SAS is on a multiyear trajectory to differentiate itself in a crowded market full of trendy startups. A cloud-first approach and embracing openness are just a part of the company’s transformation. Customers need to understand SAS strategy to operationalize and scale analytics and AI initiatives.

**Overall Rating**

![Vendor Rating: SAS](image)

**Overall Rating: Positive**

SAS overall rating remains Positive. Although the company faces threats on multiple fronts from other large vendors, maturing disruptors and open-source solutions, it retains a strong presence in the market.

There are three main reasons for our continued overall Positive rating for SAS:
Analytics breadth and enterprise-readiness: SAS continues to lead in several markets where it leverages its deep and broad product portfolio, its expertise in advanced analytics and its partner ecosystem. SAS’s cloud-ready Viya platform is the underlying platform foundation for its artificial intelligence and machine learning innovations. Viya offers seamless integration within a visual environment that extends across the extensive activities workflow that is required in large-scale data science, machine learning and artificial intelligence (AI) projects. This workflow ranges from data preparation to analytics and business intelligence (BI), data science, machine learning and AI model development, deployment and management.

Trust branded and strong customer relationships: SAS’s long-standing market presence and trusted brand have earned much customer respect. Customers choose SAS for its enterprise-grade platform capabilities and support for the entire analytics life cycle — from exploration to modeling and deployment. SAS has retained big, long-term customers because of its combination of a relationship approach to selling with deep business and industry knowledge. The product complexity and cost of change from deployed models and solutions also make it difficult to switch. SAS customers consistently view their relationship with SAS account management and support staff generally as positive.

Global reach and corporate responsibility: SAS has established a strong global presence with more than 83,000 customer installations in more than 146 countries, served by more than 400 offices and an extensive partner ecosystem. The vendor is one of the biggest private software companies, with the global sales and service presence and partner network to serve a global customer base that relies on the SAS platform and applications for mission-critical capabilities. SAS’s extensive global set of service provider partners and its own professional services group are viewed favorably by most SAS customers, judging from Gartner surveys of reference customers. These resources have a key role to play in helping SAS customers migrate to and leverage the value of the new SAS Viya platform.

Recommendations for prospective SAS customers:

- Consider SAS for the breadth of its analytics capabilities — from data management, analytics and BI, data science and AI, and industry and domain solutions — and its enterprise-grade deployment and management capabilities to support mission-critical requirements.

- Take a second look at SAS Viya if you previously considered the vendor but looked elsewhere because you felt the technology was not yet ready. The technology maturation of Viya, improved scaling in the cloud, revised pricing/packaging and an embrace of open source are reasons to reconsider SAS.

- Understand the product packaging dependencies and cost implications when choosing specific SAS products. Estimate your two-to-five-year SAS expenditures in light of the vendor’s SAS Viya roadmap, factoring in the market trend toward open-source analytics, the availability of SAS skills, and cloud costs.
Recommendations for existing SAS customers:

- Leverage the SAS sales, service and support relationships to drive value from SAS products to support your tactical and strategic initiatives such as cloud and digital business.

- Plan your SAS Viya migration with reference to the vendor’s multirelease strategy and roadmap and to open-source components and the cloud. Assess the costs, time and effort needed to migrate to the SAS Viya platform and how SAS will support that change.

- Evaluate SAS packaged analytic applications as a way to complement custom analytics and deploy faster to address domain and industry vertical analytics needs.

Detailed Rating

Product/Service: Positive

<table>
<thead>
<tr>
<th>Weak</th>
<th>Caution</th>
<th>Variable</th>
<th>Positive</th>
<th>Strong</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SAS earns a Positive rating in this category for its very broad analytics portfolio, including the SAS Viya platform. SAS’s compelling product vision is for customers to prepare their data, analyze it visually, and build, operationalize and manage data science, ML and AI models, in a single integrated, visual and augmented design experience.

This SAS portfolio spans extensive data management, analytics and business intelligence (BI), data science and machine learning capabilities, and an array of domain-specific analytic applications which is an increased area of focus. This includes customer analytics with emphasis on digital marketing and financial risk management including expected credit loss, anti-money-laundering, enterprise stress-testing and modeling and risk management. SAS also offers a wide array of industry-specific solutions, including models and workflows that leverage its platform components and expertise. Other products include supply chain analytics, retail multichannel analytics, fraud and security intelligence, decision management, streaming analytics and Internet of Things (IoT)-driven predictive maintenance. In the energy market, for example, SAS has solutions for energy forecasting, commodity trading and asset performance analytics that utilize SAS’s IoT and streaming data analytics.

SAS Viya is the vendor’s response to changing market dynamics, customer needs and competitor innovations. Viya is built on a microservices architecture with full containerization and Kubernetes orchestration available with Viya version 4 scheduled for release in fall of this year. The platform features some of SAS’s most important innovations, such as embedded machine learning automation also known as “augmented analytics.” It also provides a much improved and easier-to-
use interface and experience for citizen and expert data scientists. SAS continues the journey to migrate parts of its existing product suite, known as the SAS 9.4 Intelligence Platform, to SAS Viya. For data science and machine learning, the vendor still positions SAS Viya as an extension of, rather than as a replacement for, the traditional, proprietary SAS 9 platform.

Although SAS has continued to improve its utilities to make the migration from SAS 9.4 to Viya easier, SAS reference customers continue to view migration as challenging. For example, SAS received below-average scores for version upgrades and ease of deployment in the “Magic Quadrant for Data Integration Tools” reference survey. SAS Visual Analytics also received relatively low scores and write-ups for product quality and support by reference customers and Gartner Peer Insights reviewers. SAS Data Quality reference customers scored the overall customer experience below average especially in relation to product support. The vendor also is investing more in technical product support and customer support programs. A significant number of reference SAS Data Integration Studio customers praised SAS for its timely and effective technical product support. SAS research and development has implemented continuous integration/continuous delivery (CI/CD) processes to try to tackle the product quality issues while also balancing the need for faster innovation. CI/CD promises greater agility and speed of innovation, and maps to the expectations around delivering cloud-native software.

Support/Account Management: Positive

<table>
<thead>
<tr>
<th></th>
<th>Weak</th>
<th>Caution</th>
<th>Variable</th>
<th>Positive</th>
<th>Strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support/Account Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SAS received a Positive rating for a strong history of supporting its customers. Across product areas, customers generally rate SAS well for its support quality and responsiveness. For example, a significant number of reference customers for the “Magic Quadrant for Data Integration Tools” praised SAS for its timely and effective technical product support, as well as its account teams. It also received the highest score of the Magic Quadrant vendors in the service and after-sales support category, and reported strong renewal rates for its data integration tool portfolio.

The combination of vendor support services, other customer resources and a strong user community are important in creating value for SAS customers. Technical support is included in the annual SAS subscription fee. Organizations with multiple SAS products or solutions can upgrade to SAS Premium Support for a higher level of customer support that includes a dedicated technical support account manager. SAS also offers an Elite Support level for large organizations with critical business needs that combines the collaboration of technical support, consulting, and education teams with direct ties to SAS R&D for fast response to any issue or question.

SAS account management is separate from support, managed by a different set of executives and teams. SAS account representatives know the industries and companies to which they have been assigned. Customers consistently cite this relationship as key in contributing to long-term, recurring
engagements. Large, global accounts typically receive a global account director; smaller customers work with account managers based on geography. Some industries, such as government and education, have separate dedicated account managers. SAS also has longtime relationships, channels and expertise in financial services. Reference customers rate their relationship with SAS, both before purchasing and after implementation, as positive. This positivity, along with the mission-critical use of SAS-based analytic applications, is key to the vendor’s high customer renewal rates. SAS has invested in new strategic advisory services to guide and advise customers on their AI strategy and prioritizing use cases that will have the biggest impact on the business.

**Pricing Structure: Variable**

<table>
<thead>
<tr>
<th>Weak</th>
<th>Caution</th>
<th>Variable</th>
<th>Positive</th>
<th>Strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pricing Structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SAS’s rating for pricing is still Variable. Last year, SAS introduced new licensing models and pricing options to address some of the long-standing customer complaints about the vendor’s pricing and licensing inflexibility. SAS stated they want to make SAS pricing and licensing more competitive and customer-friendly. With Viya 4, SAS will have more capabilities for automated usage tracking and billing, and intends to enable those capabilities over time with new pricing and licensing for its cloud-ready offerings. This simplification, transparency, flexibility, new license models, and more competitive pricing should make SAS products more attractive to customers over time. However, to date Gartner has not seen any of the new pricing and licensing in any client inquiries.

In the past, a major customer complaint was that SAS only offered a subscription model with no perpetual use rights. There is a psychological advantage for the vendor when it comes to time to renew a contract if the customer does not have perpetual use rights. The customers in this situation are under more pressure to renew before their contract expires. Contrast this with the renewal of a perpetual license. Customers feel no extra pressure to renew, because they can always continue to use the last release even after the contract expires.

To be clear, SAS still offers a subscription model. What has changed is that most of the other analytics platform vendors have moved away from perpetual to adopt subscription licensing. In the past, unlike how other analytics vendors structure multiyear subscription deals, SAS would require a significant payment in Year 1 with lower fees in the remainder of a multiyear deal. SAS stated it has now changed its multiyear deal structure such that the payments are equal across each of the years.

However, SAS understands there are customer scenarios where perpetual licensing makes sense, such as IoT use cases. With SAS Event Stream Processing for Edge Computing, SAS offers perpetual licensing with first-year maintenance. This gives usage rights to software on a perpetual basis even after customers stop paying maintenance. There could be thousands of devices on the
“edge,” so a perpetual license provides flexibility for the customer on when and how often those licenses are updated.

Another change is that SAS always had a habit of bundling many software products for one price point. This made it difficult for buyers to know exactly how much they were paying for each product. SAS states that its price quotes now have a line-item specification, with each product including both the price and discount that will make the pricing clearer to the buyer. For decades, SAS customers have pushed for this kind of transparency. Customers who do receive a price quote without line items priced per product should push back on SAS for a price quote with more transparency.

Despite new capability-based and metered pricing options, Gartner Peer Insights reviewers rate SAS comparatively poorly for pricing and contract flexibility. Moreover, a relatively high percentage of SAS Visual Analytics reference customers identified cost as a limitation to broader deployment in their organization. Even with SAS’s new pricing offerings, it is difficult to change the perception of the high product costs and the vendor inflexibility.

**Technology/Methodology: Positive**

<table>
<thead>
<tr>
<th></th>
<th>Weak</th>
<th>Caution</th>
<th>Variable</th>
<th>Positive</th>
<th>Strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology/Methodology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SAS received a Positive rating in this category for its technology innovation and its continued adoption and execution of cloud architecture, enhanced open-source support and support of multiple types of users from nonexpert to expert.

SAS Viya is the underlying foundational platform for all SAS products, providing an open, cloud-ready, microservices-based architecture. It supports a growing array of SAS products and industry solutions (prebuilt analytical applications), enabling access to all capabilities via a single easy-to-use, HTML-based interface. Although the product portfolio is still often perceived as costly and complicated, SAS continues to take steps to address this. The need to understand and license separate SAS Viya components for complete functionality has been partially mitigated through the provisioning of life cycle product bundles called SAS Unified Insights. In addition, SAS has introduced more flexible pricing, such as user pricing and unlimited capacity, which is more customer-friendly.

SAS Viya’s emphasis and support of “openness” enables users to use open source to sustain rapid innovation and leverage a diverse set of coding skills that users bring to the table. Users can contribute code, procedures and services, and collaborate easily. The SAS Viya platform supports an array of coding languages and REST APIs, and can be accessed from open-source clients such as Python, Lua, Java and the R language. SAS also has the capability to deploy and manage open-source models along with SAS models.
SAS continues to position SAS Viya as an extension of, rather than a replacement for, the SAS 9 platform. Over time, more of the SAS 9 elements will run on or with SAS Viya. For example, stored processes, visual data builder queries and basic OLAP cube structures based on detailed data and star schemas can now be migrated from SAS 9 to SAS Viya. The latest SAS Viya release (version 3.5 released in November 2019), includes:

- The new SAS Job Flow Scheduler includes a flow editor that enables the graphical editing and management of complex job flows.
- Support for IBM POWER9 and Linux on Power with the POWER9 chip.
- Migration of stored processes, visual data builder queries, and some OLAP cube structures from a SAS 9 environment to corresponding objects in SAS Viya.
- SAS Studio adds the ability to create job definitions with prompting.
- SAS Infrastructure Data Server is updated to use PostgreSQL version 11.
- SAS Cloud Analytic Services adds support for Apache Parquet data files, Hadoop distributions built on Apache Hadoop version 3 and additional enhancements for caslib data sources.
- Support for SAS Viya deployment on machines that have multiple network interface cards (NICs).

The breadth of capability provided within the SAS portfolio addresses end-to-end capabilities across the analytic capability spectrum for multiple types of users. This breadth of capability results in a complex portfolio of multiple, often-overlapping SAS products that hampers the continued and extended use of SAS solutions for many organizations. Although SAS has taken steps to address this, customers still struggle to understand which components are required to provide the functionality they need, as well as the interdependencies between the various components.

Strategy: Positive

<table>
<thead>
<tr>
<th>Weak</th>
<th>Caution</th>
<th>Variable</th>
<th>Positive</th>
<th>Strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SAS earns a Positive rating in this category, based on a mix of strengths and some drawbacks and the growing risks related to intensifying competition.

SAS remains a leader in a number of key markets: data science and machine learning, analytics and BI, and a number of analytic applications. It has a powerful global presence in these markets.
While in the past, its response to key market trends (for example, ease of use, visual-based exploration, open-source integration, augmented analytics and some aspects of digital marketing such as demand forecasting) has often been delayed, it has worked to close many of these gaps. More recently, it has been a driver at the forefront of many new trends:

- With Viya and the Visual family of products, SAS has been earlier than many other vendors in the market to integrate the workflows from data to insight, to model development, to model operationalization and explanation to model management — from within a single user experience that is augmented by ML and AI. This is blurring the lines and creating a collision and ultimate convergence across what have previously been distinct market categories (see “Worlds Collide as Augmented Analytics Draws Analytics, BI and Data Science Together”). It is giving users a seamless, reusable and governable way to operationalize analytics at scale.

- SAS has also been early to natively expose a range of content analytics (what Gartner is calling X analytics) and graph analytics within the Visual product family’s end-to-end integrated workflow (see “Top 10 Trends in Data and Analytics, 2020”).

- SAS has mounted a rapid response to the recent global pandemic. It created an internal task force to deliver critically needed solutions to its government and commercial clients leveraging SAS’s core advanced analytics competencies. These include solutions for situational awareness and critical response, contact tracing, medical resource optimization, demand planning stability, and end-to-end supply chain scenario planning.

While most of its installed base currently deploys SAS on-premises, SAS Viya, which is cloud-enabled and microservices-based, is central to SAS’s strategy for enabling customers to move to the cloud. SAS recently entered into a partnership with Microsoft to optimize SAS Viya offerings for easier deployment of SAS Viya in Azure. This partnership includes SAS deploying its own hosted offering in Microsoft Azure. Since this partnership is not exclusive, we can expect SAS to enter into partnerships with other cloud providers in the future. SAS also offers its own portfolio of cloud options: domain SaaS applications, such as customer intelligence; managed SaaS offerings of its standard products; and platform deployment in the public cloud. The vendor also offers a “results as a service” offering for organizations that lack enough staff or infrastructure to build a solution themselves. This offering is a combination of strategy and consulting services, wherein SAS professionals deliver analytical solutions within weeks or months. Yet SAS has not extensively promoted these cloud options, which has resulted in a lack of awareness about them among customers. That may change with the new partnership with Microsoft.

SAS’s long-term approach to the analytics market is at risk of being disrupted by a range of technology innovations from rivals — including startups and cloud service providers, such as Amazon, Google and Microsoft. The cloud providers, in particular, are also driving convergence across their data management analytics and data science ML and AI capabilities and are delivering these at cloud scale with competitive pricing. SAS faces additional threats on multiple
fronts from other large vendors, maturing disruptors and open-source solutions. While SAS has stepped up its game, its competition is moving ahead too.

While SAS is delivering an enterprise-grade platform and has addressed many of its competitive gaps while driving some innovation, the market's perception of SAS is that it has been slow to change. This often limits a client's willingness to consider SAS for new initiatives or expanding current use. The reality is that SAS has made great strides in modernizing its core platform with SAS Viya. The vendor has also changed its product development processes by embracing a CI/CD methodology. CI/CD offers greater agility and speed of innovation, and maps to the expectations around delivering cloud-native software that improves the market's perception.

But the vendor needs to do more to better market how SAS has changed to counter the widespread "old school" or legacy perception of the company and its product portfolio. SAS also needs to increase its marketing of the strengths of SAS Viya's enterprise-grade capabilities, which will become increasingly important to compete with open-source and cloud-based data science tool options, especially for mission-critical applications.

SAS's data science and machine learning products have a high degree of enterprise readiness, compared with other market options. This is a key capability. Less than half of data science projects end up being fully deployed, according to the Gartner Data Science Team Survey (January 2018). In a 2019 AI organizations' Gartner survey, respondents cited “complexity of integrating AI solutions with existing infrastructure” as a top barrier to implementing AI techniques in their organizations. They also cited “developing and integrating AI techniques in applications” as one of three factors important for an AI team or lab mandate. Given its enterprise readiness, SAS is in a unique position to showcase SAS Viya's value in helping organizations automate and operationalize the deployment and management of large numbers of models. Both existing SAS rivals and new startups are investing aggressively in solutions to this problem. SAS needs to place more emphasis on making it easier for customers to deploy, scale and manage models in production environments.

Like other data science vendors, SAS faces the challenge of supporting legacy customers and users while adapting to a rapidly changing market. The vendor has improved its product portfolio by better integrating applications and modernizing its user interfaces. It has also improved its product packaging for new buyers. But complexity still remains for legacy customers, and they often struggle to understand which components are required to provide the functionality they need and the interdependencies between components.

Corporate Viability: Variable

<table>
<thead>
<tr>
<th>Weak</th>
<th>Caution</th>
<th>Variable</th>
<th>Positive</th>
<th>Strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Viability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Gartner’s rating of SAS’s corporate viability is constrained by the fact that we do not have enough
information to fully assess the company's financial condition. One reason is that, as a private company, SAS is not required to report its earnings or other financial data (see the Financial: Caution section below). So the financial aspect of its viability remains cloaked, regardless of the data SAS chooses to release. The absence of this data is one of the most important factors in rating SAS's corporate viability as Variable.

But there are encouraging signs. SAS is an established global company with a broad customer and partner base.

Other encouraging signs of viability are:

- The breadth of its product offerings
- Its long-term, mission-critical prominence in many global enterprises in multiple industries and regions
- Its ability to sustain a worldwide corporate presence and customer support capability

All of these are confirmed by Gartner discussions and surveys with clients that are also SAS customers.

SAS's investment priorities and profiles track the market direction toward rapidly expanding use of advanced analytics. This aligns with the vision of its founder and CEO, Jim Goodnight, and the COO and CTO, Oliver Schabenberger, who is driving the product strategy and sales and marketing execution.

**Financial: Caution**

Gartner's proprietary vendor Financial Statement Scorecard (see “Understanding the Methodology Behind Gartner's Financial Statement Scorecard for Public Companies”) measures public companies against five distinct financial ratios. The scorecard relies primarily on our ability to verify information via publicly available sources or other methods. (For more information about the Financial Statement Scorecard, see Note 1.)

In the absence of any ability to independently verify any of these ratios, it has been our policy to be conservative in our assessment. SAS is a privately held company and does not report financial details. Its standing in the market leads to the perception that it may well be financially sound. Yet there is little publicly available evidence in the form of detailed financial reporting from the company to substantiate this perception.

The only somewhat relevant data points are included here:

- Some initiatives are noted to have double-digit growth, such as fraud, risk and IoT.
- Total growth in SAS services is 11%.
However, we cannot accurately interpret anything regarding its income statement, balance sheet or cash flow from operations.

Reflecting our need to be prudent, and given the lack of any evidence to the contrary, a rating of Caution for SAS’s financial strength is appropriate.

**Additional Analyst Insights**

**Analytics and Business Intelligence**

SAS offers Visual Analytics on its cloud-ready and microservices-based platform, SAS Viya. SAS Visual Analytics is one component of SAS’s compelling product vision and strategy where customers can prepare their data, analyze it visually, and build, operationalize and manage data science, ML and AI models, in a single integrated, visual and augmented design experience (with progressive licensing).

SAS’s recurring presence as a Visionary in Gartner’s “Magic Quadrant for Analytics and Business Intelligence Platforms” reflects its end-to-end platform, enhanced investments in augmented analytics, an array of strong industry-specific analytics solutions, and a global presence in terms of sales and support.

However, ongoing challenges with migration experience and lower scores for sales experience including for cost of the platform — weaken SAS’s competitive advantage. SAS will appear on customer shortlists when integrated advanced analytics or data scalability are key requirements or when customers already have other SAS products. But customers will have to sacrifice other factors, such as lower-priced software alternatives.

SAS has innovated in several key areas that differentiate it from rivals. These include native support for text analytics and semistructured data, and a new automated analysis object that offers rich driver and variable analysis to identify which attributes most impact a particular metric. A native natural language generation capability then explains these findings, whereas many other analytic and BI platform vendors must use an OEM or other partner for that. SAS was relatively early to market in supporting voice-based queries leveraging the digital voice assistance and using SAS natural language processing (NLP) to generate voice-enabled queries across all device types. It continues to enrich these capabilities further in Viya.

In 2019, SAS significantly enhanced its augmented analytics capabilities. These now include automated suggestions for relevant factors, and insights and related measures expressed using visualizations and natural language explanations. They also include automated predictions with “what if?” and AI-driven data preparation suggestions. Robust “what if” analysis, a key feature that
organizations will increasingly rely on to do scenario planning in a post-COVID-19 world, is only available in two other analytics and BI platforms covered in the “Magic Quadrant for Analytics and Business Intelligence Platforms.” Additionally, SAS has enhanced Visual Analytics’ location intelligence capabilities and introduced a new software development kit (SDK). SAS has consistently aimed to provide a full range of capabilities, for both traditional enterprise reporting and agile analytics, in a single platform.

“Data for Good” is a movement in which SAS has been a pioneer and its tenets are a core part of the company’s culture (see “How to Use Data for Good to Impact Society”). SAS has supported a number of nonprofit organizations and governments on a range of topics, including natural disaster response, suicide prevention, wildlife tracking, opioid epidemic reduction and refugee migration. Recently, as noted above, SAS has been at the forefront of providing solutions to support organizations in their global COVID-19 pandemic response. GatherIQ is a mobile app that combines storytelling with SAS Visual Analytics for a number of these topics. SAS has also published a book titled “A Practical Guide to Analytics for Governments: Using Big Data for Good” to further raise awareness, specifically in the public sector.

Artificial Intelligence and Data Science

SAS once again is one of the top vendors in the data science market in terms of both total revenue and number of unique paying clients. SAS was also rated a Leader in this year’s “Magic Quadrant for Data Science and Machine Learning Platforms.” The SAS portfolio consists of products in multiple disciplines, such as statistics, machine learning, text analytics, forecasting, time series analysis, econometrics and optimization. In recent years, SAS has made its platform more open and more interoperable across its multiple components.

SAS Visual Data Mining and Machine Learning (VDMML) is the flagship product aimed at business analysts, citizen data scientists and expert data scientists. SAS VDMML incorporates multiple SAS products including Visual Analytics and Visual Statistics. It is extensible from the core analytics products and provides an enterprise-ready, robust and reliable platform across the complete data science life cycle. SAS VDMML provides a user experience that brings together easy-to-use interactive modeling, programming and process-flow-based automation. The platform supports the entire analytics life cycle in one environment with a consistent user experience. The model operationalization and management capabilities are strong and enable the ability to not only create, but also deploy and manage models ongoing.

SAS VDMML is designed to enable an end-to-end solution designed for ease of use and high productivity. The visual aspects of SAS VDMML make it attractive for citizen data scientists while the programming interfaces and libraries appeal to code-focused data scientists and developers. The ecosystem in SAS Viya has become increasingly open. The vendor has open APIs for Java, Python and R, and REST APIs for accessing SAS analytics, data and services. It also has features for deploying and managing open-source models and SAS models, importing models from Caffe and TensorFlow, and supporting third-party custom graphics and Python packages. The data science products are available both on-premises and in the cloud.
Through a strategy that emphasizes composite AI (i.e., the combination of multiple AI techniques, such as machine learning, optimization, graph techniques and NLP), SAS is instrumenting toward decision management. It is incorporating functionality of its Real-Time Decision Manager offering into the Viya-based SAS Intelligent Decisioning, an important component for operationalizing data science and other analytic capabilities, especially around customer intelligence. Other offerings, including SAS 360 Engage, now have purpose-built integration with this component. SAS Intelligent Decisioning supports digital commerce personalization and tailors customer experiences by triggering call center, point-of-sale, kiosk and ATM interactions. The product also supports analytical models, which can be developed using SAS’s respective data science platforms, and includes business rules and optimization techniques. Intelligent Decisioning shares the same user interface (UI) as SAS Model Manager. This allows data science teams to create and govern with a single UI, decision models and analytics, including those created in Python and R, as well as SAS. SAS executes models through SAS Cloud Analytic Services, Micro Analytic Services, Event Stream Processing (or even in batch mode), as well as directly in massively parallel processing systems such as Hadoop or relational DBMSs. This important arsenal of capabilities enables customers to put data science models in production through decision models.

Customer Analytics

SAS has a market-leading customer analytics offering in its SaaS Customer Intelligence 360 suite — part of its marketing suite of products. Additions include SAS Viya-based Visual Data Mining and Machine Learning (VDMML), which does not require programming skills.

Like other business lines, SAS Customer Intelligence 360 provides domain focus for customer and marketing analytics, which leverages SAS’s shared platform for data management and analytics. SAS has improved the ease of use for marketers and has addressed the needs of developers and data scientists. Traditionally, SAS’s customer analytics targeted experienced customer analytics teams with a comparatively high level of analytics maturity. But recent changes, such as marketer-friendly guided or templated analytics, enable a broader, less-specialized user population to leverage these analytics capabilities.

The suite includes capabilities such as marketing optimization, marketing attribution, analytically supported testing and recommenders, guided analytics, advanced segmentation, real-time decisioning, data integration, and channel execution. Digital intelligence includes real-time digital data capture and processing. SAS Customer Intelligence 360 can be deployed all in the public cloud, or as a hybrid cloud leveraging on-premises data and analytics.

Components of SAS Customer Intelligence 360 include:

- SAS 360 Discover
- SAS 360 Engage
  - SAS 360 Engage: Direct
Evaluate and prioritize customer analytics use cases to select the most relevant components to deliver the expected business outcomes, particularly when you have use cases for advanced analytics across customer and marketing analytics workflows.

**Data Integration Tools**

SAS is a Leader in Gartner’s “Magic Quadrant for Data Integration Tools,” with a portfolio of data integration products that foundationally support analytics, data science and data management. SAS data integration consists of the following products:

- SAS Data Management
- SAS Data Integration Studio
- SAS Federation Server
- SAS/ACCESS
- SAS Data Loader for Hadoop
- SAS Data Preparation
- SAS Event Stream Processing

Having the breadth of core functionality and extensive connectivity positions SAS to engage in contemporary data integration demand, with a balance of physical and virtualized delivery of data among a diverse range of functionality, provided through an integrated portfolio of capabilities.

SAS’s evolving technologies address highly interactive development interfaces that allow integration developers to manipulate and work with data, metadata-driven rapid integration of new sources, with increasing use of machine learning and natural language processing techniques. SAS’s focus on tight linkage between data integration and data quality/governance is foundational to meeting the growing challenges of data and analytics needs.

The global distribution of SAS expertise is favored by buyers, as well as skills available directly from SAS. Many SAS customers cite favorable experiences with timely and effective technical
product support, as well as positive engagements with account teams. SAS provides diverse packaging and delivery options that cater to different organization needs — such as cloud deployment of SAS solutions and bundled product sets that contain data integration capabilities with solution- or vertically-based packaging. However, as implementation complexity grows, some of SAS customers express concerns about the high cost of SAS solutions.

SAS data integration tool deals are largely associated with complex requirements of large enterprises. Brand recognition of SAS gamers a huge installed base using its data integration tools and complementary products such as data quality tools and analytics platforms. In conjunction with strengths in stream data integration and increased focus for data preparation to support data engineers, SAS has many opportunities to grow its data integration tool adoption and cross-sell to customers using adjacent technologies.

Data Quality

SAS is one of the Leaders in Gartner’s “Magic Quadrant for Data Quality Solutions.” Its data quality products are SAS Data Management, SAS Data Quality, SAS Data Preparation, SAS Data Governance and SAS Data Quality Desktop. SAS has an estimated 2,700 customers for these products. These tools enable key business roles, such as information steward, to easily perform an array of data quality functions such as data cleansing, matching, enrichment, monitoring and remediation.

SAS is strategically transforming its data quality products by bringing them into SAS Viya, a cloud-native platform with improved open-source support. This allows SAS customers to locate, manage and use their data more effectively. SAS Viya enables tighter integration of data quality functions with other SAS products including analytics, data integration, data preparation and data governance. SAS has an open-source initiative to support the flow of metadata between different technologies and tools, for example, ODPi Egeria. SAS is also refining its product strategy by embedding SAS Data Quality functions in the new SAS Viya web-based data flow designer, and adding data profiling features in the data catalog product.

In addition, SAS Quality Knowledge Base provides a collection of files that define rules, criteria, and data by which data cleansing can be performed for contact information (names, addresses, phone numbers, etc.) or product data for 40 countries in 27 languages.

However, SAS lacks native support for several key emerging technologies, such as packaged machine learning algorithms and techniques to automate sophisticated parsing of data out of box in SAS Data Quality product lines. SAS is investing in AI-driven Data Quality features to be released in 2021. These features will rely on SAS AI and ML technologies and are delivered as part of SAS Data Quality on SAS Viya at no additional cost. The vendor is investing in metadata- and AI-based self-learning capabilities to provide recommendations to users and suggest next best actions during the data preparation. For machine data, SAS does deliver SAS Data Quality as part of its IoT product, SAS Event Stream Processing. But SAS also does not have packaged solutions for transactional data. Instead, achieving this requires custom development using any visual editor
tool to extend the existing quality knowledge base. SAS’s professional services team typically works with customers for this enhancement.

Event Stream Processing

SAS is one of the few vendors that have integrated a leading data science platform with a high-throughput/low-latency event stream processing (ESP) platform. Most data science competitors do not offer ESP, and most ESP vendors do not offer data science platforms, so companies that need the combination often resort to custom development using separate products. With SAS ESP, VDMML and SAS Intelligent Decisioning, developers can build real-time streaming applications with embedded ML models more easily. This is particularly valuable if the ML models are complex or are continuously learning (retraining as the system runs).

SAS first brought its ESP platform to market in 2013. It has continued to invest in the product, particularly by improving the ease of authoring applications (Event Stream Processing Studio); administration and deployment (Event Stream Manager); and runtime monitoring (Streamviewer). Like most of its competitors, SAS recently enhanced its cloud support (Cloud Analytic Services) and refactored the platform for Docker containers and the Kubernetes framework.

SAS ESP’s primary market is IoT, although it is also used for real-time customer engagement, financial trading, and other stream analytics applications. SAS Event Stream Processing for Edge Computing’s small footprint makes it practical to deploy on small servers so that the same project that runs in the cloud can also run on the edge and near edge (“fog”). SAS has long had a large installed base in oil and gas, mining, power utilities and manufacturing which creates the potential for cross-selling ESP into those markets. SAS also partnered with Siemens to incorporate ESP into Siemens’ MindSphere IoT “operating system.”

The ESP market is growing fast but is highly competitive, with more than 30 other active vendors (see “Market Guide for Event Stream Processing”). A major challenge to SAS ESP, as with many other parts of SAS’s product line, comes from low-cost, open-source software. Open-source ESP platforms such as Flink and Spark Streaming can scale to high volumes of real-time events so they compete for cloud and large-server installations. SAS retains an advantage relative to these products for edge and low-latency (cloud or edge) applications. SAS has also made ESP a bit more open by adding support for Python and Jupyter Notebook.

Internet of Things

SAS is extending beyond its traditional analytics and business intelligence market segments into the emerging market adjacencies for analytics “at the edge” and for broader value where IoT sensor data is leveraged to drive insights and value. The product SAS presents within its IoT analytics solutions portfolio includes a core set of products that are relevant across all market sectors:

- SAS Analytics for IoT
Additionally, SAS extends a small set of products focused on leveraging telematics and IoT sensor data relating to sector-specific requirements and outcomes. These include:

- SAS Field Quality Analytics
- SAS Insurance Analytics Architecture
- SAS Detection and Investigation
- SAS Energy Forecasting

It is SAS’s focus on providing value at the edge where analytics and ML are required closer to the operational events that Gartner sees accelerated interest in SAS. While Gartner has some visibility into direct sales of IoT analytics products to enterprises for edge AI, most adoption related to edge intelligence is in collaboration with partners. To date, the most significant partners are infrastructure providers such as Cisco, Hewlett Packard Enterprise (HPE), and Dell EMC to drive real-time decisions and with managed services and IoT platform vendors such as Accenture and Siemens, respectively. Gartner also often sees SAS’s IoT analytics products bundled with, or private-labeled within, third-party vendor software and middleware. SAS maintains these IoT-centric relationships with IoT-centric technology and service providers such as Telit, Octo Telematics, OSIsoft, Siemens, Teezle and ClearBlade. Most often, these partners private-label or co-brand SAS products such as SAS Analytics for IoT, SAS Asset Performance Analytics, SAS Event Stream Processing, and SAS Visual Data Mining and Machine Learning.

Gartner sees SAS most active in the IoT market when working with enterprises in health and life sciences, energy and utilities, and manufacturing. Engagements within these market sectors generally involve SAS products that are expressly developed to leverage telematics and IoT sensor data and to provide specific outcomes for that sector. The SAS products Gartner has seen used in the market include SAS Field Quality Analytics, SAS Energy Forecasting, and SAS Detection and Investigation.

**Marketing Automation**

SAS’s Multichannel Marketing Hub (MMH) capability called SAS Customer Intelligence 360 offers multichannel marketing management, customer journey optimization, off-site targeting and
marketing planning. The product is used by customers across a range of industry verticals, with especially strong adoption in financial services, telecommunications, retail and travel and hospitality. It has featured consistently as a Leader in Gartner’s “Magic Quadrant for Multichannel Marketing Hubs.”

SAS has built on its analytical heritage to develop AI and ML features across its products, notably the testing, predictive analytics, segmentation and personalization functions. SAS has continued focus on marketing resource management, achieving closer integration between planning, attribution and execution. SAS’s 2019 roadmap saw advanced customer segmentation, constraint-based customer journey optimization, budgeting tools, approval workflows and its real-time streaming customer data platform (CDP). The vendor has focused on the customer experience of AI, offering a guided interface to improve interpretation of advanced concepts and deeper capabilities for data science users. Its advanced analytics experience is further substantiated in predictive modeling capabilities, unsupervised segmentation and lookalike targeting and next best action model analysis. In the area of technology integration, SAS is building out connector framework enhancements to improve the ease of third-party integrations. The organization’s 2020 roadmap features more AI capabilities including goal prediction, segment recommendations and AI-driven attribution. The vendor is focused on continuous product delivery with monthly release cycles that cover not only advanced analytics, but also marketing work management and journey management.

**Retail Analytics**

Retailers are focused on providing a unified retail commerce experience for customers. COVID-19 accelerated digital channels, and retailers must focus on business processes that increasingly require more advanced analytics, predictive capabilities, and are fueled by large transactional datasets. SAS’s retail solutions have also made the transition to SAS Viya. The vendor’s major retail applications covered include SAS for Demand-Driven Planning and Optimization, SAS Intelligent Planning Suite, SAS Retail Omnichannel Analytics, SAS Revenue Optimization Suite, SAS Inventory Replenishment Planning, and SAS Size Optimization.

Retailers produce vast quantities of data during operations and rely heavily on that data to create actionable insights for business leaders. Merchandising leverages this data to make decisions about what to include in assortments, how much to buy, and how to replenish and allocate inventory. Analytic support is also increasingly applied to what selling price should be leveraged, and how to promote items to customers. Analytic support is also important for short life cycles, as well as seasonal and fresh products, as it can be used to determine when to mark down for fast liquidation. The legacy of retail data has facilitated a long-standing relationship between SAS and retailers. Gartner’s retail merchandising coverage includes SAS in the following markets and reports:

- “Market Guide for Retail Assortment Management Applications: Short Life Cycle Products”
COVID-19 has accelerated the requirements to leverage these large datasets more effectively, and to combine data with less structured internal and external data sources. This allows for a more comprehensive picture of customer behavior, driving better merchandising decision making.

**Supply Chain Analytics**

SAS’s supply chain planning (SCP) applications deliver two key strengths. First, they leverage SAS’s long experience of, and great expertise in, analytics and BI, which are interwoven in its SCP portfolio. Second, SAS introduces scalability and predictive and prescriptive analytics, including machine learning, as powerful features for complex, global supply chains.

SAS should be considered a strong candidate for SCP in two cases:

- **Using SAS SCP applications for their specific or unique capabilities (as a “system of differentiation” in Gartner’s Pace-Layered Application Strategy terminology)** — for example, the SAS demand-sensing capability that translates and interprets demand signals. This function enables the supply chain to forecast short-term demand with higher accuracy and greater detail and to manage inventory more effectively. Another example is when an organization wants to augment existing analytical capabilities for tasks such as supporting new product introductions or improving forecast accuracy.

- **Using SAS’s advanced analytics in co-development of new applications to address emerging business requirements (as a “system of innovation”).** This might apply, for example, in areas such as natural language processing, automation of image detection to detect product defects, modeling of predictive maintenance and the IoT.

SAS’s emphasis on advanced analytic capabilities positions it to support several key trends that are becoming important as companies move toward digital planning. These trends include digitization of SCP, automation and leveraging big data, machine learning, AI and IoT. Traditionally, the SAS SCP offering has been best suited to enterprises with experienced analytical teams and a comparatively high level of analytics maturity. Over the past 24 months, SAS has been modernizing its platform with new features for ease of use and for guided analytics, with a focus on both business analyst and business user roles.

Gartner has observed over the last 18 to 24 months an explosion in new technologies being applied to SCP offerings, SCP vendors acquiring analytics solutions, and new SCP AI entrants that are starting to disrupt what had traditionally been a stable and mature market (see “Hype Cycle for Supply Chain Planning Technologies, 2019”). Though not yet matching SAS’s sophistication — as SCP vendors continue to innovate their analytics to support either end-to-end decision making or newer SCP AI vendors entering the market that are functionally focused on a particular function or...
use case to supplement end-to-end planning (where traditionally SAS would play) — they are gradually being seen as challengers to SAS in some of its core areas. These vendors are combining advanced analytics and good user experience, and provide these capabilities through the existing planning system, thereby enabling the overall supply chain plan to be of higher quality.

SAS offers SCP capabilities through its SAS for Demand-Driven Planning and Optimization suite, which has five main applications (or “workbenches”): demand signal analytics, forecast analytics, new product forecasting, collaborative planning, and inventory planning.

SAS is one of the longtime market leaders in demand signal management and supply chain analytics, as reflected in Gartner’s “Market Guide for Demand Signal Management Vendors” and “Market Guide for Supply Chain Analytics Technology.”

Evidence

1 The 2019 Gartner AI Organizations Study was conducted online during November and December 2019 among 607 respondents from organizations in the U.S., Germany and U.K. Quotas were established for company size and for industries to ensure the sample was a good representation across industries and company sizes. Organizations were required to have developed AI or intend to deploy AI within the next three years.

Respondents were screened to be part of the organization's corporate leadership or report into corporate leadership roles, have a high level of involvement with at least one AI initiative, and have one of the following roles when related to AI in their organizations: determine AI business objectives, measure the value derived from AI initiatives or manage AI initiatives development and implementation.

The study was developed collaboratively by Gartner analysts and the Primary Research Team.

Results of this study do not represent global findings or the market as a whole, but reflect sentiment of the respondents and companies surveyed.

Note 1 Gartner’s Financial Statement Scorecard for Public Companies

Gartner’s Vendor Financial Statement Scorecard methodology measures a combination of growth, profitability and liquidity based on a company’s financial results from public financial statements according to generally accepted accounting principles (GAAP). Gartner uses a standard methodology to derive its vendor financial statement scorecard to provide a like-for-like view among a pool of more than 750 vendors using publicly available financial information. The four basic criteria are: (1) revenue growth (trailing twelve-month year-over-year revenue growth); (2) profitability (trailing twelve-month GAAP net profit margin) with net income as a percentage of revenue; (3) balance sheet liquidity (current ratio) as current assets divided by modified current liabilities (which adjusts for the presence of deferred revenue); and (4) cash flow based on the trailing twelve months of cash flow from operations as a percentage of the trailing twelve months of revenue. For companies with large amounts of net debt, a fifth criterion, net debt divided by
trailing twelve-month cash flow from operations, is incorporated. Gartner’s policy is to use financials based on GAAP in calculating the ratios needed for the Vendor Financial Statement Scorecard (see “Understanding the Methodology Behind Gartner’s Financial Statement Scorecard for Public Companies”).

Company Overview

Name: SAS

Headquarters: 100 SAS Campus Drive, Cary, North Carolina, U.S.

Website: www.sas.com

Profile: SAS is a multinational developer of analytics software. It develops and markets a suite of analytics software for accessing, managing, analyzing and reporting on data to aid decision making.

Overall Rating Definitions

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong</td>
<td>Is viewed as a provider of strategic products, services or solutions:</td>
</tr>
<tr>
<td></td>
<td>■ Customers: Continue with planned investments.</td>
</tr>
<tr>
<td></td>
<td>■ Potential customers: Consider this vendor a strong choice for strategic investments.</td>
</tr>
<tr>
<td>Positive</td>
<td>Demonstrates strength in specific areas, but execution in one or more areas may still be developing or inconsistent with other areas of performance:</td>
</tr>
<tr>
<td></td>
<td>■ Customers: Continue planned investments.</td>
</tr>
<tr>
<td></td>
<td>■ Potential customers: Consider this vendor a viable choice for strategic or tactical investments, while planning for known limitations.</td>
</tr>
<tr>
<td>Variable</td>
<td>Shows potential in specific areas though still variable in more than one of the required categories:</td>
</tr>
<tr>
<td></td>
<td>■ Customers: Consider the short- and long-term impact of possible changes in status.</td>
</tr>
<tr>
<td></td>
<td>■ Potential customers: Plan for and be aware of issues and opportunities related to the evolution and maturity of this vendor.</td>
</tr>
</tbody>
</table>
Caution
Faces challenges in multiple required categories and execution is inconsistent:

- Customers: Understand challenges in relevant areas, and develop contingency plans based on risk tolerance and possible business impact.
- Potential customers: Account for the vendor's challenges as part of due diligence.

Weak
Has difficulty responding to problems in multiple areas:

- Customers: Execute risk mitigation plans and contingency options.
- Potential customers: Consider this vendor only for tactical investment with short-term, rapid payback.

Document Revision History
Vendor Rating: SAS - 10 May 2019
Vendor Rating: SAS - 5 February 2018

Recommended by the Authors
Top 10 Data and Analytics Technology Trends That Will Change Your Business
Augmented Analytics Is the Future of Analytics
Worlds Collide as Augmented Analytics Draws Analytics, BI and Data Science Together
How to Choose Your Best-Fit Decision Management Suite Vendor
Magic Quadrant for Analytics and Business Intelligence Platforms
Magic Quadrant for Data Science and Machine Learning Platforms
Magic Quadrant for Multichannel Marketing Hubs
Market Guide for Demand Signal Management Vendors
Market Guide for Supply Chain Analytics Technology
Magic Quadrant for Data Quality Tools
Market Guide for Asset Performance Management Software
Market Guide for Online Fraud Detection
Market Guide for Event Stream Processing

Recommended For You
Overcoming 3 Common Barriers to Agile L&D
Reframe Job Descriptions to Have Broader Appeal (Mutual of Omaha)
Preparing High Potential Employees for Senior Leadership Roles (Omega*)
Self-Service Project Risk Assessments (BP)
The DevOps Security Toolchain

© 2020 Gartner, Inc. and/or its affiliates. All rights reserved. Gartner is a registered trademark of Gartner, Inc. and its affiliates. This publication may not be reproduced or distributed in any form without Gartner’s prior written permission. It consists of the opinions of Gartner’s research organization, which should not be construed as statements of fact. While the information contained in this publication has been obtained from sources believed to be reliable, Gartner disclaims all warranties as to the accuracy, completeness or adequacy of such information. Although Gartner research may address legal and financial issues, Gartner does not provide legal or investment advice and its research should not be construed or used as such. Your access and use of this publication are governed by Gartner’s Usage Policy. Gartner prides itself on its reputation for independence and objectivity. Its research is produced independently by its research organization without input or influence from any third party. For further information, see “Guiding Principles on Independence and Objectivity.”

About Gartner  Careers  Newsroom  Policies  Privacy Policy  Contact Us  Site Index  Help  Get the App

© 2020 Gartner, Inc. and/or its Affiliates. All rights reserved.