INDUSTRY INSIGHTS

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FRANK PALAZZO
SENIOR PRODUCT MANAGER
4R SYSTEMS

4R Systems is a leading provider of advanced inventory and supply chain services, which help retailers gain significantly increased profits by optimizing their omni retail inventory and related supply chain decisions. Founded by supply chain experts from The Wharton School and Harvard Business School, 4R provides capabilities that profit optimize the matching of supply and demand. www.4rsystems.com

Analytics: Power that Leads to Profit

Q: How has the move toward consumer-centric assortments changed omnichannel retailers' merchandising strategies"

FRANK PALAZZO: Consumer-centric assortments imply higher degrees of localization and faster reactions to market trends than ever before. Omni-retail adds complexity to the situation, where consumer expectations around customization and product availability are greater. To stay ahead of these trends, merchandisers need to view assortment management as an ongoing core function. It must continue throughout the year and be driven by consumer demand rather than a fixed schedule. This means constantly monitoring category performance and prioritizing reviews accordingly. Traditional merchandising strategies, such as SKU rationalization, have proven to miss important connections between assortment composition and sales results. Assortment planning activities must incorporate consumer tastes and preferences that can only be harvested from big data. Merchandisers are looking to leverage science-driven methods, such as systems analytics, to augment traditional decision-making previously driven only by experience and judgment. In addition, these tools must have visibility into all merchandise planning functions to produce the best result, including promotions, marketing materials, and supply chain.

Q: What challenges does this cause in the age of always-on retail?

PALAZZO: In the omni-retail world, changes happen fast. Consumer-driven fads emerge, spread rapidly, then fade just as quickly. The amount of data generated is enormous. This means merchandisers must sift through unprecedented amount of data to unearth those relationships that drive demand, and must do so accurately and in record time. This is why there is rising interest in machine learning (ML). For example 4R applies ML techniques to analyze the data, augmented by human analysis, to understand the underlying systems that model how data interacts, to give our clients the best picture of consumer demand.

Q: What are the biggest operational stumbling blocks that are impacting merchandising strategies?

PALAZZO: The traditional organizational silos that exist in many retail organizations are obstacles to consumer-centric merchandising. It is a challenge for merchandisers to get a complete picture of operations across supply chain, logistics, marketing and other teams. Also, physical store constraints such as presentation fixtures and planograms can constrain merchandising decisions. Consumer-centric assortments do not always fit neatly into 4-, 8-, and 12-foot fixtures. With the movement toward greater localization, assortments in stores may conflict with DC shipping efficiencies and container optimizations. Finally, with so many products originating from import vendors, long lead times put great pressure on merchandise planning, which should react to fast moving consumer trends.

Q: How has the collection of big data changed retailers' merchandising operations?

PALAZZO: Big data has opened doors for merchandisers to become more consumer focused and make decisions informed by science. This enables them to find previously unknown assortment patterns. It also enables them to provide more localized assortments for categories where demand varies greatly across locations. This results

in more assortment changes happening more frequently, and varying more across the chain. Merchandising operations must be more agile and more efficient to implement the selected changes.

Q: Why is it important to base assortments on location and item levels?
PALAZZO: Retailers can enjoy two main benefits of assortment optimization. They are 1) finding the best level of localization for their business; and 2) eliminating non-performing SKUs. To do this effectively, one must analyze data at the location/item level. Not only will the analytic algorithms require that level of data granularity, but non-intuitive relationships can be uncovered only by mining data at that level. One 4R client found two stores where demand for an entry level product dominated in one store while demand for a premium product dominated in the other. Yet these stores were a mere 10 miles apart. Basing assortment planning on micro-level data can reveal these surprising patterns that would be missed by aggregate level data, or worse, human judgment alone.

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Q: What is the value of attribute-based assortments?
PALAZZO: One of the traditional pitfalls in assortment planning is generating a "self-fulfilling prophecy" relative to improvements. We have worked with Dr. Fisher of the Wharton School of Business to implement a unique, predictive analytics approach to big data optimization using attributes. Consumer trends — and their associated profits — emerge from the data mining and can be quantified when you examine the patterns underlying the attributes in the SKUs of a given assortment. The great benefit of this approach is that improvement can be predicted and quantified versus existing assortments so that accurate profit and revenue projections are possible.

Q: What does analytics-powered merchandising mean to you?
PALAZZO: Using analytics to enhance merchandise planning means leveraging advanced algorithms and systems analytics to augment clients' decision making — previously based on assumptions, judgments, and tradition. It means mining a variety of data sources and injecting human intelligence to reveal relationships between product attributes, locations and consumer behavior. It means constantly measuring performance of product categories versus a benchmark and reviewing that benchmark regularly. It means not only identifying changes to assortments but also quantifying the benefit of those changes so that the return on investment for assortment changes can be calculated. Finally, it means constantly measuring the accuracy of the algorithms and adjusting the system model to improve them.

Q: What analytics capabilities are most important for success?
PALAZZO: Throughout 4R's history we've found that systems analytics are required to achieve the best results for our clients. Systems analytics is an approach beyond machine learning. It doesn't only find correlations between various data elements, but also models the underlying behavior that generates the consumer demand patterns. This approach is more than simply calculating an index between some data element and sales. Analytics must measure demand transference, notably substitution and cannibalization, among related products. To quantify the benefit of assortment updates, the analytic tools must be able to forecast sales results for potential assortments. Similarly, advanced systems analytics can define the level of localization in the clusters of stores where maximum benefit can be achieved. For some categories, an assortment per store or per consumer is optimal but in other cases six or fewer clusters are able to satisfy customer preference. Finally, the analytic tools should consider "real world" factors that constrain optimal assortments, for example space, market basket correlation, and presentation minimums.