



Credit Risk and Investment Management Solutions

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This problem situation was written by Luis Arturo Bernal Ponce (larturo.bernal@tec.mx), with the purpose of serving as discussion material in the classroom; it does not intend to illustrate good or bad administrative practices. The story on this document is based on different people's experiences; some data has been modified at the request of the people and institutions involved.

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Tecnológico de Monterrey
Escuela de Negocios

FirmX

FirmX is a global financial sector firm that offers financial services to its customers. On the one hand, it offers personal loans for individual customers, where credit risk management is a key factor. On the other hand, it offers investment management solutions. In the last few months, the executives of FirmX have been concerned with the recent adoption of artificial intelligence in the financial sector, affecting both firm's business lines.

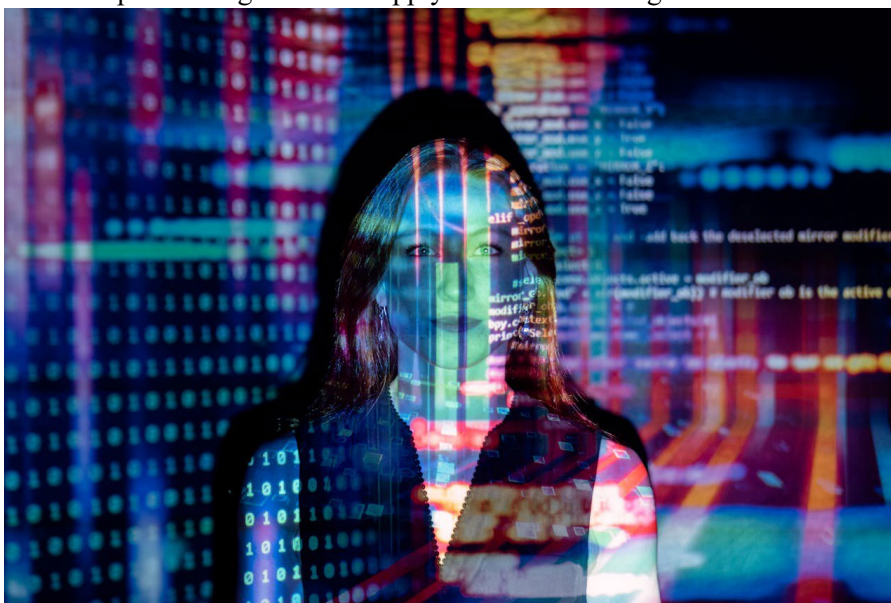
The Investment Management Problem

Regarding the investment management business line, the executives at FirmX are concerned because AI provides new opportunities beyond cost reduction and efficient operations. It has been used to identify trends and patterns to support trade allocation, portfolio construction, and analytics. (Deloitte, 2019). As a result, the firm has realized that some prospective customers are taking their wealth to other investment management firms. The firm's finance department has been conducting a survey of prospective customers to understand why they are making that decision. The survey has shown that they are taking their money to other alternatives that offer higher returns, taking advantage of AI by applying algorithms, machine learning, and big data to build higher-performance portfolios.

Additionally, the FirmX research team conducted a study to extend the understanding of the Algorithmic Trading concept. The report showed that some investment funds, banks, and institutional traders have been applying Algorithmic Trading for a long time. As an example, the report explains that in the foreign exchange markets retail traders that apply Algorithmic Trading have 5.5 percent of the global market share, representing \$250 billion USD in daily trading volume, with an expected annual percentage growth of 11.23 between 2022 and 2026 (BTC Peers, 2021).

Based on the survey and the research report, the FirmX executives wish to apply AI and algorithms to offer their clients a higher-performance portfolio. The strategies must incorporate some tests about the predictability of asset prices, such as the Efficient Markets Hypothesis test. Also, these must be based on the so called Market Anomalies. They also have in mind that the solution must be capable of making an order placement algorithm using signals. Finally, they expect the algorithms to be able to apply back-testing methods to validate the portfolio performance.

Image. The executives expect the algorithms to apply innovative strategies to build investment portfolios.



Source. ThisIsEngineering in Pexels, 2019.

The Credit Risk Management Problem

The FirmX executives have been researching the credit risk management field to detect the state of the art. They have found that using AI and Machine Learning (ML) techniques is very promising in credit scoring, where it can help with detailed analysis and interpretation of large data sets. All this is very helpful in refining the credit risk assessment more accurately (Baldassarri et al., 2023). Based on that, the executives wish to build a credit scoring model using machine learning techniques based on the current customers' historical information.

The Decision

To incorporate the AI techniques into the investment and credit risk management departments, the FirmX executives wonder whether it would be better to see an example for both areas first. They have hired external consultants to develop an example of both projects and set a delivery deadline. Regarding the credit risk management solution, the consultants have mentioned that they already have the background knowledge to develop the required solution in one week. However, to fulfill the requirements related to the investment portfolios, they first need time to get insights into the state-of-the-art investment strategies before developing the algorithms. So, they have promised to deliver an example of both projects in four weeks-time.

References

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