burdened compensation (annual)	TEI standard	$60,000	$61,800	$63,654
Bt	Automation and streamlining of repetitive clerical tasks	B1*B2*B3*B4	$1,050,000	$1,514,100	$1,782,312
	Risk adjustment	↓10%			
Btr	Automation and streamlining of repetitive clerical tasks (risk-adjusted)		$945,000	$1,362,690	$1,604,081
	Three-year total: $3,911,771			**Three-year present value: $3,190,451**	

AUTOMATION AND STREAMLINING OF CALL CENTER EFFORTS

Evidence and data. The combination of IBM Cloud Pak for Business Automation's robotic process automation, content capture, document processing, and workflow automation capabilities enabled interviewees' organizations to automate certain efforts previously handled by call center workers. The technology identified incoming customer requests and initiated automated processes that in many cases could sufficiently address them. As a result, call center staff time could be dedicated to more complex inquiries.

This allowed interviewees' organizations to service a greater volume of customer inquiries with existing staff, decrease hiring as turnover created vacancies, or reallocate some call center workers to other customer support roles.

In describing how IBM Cloud Pak for Business Automation improved the efficiency of a telecommunications company's fleet services call center by nearly 80%, a technology manager said: "We used the technology to automate their processes, making them better and more efficient. We automated everything from vehicle registrations to ongoing services. If a vehicle needed to have a flat tire fixed, the fleet services worker could digitally submit a receipt from a mom-and-pop gas station with a request for payment, and get it paid faster because it was processed through our automated system."

A VP of IT infrastructure at a financial services company noted a 50% reduction in call center effort to date and estimated that would become a cumulative 75% decrease in another year or two as additional applications were automated.

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

- The composite organization has a baseline of 200 call center workers.
- Automation and process streamlining free up 45% of the workers' time in Year 1, a cumulative 60% in Year 2, and a cumulative 75% in Year 3.

Risks. Automation and streamlining of call center efforts will vary based on:

- The number of call center workers.
- Nature of the questions and issues fielded by call center workers.
- The workers' comfort with technology.
- Prevailing local compensation rates.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $11.1 million.

Automation And Streamlining Of Call Center Efforts

Ref.	Metric	Source	Year 1	Year 2	Year 3
C1	Baseline number of call center workers	Interviews	200	200	200
C2	Percentage of call center staff time freed up due to automation and process streamlining	Interviews	45%	60%	75%
C3	Call center worker fully burdened compensation (annual)	TEI standard	$40,500	$41,715	$42,966
Ct	Automation and streamlining of call center efforts	C1*C2*C3	$3,645,000	$5,005,800	$6,444,900
	Risk adjustment	↓10%			
Ctr	Automation and streamlining of call center efforts (risk-adjusted)		$3,280,500	$4,505,220	$5,800,410
	Three-year total: $13,586,130			**Three-year present value: $11,063,529**	

SAVINGS ON PAPER, PRINTING, POSTAGE, AND PHYSICAL STORAGE

Evidence and data. By digitizing and automating many efforts that were previously paper-based and manual, the interviewees' organizations significantly decreased their expenses for paper, printing, postage, and physical storage.

A technology manager at a telecommunications company said, "By providing personnel with the ability to access data from their desk instead of having to find and use a paper copy, we freed up warehouses full of paper that we used to have to store. Now the information automatically goes directly to their desktops. They don't need to print it. We've saved millions of dollars." A director of IT at a healthcare company described using a combination of RPA and workflow automation capabilities to digitize processes that previously were paper-based and reduce the related expenses.

At a logistics company, a head of content management explained how "virtual packets" replaced as many as 20 pages of documentation that it previously had printed and included with each shipment, totaling millions of pages of paper annually. That packet provided links to the documents in digital form.

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

- The annual number of paper-based transactions replaced by digital transactions is 2 million in Year 1 and grows 3% in each of Years 2 and 3.
- Each paper-based transaction had averaged five pages that were printed, postal mailed, and stored.
- The per-page cost for paper, printing, postage, and storage is $.30.
- By switching to digital documentation, the organization's per-page cost decreases by 95%.

Risks. Savings on paper, printing, postage, and physical storage will vary based on:

- Annual number of transactions.
- Average number of pages per transaction.
- Choice of color versus black and white printing.
- Geographic location of customers and resulting postal rates.
- Prevailing local rental rates for storage space.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of $6.2 million.

"We canceled leases on warehouses full of printed documents. Now that information is all available in an online content repository."

Head of content management, logistics company

Savings On Paper, Printing, Postage, And Physical Storage					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
D1	Annual number of paper-based transactions replaced by digital transactions	Interviews	2,000,000	2,060,000	2,121,800
D2	Average number of pages previously printed, postal mailed, and stored per transaction	Interviews	5	5	5
D3	Total number of pages	D1*D2	10,000,000	10,300,000	10,609,000
D4	Per page costs for paper, printing, postage, and physical storage	Interviews	$0.30	$0.30	$0.30
D5	Cost reduction from switching to digital documentation	Forrester estimate	95%	95%	95%
Dt	Savings on paper, printing, postage, and physical storage	D3*D4*D5	$2,850,000	$2,935,500	$3,023,565
	Risk adjustment	↓15%			
Dtr	Savings on paper, printing, postage, and physical storage (risk-adjusted)		$2,422,500	$2,495,175	$2,570,030
	Three-year total: $7,487,705			**Three-year present value: $6,195,303**	

UNQUANTIFIED BENEFITS

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

- **Better customer experience.** IBM Cloud Pak for Business Automation improved the customer experience for interviewees' organizations in multiple ways.

  Its built-in chatbot and interactive voice response (IVR) capabilities freed up call center staff time by automating certain tasks that staff previously handled manually. It enabled the interviewees' organizations' customers to get faster resolution of certain needs and spend time engaging with call center staff only on their more complex and challenging issues.

  A VP of IT infrastructure at a financial services company said: "We used to have customers waiting for at least 15 or even 20 minutes for their support questions to be handled. Now, customers can go to the website and have bots answer the most common questions. It's all automated through speech recognition, work recognition, type recognition." A head of content management at a logistics company said, "By moving all paper-based customer content to digital content that could be viewed online, we removed delays that customers faced in the past."

  IBM Cloud Pak for Business Automation also helped speed up operations and better serve customers by reducing operational staff time previously diverted to manual paper-based processes and providing additional customer-specific information online. A head of content management at a logistics company said: "At all our distribution points, the freight operators recovered a lot of time because they no longer needed to stop what they're doing to move freight and instead go over to a copy machine, copy documents, and send them out to a customer. All

that went away. So now they can focus on improving the movement of freight through their station."

- **Improved revenue recovery.** A head of content management at a logistics company explained that delayed or lost paperwork had previously impaired that organization's ability to collect revenue from some of its customers for their shipments. The company lacked a digital trail that would enable it to confirm it had billed the customer in a timely manner and provided all required documents.

  That head of content management said, "They weren't getting the bills on time, because the folks on the ground weren't able to say, 'Oh yes, we have that right here. Let me just send it to you.' They couldn't do that because they had to find whichever folder they stored all these in. We used to have warehouses full of copies of shipping documents. If somebody had to go find a document, they'd have to go look through those pallets of documents. Then they would have to go find it again later to follow up and try to get it paid. It was a mess."

  After deploying IBM Cloud Pak for Business Automation, the organization was able to recover a higher percentage of the revenue owed to it, while also improving the customer experience.

- **Resiliency to accommodate business disruption.** A head of content management at a logistics company said of that company's IBM Cloud Pak for Business Automation implementation: "Because everything we need to keep operations moving and service our customers is now available via desktops, the pandemic didn't impact us like it would have if we had not implemented this. Our operations were down to a limited skeletal crew, but we did and continue to do OK."

- **Increased agility for pursuing new business opportunities.** An IT professional at a retail company said: "We don't need to have experts in enterprise content management anymore, and, in general, developers can work faster. So as a company we can be more agile. Our time-to-market with a new idea is shorter."

- **Reduction in expenses from errors and fraud.** A director of IT for a healthcare company said: "Errors have decreased because there's no human error — you tell the system what to do. Removing people plus adding automated workflows and safeguards equals fewer errors." As an example, that director described how document processing automation helped avoid potential accounting errors, such as charging an expense to an incorrect budget code or having a general ledger account exceed expected ranges.

  That director also explained how automated processes developed with IBM Cloud Pak for Business Automation helped reduce fraud: "It does a verification to ensure that an expense is legitimate expense, by looking in the system and trying to tie the purchase order with the service request. It's looking to see if anyone may have ordered something they shouldn't have or were trying to avoid a process. It also does general validation work, and ensures we save all the receipts and document all the POs. If we later need to go back and explain what happened, then we definitely can do that as well."

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might implement IBM Cloud Pak for Business Automation and later realize additional uses and business opportunities, including:

- **Leverage deployed capabilities more fully, including via AI.** After deployment, interviewees' companies continued to discover new ways to

leverage the extensive functionality within IBM Cloud Pak for Business Automation.

For instance, an IT professional at a retail company looked forward to capitalizing on the AI capabilities within it, noting: “We have a lot of ideas and things we want to find out, create, and share with other people here the company. AI can come into the document automation process, and it takes a big part in document classification and self-learning and things like that. We’re trying to show our departments what you can do with AI, because it can be groundbreaking within our company.”

- **Deploy additional capabilities.** Because IBM Cloud Pak for Business Automation is an integrated set of modular software components addressing multiple aspects of automation, interviewees’ organizations typically leveraged more of those components over time.
- **Expand use to additional business units and functions.** As awareness of what can be accomplished with IBM Cloud Pak for Business Automation increased across interviewees’ organizations, its use also increased.

  A principal systems engineer at a telecommunications company said, “As more departments found out what we can do and how we can manage their data, they wanted to work with us to manage their content more efficiently. We had originally started working with IBM Cloud Pak for Business Automation because of our finance department but quickly began to move it out of just finance and to the enterprise.”

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

Interviewees from two organizations mentioned an additional scenario: migrating some of their IBM Cloud Pak for Business Automation deployments to the cloud and leveraging the platform’s OpenShift capabilities and containerization. A retail company had begun to shift some of its IBM Cloud Pak for Business Automation applications to an OpenShift environment, while a telecommunications company anticipated doing so in the next few years.

Those interviewees cited the following as potential benefits from moving to the cloud and OpenShift:

- **Reduced expenses to acquire and manage servers.** An IT professional at a retail company explained, “By moving our IBM Cloud Pak for Business Automation efforts to OpenShift in the cloud, we’ll cut our costs for servers, for the operating system software that each server needs, and for the people time to maintain, patch, and upgrade those servers. We won’t have to know about or do anything with the servers on which the OpenShift environment runs.”

  Elaborating on anticipated IT staff time savings, that IT professional noted that if something inside a container isn't working, the container is automatically shut down and its contents are moved to another container. The IT professional said: “If a server runs badly and must be restarted, it will all be done automatically. So we’ll no longer need someone to look at the server, shut it down, and restart it.”

  In explaining the potential for significant reduction in IT maintenance expenses, a principal systems engineer at a telecommunications company said: “From a cost perspective, maintenance should be drastically reduced. Today we have to grab the software, install it, update it, and so on, instead of just sliding in a container that’s provided by the vendor.”
- **Improved scalability and flexibility.** An IT professional at a retail company said, “One of the biggest drivers for us about the licensing model and the container strategy is that you can scale up in a very short time. For instance, at the end of each month, we get a lot of bills, and they must

be scanned very fast. So we need more compute power for scanning, which we don't need in the beginning of the month. With containerization, we can juggle the compute power we have, and say, 'Okay. Right now, we need more power on document processing.' And later: 'Now, we need more power on scanning.' Or, 'We need more power on decisions.' This flexibility is one of the biggest advantages and benefits we are hoping to achieve in the cloud environment."

- **Additional functionality.** A technology manager at a telecommunications company said: "We've wanted to go to the cloud version with OpenShift for a while, and that's because of the toolsets it offers. For some of our internal clients' needs, it provides functionality and serviceability that our current product doesn't have."

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 software fees	$780,000	$156,000	$156,000	$156,000	$1,248,000	$1,167,949
Ftr	Internal effort for deployment, management, and support	$714,141	$465,722	$488,850	$494,085	$2,162,798	$1,912,746
Gtr	Professional services from IBM and third parties	$550,000	$88,000	$55,000	$55,000	$748,000	$716,777
Htr	Infrastructure expenses	$385,000	$220,000	$220,000	$220,000	$1,045,000	$932,107
	Total costs (risk-adjusted)	$2,429,141	$929,722	$919,850	$925,085	$5,203,798	$4,729,579

IBM SOFTWARE FEES

Evidence and data. IBM software fees reflect licenses and maintenance for IBM Cloud Pak for Business Automation, with a standard level of support.

Since license and maintenance costs are determined by customer-specific factors, consult with IBM for likely costs specific to your organization when conducting your analysis. Your organization's fees may differ from the composite organization's fees.

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

- IBM Cloud Pak for Business Automation is deployed on-premises.
- Initial license fees total $650,000.
- Annual maintenance fees are $130,000.

Risks. IBM software fees will vary based on:

- How many and which IBM Cloud Pak for Business Automation capabilities are implemented.
- Scope and complexity of the implementation.
- Prior state of the operations that are automated.
- Whether deployment is on-premises or in the cloud.

Results. To account for these risks, Forrester adjusted this cost upward by 20%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $1.2 million.

IBM Software Fees						
Ref.	**Metric**	**Source**	**Initial**	**Year 1**	**Year 2**	**Year 3**
E1	IBM Cloud Pak for Business Automation licenses and maintenance	Interviews	$650,000	$130,000	$130,000	$130,000
Et	IBM software fees	E1	$650,000	$130,000	$130,000	$130,000
	Risk adjustment	↑20%				
Etr	IBM software fees (risk-adjusted)		$780,000	$156,000	$156,000	$156,000
	Three-year total: $1,248,000			**Three-year present value: $1,167,949**		

INTERNAL EFFORT FOR DEPLOYMENT, MANAGEMENT, AND SUPPORT

Evidence and data. The interviewees' organizations implemented IBM Cloud Pak for Business Automation using a team of business managers and varied IT staff (architects, tech leads, developers) who determined and delivered on initial use cases through a process of determining requirements and then designing, building, and testing systems.

Implementation also included training application developers and call center and clerical workers. Application developers attended IBM training while internal staff trained the call center and clerical workers.

On an ongoing basis, IT staff continued to expand their organization's use of IBM Cloud Pak for Business Automation capabilities, guided by input from business managers on their organizations' most pressing needs. They also addressed user questions, managed updates, configured new document classes as needed, and kept applications based on IBM Cloud Pak for Business Automation up and running.

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

- IT staff spend a combined 7,000 hours on deployment, and 6,240 hours on management and support in each of Years 1, 2, and 3.
- Forty developers are trained on using IBM Cloud Pak for Business Automation in their development efforts, spending an initial 20 hours in training and an additional hour in Year 2 to address new functionality.
- Business managers spend a combined 4,160 hours on deployment and 2,080 hours on management and support in each of Years 1, 2, and 3.
- 270 clerical and call center workers are trained on using applications developed with IBM Cloud Pak for Business Automation, spending an initial 4 hours in training and an additional hour in Year 2 to address new functionality.

Risks. Internal effort for deployment, management, and support will vary based on:

- Prior state of the operations that are automated.
- Scope and complexity of the IBM Cloud Pak for Business Automation deployment.
- Whether the deployment is on-premises or in the cloud.

- Amount of content an organization migrates into IBM Cloud Pak for Business Automation.
- The number of users trained.
- Users' comfort with technology.
- Experience and capabilities of the organization's IT staff and business managers.
- The extent to which the organization continues to expand and evolve its use of IBM Cloud Pak for Business Automation's full capabilities.
- Prevailing local compensation rates.

Results. To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year, risk-adjusted total PV of $1.9 million.

Internal Effort for Deployment, Management, And Support

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
F1	IT staff time for deployment, management, and support (hours)	Interviews	7,000	6,240	6,240	6,240
F2	Number of IT staff trained on using IBM Cloud Pak for Business Automation	Interviews	40		40	
F3	Hours spent in training	Interviews	20		1	
F4	Blended IT fully burdened hourly compensation	TEI standard	$45.43	$45.43	$46.79	$48.20
F5	IT staff time	(F1+(F2+F3))*F4	$354,354	$283,483	$293,859	$300,747
F6	Business manager time for deployment, management, and support (hours)	Interviews	4,160	2,080	2,080	2,080
F7	Average business manager fully burdened hourly compensation	Interviews	$58.41	$58.41	$60.16	$61.97
F8	Business manager time	F6*F7	$242,986	$121,493	$125,138	$128,892
F9	Number of clerical and call center workers trained on using applications based on IBM Cloud Pak for Business Automation	Interviews	270		270	
F10	Hours spent in training	Interviews	4		1	
F11	Blended clerical and call center worker fully burdened hourly compensation	TEI standard	$21.90	$21.90	$22.56	$23.23
F12	Clerical and call center worker time	F9*F10*F11	$23,652		$6,090	
Ft	Internal effort for deployment, management, and support	F5+F8+F12	$620,992	$404,976	$425,087	$429,639
	Risk adjustment	↑15%				
Ftr	Internal effort for deployment, management, and support (risk-adjusted)		$714,141	$465,722	$488,850	$494,085
	Three-year total: $2,162,798			**Three-year present value: $1,912,746**		

PROFESSIONAL SERVICES FROM IBM AND THIRD PARTIES

Evidence and data. The interviewees' companies used IBM and third-party consultants to supplement the capacity and capabilities of their internal staff. This enabled them to accelerate implementation and ensure user needs were met.

After going live with IBM Cloud Pak for Business Automation, the interviewees' companies continued to work closely with consultants to refine and expand upon the initial deployment.

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

- Professional services from IBM and third parties total $500,000 during implementation, $80,000 in Year 1, $50,000 in Year 2, and $50,000 in Year 3.

Risks. Professional services from IBM and third parties will vary based on:

- Prior state of the operations being automated.
- Scope and complexity of the IBM Cloud Pak for Business Automation deployment.
- Magnitude and nature of an organization's internal resources.
- Availability and cost of external consultants.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of $716,700.

Professional Services From IBM And Third Parties

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
G1	Implementation and ongoing assistance	Interviews	$500,000	$80,000	$50,000	$50,000
Gt	Professional services from IBM and third parties	G1	$500,000	$80,000	$50,000	$50,000
	Risk adjustment	↑10%				
Gtr	Professional services from IBM and third parties (risk-adjusted)		$550,000	$88,000	$55,000	$55,000
	Three-year total: $748,000			**Three-year present value: $716,777**		

INFRASTRUCTURE EXPENSES

Evidence and data. Because nearly all interviewees' organizations deployed IBM Cloud Pak for Business Automation on-premises, they had initial and ongoing expenses for servers to handle compute and storage needs across development, production, and back-up environments. In addition, they needed IT staff to manage and maintain the servers including handling updates, modifying configurations, and answering user questions.

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

- The initial purchase of servers during implementation totals $350,000.
- Server expenses (including space and electricity) total $50,000 in each of Years 1, 2, and 3.
- Fully burdened IT staff time for server management and maintenance totals $150,000 in each of Years 1, 2, and 3.

Risks. Infrastructure expenses for IBM Cloud Pak for Business Automation will vary based on:

- Whether the organization implements IBM Cloud Pak for Business Automation on-premises or in the cloud.
- The scope and complexity of the deployment.
- Volume of transactions and data.
- Prevailing rates for servers and server-related expenses.
- Prevailing local compensation rates.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of $932,100.

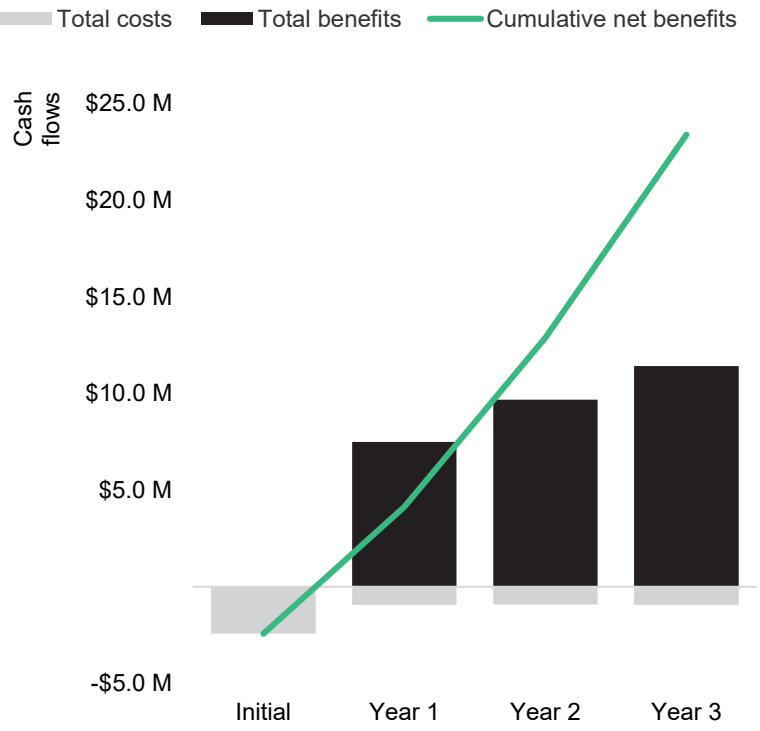
Infrastructure Expenses

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
H1	Servers (compute and storage, across development, production, and backup environments)	Interviews	$350,000	$50,000	$50,000	$50,000
H2	IT staff for server management and maintenance	Interviews		$150,000	$150,000	$150,000
Ht	Infrastructure expenses	H1+H2	$350,000	$200,000	$200,000	$200,000
	Risk adjustment	↑10%				
Htr	Infrastructure expenses (risk-adjusted)		$385,000	$220,000	$220,000	$220,000
	Three-year total: $1,045,000			**Three-year present value: $932,107**		

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	($2,429,141)	($929,722)	($919,850)	($925,085)	($5,203,798)	($4,729,579)
Total benefits	$0	$7,498,500	$9,677,108	$11,418,193	$28,593,801	$23,393,086
Net benefits	($2,429,141)	$6,568,778	$8,757,257	$10,493,108	$23,390,002	$18,663,507
ROI						395%
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] 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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