A Forrester Total Economic Impact™
Study Commissioned By IBM
May 2018

The Total Economic Impact™ Of IBM SPSS Modeler

Business Benefits And Data Science Productivity Enabled By SPSS Modeler

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ABOUT FORRESTER CONSULTING

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Key Benefits

Business value generated by SPSS Modeler:

54% of total three-year benefits are from incremental business growth

Data scientist productivity improvement:

40% productivity improvement for data scientists

Return on investment

480% ROI

Executive Summary

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

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed several customers with years of experience using SPSS Modeler. SPSS Modeler is a visual productivity tool used as part of the data science life cycle to help organizations gain predictive accuracy, uncover data patterns, and improve decision making.

The interviewed organizations were using multiple disconnected tools and consulting services to support data science initiatives prior to their SPSS Modeler investments. These tools created cost and time inefficiencies and couldn't provide the advanced model management and deployment capabilities needed to drive business impact. Without an end-to-end platform for data science, the organizations struggled to transform business through predictive insights.

With SPSS Modeler, the interviewed customers gained access to new features and techniques that enable them to build machine learning models ranging from simple to advanced neural networks. These models help business teams seize growth opportunities, cut costs, and avoid risks. Interviewed organizations can now support more data science projects by improving the productivity of data science teams and reducing the growth rates of their teams while increasing their output incrementally.

The visual modeling features of SPSS Modeler enable these organizations to empower "citizen data scientists," employees who understand business use cases and data but don't have the coding skills of programmatic data scientists. Business analysts can use drag-and-drop features to access and prepare data, build models, and deploy models in production in a unified environment with access to structured and unstructured data including text analytics. Data scientists and analysts can use 40+ out-of-the-box machine learning algorithms to deploy well-known functions and blend code-based models to provide customized results and experiments.

Having business, IT, and data scientists working within the same platform improves collaboration and productivity, which leads to faster, more impactful business outcomes. Interviewed customers vary in size and industry — yet all have felt a positive impact proportional to the scale of implementation.

Key Findings

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

- **54% of total benefits are from incremental business impact due to SPSS Modeler over three years.** Interviewees use SPSS Modeler to identify patterns in data and create predictive models that allow them to work with business teams to create impactful changes. These include improvements to conversion rates, pricing, fraud detection, inventory forecasts, and decisions on capital investments.
- **Data scientists are 40% more productive, helping organizations**

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Benefits PV
$2.4 million

NPV
$2 million

Payback
7 months

Cost savings
$337,000

avoid hires needed to keep pace with demand. SPSS Modeler makes the entire data science life cycle more efficient, allowing technical and citizen data scientists to spend more time adding value by building more models, training models, and improving existing models. Teams support more demand for projects without adding headcount.

- **Organizations save on cost by replacing existing tools and processes with SPSS Modeler.** On average, organizations save $50,000 annually in consulting services, $10,000 per year in license costs for previous tools, and up to almost 1,700 hours of IT time with simpler model deployment.

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

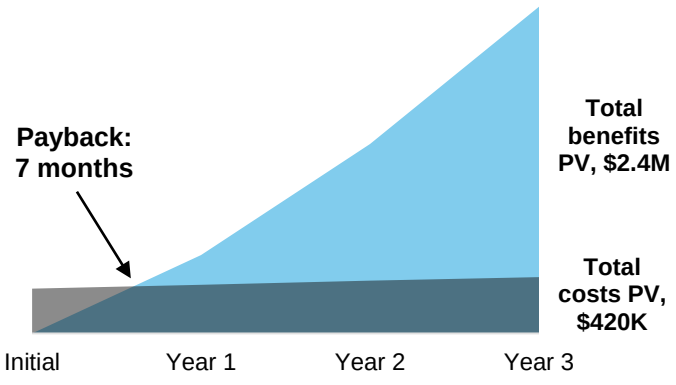
- **Business analysts perform ad hoc data tasks more efficiently.** Business users utilize SPSS Modeler to automate tasks, prepare data, and create ad hoc reports and simple models. Using the same platform improves collaboration between data scientists and business users.
- **Organizations onboard new hires faster.** The visual features of SPSS Modeler allow new hires to get up to speed on models faster than they would by sorting through and debugging lines of code.

Costs. The interviewed organizations experienced the following risk-adjusted PV costs:

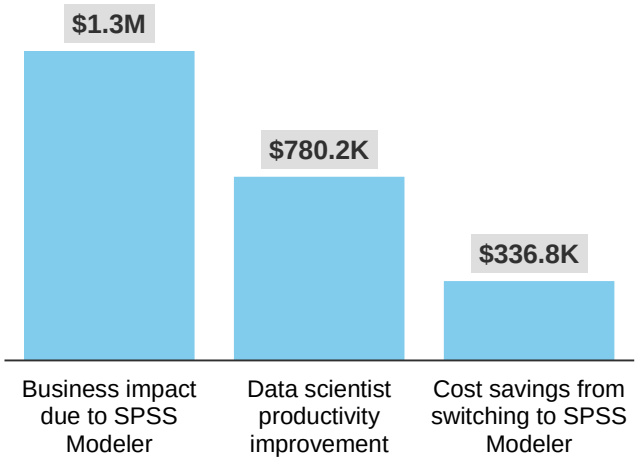
- **Installation and implementation costs.** Installation of SPSS Modeler was quick, while the implementation time for initial data science projects ranged from eight weeks to two years, depending on complexity, customization, and learning curve. Interviewees used a combination of professional services and staff time to implement SPSS Modeler.
- **SPSS Modeler license costs.** Interviewees chose perpetual licenses that include desktop clients for a certain number of users and core-based pricing for the server client.
- **Training costs.** Interviewees received minimal upfront official training, ranging from a few hours to a week-long training course.

Forrester's interviews with four existing customers and subsequent financial analysis found that a composite organization based on these interviewed organizations experienced benefits of $2.4 million over three years versus costs of $420,000, adding up to a net present value (NPV) of $2 million and an ROI of 480%.

Financial Summary



Benefits (Three-Year)



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TEI Framework And Methodology

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

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 SPSS Modeler can have on an organization:

The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

DUE DILIGENCE
Interviewed IBM stakeholders and Forrester analysts to gather data relative to SPSS Modeler.

CUSTOMER INTERVIEWS
Interviewed four organizations using SPSS Modeler to obtain data with respect to costs, benefits, and risks.

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

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

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

The IBM SPSS Modeler Customer Journey

BEFORE AND AFTER THE SPSS MODELER INVESTMENT

Interviewed Organizations

For this study, Forrester conducted four interviews with IBM SPSS Modeler customers. Interviewed customers include the following:

INDUSTRY	INTERVIEWEE	USE OF SPSS MODELER
Financial services	Head of predictive analytics and data mining	More than 6 years
Insurance	Head of pricing	2.5 years
Industrial manufacturing	Manager of business intelligence	6 years
Integrated retail/ manufacturing	Head of business analytics	3 years

Key Challenges

The interviewees discussed several challenges arising from their previous analytics processes:

- **Interviewed organizations typically had multiple tools for data analytics, but none that provided a cohesive platform.** Common tools prior to SPSS Modeler included spreadsheet software, database management systems, less robust statistics and analytics tools, and open source software. Much of this analysis was descriptive, driven by historical data. Interviewees struggled with some previous analytics tools, noting that they could only build simple models and that the interfaces were poorly designed. Some interviewees contracted external consultants to build more advanced models, but this was a costly and inefficient workaround. Organizations wanted to develop those insights internally and wanted one end-to-end platform to enable better collaboration.
- **Interviewed organizations had access to a lot of data, but they didn't know how to get insights out of it, and prior tools limited data scientist efficiency.** Most of the interviewees had limited experience with predictive modeling prior to SPSS Modeler. They needed a platform that could handle large data sets, combine data from different sources, and provide access to special algorithms that could find new patterns in the data to make better decisions. The interviewees also sought to deploy models in real time. Data scientists struggled with time-consuming data preparation and deployment work with IT that limited the amount of time they could spend on actual model development and analysis. Some organizations had citizen data scientists, familiar with data but with fewer coding skills, who looked for a platform that would be easy to use.
- **The organizations faced increasing pressure to derive insights from data and respond to competitive forces in the market.** Most of the interviewees approached the investment in SPSS Modeler with several key performance indicators (KPIs) that they aimed to explain and influence. Others wanted to automate data processes that were inefficient, with data in multiple places without one platform to bring it

> "Especially in the middle of the economic downturn — we said okay, we have this asset of data. We have been very good at using data to look at business from a historical perspective and from a current perspective. But it's been elusive for us to really do much prediction. So, the idea was, 'Why don't we give it a try?'"
>
> *Manager of business intelligence, industrial manufacturing company*

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all together. The interviewees realized the value that remained unlocked within their existing data and saw the investment as an opportunity to drive competitive advantage.

Key Results

The interviewees discussed several key results from the SPSS Modeler investment:

- **SPSS Modeler provides versatility through coding-optional functionality, opening the door for citizen data scientists.** While most interviewees are focusing on the impact of using SPSS Modeler for traditional data scientist roles, they acknowledge the growing impact of the drag-and-drop interface in empowering business roles to derive value from the platform. This includes efficiency for business users on ad hoc data tasks, data preparation, and data analysis. Having business and technical roles work within the same platform also improves collaboration across teams and facilitates decision making based on model results. Organizations also acknowledged the option for business analysts to be promoted to citizen data scientists in the future, alleviating hiring concerns for data scientist roles. One organization had no traditional data scientist team and instead used citizen data scientists to build predictive models with SPSS Modeler.
- **Data scientists are more efficient with SPSS Modeler, allowing them to spend more of their time on high-value work.** Organizations report improved efficiency in data preparation, building models, and deploying models with SPSS Modeler. This frees up time for data scientists to experiment more, explore new algorithms, and maintain model accuracy over time. This productivity ties directly to the incremental business value generated by these projects.
- **The interviewees use predictive models built with SPSS Modeler to drive significant business value and agility.** Interviewees use SPSS Modeler to discover new patterns in their existing data that inform key business decisions. The results of these decisions include additional process automation, optimized pricing, increased conversion rates for marketing campaigns, increased agility in changing the pricing methodology, and reduced risk of fraud.

> "What we like about SPSS Modeler is, of course, the modeling capability, including the machine learning algorithms, and it's very useful that you can build the stream starting from data preparation to model development and deployment. It helps a lot that you have all that in your package, extensible to open source innovation with Python and R. We see the model more as a workbench where we combine everything because there are some employees that prefer to work with R, and with this we can tell them, 'Come onto the platform and you can use R or Python.' The text analytics tool, of course, is important for understanding sentiment and detecting potential fraud."
>
> *Head of predictive analytics and data mining, financial services company*

Composite Organization

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

Description of composite. The composite organization is a global company with $6.5 billion (USD) in annual revenue and 22,000 employees. Prior to the SPSS Modeler deployment, the organization did not have a centralized data science team. Instead, it had six data scientists of varying technical skill in one part of the business building simple models using tools like database management software, spreadsheet software, and less robust statistical analysis tools. The data scientists were looking mostly at historical data, had a difficult time

finding and accessing data, and were unable to confidently answer business questions using these models. The organization partnered with external consultants to build a predictive model, but this service was costly and required significant IT time to put this model in production.

Deployment characteristics. With SPSS Modeler, the department's data science team can build robust predictive models more efficiently than it could build the simpler models in the prior state. The data scientists use these time savings to experiment more and to take on more projects. In Year 1, the team focuses on two major business problems and continues to add one major project each year. Over time, the data science team grows to keep up with this demand. Business analysts also use SPSS Modeler for simple models, data preparation, and ad hoc queries and reports, as well as to automate some tasks.

Key assumptions

Six data scientists initially

Four major data projects over three years

SPSS Modeler significantly reduces time to go live, saves implementation services, and minimizes the need for one-off, simple modeling tools.

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	Business impact due to SPSS Modeler	$360,000	$540,000	$720,000	$1,620,000	$1,314,500
Btr	Data scientist productivity improvement	$162,000	$324,000	$486,000	$972,000	$780,180
Ctr	Cost savings from switching to SPSS Modeler	$121,380	$135,456	$152,347	$409,183	$336,753
	Total benefits (risk-adjusted)	$643,380	$999,456	$1,358,347	$3,001,183	$2,431,433

Business Impact Due To SPSS Modeler

With SPSS Modeler, data scientists can enable impactful change for business teams. This is one of the most important and visible benefits from the implementation. SPSS Modeler allows data scientists to use their time more productively to build and deploy better models (see next benefit). Data scientists gain access to improved functionality that allows them to surface new insights in response to business questions. Some examples of the business impact created with SPSS Modeler include:

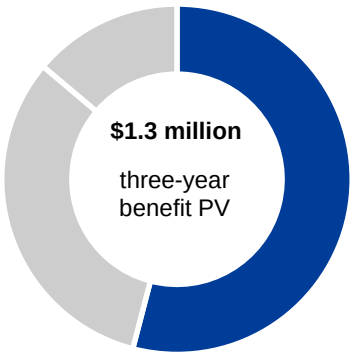
› **Increasing revenue.** Organizations have increased revenue by:

- Improving the conversion rate for marketing campaigns by up to a factor of 5, creating a 30% increase in revenue for those campaigns.
- Using pricing models to optimize pricing systems, generating several million dollars in revenue.
- Delivering price quotes three times faster than before.
- Predicting revenue using nonfinancial metrics to understand what influenced revenue. One interviewee said: “I looked at inquiry type metrics, and I tied that against our actual revenue, and what I found was there was a six-month lag from the time these activities happened to the time we actually saw revenue. It is probably 92% to 93% accurate over time to predict our revenue within a certain range. It has forced us to say, ‘How can we predict these influencers?’”

› **Decreasing costs.** Organizations have decreased costs by:

- Using SPSS Modeler to discover that a business challenge was not a problem as previously thought, allowing the organization to avoid a capital investment. The interviewee at this organization stated, “What SPSS Modeler helped us do is to understand in the data that our problem was not what we thought.”
- Using SPSS Modeler to analyze transactions to detect fraud, resulting in reduced risk to the organization.
- Using SPSS Modeler to forecast demand more accurately, resulting in reduced inventory.

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of over $2.4 million.



Business impact: **54%** of total benefits

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All the interviewees mentioned that accessing this kind of value was not possible before SPSS Modeler. One interviewee said, "With millions of data, you can find patterns, you get information out of it, but that was not possible before." Another interviewee said, "Before the acquisition of IBM SPSS Modeler, we couldn't even think about that [project]. It gives us a new range of possibilities."

For the composite analysis, Forrester assumes that:

- In the first year, the data science team works on two new large projects to solve business challenges. In Years 2 and 3, the team works on two additional major projects — one project each year.
- In subsequent years, data scientists refine those models to continue to add value to the business teams. Some interviewees believe that over time, as models are improved, they will generate more value for each project. Forrester conservatively assumes that, on average, the value generated each year per project remains at $450,000.
- To calculate the true impact to the business, Forrester looks at an average of the cases mentioned above, using interviewees' operating margins to calculate the impact of incremental revenue less costs to generate that revenue (operating profit).
- While SPSS Modeler plays a significant role in generating this impact, other factors may contribute to the magnitude of this benefit. To be conservative, 50% of the value generated can be directly attributed to SPSS Modeler.

Multiple risks could affect this benefit estimate:

- Some interviewees cautioned about the need to validate data produced before acting on that data. One interviewee stated: "You still need to investigate the reasonableness of what it's saying. Over time, what we found is that the system is more often right than wrong."
- Some interviewees actively sought new business challenges to solve on a regular basis while others focused on a few challenges over the course of several years.
- While Forrester conservatively assumes that the value generated by each project remains the same each year, there is a possibility that models may lose their accuracy and impact over time if not maintained.

To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year risk-adjusted total PV of $1.3 million.

"We are able to explore [a new business goal] this year. Before the acquisition of IBM SPSS Modeler, we couldn't even think about that. It gives us a new range of possibilities."

Head of pricing, insurance company

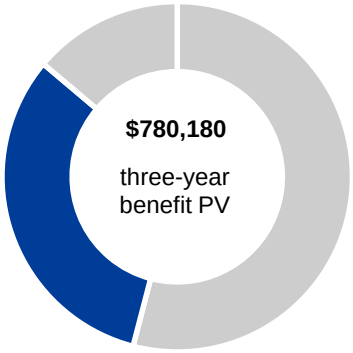
Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

Business Impact Due To SPSS Modeler: Calculation Table					
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Number of major predictive analytics projects per year	Interviews	2	3	4
A2	Average incremental profit or cost savings per project	Interviews	$450,000	$450,000	$450,000
A3	Attribution to SPSS Modeler	Assumption	50%	50%	50%
At	Business impact due to SPSS Modeler	A1*A2*A3	$450,000	$675,000	$900,000
	Risk adjustment	↓20%			
Atr	Business impact due to SPSS Modeler (risk-adjusted)		$360,000	$540,000	$720,000

Data Scientist Productivity Improvement

The improved productivity of data scientists is one of the main factors contributing to the business impact generated by SPSS Modeler, quantified in the previous benefit. Both technical and citizen data scientists are empowered by SPSS Modeler to work more efficiently, and they use that saved time to increase experimentation, build more effective models, and expand from descriptive to predictive models. Interviewees mentioned the following examples of the impact to data scientists:

- From end-to-end, the data science workflow is more efficient with SPSS Modeler compared to previous tools.
  - One interviewee said: "It's more efficient from the beginning until the end. Especially if you have to include a lot of different data sources, you can use the data handling. And, of course, all the prepared models, that's very easy, and then you can explore the results very easily. Then the deployment as well."
  - Another interviewee noted: "With [our spreadsheet software], you're manually doing a lot of it whereas with SPSS Modeler, it's really doing it for you. If you think about the way SPSS Modeler works, it takes the data, runs it every which way from Sunday, and then gives you an answer. [With our previous tool], you are doing lots of tests, but the SPSS Modeler function says, 'We'll run all the tests for you; we'll run every test and then determine which is the best model for you.' Also the data cleansing, it will make suggestions to you on how to cleanse the data; [our previous tool] doesn't do that."
- Because of improved efficiency, data scientists can now spend less time on tasks like data preparation and more time on valuable tasks like building additional models, improving existing models, and using more sophisticated techniques.
  - One interviewee said: "You can build more models in a shorter time. For a bigger project where we try a lot of different models, before we built probably five models a month across the whole team. We spent much more time in sourcing and data preparation, and really less time in modeling. We build 15 models per week now."



Data scientist productivity improvement: **32%** of total benefits

"You can build more models in a shorter time. For a bigger project where we try a lot of different models, before we built probably five models a month across the whole team. We spent much more time in sourcing and data preparation, and really less time in modeling. We build 15 models per week now."

Head of predictive analytics and data mining, financial services company

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- Another interviewee said: “Before, it took us four months just building the model before we handed it to IT. Today, we have analysts that build a model and put it in production in one month.”
- Another interviewee added: “Before, two people had to work with IT to move projects along; now it’s only 5% of their time. We are using that time to solve the analytical challenges that we have. So, more time to the core of our business.”

› Some interviewees noted the importance of having a data science tool that can be used by both technical and citizen data scientists. Thanks to this tool, organizations can recruit less technical people to work on data science projects where technical talent is scarce.

For the composite analysis, Forrester assumes that:

› Initially, the data science team consists of six people, growing to 10 people by Year 3.

› Data scientists experience significant productivity on tasks improved by SPSS Modeler. Some interviewees realized up to 70% efficiency for the tasks using SPSS Modeler compared to previous tools. Not all the data scientists’ time is spent on tasks related to SPSS Modeler, however; overall, data scientists are 40% more productive.

› Due to this increase in productivity, the composite can avoid hiring up to three data scientists by Year 3 while supporting the same demand for projects. Note: Forrester rounds up to the nearest whole number.

› For a data scientist, the average fully loaded compensation is roughly $180,000. Forrester uses public sources to arrive at average compensation estimates. This is a conservative estimate, particularly for metro areas.

Multiple risks could affect this benefit estimate:

› This benefit assumes that data scientists continue to support new projects over time. Some interviewees instead experienced efficiency initially when models were built but spent less time in subsequent years as no new projects were added, decreasing efficiency benefits over time.

› Hours saved will be dependent on the prior state.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of $780,000.

> “We’ve never employed a data scientist. I would be the closest to it; I’ve got an MBA and I work with data all the time. From a data science perspective, I understand about cleansing data, I understand about using data, I understand about the statistical aspects of use of data. I may call myself a data scientist, but I don’t know if that’s the right description for it. It’s people like myself that understand data and business that use SPSS Modeler — no special skills, really no special skills required to use it.”
>
> *Manager of business intelligence, industrial manufacturing company*

Data Scientist Productivity Improvement: Calculation Table					
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Number of data scientists	Interviews	6	8	10
B2	Hours saved with SPSS Modeler, per data scientist	Interviews, 40% efficiency overall, 60% captured	250	500	500
B3	Data scientist hires avoided (rounded up to nearest whole number)	(B1*B2)/2,080	1	2	3
B4	Data scientist fully loaded annual salary	Assumption	$180,000	$180,000	$180,000
Bt	Data scientist productivity improvement	B3*B4	$180,000	$360,000	$540,000
	Risk adjustment	↓10%			
Btr	Data scientist productivity improvement (risk-adjusted)		$162,000	$324,000	$486,000

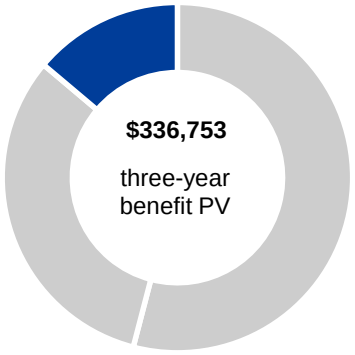
Cost Savings From Switching To SPSS Modeler

Prior to using SPSS Modeler, interviewees used several less powerful tools to analyze data and discover actionable insights. Some interviewees also invested in costly external consulting services to supplement existing data science tools and skills. All roles involved in the development and implementation of models, including business subject matter experts (SMEs), data scientists, and IT staff, were inefficient in this previous state. Interviewees shared the following challenges:

- Several interviewees relied heavily on IT to operationalize models in their prior environments. The time for IT to publish models decreases significantly with the SPSS Modeler investment. One interviewee said: "It was a pain to implement those models in the IT platform at that time. Refreshing the model in production would take three to six months with IT." Another interviewee said, "[With SPSS Modeler], once we have everything set, we just copy and paste through the Collaboration and Deployment Services Platform and the IT team just publishes it." Interviewees also noted that with SPSS Modeler, time spent on ongoing administration is minimal.
- Some interviewees either worked with external partners to develop predictive models or considered it as an alternative to investing in a data science platform. With SPSS Modeler, the interviewees could bring that knowledge in-house and streamline costs.

For the composite analysis, Forrester assumes that:

- The composite previously relied on an external consultant for some predictive modeling work. With the SPSS Modeler investment, the organization has eliminated those costs, averaging $50,000 per year in cost savings.
- The organization also had some internal tools for data analysis that it used to build simple models. The organization replaced some of those licenses with SPSS Modeler. This saves the organization $10,000 per year on average.
- Prior to SPSS Modeler, the data science team relied more heavily on IT to put models in production. Initially, this averaged to 30% of two IT employees' time and increased over time as the data science team



Cost savings from previous environment: **14%** of total benefits

"With the SPSS Modeler investment, one, we were reducing [consulting costs], and two, we were reducing the time of implementation from three to six months to weeks and days."

Head of pricing, insurance company

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grew. With SPSS Modeler, IT time is streamlined to just 100 total hours per year, on average, increasing over time with project growth.

› For IT, the average fully loaded compensation is $150,000.

› While IT administration of SPSS Modeler is a cost, Forrester did not include this in the cost categories below because overall the IT team is more efficient due to the investment. That is reflected in this benefit category.

Each interviewee had a unique previous environment that included a mix of existing tools, IT support, and sometimes consulting services. Because of this variability, Forrester ascribes a higher risk adjustment to this benefit category as estimates will fluctuate based on the specifics of each organization. Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of $337,000.

Cost Savings From Switching To SPSS Modeler: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Savings from not using third-party consulting services	Interviews	$50,000	$50,000	$50,000
C2	Savings from retiring basic modeling software	Interviews	$10,000	$10,000	$10,000
C3	IT hours for model deployment and management prior to SPSS Modeler	Interviews, 2 FTEs, 30% of time	1,250	1,500	1,800
C4	IT hours for model deployment and management with SPSS Modeler	Interviews, 1 FTE, 5% of time	100	120	144
C5	IT fully loaded hourly salary (rounded to nearest dollar)	$150,000/2,080	$72	$72	$72
Ct	Cost savings from switching to SPSS Modeler	C1+C2+((C3-C4)*C5)	$142,800	$159,360	$179,232
	Risk adjustment	↓15%			
Ctr	Cost savings from switching to SPSS Modeler (risk-adjusted)		$121,380	$135,456	$152,347

Unquantified Benefits

Interviewees also identified benefits that were important but were not able to be quantified, including:

› **Ease of onboarding for new hires.** Instead of having new hires look through large blocks of code, the visual flow capability of SPSS Modeler allows new hires to quickly understand existing models.

› **The ability for business analysts to create value using SPSS Modeler.** SPSS Modeler provides benefits outside of the data science team to analysts in business units that have daily or ad hoc data tasks:

- SPSS Modeler can automate some tasks, saving teams time previously spent on manual work. One interviewee said, "Before, 10 people had to read the document and classify it; now we use text mining and neural networks to do that." Another interviewee said: "Before, the marketing team had a manual process where they had to send the file. They had to format it and then load it into the system. Now we can deliver

> "Because SPSS Modeler is very user-friendly, it's much easier to get people onboard it. You don't have to look for a specialist. I think it's very creative about the way you can work with it. It's more fun."
>
> *Head of predictive analytics and data mining, financial services company*

that, everything directly, with SPSS Modeler's integration with our systems."

- Some interviewees use SPSS Modeler for data preparation. One interviewee explained: "Because the data preparation of SPSS Modeler is very good, it's very fast for users that don't know how to program or create a more complex data preparation. It's faster than [spreadsheet software] or [database management software]. One example is that a task from one team went from taking one week to one day."
- One interviewee mentioned that SPSS Modeler can help facilitate discussions about insights surfaced from models, saying, "Now we can show the business different models, and we can have a better discussion, and then for decisions, we can provide everything in detail."
- Another interviewee mentioned the benefits of working in a common platform: "Another benefit is the synergy that the platform provides for the pricing team since they are working together in the same platform, using the same databases, and using the same language. They share their processes, and they collaborate easier."
- Business analysts may experience significant efficiency for discrete tasks that are impacted by SPSS Modeler. These tasks typically represent a small portion of the analysts' overall time.

Flexibility

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

› **Spreading the use of SPSS Modeler to additional departments or regions within the organization.** Many interviewees were still maturing in their data science organizations. While they had partnered with business SMEs within their own departments or in a few departments, they noted that there was room for growth both in larger data science projects conducted to achieve specific business goals and in the use of SPSS Modeler by citizen data scientists, business analysts, or data engineers to simplify their day-to-day tasks and improve their access to data.

› **Further integration of SPSS Modeler with key business systems.** Several organizations mentioned ongoing integration work to fully integrate SPSS Modeler with key systems, including marketing tools and financial systems.

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

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

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
Dtr	Installation and implementation cost	$156,400	$0	$0	$0	$156,400	$156,400
Etr	License cost	$157,500	$31,500	$31,500	$31,500	$252,000	$235,836
Ftr	Training cost	$20,412	$0	$4,385	$4,385	$29,182	$27,330
	Total costs (risk-adjusted)	$334,312	$31,500	$35,885	$35,885	$437,582	$419,566

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of roughly $420,000.

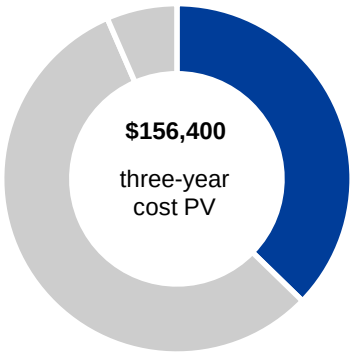
Installation And Implementation Cost

SPSS Modeler installations range from desktop installations to larger deployments that are integrated within operational systems. While the desktop client can be installed quickly, the production implementation can take more time depending on customer processes, internal teams involved, and the amount of customization or integration work needed. Most of the interviewees received help with their initial project implementations as they went up the learning curve from their previous simpler tools. Interviewees described a wide range of installation and implementation efforts, including:

- **A roughly two-year effort involving internal staff and IBM services to implement the server client.** This was largely due to security concerns that required significant customization. The organization also integrated SPSS Modeler with several data warehouses.
- **An IBM-led implementation that took eight weeks and included initial installation, testing, training, and integration with the existing business analytics environment.** The organization integrated with an IBM cognitive system, enterprise resource planning (ERP) system, spreadsheets, database management software, and a structured query language (SQL) server database. IBM created some test cases for the customer during this period as well.
- **A one-and-a-half-year implementation that included development and finalization of all initial models, training, and integration with other systems.** The organization hired an outside expert to help with model development during this period. This customer integrated SPSS Modeler with a demand planning tool, an IBM analytics tool, databases, and spreadsheets.

For the composite analysis, Forrester assumes that:

- The total installation and initial project implementation time lasted two months. This included planning, installation, testing, and integration work for the server client and help on two initial projects.
- The composite used a combination of internal staff and IBM services during this period. The organization paid $40,000 upfront for IBM services and had four IT staff and two data scientists involved in the implementation for roughly 60% of their time over the two months.



Implementation costs: **37%** of total costs

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› The composite integrated SPSS Modeler with several business and analytics tools and data sources.

Risks that could affect this cost estimate include:

› The availability of internal staff to support the installation and implementation and resulting reliance on professional or IBM services.

› The amount of customization needed in response to internal processes, security requirements, or other factors.

› The amount of external support needed to develop test cases or initial models based on the skill level in the previous environment.

To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year risk-adjusted total PV of $156,400.

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

Installation And Implementation Cost: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
D1	Implementation time (months)	Interviews	2			
D2	Professional services	Interviews	$40,000			
D3	IT FTEs involved in implementation	Interviews	4			
D4	IT FTE fully loaded monthly salary	$150,000/12	$12,500			
D5	Data scientists involved in implementation	Interviews	2			
D6	Data scientist fully loaded monthly salary	$180,000/12	$15,000			
D7	Percent of time FTEs spent on SPSS Modeler implementation	Assumption	60%			
Dt	Installation and implementation cost	D2+(D1*D3*D4*D7)+(D1*D5*D6*D7)	$136,000	$0	$0	$0
	Risk adjustment	↑15%				
Dtr	Installation and implementation cost (risk-adjusted)		$156,400	$0	$0	$0

License Cost

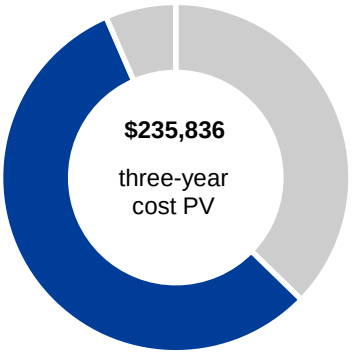
Customer interviewees had varying license costs based on the functionality required, number of SPSS Modeler users, and variables in the core-based pricing for the server version. The interviewees chose perpetual licenses, with an upfront cost and annual support fees.

For the composite analysis, Forrester assumes that:

› The composite pays for a perpetual license that covers three to five SPSS Modeler users and a server implementation in production and test environments. The composite pays annual support fees equal to 20% of the initial license cost.

› The composite invests in Modeler Gold, which includes all modeling functionality, text analytics, and collaboration and deployment services.

Multiple risks could affect this cost estimate:



License cost: **56%** of total costs

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› Software costs are variable from organization to organization based on volume discounts, other products licensed from the vendor, and other factors.

› Software costs will vary based on the Modeler version purchased, number of users, and scope of use of the server implementation.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of $235,836.

License Cost: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
E1	SPSS Modeler license costs (enterprise level)	20% of initial for Y_1, Y_2, Y_3	$150,000	$30,000	$30,000	$30,000
Et	License cost	E1	$150,000	$30,000	$30,000	$30,000
	Risk adjustment	↑5%				
Etr	License cost (risk-adjusted)		$157,500	$31,500	$31,500	$31,500

Training Cost

The interviewees all agreed that the official training effort needed to use the SPSS Modeler platform was minimal. Training estimates ranged from an hour-long training session to a week-long course. Most interviewees learned new modeling skills through on-the-job training, quantified in the installation and implementation cost category above.

For the composite analysis, Forrester assumes that:

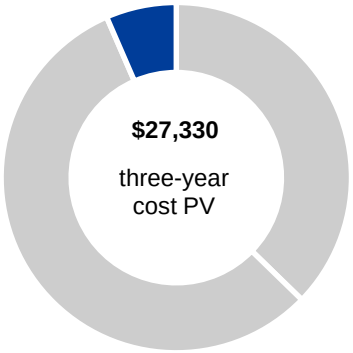
› Data scientists and IT staff receive more formal training. Business analysts are more likely to learn through review of documentation or on-the-job experience as their use of SPSS Modeler is more limited.

› Initially, six data scientists and four IT staff participate in a three-day training session. As new data scientists join the team in Years 2 and 3, they participate in three days of training, though this training may be more informal than the initial session.

Risks that could affect this cost estimate include:

› The skill level of existing staff and resulting need for formal training.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of $27,330.



Training cost: **7%** of total costs

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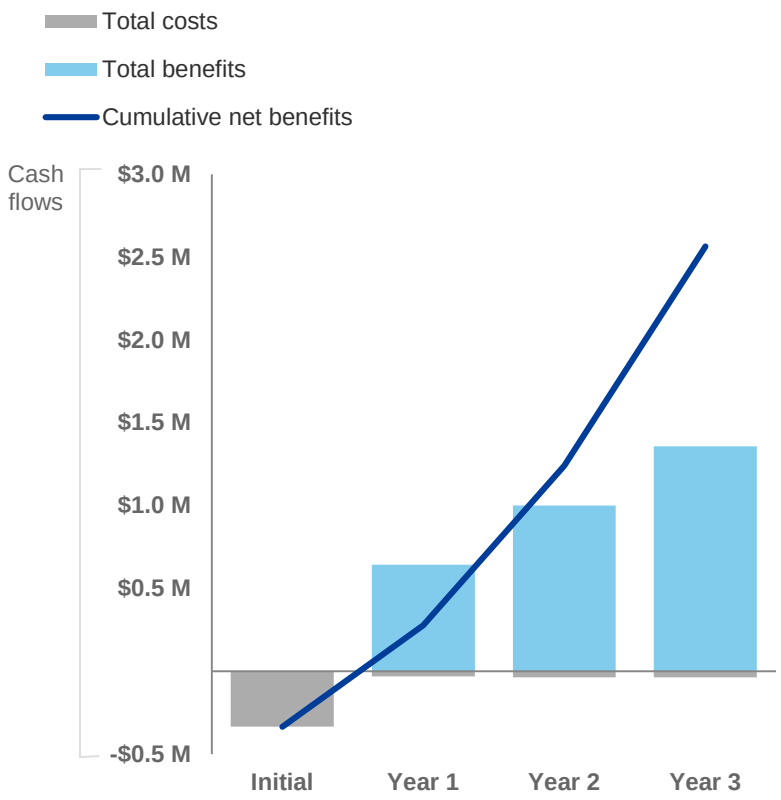
Training Cost: Calculation Table						
REF.	**METRIC**	**CALC.**	**INITIAL**	**YEAR 1**	**YEAR 2**	**YEAR 3**
F1	Number of data scientists involved in training	Interviews	6	0	2	2
F2	Number of IT staff involved in training	Interviews	4	0	0	0
F3	Hours of training	Interviews	24	24	24	24
F4	Data scientist fully loaded hourly salary (rounded to nearest dollar)	$180,000/2,080	$87	$87	$87	$87
F5	IT fully loaded hourly salary	$150,000/2,080	$72	$72	$72	$72
Ft	Training cost	(F1*F3*F4)+(F2 *F3*F5)	$19,440	$0	$4,176	$4,176
	Risk adjustment	↑5%				
Ftr	Training cost (risk-adjusted)		$20,412	$0	$4,385	$4,385

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



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

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

Cash Flow Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	($334,312)	($31,500)	($35,885)	($35,885)	($437,582)	($419,566)
Total benefits	$0	$643,380	$999,456	$1,358,347	$3,001,183	$2,431,433
Net benefits	($334,312)	$611,880	$963,571	$1,322,462	$2,563,602	$2,011,867
ROI						480%
Payback period						7 months

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IBM SPSS Modeler: Overview

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

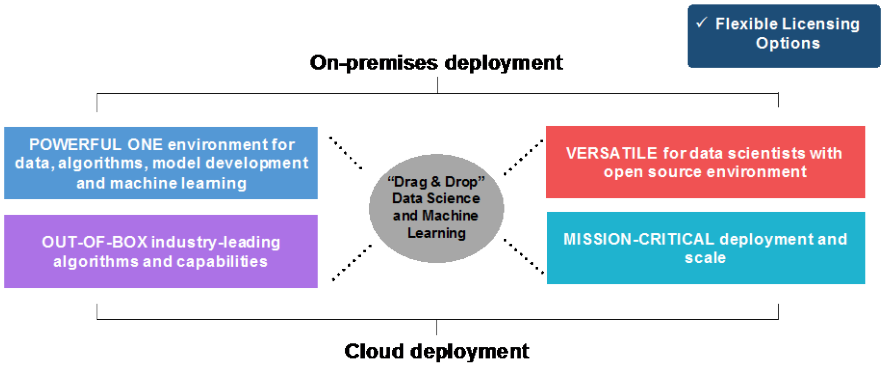
IBM SPSS Modeler is a visual data science and machine learning solution. It helps enterprises accelerate time-to-value and desired outcome by speeding up operational tasks for data scientists. Leading organizations worldwide rely on IBM for data discovery, predictive analytics, model management and deployment, and machine learning to monetize data assets. IBM SPSS Modeler empowers organizations to tap data assets and modern applications with over 40+ out-of-the-box algorithms and models, suited for hybrid, multicloud environments with robust governance and security posture.

IBM SPSS Modeler empowers organizations to:

- Take advantage of open source-based innovation, including R or Python.
- Support data scientists of all skills, programmatic and visual.
- Exploit hybrid cloud approach — on-premises, public clouds, or private clouds.
- Start small and scale to enterprise.

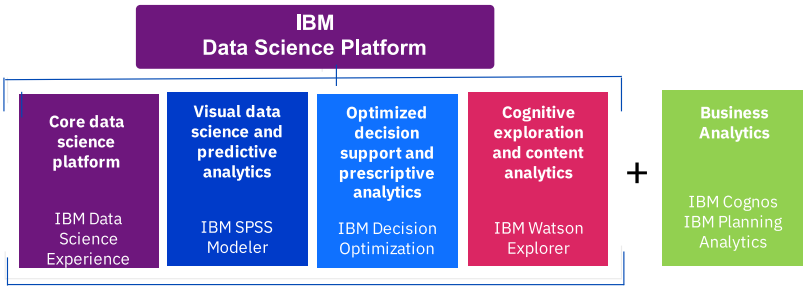
IBM SPSS Modeler value

Accelerate time to value — from data discovery to machine learning and application development



IBM SPSS Modeler is available by subscription, by perpetual license, or as part of IBM Data Science Experience. To learn more, please visit: https://www.ibm.com/products/spss-modeler.

Partner with IBM to drive value from data science investments



- **Licensing**
  Flexible entitlements for business agility and cost-optimization. Includes subscription and FlexPoint
- **Expertise**
  Powered by IBM's unparalleled data science track record and know-hows
- **End-to-End Solution**
  Complete, enterprise data science and analytic solution
- **Ecosystem**
  Supported and extended by rich partner ecosystem[54]

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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.