

ARTIFICIAL INTELLIGENCE AND FINANCIAL MODELLING

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Abstract

Predictions suggest that artificial intelligence will lead to the reduction of 300 million jobs in Europe and the US. Accountants are professionals who are most exposed to the potential impact of artificial intelligence on their work. Does this also mean the end for experts in financial modelling? Keeping this in mind, how can those of us involved in financial modelling ensure that we remain relevant in this constantly changing world? The answer lies in those who learn and adapt to changes will continue to thrive. Artificial intelligence brings advantages, not just threats; let's leverage them.

How can artificial intelligence help in finance and financial modelling? By helping us understand the vast amounts of data we encounter every day and uncovering connections between them. This information will help us improve our business processes, facilitate decision-making, and enhance forecasting. Companies should leverage artificial intelligence to improve competitiveness, mitigate differences caused by human errors, and automate repetitive tasks as much as possible. Through our work, we will attempt to showcase use cases of artificial intelligence in financial operations and financial markets. We will try to demonstrate the benefits of artificial intelligence for financial modelling and forecasting as an efficient way to gain advantages in this field by processing complex tasks that ordinary people cannot perform and automating them. The automation process is essentially the key advantage of AI for financial modelling.

Keywords: financial modelling, artificial intelligence, automation
Information, business processes.

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1. Introduction

Financial modelling is the process of creating a mathematical representation or simulation of a financial situation or business using various financial data, variables and assumptions. It is a key financial and investment analysis tool used for decision-making, forecasting and planning. Financial models, in short, help predict a company's future financial performance by bringing together accounting, business metrics, and finance (Rafa, 2023). They can be applied to a variety of scenarios, including valuing a company, projecting future financial performance, evaluating investment opportunities, and assessing risk.

According to experts, the introduction of artificial intelligence will lead to the reduction of about 300 million jobs in Europe and the USA. Financial professionals will be most exposed to the possible impacts of artificial intelligence on their work. Does this also mean that it is the end for financial modelling experts? We who deal with this profession, that is, creating financial models, and predicting possible scenarios of events caused by financial decisions, how can we ensure that we remain relevant in this world that is constantly undergoing changes. This is the answer to the question posed above, which is that those who learn and adapt will continue to work and progress and use all the benefits that artificial intelligence brings. From this, it follows that artificial intelligence is not a threat to financial modelling experts, but that we should use it.

How can artificial intelligence help build financial models? In a way to understand and successfully process the huge amount of data we encounter every day and to discover the interdependencies between them. Artificial intelligence will help us to make better use of this everyday information and thus improve our business processes, improve forecasting and ensure successful business decision-making (Al-Okaily & Al-Okaily 2024). By applying AI tools, companies will reduce human errors to a minimum, automate many tasks, primarily those that are repetitive, and thus better understand the needs of our customers and increase competitiveness.

In the paper, we will try to show the benefits of using artificial intelligence in creating financial models and on financial markets. Primarily the benefit of using AI in predicting future possible scenarios, is an efficient way that leads to competitive advantage. In addition, AI helps us to process complex tasks that ordinary employees cannot do or automate as reliably as possible when creating financial models. Process automation is essentially a key advantage of AI for financial modelling.

2. How AI is used in financial modelling

Financial models are used for a wide range of purposes in the world of finance, business and investment. Here are some applications of financial models: valuation, investment analysis, planning, mergers and acquisitions, project finance, budgeting and forecasting, risk assessment, portfolio analysis, leveraged analysis,

sensitivity analysis, capital structure, financial reporting, supply chain management, pension fund management etc (Perumalsamy et al., 2023).

AI can address several challenges in traditional financial modelling, offering solutions that improve accuracy, efficiency and decision-making.

How is AI used in financial modelling? As we mentioned above all, it helps employees understand huge amounts of data and discover interdependencies within them. In this way, the company tries to offer better prices for products and services, better understand the needs and demands of customers, reduce employee errors and automate all repetitive tasks.

Financial models are often reminiscent of a tower of cards, where it is necessary to balance every assumption that will keep the tower from falling or the business from failing (Saxena et al., 2023). Artificial intelligence can help make financial models stable. In what way and what can we expect?

- Artificial intelligence will take over solving tasks and concepts that are complex, and time-consuming, with a lot of data. In this way, it will make them simple and quickly accessible. Modelling requires a lot of manual work and making models from scratch and according to pre-prepared templates, and statistics say that about 90% of such templates contain an error, which would be eliminated in this way. A mistake in big companies and big jobs can cost several millions.
- AI can help make financial modeling and forecasting faster and easier, while at the same time adapting to emerging changes on the fly. AI will help us use a language that is understandable to most employees for complex models and reports, and even help AI recognize trends, risks and possible omissions. All this reduces the risks for the company's operations.

In one paper, we already discussed the integration of business risks into financial models, and there we saw how much it is possible to reduce risks and improve business decision-making.

We will list a few common applications of AI in the financial market.

1. Process automation in corporate finance
2. Improved customer relations. One of the most practical applications of AI in finance is in customer relations. Financial companies are using ML technology such as chatbots to improve customer experience through on-demand assistance and real-time recommendations. In addition, customer acquisition and onboarding are often automated at insurance companies to make the process faster and easier.
3. Security analysis and portfolio management. robo-advisors
4. Stock market forecasting
5. Online lending platforms
6. Fraud prevention
7. Risk assessment
8. Property valuation etc

At one of the discussions on the use of AI in financial modelling, Rob Matthews of Spiff said that we should use AI to do "the simplest jobs that are essentially the weakest". Why is that? These tasks take a lot of time and can easily be automated. These jobs bring the most mistakes and damages in business. The first thing that should be applied in financial modelling is the organization of data. Collecting the information we need to create financial models comes from multiple sources, and AI can help us by combining and categorizing this data into sets, to help us in the analysis. By analyzing this data, we can see deviations in that data, opportunities and potential risks.

From this we see that AI is becoming a combination of data administrator, financial analyst and data modeller, giving us good model foundations from which experts in the field can fine-tune the financial model. This allows experts in this field to spend less time on creating a financial model and creating possible scenarios, and more time on "Why" it is so and could it be different.

We see that there are very clear advantages of applying AI in the creation of financial models in the company. However, the question arises how to implement AI in your business. Will it lead to an advantage or is it a danger for our experts. Will there be fear of application and rejection of such type of business? That's why key steps should always be considered before implementing AI in financial modelling.

- Consider whether there is a need to apply AI in financial modelling
- Find the right solution. If there is a need to implement AI, it is necessary to find the right solution for our company, because it cannot be copied from other companies
- Choose which tools to use.
- Ask the question of whether to believe or verify. Technology as well as employees need time to become familiar with the processes, in order to be able to trust them, until then the results need to be checked and verified.

2.1 Five disciplines of financial modelling

As AI progresses, financial modelling must also adapt to the emerging changes.

The first phase of financial modelling involves scoping and design, where financial experts work closely with stakeholders to understand the specific requirements of the financial model. AI.

In the drafting phase, a real financial model is created, which represents a realistic financial scenario. Financial modellers use a variety of tools, including spreadsheets and software solutions, to create these models. Artificial intelligence can be used to streamline and create automated output generated by scoping and design (Kartanaitė et al., 2021).

Overview of financial models is a critical step to ensure accuracy and reliability. This includes validating input assumptions, calculation logic, ensuring formula accuracy, following best practices, output validity, and sensitivity to any changes. While review tools exist to assist financial modellers in this process, AI can improve reviews by detecting errors and increasing model accuracy

Financial modelling helps analyze different scenarios and determine whether the business case is sensitive to changing assumptions. AI can provide a more complex analysis of scenarios, allowing financial modellers to focus on interpreting results and making strategic decisions.

While AI can provide important insights and insights from data, employees are needed to translate and effectively communicate these insights to other stakeholders. The ability to communicate complex financial information clearly and contextually remains a critical skill in financial modelling.

3. Advantages of using artificial intelligence for financial models

The term AI has become popular recently. This is not surprising, because the potential of this technology is huge. But because the word is packed with so much excitement, it's easy to lose its true meaning. In the context of financial modelling and forecasting, it can be useful to think of AI as "automation." It's effectively how it benefits the field of finance, taking complex tasks that are usually done by humans and automating them. Now obviously those automations can be multi-step and very complex, but essentially that's the key benefit of using AI for financial modeling and forecasting.

Specifically, some of the key benefits of using AI or automation technology are:

- Simplification of certain jobs
- Reducing the possibility of error
- Reducing the need for a larger number of professional employees. Using AI, formulas and tables can be replaced with a plain language query. This means that everyone on your team can make financial forecasts and build models, not just expert analysts.
- Increasing possible cooperation between employees. Since AI can speed up the forecasting process, this means that the team has the ability to drastically improve their scenario planning capabilities.
- Improves data volume management. With the previous tools, there was a limitation of entering data into certain sets, the application of AI would avoid this.

4. Conclusions

The use of artificial intelligence in financial modelling brings numerous advantages that can significantly improve the efficiency and success of our company. From more effective data analysis, customer understanding, error reduction, risk management to increased sales and revenue. AI provides tools that enable deeper market understanding and faster decision-making. In the end, we can conclude that AI will not destroy experts who deal with financial modelling, but will help them to be more efficient, to make better use of information and thus improve their business. By applying AI tools, companies will reduce human errors to a minimum, automate

many tasks, primarily those that are repetitive, and thus better understand the needs of our customers and increase competitiveness (Javaid, H. A. (2024)).

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