

How is Optimisation Applied to the Business World?

🕒 READ TIME: 2 MINS

👥 AUDIENCE: BUSINESS & TECHNOLOGY

Optimisation is a very useful field in Data Science that has helped in executing sophisticated tasks that would not have been possible without such technique and concept. In a mathematical perspective, Optimisation is the act and process of finding the best combination of variables that would give the best solution to a specific problem. It is often separated into maximisation and minimisation. Usually, maximisation problems are situations where one would benefit when the value is maximised such as profits or customer flow; whereas minimisation is the opposite, usually to save time and costs. Optimisation is used in numerous fields nowadays such as city planning, airline scheduling, manufacturing and logistics, healthcare etc. One sophisticated example would be the mathematical optimisation in intensity modulated radiation therapy (Uhrigott, 2009), which utilizes Optimisation to find different angles of the laser beam and a sequence of configurations of a multileaf collimator that would deliver the treatment. This would benefit cancer or tumor patients by finding potentially better configurations for the radiotherapy machines in hospitals.

In the current business world, manufacturing and logistics are the most demanding fields regarding the use of Optimisation. In the numerous stages of manufacturing, optimisation is applied to calculate how much materials are needed for each stage and how its related costs could be minimized while maximizing the profits. Comparatively, logistics is a more complicated topic. For companies such as Amazon and DHL, which have delivery and courier services, would use optimisation to compute the fastest routes between multiple addresses within a city. The routing algorithm is often

reinforced with constantly updating functions that take variables such as traffic into consideration. This can help save time which saves up employment costs, fuel costs, as well as



Business Optimisation

maintaining a high customer satisfaction for consistent on-time deliveries. Without Optimisation, the supply chain efficiency would be drastically reduced and flawed.

Optimisation can also be seen in assisting airline scheduling, where high business profits and costs are on the line. Typically, Optimisation programs are used to schedule airlines on a daily basis. However, there are also Advanced Decision Support Systems in place to come up with solutions whenever a disturbance due to natural phenomena or technical difficulties occur, to quickly replace the airline schedule and minimize the damage that is done to the customers. Alongside the existence of big data systems, flights could almost arrive at scheduled times with pinpoint accuracies down to a minute unit, which is fundamental for the functioning integrity of airline companies.

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