

MARKET NEED

An inefficient supply chain has a detrimental effect on the profits achieved by any business. Many companies supply inventory to their customers via a consignment agreement, whereby the customer stores the product but is not invoiced by the supplier unless the product is sold or used. Inefficient consignment inventory policies result in the supplier over investing in customer inventory and can lead to product wastage. The complexity of setting the inventory level is increased for suppliers who guarantee against stock outs. For example, this is the agreement between some medical device suppliers and their customers (hospitals).

To reduce over investment in inventory stock, there is a need for an automated platform which takes the raw order profile data by customer and product and recommends a minimum inventory level. The system should include a non stock out constraint to ensure product is always available for the customer.

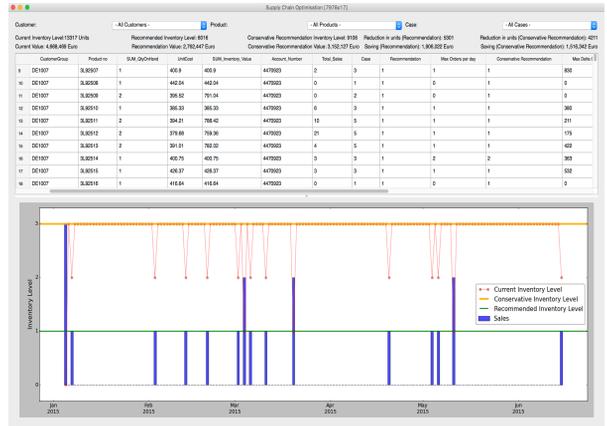


Figure 2: The data viewer user interface allows the user to visualise how the inventory levels would have developed over historical data.

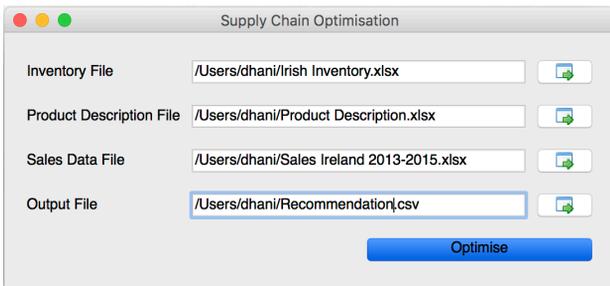


Figure 1: The recommendation interface allows the user to point the optimisation engine at the desired data files.

TECHNOLOGY SOLUTION

CeADAR researchers have developed a two part system to optimise the amount of stock that is invested in customer inventory. Initially the analyst uses a simple interface (see figure 1) to point the optimisation system at the correct data sources. The optimisation system's Python driven back end extracts the statistical demand profile from the sales data and creates an optimal inventory policy.

The analyst can then view the policy data in the intuitive data viewer interface (see figure 2). This interface allows the user to inspect each individual recommendation, along with other descriptive statistics about the sales and inventory data. The analyst can inspect an inventory-level plot by clicking on any data entry in the table. This displays how the inventory level would have behaved on historical data, had it been implemented.

APPLICABILITY

The solution we developed is not restricted to any particular market.

Any organisation who supply their customers via a consignment agreement can take advantage of this technology solution which will:

- Reduce cash-flow invested in customer inventory,
- reduce product wastage,
- ensure that there is always a buffer stock in the customer's inventory.

Research Team

The project team at UCC consists of Barry O'Sullivan, Helmut Simonis and Dhani Merrick.

