TATA CONSULTANCY SERVICES

Building on belief

Insights at scale: New growth engine for financial institutions

Abstract

Insights are the key ingredients of strategic and tactical decision-making. The quality of decisions improves when operations are critically evaluated, intelligent insights extracted, and integrated with existing systems on a continuous and near real-time basis. In the financial services industry, insights generation and consumption are restricted to niche areas – in our experience, less than 10% of insights created are consumed or operationalized. The current technology ecosystem analyzes data, draws insights, predicts outcomes, and visualizes the impact or influence manually. This impacts the delivery of insights and leads to sub-par business outcomes.

This offers financial institutions a big opportunity to automate critical components, generate a continuous flow of insights, move to insights-driven operations, and stay ahead of the competition. Machine intelligence and other technology advances offer financial institutions an opportunity to leapfrog into insights-driven operations and unlock exponential value. This white paper proposes a simple framework for consolidating patterns from data science and technology infrastructure to enable automated scaling of insights. The paper also highlights key capabilities that can serve as the building blocks for scaling machine intelligence to derive valuable insights.

Insights at scale are the key to success

Although financial institutions have been using machine learning (ML) innovations to raise the bar on insights creation, their use is limited to creating one-off reports or presentations in niche areas. There exists a wide gulf between insights generation and consumption in the banking industry, despite examples of seamless integration witnessed in companies such as Amazon.com and Alibaba.com.

Chances of customer retention are higher in physical interactions at branches. However, the rise of digital banking has reduced human interaction and adversely affected customer stickiness. It has thus become imperative to continuously monitor shifting customer contexts, identify and address needs as they arise, craft new personalized value propositions, and offer them to customers at the right time. To achieve this, the availability of insights at the frontline where customers interact is crucial. Currently, insights are predominantly achieved through a time consuming, rule-driven business process. They are codified as business rules and embedded into applications to make them available for business processes. An insights-based approach, on the other hand, allows dynamic reconfiguration of business processes depending on the context.

With vertically integrated business models giving way to horizontally connected ecosystems, financial institutions are unbundling their existing business processes and integrating loosely coupled capabilities with those of their partners to deliver just-in-time value to their customers. A continuous flow of predictive insights is critical to delivering personalized, contextualized service, enhancing experience, and driving customer retention.

Traditional statistical data analysis is time-consuming and provides solutions with incomplete data. Analyzing huge volumes of varied data in near real-time requires the use of newer technologies to obtain the necessary scale and speed. Continuously delivering new value to customers, as well as ensuring efficient operations, will require financial institutions to integrate insights at scale. This will enable smart financial institutions that are highly responsive to the environment.

The good news is that the technologies are available

Foundational capabilities across data management, on-demand distributed computing resources, ML and deep learning (DL) techniques, as well as options to automate model design and operationalize machine intelligence, are readily available. Data lineage management techniques are evolving to provide a central view of data, enabling data science teams to derive insights from across the organization.

Containerization is another technology that allows the portability of insights from one infrastructure to another, enabling financial institutions to choose cost-optimized, value-maximized, just-in-time decision-making mechanisms. Individual models are trained separately using custom-designed containers, and their orchestration is managed through mature container orchestration technologies. Containerization, in conjunction with advanced application programming interfaces (APIs), facilitates easy consumption of insights. Performance can be easily tracked, while deviations automatically trigger relearning followed by automated redeployment of the upgraded model.

Regulatory compulsions have forced financial institutions to develop unbiased, explainable, and repeatable models to generate insights. These models are based on traditional ML algorithms and involve multiple human interventions to reconcile data quality issues. New DL techniques, on the other hand, are more accommodative of data inconsistency and variety and do not adversely affect model quality.

SAIL: An approach to scaling insights

SAIL is a templatized approach to scale insights, enhance business processes and capabilities as well as derive crucial customer insights to deliver personalized products and services and improve the experience. On the technological front, the SAIL approach enables the standardization of three pipelines – data, learning, and model operation. These pipelines are the crucial building blocks needed to create value through investments in artificial intelligence (AI).

The approach spans four main dimensions – Synergized algorithms, Automated model creation, Infrastructure, and active Learning – in conjunction with templatized automation to deliver on the promise of build and deploy anywhere (see Figure 1).

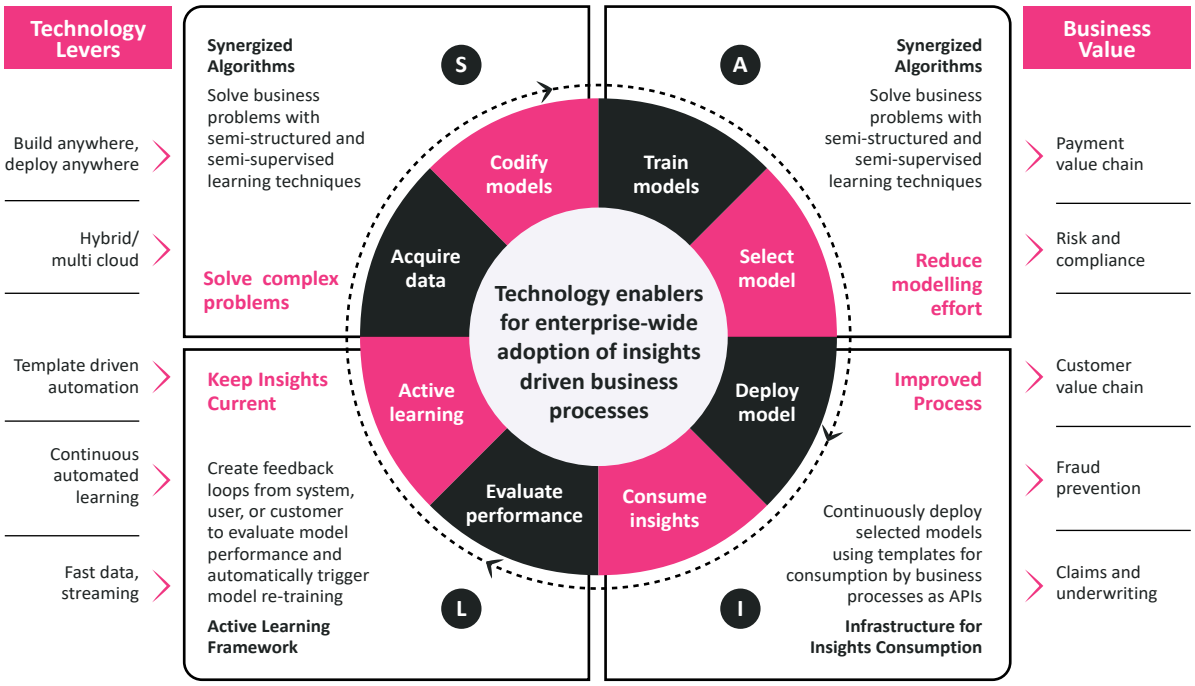

Figure 1: The SAIL Approach to Scaling Insights

Synergized algorithms

Essentially, this blends algorithms to process data in unique ways and combine them to generate insights. Structured, semi-structured, and unstructured data can be combined using advanced AI, such as unsupervised learning, and fusion of DL and semantic graphs. In addition to bringing together capabilities to build, deploy, monitor, and evolve models, SAIL offers the flexibility to operate in a multi-cloud, multi-platform hybrid environment with loosely coupled, API-based integration across functional and algorithmic layers, making it interoperable and portable.

Automated model creation

To deliver insights on scale, a large volume and a variety of learning pipelines need to be designed and verified. Deciding on the right model for deployment will require enormous time spends from data scientists and ML engineers. Fortunately, the SAIL playbook incorporates new techniques to automate model design and selection.

Infrastructure for insight consumption

The models are integrated into business processes and deployed into different environments such as development, testing, and production. Subsequently, templatized automation incorporated in the SAIL playbook facilitates automation of the versioning and deployment infrastructure, ensuring that the models are continuously evaluated and retrained.

Learning actively

The generated insights need to be constantly monitored for deviations and quality. Based on the feedback provided by the integrated mechanisms installed on the edge components of the insights pipeline, the model is tweaked to maintain the overall quality. A set of approaches or solution spaces – equivalent to patterns in a business problem domain – are leveraged to ensure the continuous creation of quality insights.

Applicability in the financial services industry

In our view, the SAIL approach has widespread applicability in the financial services industry. For instance, in the wealth management segment, firms operate with a hybrid financial advisory model that may not have the capability to deliver personalized advisory. To add to this, Gen X customers prefer in-person interactions while millennials wish for more independence in their investment decisions. To transition to an engagement model centered on personalized advisory, firms will need to differentiate their value proposition from that of fintech disruptors. This will require firms to proactively meet customer needs by gathering continuous insights on product performance, market conditions, and human advisory. A platform that has the ability to assimilate investment logic stored in advisors' brains, support self-service, and work with legacy systems as well as integrate products from partners, will need to be built.

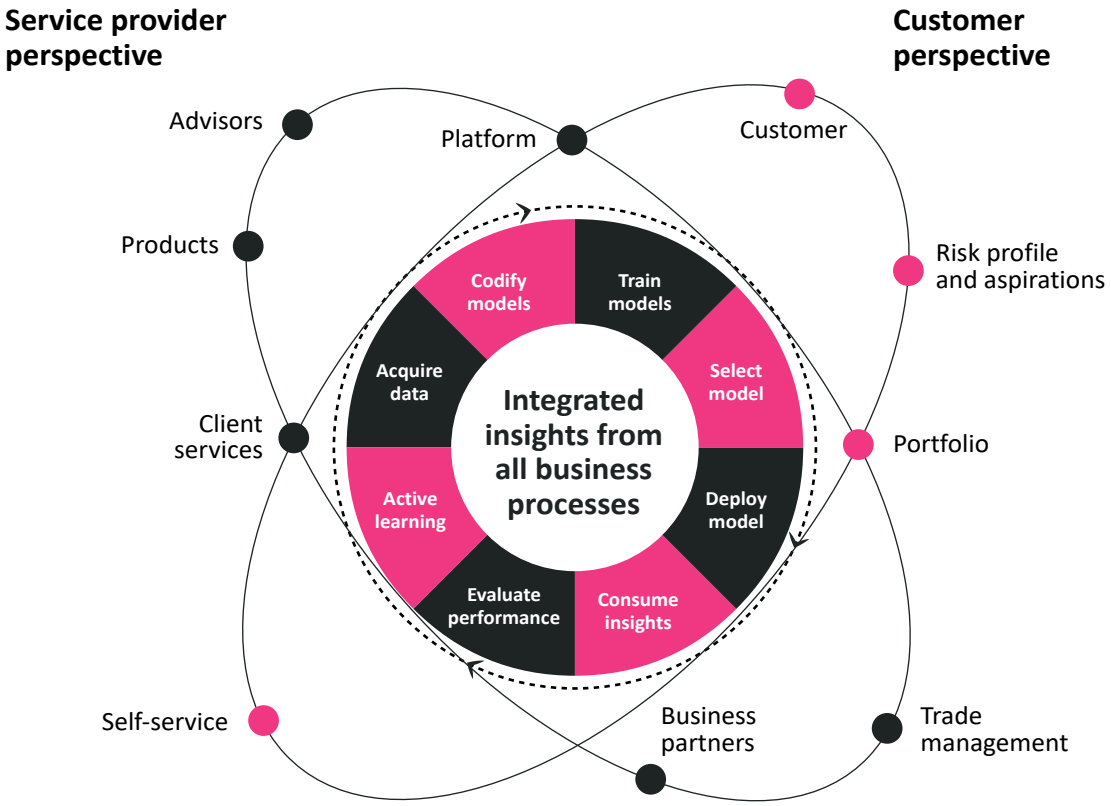

Figure 2: Using SAIL to Integrate Multiple Perspectives and Deliver Value in a Financial Advisory Context

Deploying the SAIL playbook will enable the advisory platform to process a variety of data available in the data lake (see Figure 2). This, along with the ability to combine multiple algorithms in a calibrated way, allows the platform to provide personalized next best action recommendations to Gen X customers either digitally or in person. To meet millennials' need for independent decision-making, a prioritized list of possible outcomes for multiple strategies can also be enabled on the platform.

Similarly, regulatory compliance is another area where the SAIL approach can be implemented. Risk teams spend significant time and effort on sifting through existing processes and controls before finalizing the reuse or creation of new controls. For a leading American payment services provider, the SAIL approach helped reduce control identification time to less than three weeks while maintaining control recommendation accuracy at approximately 98%. This success can be attributed to a holistic approach enshrined in SAIL to create and deliver value to risk control officers.

Next steps

Over the last few years, financial institutions have strived to come closer to their customers. From a technology perspective, data lakes and analytics for better customer insights, omni-channel customer experience platforms, and connected ecosystems to bring together different stakeholders offering a variety of products and services to meet specific customer needs have been some components of digital journeys. Financial institutions must now take the next leap and transform into insights-driven enterprises to enhance the quality of decision-making, drive efficiency and growth, and deliver customer delight. And the need for speed is paramount – firms that act quickly will surge ahead of the competition.

About the authors

Prasad Chitta

Prasad Chitta is a technology leader with TCS' Banking, Financial Services, and Insurance (BFSI) business unit. He has over 27 years of experience with expertise in enterprise data management, analytics, and machine learning. Prasad has previously worked with research and technology companies. He has a Master's degree in Computer Science from Alagappa University, Karaikudi, India.

Praveen Kumar B S

Praveen Kumar B S is a chief architect with TCS' Banking, Financial Services, and Insurance (BFSI) business unit. He has more than 23 years of experience architecting solutions for retail banking, wealth management, transaction banking, trade finance, and property and casualty insurance. He has a Master's degree in Materials Engineering from the National Institute of Technology Karnataka, Surathkal, India.

Contact

For more information on TCS' Banking, Financial Services, and Insurance unit, visit https://www.tcs.com/banking-financial-services or https://www.tcs.com/insurance

Email: bfsi.marketing@tcs.com

About Tata Consultancy Services

Tata Consultancy Services is an IT services, consulting and business solutions organisation that has been partnering with many of the world's largest businesses in their transformation journeys for over 50 years. TCS offers a consulting-led, cognitive powered, integrated portfolio of business, technology and engineering services and solutions. This is delivered through its unique Location Independent Agile™ delivery model, recognised as a benchmark of excellence in software development.

A part of the Tata group, India's largest multinational business group, TCS has over 488,000 of the world's best-trained consultants in 46 countries. The company generated consolidated revenues of US $22.2 billion in the fiscal year ended March 31, 2021, and is listed on the BSE (formerly Bombay Stock Exchange) and the NSE (National Stock Exchange) in India. TCS' proactive stance on climate change and award-winning work with communities across the world have earned it a place in leading sustainability indices such as the MSCI Global Sustainability Index and the FTSE4Good Emerging Index. For more information, **visit www.tcs.com** and follow TCS news at **@TCS_News**.

To stay up-to-date on TCS global news, follow **@TCS_News**.

Corporate Marketing | Design Services | M | 06 | 21