

Inventory Management Optimisation in the 21st Century

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Inventory management has been a perpetual challenge for generations of forecasters and planners around the globe. We have inherited many models and tools, from Aback to Wilson's economic order quantity, to Minimum Order Quantity (MOQ), to Pareto logic, to advanced forecasting such as the linear regression method, all of which are static and fail to incorporate the dynamics of time and quantities.

Inventory is subject to many challenging factors such as theft, obsolescence, and government rules and regulations. It is even more complicated now with the high volatility of markets and complex supply chains of the modern and dynamic business environment.

Traditional inventory management policies are obsolete in today's supply chain complexity. They contribute to bi-modal inventory behaviours, which result in keeping too much stock of all the wrong materials, while not enough stock of all the right ones. It is catastrophic for a company's growth, brand image, and customer retention.

Inventory management is at the cusp of experiencing a major transformation. The democratisation of recent disruptive technologies has made the use of vast amounts of real-time data a reality. Specifically designed software systems combined with smart products enable inventory managers to establish a connection between past correlations and future decisions, in an autonomous fashion.

REAL-TIME DATA CHANGING THE GAME

Advances in data mining and machine learning are already modernising inventory management methods. The challenge in managing inventory is predicting the demand, which is why forecasting is an essential tool for inventory managers.

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The ideal is to incorporate the customer's experience through the sales and marketing team in real time. Advanced forecasting tools use vast and diverse data sources, such as daily market demand or daily sales records, along with inventory management factors such as MOQ, lead time, and many others, to deliver a more reliable forecast. But what truly differentiates these advanced forecasting tools from their predecessors, other than the accuracy of their forecasting, is their ability to identify patterns and correlations with past replenishment decisions, in order to build and calculate the optimum inventory buffer profiles for the past, without human interventions.

Embedded with machine learning capabilities, software allow to keep the right amount of inventory for the right materials

at the right positions in your organisation. It covers all types of inventory, raw materials, in-transit inventory, Work In Progress (WIPs), finished goods, and spare parts, while maintaining 100% service level to your customers. The balancing and better positioning of the inventory typically results in 50% overall inventory reduction and 40% average lead time compression.

This evolution requires a change in the management of inventory optimisation processes and organisational structures. While the system identifies patterns and gives recommendations, the human responsibility will be to interpret, adjust, and validate options. **F**