Advanced Analytics Solutions

Harnessing Advanced Analytics to Combat Margin Compression in Technology Distribution

Distributors have historically played a key role across the technology industry value chain, acting as cost-effective "one-stop shops" for resellers and providing vendors with access to a global network of customers.

However, distributors increasingly face pricing pressure as some larger vendors look to bypass their channel partner relationships and sell directly to their major resellers, often at a lower price point than distributors can offer. For example, HP and Cisco recently formed direct sales relationships with CDW, a large reseller. Net margins for major distributors have already fallen to 1-2%, and the threat of Amazon's entry into the market as a low-cost B2B wholesaler suggests that price-driven margin pressure could further intensify in the future.

The current market environment, therefore, creates a strategic imperative for distributors to optimize the way they manage costs. Purchasing and storing physical product inventory represents the most significant category of cost for technology distributors. Therefore, optimizing the product range to eliminate unprofitable SKUs represents a notable opportunity for cost reduction and margin improvement.

Whether technology distributors focus on specific sectors or serve broadline customer needs across numerous technology end markets and product sectors, businesses typically offer many thousands of product SKUs and generate high transaction volumes. Over time, distributors tend to offer more SKUs from a wider range of vendors in order to leverage the core platform they already have in place. Although increasing the number of SKUs offered can drive revenue growth by allowing the business to meet a wider range of customer needs, SKU proliferation makes it more challenging for businesses to understand the entire SKU portfolio's performance and optimize it accordingly.

Advanced analytics offer technology distributors the opportunity to gain insights into SKU performance and optimization by applying analytics tools to their data-rich transaction records.

With better access to more data and improved analytics tools that make it easier to mine the data efficiently, companies can use insights from advanced analytics to manage inventory costs more effectively and improve overall margins.

The power of product associations

Retail marketers know the importance and value of product associations — the tendencies for certain products to be purchased together or separately — in optimizing merchandise stocking and impacting promotions. A common example is the peanut butter and jelly sandwich: In grocery stores, the probability that a shopping cart with bread and peanut butter in it also contains jelly is far greater than the probability that any given basket will contain jelly.

For technology distribution companies, there are also numerous product associations that exist across a given SKU/transaction data set. While some may be intuitive, such as the joint purchase of computer mice and keyboards, most are nonintuitive and may be very hard to detect on the surface. The sophisticated algorithms within advanced analytics tools, however, offer a powerful way for distribution companies to identify and quantify both intuitive and nonintuitive product associations in their sales data. These insights, in turn, enable technology distribution companies to make better decisions about the products they carry and minimize the cost impact of unsold inventory.

To understand the true value of each product in their portfolios, technology distribution companies must recognize that product associations aren't just a metric for SKU management. Most distribution companies measure sales performance and gross profitability at the individual SKU level, but this view doesn't provide a complete picture of the value of each SKU to the entire portfolio. Though product-level value is crucial when a company undertakes a SKU rationalization exercise to determine which SKUs to keep, delete or reprice, it views each product in
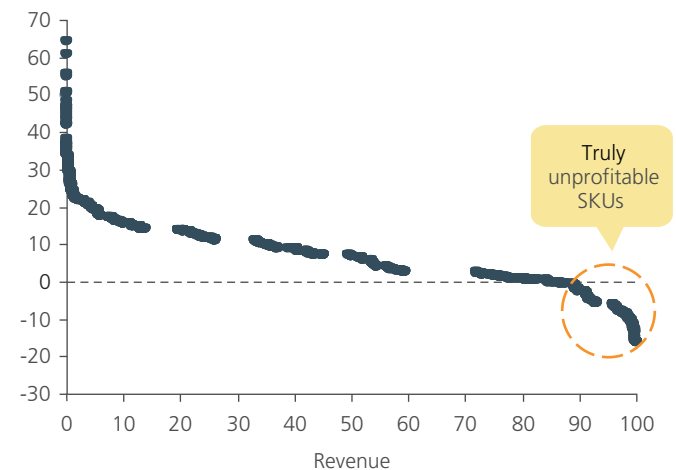
Operating margin by SKU
Individually
Percentage

Individually
unprofitable
SKUs

Revenue
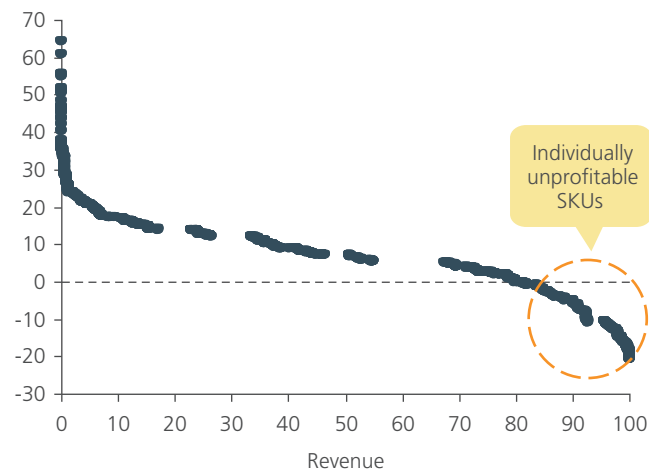
Operating margin by SKU
Including pair-wise associations
Percentage

Truly
unprofitable
SKUs

Revenue

Source: Tktktkt tktktk

a vacuum, independent of its associations with other products. With the added information that product associations provide, distribution companies can build assortments, price products and manage portfolios more effectively, capitalizing on interproduct attraction and repulsion.

Algorithms can be used to find and measure how likely it is that a certain item set (one or more products) will be found in a basket containing some other item set. The outputs of these algorithms are robust and can be illuminating; but even for a distributor with just several thousand SKUs, the number of possible combinations of products can be unfathomably high and become nearly impossible to analyze.

To surmount this obstacle, L.E.K. Consulting's advanced analytics team has devised a standardized process to limit analysis to only pair-wise associations. In other words, we analyze only the associative properties of item pairs, ignoring larger sets of items. A set of 10,000 SKUs has just under 100 million pairs — or half that if we view each pair as a combination rather than as a permutation. This is still a large number, but it is well within the reach of modern computing. Once the value of each item pair is quantified, the results can be layered into each item's nominal value to add another dimension to the true value an item provides within the context of the entire portfolio.

We accomplish this by following a straightforward calculation process:

1. Use a transaction table and supporting data to create a list of unique SKUs and aggregated metrics, such as:

    a. Transaction count

    b. Quantity sold

    c. Revenue and profit earned

2. Self-join SKU lists to create all pair permutations

3. Use a series of joins between SKU pairs and the transaction table to aggregate metrics for each item of the pair when that pair exists in a transaction

4. Calculate a variety of metrics for each pair to determine a variety of association values and each pair's statistical significance, dependence, etc.

5. Calculate the financial value of each SKU's pair-wise associations

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This added information can make the difference between value-creating SKU rationalization and elimination of significant profit dollars. This means that many SKUs that appear individually unprofitable are actually necessary to drive high-margin transactions on other components within purchased bundles. The L.E.K. approach applies pair-wise product association analysis to quantify the strength of product associations across all SKUs in a client's portfolio. This analysis allows individually low-value products with high-value associations to be retained in the portfolio, saving substantial associated product profit that otherwise would be lost and improving overall margins for the business.

About us

L.E.K. works with technology distribution companies to optimize their commercial success. Our advanced analytics process helps our clients examine their expanded product portfolios, drive superior profitability through SKU optimization, and enhance their sales and marketing strategies.

How can we help you? For more information about optimizing SKU management in technology distribution, please contact technology@lek.com.