



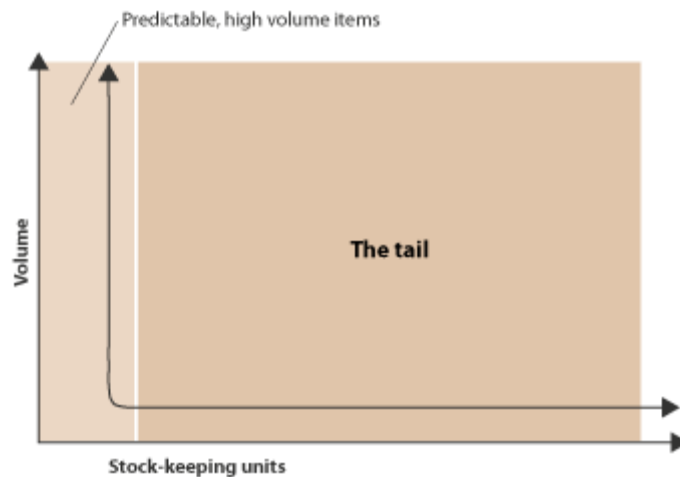
Of Long Tails and Supply Chains

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Product profiles are changing. Products are proliferating and companies are struggling to plan and replenish new product introductions and heavily promoted items. The result is the “long tail,” the concept Chris Anderson wrote about in his book of the same name, in which there are more products for niche markets than large volume, predictable markets. The distribution of the niches and the demand predictability of products within the niches are often as diverse as the population itself.

Figure 1: The long tail



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Source: AMR Research, 2008

But what does this mean for CP companies and their practices? We have some thoughts.

What it means for replenishment...

Four primary changes have taken place concurrently with the long-tail phenomenon, confusing many companies:

- **Lumpy demand**—While high volume items have regular, predictable demand, slow moving ones in the tail have a lumpy, unpredictable demand pattern. The demand patterns are skewed and do not represent a normal distribution.
- **Changes in forecasting processes**—As products and channels have proliferated, forecasting processes have changed. What used to be a monthly forecast spread by rules into weekly buckets is now a weekly statistical forecast with daily statistical analysis. What’s the effect? What will appear to have a regular demand pattern when forecasted monthly will have intermittent behavior at the weekly and daily levels.
- **A shift in goal**—While CP companies used to be focused on the warehouse, keeping distribution warehouses stocked, the goal is now to minimize out-of-stocks at the retailer. As replenishment shifts from primary distribution centers to secondary distribution centers and then to the retail shelf, volume diminishes with the individual demand streams measured over more meager volume. They then, consequently, exhibit a more intermittent demand pattern.
- **Higher service levels**—Since many of the products in the long tail are important to the company—new product introductions and heavily promoted items—companies are trying to deliver higher service levels of 98% to 99%.

What this means for technology...

The deterministic, replenishment logic traditionally found in advanced planning and scheduling (APS) technologies are not a good fit for the long end of the tail. Likewise, the embedded tools in Wal-Mart Retail Link (**Inforem**) don’t fit this new paradigm well, leaving many companies struggling to make existing technologies work. Bottom line, in this scenario, traditional inventory techniques—safety stock logic based on normal demand distribution—just don’t work.

One of the early pioneers in statistical forecasting, Bob Brown, wrote in his book *Advanced Service Parts Inventory Control*:

"It is coincidence, but in the range of 90%-95% probability of a shortage on the next replenishment cycle, most of the common distributions require very nearly the same value for the safety factor, so the distinction among alternative forms of distribution is not so critical.

But, if you want to aim for 98% to 99.5% service, there can be a large difference between the safety stock theoretically required under a skewed distribution and that required if the forecast error was normally distributed."

So what does this mean for you? If the products have a skewed distribution and it is your desire to meet a higher service level, then the deterministic technologies of APS and ERP are not designed to meet your needs.

What this means for you...

Since not all products are created equally, characterize products in the tail based on product importance and cost to the business. Since product profiles change, leaders profile products every four weeks.

Figure 2: Slow-moving product framework



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Source: AMR Research, 2008

For the purpose of this discussion, we have used a four-box model (outlined in Figure 2) to rationalize strategies. Here are techniques to deal with each:

Maximize: Products with high importance and low carrying cost

Improve demand sensing and reduce demand latency to improve the organization's time to respond. Use deeper statistical modeling, like the new applications from **John Galt**, **ILOG**, **Optiant**, **SmartOps**, **Terra Technology**, **ToolsGroup** for warehouse withdrawal, **T3CI** and **True Demand** for retail outlet sensing, and **Market6** and **Prescient** to build inventory strategies from point-of-sale (POS) data in direct store delivery (DSD) environments. In parallel, implement agility strategies, like postponement, flexible manufacturing strategies, and agile supply to improve the supply response. However, only build responsiveness when you have a firm foundation of reliability in place.

Focus: Items with high importance and high cost to serve

For this quadrant, in addition to the techniques in the maximize category, address cost-to-serve and positioning of the product in the right channels. By positioning the right product with the right channel you can maximize the opportunity and mitigate risk. Use demand insight data—unstructured text, shopper insight data, and loyalty data—to maximize insight of buying behaviors. Use the techniques under the maximize quadrant to improve supply agility.

Buffer: Low in importance with low cost to serve

For these products, the focus is primarily on inventory and replenishment strategies. If an out-of-stock is not important, standard min/max logic can be used. Issues occur if there are high customer expectations on service levels without a change in technology.

Rationalize: Low in importance and high cost to serve

For these items, product rationalization, reducing non-performing items and re-positioning items to improve profitability, is important. For more on this topic, see "Consumer Products: Three Case Studies on Complexity."

Conclusion

As product profiles change, rationalizing the fit of the technologies and processes is vital. While forecasting techniques have remained constant, needs have not. Companies must match the right technique, set up the right model, and implement the right process for their product profiles and system goals. Doing this right requires constant tuning and modification.

The long tail is certainly more challenging than the high volume mainstream products of yesteryear; but for most businesses, this phenomenon is here to stay. Please let us know if we can be of help at lcecere@amrresearch.com.

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