On-demand Access to Risk and Regulatory Intelligence for Business Decision-making

Abstract

Effective risk management in the contemporary financial services environment requires agility and access to right insights for strategic decision-making. Risk information and insights required by business users in financial services organizations are largely federated and siloed necessitating a certain degree of mining despite access to sophisticated dashboards and reporting solutions. Real-time, round-the-clock, and easy access to risk insights has the potential to turn business decision-making more effective and powerful. An intelligent risk assistant trained to understand the business and regulatory terminologies, and retrieve and deliver real-time risk insights from structured and unstructured sources at the click of a button can be a godsend for the financial institutions. This paper highlights the importance of real-time risk intelligence and presents a way to build an intelligent risk assistant using natural language processing and machine learning technologies.

Data Insights: The Bedrock of Effective Risk Management

In the hyper dynamic world of financial risk management, round-the-clock access to critical information and insights is essential to enable the right business and strategic decisions. The most critical information needs for a financial firm revolve around getting responses to ad hoc queries in real-time from structured datasets and referencing specific sections of organizational policy and regulations stored in enterprise portals (see Figure 1). Additionally, gathering customer information is critical to gaining a real-time 360-degree view of the customer to either asses risk or perform periodic risk reviews. These demands for information have to be met in the shortest possible time without having to institute technically complex queries or spend valuable time scanning policy portals and the public domain or sending out a flurry of emails to get a specific piece of information.

Figure 1: Business Need Diagram

Gaining Real-time Insights: Assessing the Challenges

Despite financial institutions using self-service business intelligence (BI) applications and easy-to-use risk dashboards, accessing specific information or insights buried under the multiple views and sections of a risk report requires considerable time and effort. Navigating through policy portals and scanning multiple documents to clarify a specific guideline or regulatory provision too is time and effort intensive. Similarly, entity research requires an army of analysts to manually delve into news feeds and risk and research reports available in the public domain to derive insights. In addition, deriving some business insights need access to systems that may not be available beyond regular business hours. Thus,

though financial institutions are sitting on heaps of data, business teams are neither equipped to mine the information nor is it the best use of their time, which can be better utilized for critical business decision-making. The need of the hour is for financial institutions to deploy a solution that delivers critical information and insights in real-time and on demand to facilitate quick and timely strategic decisions.

Building an Intelligent Risk Assistant

In our view, deploying an intelligent risk assistant or a virtual agent is the way forward for financial institutions to meet the demand for real-time insights from business stakeholders. A virtual agent or a chatbot with the ability to converse in simple business language can be trained in specific domain ontologies and data dictionaries to understand and respond to a query related to a given business context. Text mining and natural language processing (NLP) technologies can be leveraged to enable the bot to respond to specific requests by extracting information from structured risk data stores as well as unstructured sources.

To successfully develop and deploy an intelligent risk assistant or bot, financial institutions must consider some key aspects:

- Clearly stipulate both structured and unstructured data sources. Ensure that data is used more at the consumption point rather than the source points.
- Define the intent and entities specific to the risk and regulatory domains to enable processing in natural language using NLP techniques.
- Train the virtual agent to understand variations and nuances of language and terminologies by mapping to specific intents and entity definitions using NLP techniques; this is crucial to ensuring that the agent is able to handle a wide variety and depth of tasks.
- Build the virtual agent keeping in mind its end use as an information delivery channel.

Integrating the Risk Virtual Agent into the Business Ecosystem

Successfully deploying and integrating the intelligent risk assistant into the banks' risk landscape will require customization to meet organization-specific needs for risk information and insights. For the bot to be effective, it should have the intelligence to understand business context and the related business terminologies to support users in their day-to-day tasks. Building bots using intelligent technologies such as NLP and training them through machine learning (ML)-based

expert annotation techniques will equip them with the capability to undertake a variety of tasks ranging from risk identification and quantification to monitoring and mitigation as well as reporting. Initially the assistant can be limited to providing risk intelligence to users in specific lines of business; organizations can eventually look at extending adoption to cover end-to-end enterprise risk management.

For intelligent risk assistants to seamlessly deliver insights to the stakeholders, integrating it into the enterprise risk data mart or risk data warehouse is crucial. Effective integration will necessitate identification of key risk and regulatory data fields and mapping them with the entity list of the conversational engine along with the variation in business references for specific fields. For example, if the risk data mart has a field called 'customer rating', then the bot must be trained to handle additional aspects such as borrower rating, probability of default (PD) rating, and counterparty ratings and so on. In addition, machine learning (ML) algorithms will need to be used to train bots to analyze and pull insights from unstructured data sources such as policy and regulatory documents or the internet. On receipt of a command from the user, the intelligent risk assistant will interpret it using NLP libraries and deliver the required information. To enable the bot to understand the business context and retrieve the most relevant entity-specific information from external sources, risk experts will need to manually include annotations to train the bot in intent and entity relationships. Figure 2 depicts how an Intelligent Risk Assistant can be functionally positioned and integrated into the risk management ecosystem of banks.

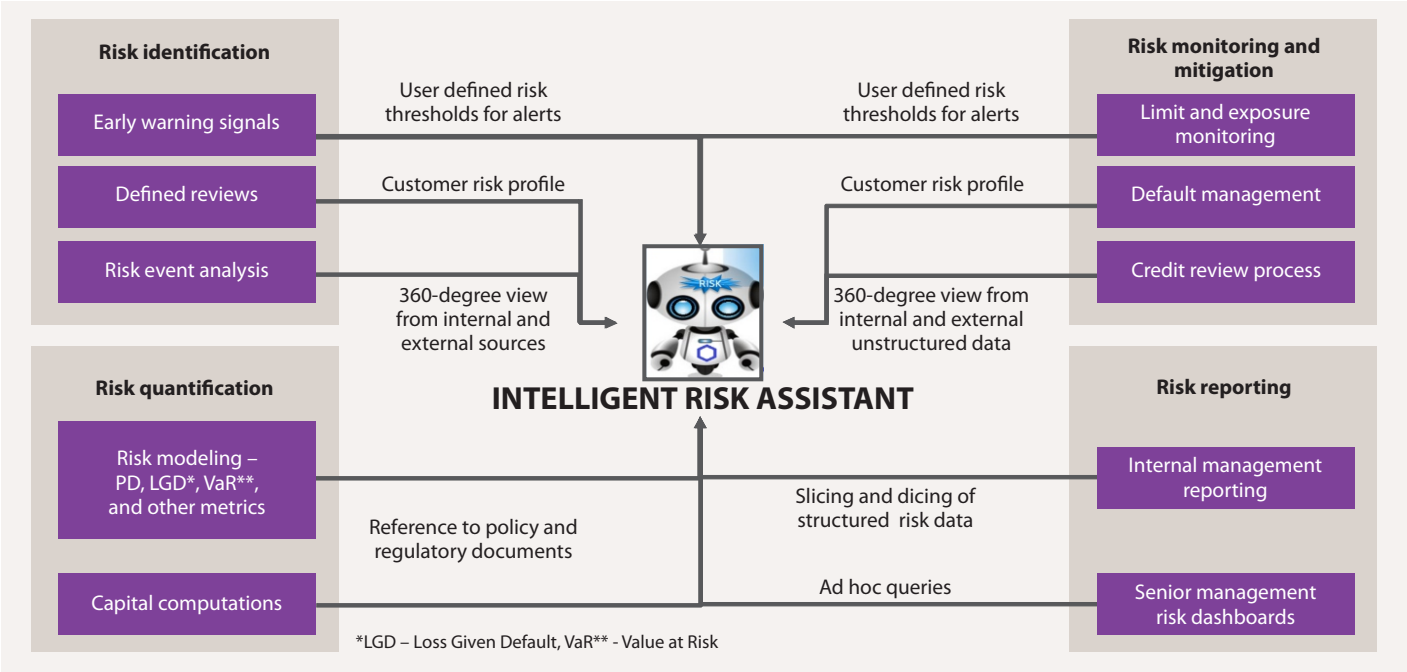

Figure 2: Functional Positioning of the Intelligent Risk Assistant in the Risk Ecosystem

Benefits of an Intelligent Risk Assistant

An intelligent risk assistant enables interactions in natural business language, eliminating complex technical queries and search strings across document repositories and the internet. Additionally, round-the-clock availability of risk virtual agents enables real-time query resolution by interfacing with structured and unstructured data sources as opposed to receiving critical inputs via email on the next business day or manually scanning data repositories and surfing the internet. Intelligent risk assistants can also be trained to deliver risk metrics, insights, and alerts personalized to the roles and responsibilities of specific business stakeholders, which in turn will facilitate faster and better decision-making. Most importantly, they can provide a 360-degree view of risk and enable a more comprehensive view of the risk profile of individual customers to foster a more informed and faster risk approval process.

Case-in-point

For a regional bank in the US, we ran a proof of concept (PoC) for an intelligent risk assistant in their credit risk datamart. The bot was trained to handle about 25 credit risk terms (parameters) and answer questions around variations, decomposition, aggregations, and the bank's top customers. The bot was also trained to pull out negative news on the bank's top five customers from the public domain and deliver additional insights to enable more efficient underwriting and credit review.

The PoC demonstrated that a full implementation could deliver crucial benefits:

- Top management access to credit risk insights derived from huge amounts of structured data in real time (this currently takes days to compile manually).
- Better credit decisions enabled by real-time alerts on negative news related to customers – negative news screening currently takes two to three hours for each customer under review.

Looking Ahead

As we stride further into the digital era, business users across the globe are going to be inundated with huge amounts of data. Spending enormous amounts of time on data collation will divert attention from more critical tasks like analysis, assessment, and developing strategies to mitigate risk putting banks at a competitive disadvantage. To overcome this, banks must consider deploying intelligent risk assistants with the capability to deliver crucial insights necessary for sound business decisions and efficient risk management fundamental to a stable financial system in the digital era.

About The Author

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Manoj Reddy is the Head of the Risk and Compliance Practice, Banking, Financial Services and Insurance, TCS-North America. With over 15 years of experience across financial services, IT, and business consulting, Reddy has led several consulting and implementation engagements for the risk function of global financial firms. He has provided both regulatory and strategic solutions to TCS' clients over the past decade primarily in the areas of enterprise risk transformations, CCAR and Basel compliance, liquidity risk and credit risk management. He is currently leading TCS' efforts in providing cognitive solutions for risk and regulatory problems in North America. Manoj holds a master's degree in in Business Administration with specialization in Finance and Marketing from St. Joseph's College of Business Administration, Bangalore, India.

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