



EyeOn product

A Supply Chain's Digital Twin

Mimic real-life processes with thousands of scenarios to find the optimal balance of many cost factors

The competitiveness of a modern company that sells physical products is highly related to the effectiveness of its supply chain. Managing many goods, often with unstable demand and limited shelf life, is especially challenging. Having too few of some products in stock impacts the provided service level, while having too many products may result in waste.

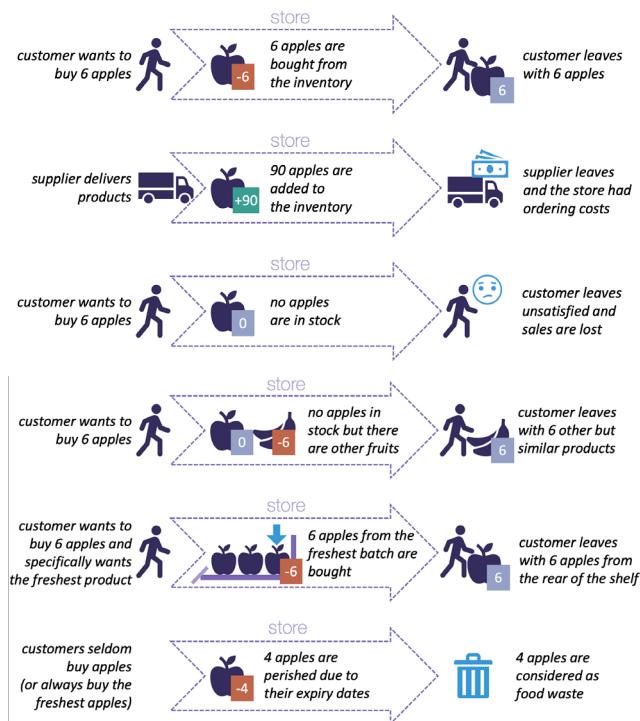
In a perfect scenario, you can maximize availability and freshness of products while simultaneously minimizing lost sales, waste and operational costs. A sensible replenishment and inventory policy should find a balance between the relevant aspects to minimize the total monetary and non-monetary costs.

In this context, EyeOn has developed a “supply chain digital twin” – a simulation tool that mimics real-life processes and can assess the performance of replenishment and inventory policies. By simulating how countless strategic, tactical or operational decisions would impact key metrics, we can quickly understand the impact of different scenarios. Such computer simulations are almost as good or as conducting empirical experiments; and that for a fraction of the cost, time and without risking operations and customer satisfaction.

On top of having thousands of scenarios at your fingertips, our proprietary self-learning Artificial Intelligence (A.I.) engine helps actual decision-making by steering the simulations towards scenarios that result in the desired strategy – be it maximizing service level, minimizing total costs, minimizing waste, a combination of those metrics or anything else. In other words, the Digital Twin goes beyond showing “what if...” scenarios; it provides very tangible “these are the best decisions if....”.

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Getting prescriptive business decisions from a wide range of scenarios is very appealing in itself, but another aspect on of the Digital Twin is just as interesting. Namely, when applied well, simulations have the inherent feature that the digitized real-life processes can easily be validated to demystify typical “black box” models. There are thousands of events during a simulation that lend themselves well to intuitively check whether the computer model behaves according to reality.

A typical Digital Twin project is approached as follows:

1. Defining the goal, e.g. minimize total costs or maximize service level with constraints on costs.
2. Defining, developing and validating a digital twin’s “base case”. This base case is the benchmark to compare other simulations with, and most often this is the current situation. This step is crucial to ensure that the simulation represents the real-life supply chain and that we can fully trust the model.
3. Defining other scenarios that are different from the base case, e.g. change in customer behavior or supply disruptions.
4. Development of the full model, running the simulations, optimizing with the self-learning A.I. engine, validating.
5. Setting up a process to embed results in the company and possibly running the model regularly.

Simulation case study

One of the applications is the Digital “Supermarket” Twin. The very granular customer behavior and demand in combination with the freshness of products make this an interesting case. where a selection of 6 possible events in the simulation are illustrated. Of course, each of those events influence the performance of the supermarket.

In the analyses we found that using more advanced replenishment policies that utilize the perishability information of the individual greatly reduces total cost. The impact of applying our self-learning A.I. engine to the simulations is even more substantial – the engine improved the current way of working by as much 12-30%. Moreover, this minimization of total costs is paired with a reduction of waste (due to perishability) by 27% on average while maintaining the desired service level. These are very significant numbers that motivate implementing the suggested decisions to realize the potential gains. For more in-depth discussion about our Digital Supermarket Twin, please read our in-depth whitepaper “A Supply Chain’s Digital Twin”.

Interested?

Curious about how EyeOn can support you in creating a digital twin of your supply chain and obtain insights and prescriptive results in how to improve your business? Or do you need support in designing, implementing and executing excellent (planning) processes as a discriminating factor for success? Visit our website or contact one of our experts!

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Our promise

We apply proven innovations on forecasting and planning. We approach our clients' challenges in the most pragmatic way possible. Using our extensive knowledge, we deliver valuable results and turn challenges into opportunities. This is how we develop and implement fit-for-purpose improvements with sustainable impact.