Automated Conduct & Supervision Monitoring: Implementation of Artificial Intelligence Machine Learning in Self-Audit Framework

By

Yusuf Gökhan SATICI

Submitted to

Department of Economy

Central European University

In partial fulfilment of the requirements for the degree of Master of Science

Supervisor: Zoltan Bakonyi

Budapest, HUNGARY

2020

Abstract

In our era of 21st century, one can argue that Artificial Intelligence has had a significant impact on most of industries in modern economies. In specifically, from the machine learning perspective, the AI enables itself to keep improve its performance on tasks that were given without any further need of human input. The project examines how AI can be implemented on risk & and control framework for a multinational asset management company in order to mitigate operational and regulatory risks.

Acknowledgements

I would like to express my deepest gratitude for Achilles Georgiu, Zoltan Bakonyi and professors of MS Technology Management and Innovation for their support and help through the one year program. The TMI program has pushed me for more insightful thinking on the finance industry that I am working. Furthermore, the courses I have taken helped me to deepen my understanding from day-to-day tasks whilst improving my professional and interpersonal skills at work.

In addition, I would like to thank my friends in Budapest, Kemal Oker and Kayacan Polat for their support. Also, I would like to express my gratitude for my mentor and previous manager, Scott Harris, who supported me in the first place and helped me to enroll into the TMI degree, so I could become better and increase my professional skills.

Finally, I would like to thank my parents and my brother – Filiz Satıcı, Burhan Satıcı and Mert Serdar Satıcı – for always standing behind me and keep faith in me that I would become successful.

Table of Contents

CEU eTD Collection

1. Introduction

In our era of 21st century, one can argue that Artificial Intelligence ("AI") has had a significant impact on most of industries in modern economies. In specifically, from the machine learning ("ML") perspective, the AI enables itself to keep improve its performance on tasks that were given without any further need of human input. In last decade, machine learning has become more effective than human-based work and widely applicable. These systems can learn how to perform tasks on their own[1].

According to Brynjolfsson and McAfee, machine learning has become important based two aspects. People know more than they actually tell. In other words, people generate tacit knowledge on fields they've become expert which they are not able to explain exactly how they are able to do a lot of things. The other important factor is, machine learning systems can achieve incredible performance on learning a wide range of activities. Whilst they are learning wide across activities and different fields, their knowledge are explicit that is easy to transfer and explain.

The process of ML starts with data analysis or specific given examples or inputs from instructor. In this way, the AI is able to search for patterns in given data and establish decision-makings for future based on inputs that instructor would provide. The sole purpose of AI Machine learning is to allow a computer system to learn automatically by itself without any additional human input or intervention[2].

In 2017, JP Morgan Chase implemented a AI machine learning system for analyzing and reviewing commercial loan contracts. In overall, the automated review had taken over loan officers 360,000 working hours and completes in a few seconds[3].

In overall, this project is based on how AI Machine Learning can be implemented on a company's self-audit monitoring. The monitoring focuses on sales activities for supervision and mitigation on operational and regulatory risk which the firm may be facing. The aim of this project is to decrease human intervention on monitoring activities and working hours, decrease risk by increasing population size and managing the knowledge transfer from tacit to explicit.

---

[1] **The Business of Artificial Intelligence.** Erik Brynjolfsson & Andrew McAfee (2017). *Harvard Business Review*
[2] What is machine learning? A definition. (2020, May 29). Expert System. https://expertsystem.com/machine-learning-definition/
[3] An AI completed 360,000 hours of finance work in just seconds. (2017, March 8). Futurism. https://futurism.com/an-ai-completed-360000-hours-of-finance-work-in-just-seconds

2. Background

I am working for a multi-national company in field of asset management industry. The company has a Core COO Team in EMEA Client Business. The team is led by a senior director. The director has 3 direct reports (a director and 2 vice presidents) manages 3 teams – Core Conduct & Supervision, Business Management and Change Management. I am part of Core Conduct & Supervision team under the Core Coo. Within the organizational structure, my main responsibility is to implement controls and provide supervision for mitigating operational and regulatory risks that EMEA Client Business faces in each day.

In order to establish a firm detective control on sales activities, 2 years ago, I designed a self-audit framework where couple of SQL queries withdraw CRM based sales activity records. Excel based on formulas and automated power pivots, the team monitors these activities' compliance as per policies and procedures.

In these self-audit monitoring, the analysis aimed to capture sales activities pertaining to client meetings[4], reverse solicitation[5] & private placement[6], cross-border sales[7] and sent client custom reports[8].

Since January 2019, the team implements these controls on existing manual monitoring under my supervision. During these period;

- The team managed to achieve significant visibility and acknowledgement from EMEA wide business via provided self-audit control value
- Controls were performed on a statistically significant sample size

---

[4] The salespersons in client business use marketing materials in their **client meetings or conference calls**. As per MiFID regulation, there are specific requirement what an asset management company leverage as a marketing material. The team reviews all used funds/company capability related presentation, factsheet, advertisement or any material that may fall under marketing material. If these materials do not meet with MiFID criteria or firm's policy, found activities are reported in self-audit.

[5] In specific jurisdictions, a firm can provide a fund's information where the fund is not registered for marketing, only if the client specifically requested the fund's detail. In other words, the company provides an locally unregistered fund's information to client without marketing. This process is called as **Reverse Solicitation**, which is extremely high risk activity. As per regulation, investment firms need to provide detail per quarter, how many funds were being reverse solicited.

[6] In a very rare conditions and in few countries in EMEA, a firm can actively market an un-registered fund a client. This activity is called **Private Placement** and extremely high-risk. Any potential breach of this activity may lead local regulatory sanction, fine or even imprisonment of salesperson who committed this activity.

[7] Each salesperson in a country expected to perform sales activities in his/her jurisdiction or coverage area (i.e. German sales can perform sales activities in Germany, Austria, Slovakia, Poland and Hungary). Any activity performed outside of jurisdiction/coverage area would be categorized as **cross-border sales activity**.

[8] In very specific conditions, salespersons may asked for **custom report** in specific to clients need (portfolio holdings/investments or regulatory reporting). While there is a reporting team to prepare/deliver these reports, sales may find themselves preparing them due to lack of resources or urgent client need. If there is any report being sent by sales, they need to contain specific disclaimers in document for safeguarding themselves and the firm.

- Team members gained tacit knowledge per procedure and each became more expert on one or two fields
- These developed knowledge in each member has increased their visibility and become "to go" person from sales perspective.

 However, the manual self-audit control and procedure caused the team to spend most of its time. Along with spent-time on self-audit, below specific reasons have led a desire for automation of these controls;

- Current controls are based on each team members' "tacit knowledge" – these knowledge is difficult to write down on a guide or transfer from one person to another. Therefore, there is a need for codifying these knowledges and transform the knowledge from "tacit" to "explicit".
- The team needs a tool/platform based on machine learning: where experts will architect the explicit knowledge (if needed); and people, who are not experts, will be able to work on the tool without needing to know specific details on procedures.
- The automated control will enable to review all sales activities from sample size to full population review. This will decrease the risk from Client Business perspective, as the team will be able to have a control of all sales activities.
- The automation of risk controls will not only deliver efficiency but also establish leverage that the COO function would be able check certain controls (regulatory/high-risk related) on weekly basis.
- Gradually, the team will be able to decrease its 42 business days workload to minimum levels

3. Coherence and Critical Interpretation

The Core Conduct & Supervision Project had received initial sign-off by 27th of March by the Core COO Head. Upon sign-off obtained, the project owner was designed for Adam Corden; and Gökhan Satıcı assigned as the project manager.

For the project development, the manager works with two main stakeholders:

- 1st stakeholder: Specialized in Machine Learning, SQL and Python. He focuses on how to establish automated analysis and machine learning via provided underlying data. He is currently reporting to Change Management Team under Core COO.

- 2nd stakeholder: Specialized in SQL and Python. He provides underlying data and customization. In addition, he helps with data mapping and gaining access on database servers. He is currently reporting to Core Conduct & Supervision Team under Core COO.

The project manager's main responsibilities are listed below:

- Efficiently keep the track of project

- Remove any blockages what the team may face with

- Ad-hoc stakeholder management

- Create a flow/chart on how automation established and establish the achieved scope and limitations

- Output (prototype) testing

Initially, some team-members had partial worry regarding to the automation project – expecting the automation of tasks and removing time-waste from team would cause employee's laying off. However, concerned members have realized that removing time burden would help them to focus new projects and different fields to focus for expertise. Therefore, they've become supportive for the project.

4. Summary

In overall, this project is currently in work-in-progress where initial milestones have been completed. Whilst few products could be completed (algorithms 1.a, 1.b. and 1.c for client meeting reviews), these automated controls will be able to decrease to teams' workload from 280 working hours to minimum.

Remaining deliverables of the projects are expected to be completed gradually until August 2020.

The project has full support from all stakeholders and senior managers. Especially during COVID-19 crises, remote working and frozen recruitment, decreasing the workload has a significant importance. Any potential decrease of workload from workforce needs to be re-located for a new task or people need to focus on new projects.

In addition to the project status, update and value, this project has been started during the COVID-19 pandemic. Therefore, the project has been managed virtually and stakeholder management has been a complete example for e-leadership; while the manager remains in Hungary, his main stakeholder resides in Germany and the other works remotely in Hungary.

References

An AI completed 360,000 hours of finance work in just seconds. (2017, March 8).

Futurism. https://futurism.com/an-ai-completed-360000-hours-of-finance-work-in-just-seconds

Brynjolfsson, E., & McAfee, A. (2017). The Business of Artificial Intelligence. *Harvard Business Review*. https://starlab-alliance.com/wp-content/uploads/2017/09/The-Business-of-Artificial-Intelligence.pdf

What is machine learning? A definition. (2020, May 29). Expert System. https://expertsystem.com/machine-learning-definition/