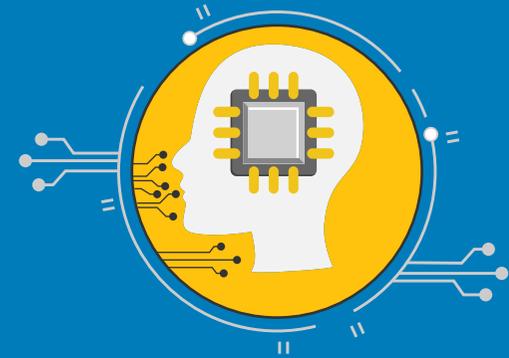


Banking

Early warning system reveals financial distress 5 months earlier than normal

BSG worked with a South African bank on a system to enable **prediction of financial distress** up to **five months earlier** using **machine learning**, integrated with a **data pipeline**, built on a **big data stack**.



Overview of the client's needs

- Reduce unexpected losses across credit products in corporate and investment banking (CIB)
- Automate manual process of identifying high-risk customers
- Transition from reactive to proactive risk management
- Bring in risk factors from other areas of the bank that may be indicative of distress



Objectives of the engagement

- Save the bank money lost as a result of default
- Develop a tool to identify financial distress earlier and more accurately than existing credit models
- Leverage other internal and external data sources to improve distress prediction
- Create a robust data pipeline to enable consistent, reliable outputs
- Translate the tool's outcomes into business terms stakeholders can clearly understand



Benefits of the change

- Improve the identification of risk by four to five months
- Proactive risk management to enable the bank to assist customers by restructuring their debt
- Time and money savings through proactive suggestions prior to customers being distressed
- Sustainable outputs as a result of a robust pipeline that transforms input data into business intelligence-ready data sets

In a first for the bank, BSG took **data consolidated from various sources** and fed it into a **predictive analytics model**, generating insights around default risk, which is then **integrated into daily operations**, enabling the bank to **proactively manage financial distress**

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Engagement Overview

The bank was losing billions of Rands annually due to credit default. Rather than reactive risk management, the bank needed to move to a proactive approach, leveraging data to surface insight around default risk. The challenge was compounded by the fact that customer information was stored disparately across multiple systems.

A solution to consolidate data and create transparency to accurately – and quickly – identify distress was required. The bank asked BSG to design an early warning financial distress trigger to identify customers in distress and notify the relevant banker, thus enabling proactive action to be taken to avoid losses.

Financial distress is classified as the likelihood of a customer meeting financial obligations, and ranges from stable operation through mild distress to severe distress. This is a fluid concept and differs from customer to customer. Successful early identification of distress patterns could save millions of Rands per customer within the CIB space.

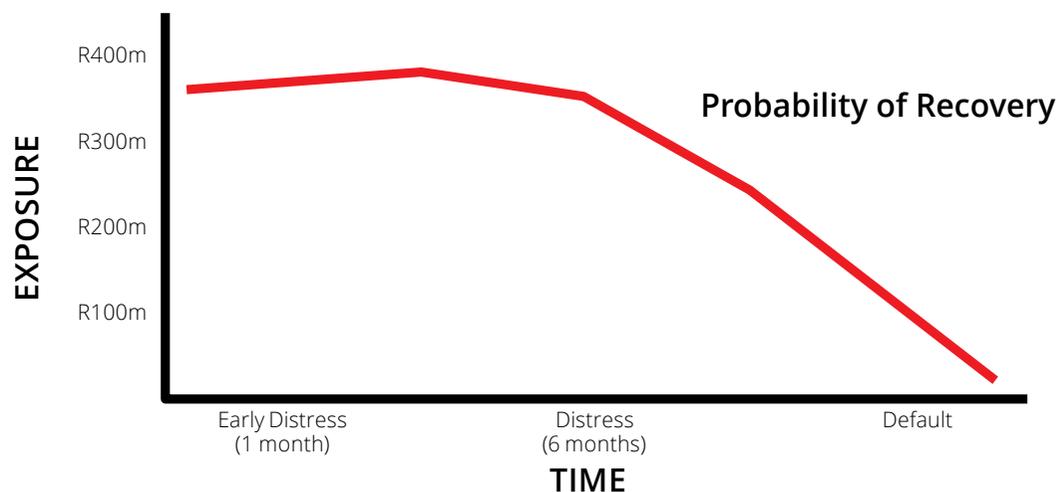
Solution

With the large volumes of data, in various formats, spread across multiple systems, creating a holistic view to enable the predictive model was a challenge. The system has been in operation for over three and a half years and uploads customer prediction scores into a database, served via PowerBI views. To do so, it draws data from >10 data sources into a pipeline, built on a Cloudera big data stack. The system was built to minimise the effort required to run a complex model by automating the data draw from each source, cleaning it, enriching it, and then using algorithms to stitch data together from legacy and new source systems, creating a holistic view.

Once internal and external data is combined, a suite of cutting edge models, developed by BSG, predicts customers likely to go into financial distress in the near future. These models were developed by using historic data, coupled with expert business knowledge. The resulting models are able to glean insight from what is known as “a low-event problem”.

Once the models have produced a set of predictions, the system stores that information in a human-readable format. In this format it is ready to be injected into a database for consumption by popular business intelligence tools, such as PowerBI. The system's output has since been distributed to multiple committees in the bank that have used the data to manage relationships with their customers more carefully, enabling better predictions on loans and even creating value-adding cross- and up-sell opportunities.

By combining data science, technology and business domain knowledge, BSG created a scalable system that has potential to be rolled out, not only to other divisions in the bank's South African business, but its operations in the rest of Africa as well.



BSG making a difference

This financial distress early warning tool has enabled the bank to identify risk early and take proactive action to assist customers in restructuring their debt. It provides customers with a greater opportunity to succeed, while reducing the monetary impact for the bank, decreasing reputational risk, and ensuring the bank is able to offer its customers greater value than its competitors.

It is in the bank's best interest to prevent customers defaulting, as this loss is not only monetary but there is also the knock-on effect of job losses in the bank's customers. At a time when many businesses are operating under increased constraints, the ability to proactively manage customer portfolios in this way, provides the bank with a significant advantage. At BSG, we believe in working with our clients to create solutions that enable a better future for their customers.

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