GAVel- Transform Business Analysis Through Accessible, Scalable Predictive Analytics

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GAVS

Influence Real-Time Data Analytics for Competitive Advantage

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About GAVS

Executive Summary

Unanticipated downtime can be a setback in many ways including loss of productivity, brand reputation and finances. Traditional methods of tackling the outages are reactive in nature and are not ideal for the current dynamic scenario.

Organizations are moving towards virtual and cloud based infrastructure. This ensures availability of the infrastructure at all times. Having an optimal uptime enables businesses to detect critical services or application outages early on.

Today's highly evolving infrastructural environment results in generation of vast volume of data that encompasses hidden insights and leveraging this information is a prerequisite for business houses. Using Azure Machine Learning and Predictive Analytics, businesses can perform user experience analysis, to stay competitive, maintain healthy revenues and sustain their business growth.

This analysis requires real-time information on the IT environment and complete picture of the service support system through correlation of various events. They can leverage the proactive fact-based service intelligence to identify patterns, relationships, and dependencies within the data, ahead of time. Using predictive analytics in IT operations management helps businesses gain deep understanding of their operations and leverage the insights to proactively solve IT operational problems.

> *"Machine Learning will help to drastically reduce wait times in emergency rooms, predict disease outbreaks and predict and prevent crime. To realize that future, we need to make machine learning more accessible - to every enterprise and, over time, everyone."*
>
> *Joseph Sirosh,*
> *Corporate Vice President, Data Group, Microsoft*

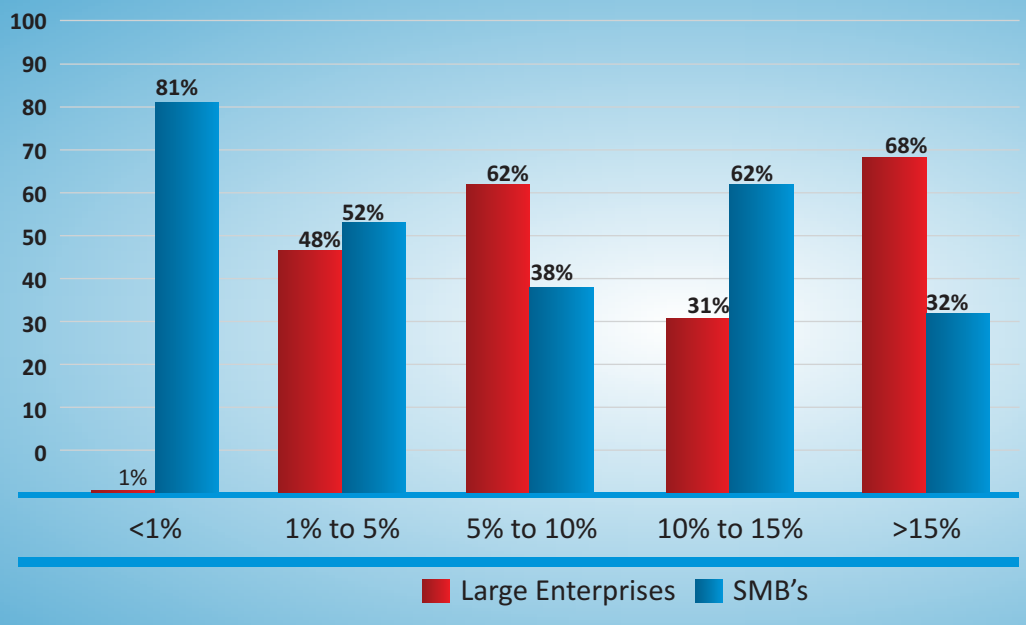
Emerging Technology Build up

It is crucial to keep track of emerging technologies and developments that radically transform our world, enabling timely expert analysis in preparation for these disruptors. The trend surrounding the emerging technologies for 2016 in different verticals and industries is fuelled by the innovative ideas and development by thought leaders.

Analytics, Web and Mobile services, Enterprise Applications, Security, Cloud, IoT, Application Development and Managed services – all have benefited by the constant feedback from their respective functional areas to improvise and deliver. The technologies are not new, but they've been worked on for years.

Their acceptance and maturity levels are the tipping point where its impact can be meaningfully felt.

Organizations worldwide are spending a considerable amount of their IT expenditure on future technologies like Advanced analytics. Shown below are the IT spending on Advanced Analytics by both SMB's and Large Enterprises.



Advanced Analytics Spending by Organisations

We can infer that Large Enterprises are spending more than 15% on Advanced Analytics, while SMB's are spending between 5% to 15% of their IT expenditure.

This research will change as more SMB's adopt Advanced Analytics in their business strategies.

Source: Infoholic Research

GAVS Technologies provides businesses with the requisite expertise to transform the way business is done, compelling organizations to adopt and optimize their IT infrastructure to stay competitive and meet customer demands.

It harnesses the capabilities of Azure ML and Predictive Analytics to increase their system uptime and drive revenue through predictive insights through GAVel - the next-generation predictive intelligence platform.

Market & Business Perspective for Advanced Analytics and Azure Machine Learning

Advanced Analytics can be defined as a collection of sophisticated techniques and tools that offer incredible potential for predicting, forecasting, identifying repeatable patterns, generating recommendations and providing insight into unstructured data. It is used to derive valuable insights that drive changes and improvements in business practices.

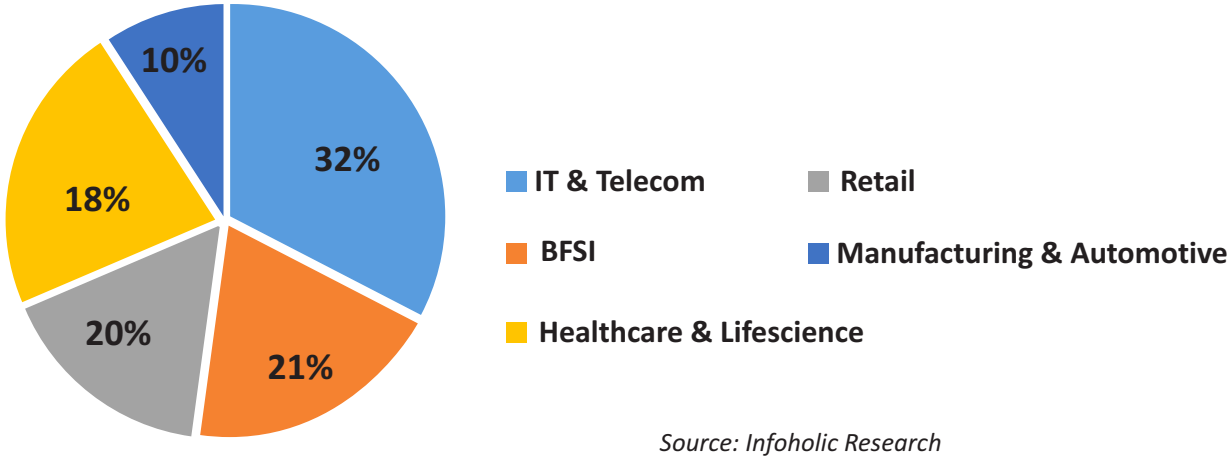
Advanced analytics is the fastest-growing segment of the business intelligence (BI) and analytics software market. This growth is due to factors such as Cloud platform solutions, reduced price of solutions, emerging markets and growing demands.

Tools for advanced analytics focus on forecasting future events and behaviours, allowing businesses to conduct what-if analyses to predict the effects of potential changes in business strategies. Using a spectrum of new technologies like Cloud, IoT, NoSQL, Big Data, Data Harvesters etc. advanced analytics combines, the massive data available from sensors, mobile devices and social media to generate models that can be used for making informed business decisions.

Emergence of the niche players providing vertical specific solutions has changed the dynamics of the market forcing the major players such as SAP, SAS, and Oracle to provide industry specific solutions.

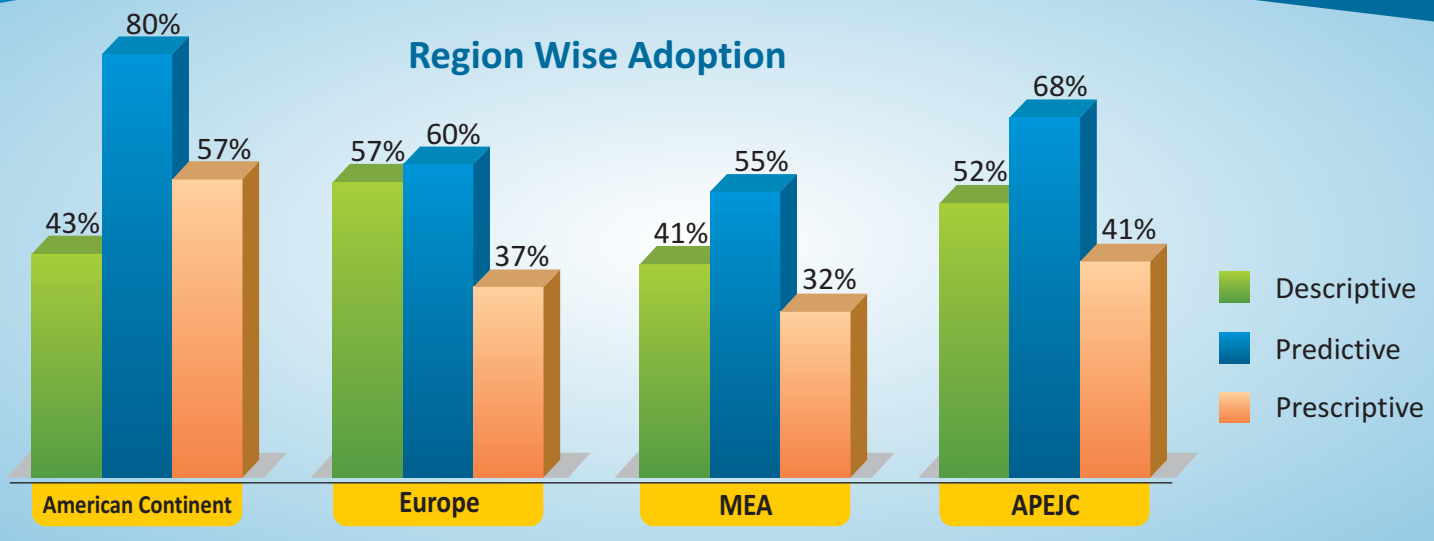
Some of the advanced analytic techniques include descriptive analytics, prescriptive analytics, predictive analytics, machine learning, big data analytics, pattern matching, forecasting, complex event processing, neural networks and location intelligence. These analytics are widely used in industries including Marketing, BFSI, Healthcare & Life science, Manufacturing & Automotive, IT & Telecom, Retail, Risk Management, and Economics.

Adoption of Advanced Analytic by Industries



Source: Infoholic Research

The region wise adoption of Advanced Analytics, particularly Predictive Analytics is prominent in the American Continent followed by APEJC, Europe and MEA regions.



Source: Infoholic Research

Emerging Trends in Advanced Analytics That Will Shape the Future

- Growth of Social Media and Customer Analytics for big data generated through social media will drive business innovations.
- Text Analytics and Sentiment analysis of the data will enable business to understand human sentiments in social media, reviews and other content sources. This analytics includes a range of software and techniques like natural language processing, machine learning, relationship extraction, visualization, and predictive analysis.
- Evolution of Deep Data learning in image recognition, language understanding, that will exceed human performance in many areas.
- Technology advancements and developments like in-memory processing, real time streaming analytics for processing real time data will provide analytics and reports for business strategies.
- Cybersecurity is beginning to employ predictive approaches to threat intelligence and monitoring

Business Importance of Machine Learning and Predictive Analytics

As businesses moved from simple databases with limited data, to generating terabytes of data; managing, analysing and using this information to gain insights became a monumental challenge. Having more data allows businesses to examine it in intelligent ways to find patterns. Using those patterns which are typically too complex for easy detection, businesses can provide solutions to their problems.

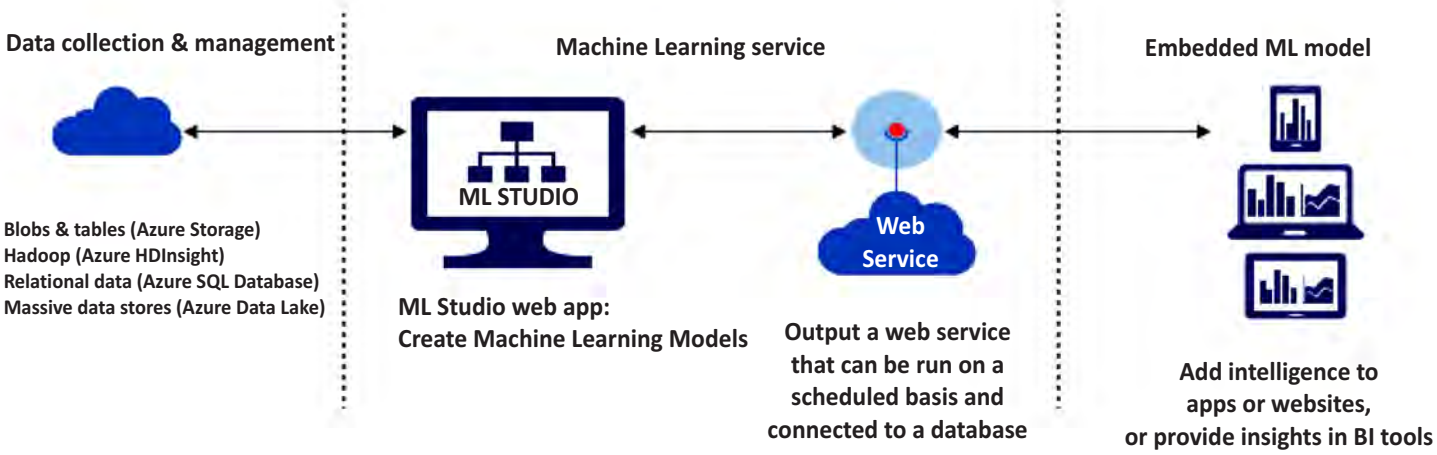
This is exactly what the Azure Machine Learning process does: It applies statistical techniques to large amounts of data, looking for the best pattern to solve the problem. It then generates code that can recognize those patterns in the new data. This generated code is referred to as a model, and it can be called by applications that need to solve this problem. It focuses on machines having the ability to teach themselves, to grow and change when exposed to new data. In other words, using predictive insights through GAVel - the next generation predictive intelligence platform, smarter applications are developed.

Azure ML Success Stories

- Deploying Azure ML, data scientists at Mendeley Ltd. were able to improve their predictive models and achieve 30% better recall, says Fernando Fanton, Senior Vice President of Product Development at the company.
- Rockwell Automation Inc. achieved a 1% increase in energy efficiency (a significant savings, especially for a large system), by deploying Azure ML in their data strategy for municipal water plants, says Doug Weber, Business Manager, Remote Application Monitoring for Rockwell Automation.

Azure ML: Basic Workflow

Build models from data and operationalize a Machine Learning Solution



Source: Microsoft Azure

As Machine Learning helps predict the future, it's often included in the broader category of predictive analytics. All that is needed is the data, machine learning software to learn from that data, and people who know how to use that software.

From a business perspective, GAVS and GAVel serves you by applying Azure Machine Learning and Predictive analytics to

- **Yield sustainable ROI** – Businesses can improve their existing processes, better understand their customer behaviour, identify unexpected opportunities and anticipate problems beforehand.
- **Cost effective pricing** – Save on the expected costs incurred during your OPEX and CAPEX expenditures. Businesses can opt for the Free Tier or Standard Tier Azure ML pricing depending on their requirements.
- **Flexibility** – Using Cloud capabilities, business can handle small or big projects involving huge volume of data.
- **Better insights** – Businesses can make informed decisions based on the insights and information gathered through predictive analysis.

GAVS has expertise in creating predictive models using Azure Machine Learning. It has everything you need to create predictive analytics solutions in the cloud, from a large algorithm library, to a studio for building models, to an easy way to deploy your model as a web service.

Businesses can create advanced Machine Learning algorithms composed of many technologies (such as deep learning, neural networks and natural-language processing), that can be used in unsupervised and supervised learning, and that operate guided by lessons from existing information.

Business Concerns and Issues Involving Real Time Data and Analytics

Next generation technologies are transforming the way business is done, compelling organizations to adopt and optimize their IT infrastructure to stay competitive and meet customer demands. Understanding issues in real time is critical to managing IT operations selectively, before they cause significant disruptions and impact the business adversely. Businesses are, therefore, realizing the importance of proactive IT operations management in ensuring superior customer services.

However, organizations are challenged by the need to handle complex and expansive technology ecosystems and the exhaustive amounts of data produced.

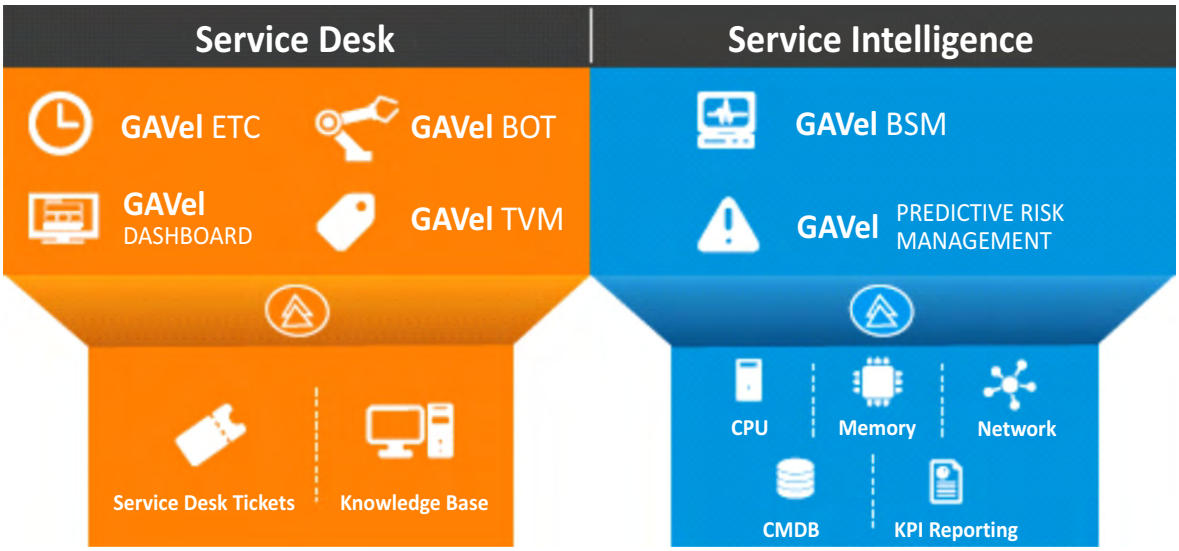
Typical concerns and issues that businesses face are

- Do service teams have end-to-end visibility of operations and infrastructure?
- Can problems be pre-empted proactively by monitoring enterprise-wide operations?
- Is machine generated data integrated with human intelligence to provide a comprehensive view of operations?
- Can IT operations be safeguarded based on past performance?
- Inaccurate or misleading revenue forecasts and models?
- Identify risks and mitigate their effects
- Is there relevant expertise to create, develop and deploy the predictive models?
- Interoperability among multiple machines, operating platforms, and applications, which requires interoperable software
- Complex data which requires extensive processing and formatting

Fortunately, these barriers for successful implementation of Azure ML and Predictive analytics are beginning to fall, thanks to advances in software, computing, and database technologies.

The GAVel Product

GAVel is a next-generation predictive intelligence platform for your data center operations and contact center. It offers real-time, end-to-end visibility into an enterprise's operations, processes, and user experience through analysis of machine data & human intelligence to enhance the uptime of the systems and predictions on the time of incidents. The tool can be used across devices and platforms, enabling the enterprise to minimize downtime and maximize operational productivity.



ETC - Estimated Time to Completion | TVM - Ticket Volume | BSM - Business Services Monitoring - *Overview of the Gavel ITOA solution*

GAVel's IT Operations Analytics (ITOA) makes it possible for teams to assess event data, performance metrics and other operational data, thereby, enabling rapid resolution of multiple issues. It also facilitates a high level of accuracy in identifying and addressing anomalies.

Cutting Edge Advances of GAVel

GAVel is the platform for gaining the best insights in your business and boost the business information revolution. The highlighting features of GAVel is its effective use of prescriptive and predictive analytics. It is used to predict potential failures and evaluate its customer's sentiment analysis.

Predicting Potential Failures

In an IT environment, unanticipated downtime can result in loss of productivity, revenues and brand recognition. GAVel's predictive and prescriptive algorithms enable technicians to pre-empt and resolve critical business incidents due to infrastructure/applications issues. The customized self-help engine, provides inputs to the users to resolve the issues themselves before raising a ticket to the service. Through the web-based personalized dashboard, it communicates ticket resolution status through dynamic visualization and uses statistical models on past incidents to help assign accurate estimated time to completion (GAVel ETC).

Sentiment Analysis

The GAVel sentiment analysis engine accurately measures employee performance and helps them to be more productive. The GAVel Estimated Time to Completion(ETC) and user-friendly UI interface help in setting the expectation with users to reduce the negative CSAT, thereby accurately measures user sentiments. Based on this analysis, employees are rewarded and appreciated, thereby increasing customer satisfaction.

What's Under the Hood?

Much of the work done by a data scientist involves statistics who apply some kind of statistical technique to prepared data.

- GAVel as a product can be deployed as a service. As businesses are investing more into cloud, which means that they can easily create machine learning services that can be added to almost any product.
- User friendly front end which neatly integrates with the backend, enabling greater user interaction, customer satisfaction and productivity.
- GAVel's Prediction codes are written in R, the open-source language for statistical computing. R has become the De facto language for writing code in this area. This makes it easier for GAVel solution to be implemented by data scientist without extra training.
- Microsoft has included broad R support in Azure ML to use R code and create an API web service, thus enabling simple ways to move R models into production. This combination provides scalability and ease of deployment of Azure Machine Learning with the flexibility and deep analytics of R. Due to its ease of scripting, R is used to implement new machine learning algorithms, new data pre-processing modules, and more.
- GAVel allows data scientists to either manually write predictive code in R or use Azure ML packages viz., Linear regression, Logistic Regression, N-gram techniques to helps reduce manual coding and also fastening the processing time.
- Azure ML also helps achieve self-learning with the help of AI models integrated within it. The one of its kind language classifier help GAVel classify sentiment of the data thereby boosting the prediction process.

Machine Learning and Predictive Analytics Advantage

- Big Data, Predictive & Prescriptive Analytics, and Mobile enable us to harness next generation technologies to deliver unique value-added services to clients
- Enhances ITSM services with embedded intelligence capability
- Identifies future events and predicting failures, that results in increased uptime and higher customer satisfaction
- Identifies events that have the potential to cause major disruptions, resulting in quicker resolutions and improved productivity
- Improves transparency and greater visibility into different business operations with web based dashboards and intelligent self-help communication tools

Going Forward

Future Road Map for Azure ML and Analytics

As IT Operations Analytics (ITOA) gains popularity, businesses are recognizing the need to acquire deeper understanding of how Azure Machine Learning and Advanced analytics can help them improve IT operations in specific ways and achieve competitive advantage. It helps in making decisions related to IT infrastructure with the business impact inline. The major focus has always been to prevent issues or problems that impact the business revenue. The overall challenge and considerations is to analyse and reduce business impact.

The future inevitabilities for Azure ML and Predictive Analytics

- **Remote Asset & infrastructure Monitoring** - Provides proactive monitoring of critical business functions to improve performance and uptime of critical systems and processes
- **Predictive Maintenance** – Predicts additional event occurrences if an issue stays unresolved within the dedicated time
- **Competition and Trend Analysis** – Enables improving end user satisfaction and increasing operational performance, while reducing costs and infrastructure downtime
- **Embedded global distribution system**- Easy access to the reports and analytics anytime
- **Data Flywheels** – Digital data and cloud storage follow Moore's law: the world's data doubles every two years, while the cost of storing that data declines at roughly the same rate. This abundance of data leads to more features, better machine learning models, user experience, leading to more users and more data
- Faster MTTR & Streamlined Operations leading to better user satisfaction

Successful Customer Stories

GAVS Technologies has served clients across various verticals like Banking & Financial services, Healthcare & Life Sciences, Manufacturing, Media & Publishing. GAVS offers a team of industry specialists and technology experts who have successfully implemented their GAVel solutions across an assortment of functional areas. Research has shown that when if you empower people with data, they will make better decisions. GAVS has proved this with their successful clients across various domains.

One of their customer is the largest voluntary, not-for-profit health care system providing more than one million patient visits annually. They are the leading hospital that provides quality health care using latest technologies. GAVel helped the customer improve the uptime of their systems by 20% and reduce the number of issues by 35% by using its predictive analytics capability to analyse human intelligence data & machine data to provide prediction on potential issues. Another success story is where a large leading bank is using GAVel social analytics capability to analyse their employee sentiment to retain talent and also acquire new talent with targeted branding. GAVel pulls data about the customer and their competitors to provide inputs on their brand strengths and weakness for their branding strategy.

About GAVS

GAVS Technologies (GAVS) is a global IT services & solutions provider enabling enterprises in their digital transformation journey through infrastructure solutions. GAVS' services and solutions are aligned with strategic technology trends to enable enterprises take advantage of Bimodal IT trend – managing current operations, transforming them through IT Operation analytics, automation, cloud orchestration and DevOps.

GAVS has been recognized as a 'Cool Vendor' by Gartner in 'Cool Vendors in ITSM 2.0, 2016' and positioned as an 'Aspirant' in Everest Group PEAK Matrix™ for Healthcare Provider IT Services. GAVS was also rated as a prominent India-based Remote Infrastructure Management player & one of the key small players serving the mid-market & enterprise clients in North America by Gartner.

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