Unlocking eCommerce growth with a Machine Learning inventory Management Tool

E-commerce and digital transformation have changed everything. It has changed consumer behavior forever; and retailers, restaurants, and hospitality organizations may be stuck with technologies and processes unfit to weather this transformation.

It is no surprise that the clear winners in today's world of commerce have real-time perpetual inventory management systems capable of dynamically interacting with online and instore transaction processing systems. They are able to proactively avoid lost sales attributed to out-of-stock inventory while simultaneously reducing non-value-adding inventory that needlessly ties up working capital. Winners also have less shrinkage and spoilage of inventory as well.

One of the problems that exist with most legacy inventory management systems is that they are built on top of legacy demand forecasting algorithms that lack channel-specificity; failing to understand online shopper demand patterns. More clearly, existing demand forecasts show a bias towards in-store shopping and will be much less accurate for digital channels.

When the above occurs, consumers are easily frustrated because they do not actually end up getting everything that they ordered. In fact, in some retail channels particularly, consumers may only get ~80% of what they originally ordered online, resulting in the consumer being forced to accept substitute products.

Where can the solution lie? One way is to enable your data to harness the power of Artificial Intelligence (AI), Machine Learning (ML) and Data Science to autonomously revolutionize your demand forecasting and inventory so that out-of-stocks and overstocks become a thing of the past.

Demand forecasting in the 2020s must be AI-powered, autonomous, real time, provably accurate and channel specific. It must understand both in-store and online demand signals. Forecasts must be accurate by item, by store, by date, and by time of day. The demand forecasts must account for the effects of price, promotion, assortment, also accounting for seasonality, events, holidays, and weather.

With the proper autonomous demand forecasting in place, the ideal solution for most companies will be a real-time perpetual inventory that can support available to promise commitments for customers. Many business to consumer companies elect not to use a real time perpetual inventory because their receiving, inventory, and POS scan practices lack discipline and *integrity (we are of course NOT considering Blockchain solutions here).*

An AI-powered autonomous inventory solution is a highly attractive alternative helping retailers, restaurants and hospitality organizations to auto-detect and proactively avoid inventory scarcity issues or resolve them in a timelier way without all of the disciplines and integrity required for a true perpetual inventory.

How AI is being used to understand inventory today

At present, AI in inventory management has an unclear, customer-facing role. When it comes to ***who*** can help, there are *frustrating* bots and chats on websites as well as less-than *satisfying* emails alerting consumers of when an out-of-stock item might be back in inventory. AI, ML, and other data science models in these roles is a recipe for disaster, especially as its strengths could be better leveraged in the deep, dark confines of back offices.

Consider, despite a near infinite number of inventory management software programs and inventory software solutions, that the demand planner and forecaster at even the world's largest retail chains are still perplexed by the simple question, *how much inventory should be on hand on any day and at any one time?*

This is all in spite of the fact that AI, ML, and other data science models can deployed to help make sense of reams of data from legacy and disparate inventory management systems and, in so doing, make use of cloud software that makes sense of historic consumer buying patterns. In other words, and when the data is validated and verified as accurate, AI in inventory management can aggregate and analyze consumer demand, supplier orders, production orders, re-order points, economic order quantities, and much more.

Inventory optimization, however, and as briefly alluded to at the start, requires more than smart machines and historical data to avoid future stockouts. Understanding ***why*** certain processes exist in the first place and *how* they no longer serve to effectively minimize the risk of out-of-stock situations as well as prevent safety stock from becoming deadwood is imperative. Ensuring compliance with standards as well as implementing an appropriate inventory management system means that inventory planners will be able to better *anticipate* "how much" to order, and just as importantly, ***when*** to make those orders.

To be clear, while AI has made significant advances over the past few years, it is not a cure for poor company disciplines or a legacy inventory management system. In other words, AI in inventory management can be used to transition from instinctive practices to those based on data science and statistics. By aiding retailers, restaurants, hospitality organizations and CPGs in their identification of those processes and practices that are resulting in unreliable inventory levels, AI can do most of the heavy lifting of removing uncertainty and variation from decision making.

Even though AI cannot predict the future with 100% certainty, a robust and intelligent platform can run far more combinations than any statistician and calculate a near infinite number of permutations that can, at the very least, guide planners and schedulers on ***what*** items are at risk of a stockout. Once a probability is known, decision makers can identify an appropriate amount of safety stock in which to have on hand and begin to prepare accordingly. Assuming, of course, that there is no risk of a black swan event waiting in the wings.

COVID-19 impact

To say there is absolutely zero risk of some earthshattering event disrupting supply chains the world over is to laugh in the face of COVID-19 as well as other momentous events like it.

Unlike other events of a similar magnitude in the past, however, AI is yet a new capability in which retailers, restaurants, and hospitality organizations can now leverage to put their businesses back together. In short, all businesses were thrown a curveball, but AI, ML, and data science can react to today's challenges with greater ease and accuracy.

That said, and in partnering with **Cloud Health is Wealth**, entire fulfilment systems and logistics pipelines benefit to the *satisfaction* of customers around the globe. This venture-backed company based out of New York, USA, has a proven track record of making sense out of disparate data sources in order to provide decision makers in retail, hospitality, e-commerce, and the like with actionable insights across their inventory. What's more, and has been discussed above, is that **Cloud Health is Wealth** goes beyond the "silver bullet" cure of AI in inventory management and offers enterprises a more robust platform in which to leverage their data for internal decision-making purposes. The **Cloud Health is Wealth** solution is both, at once, an AI-driven platform that automates certain processes while simultaneously looking for the root cause behind an issue so as to ensure *satisfying* customer-based outcomes.

Supply Chain Inventory Management and the Value of Shared Information: https://pubsonline.informs.org/doi/abs/10.1287/mnsc.46.8.1032.12029
Machine learning applied in production planning and control - a state-of-the-art in the era of industry 4.0: https://link.springer.com/
E-commerce inventory management: https://www.solvoyo.com/

Questions:-

1. How would you tackle Increasing loopholes in inventory management ?
2. The major problem with Inventory management is speed and agility . How can this be leveraged so as to improve planning and service assurance ?
3. How can we identify business risks and reduce disruptions ?
4. Traditional infrastructure is a major hurdle that creates connectivity issues . How do we upgrade and redesign our inventory with the availability of the new and improved technologies ?
5. How we encourage enhanced information delivery and help improve performance and productivity ?
6. How can we do Demand Prediction for Inventory Management ?
7. Is Integration with existing inventory management (Traditional) possible ?
8. How to build a homogenous model using machine learning ?
9. what are the different approaches that can be used for business re-design ?
10. How can error reduction be done in forecasting ?