

the 4caster

The 4R Systems Company Update



In this Issue

2

Crate and Barrel Selects 4R to Optimize Supply Chain

Linens 'n Things Deploys 4R's MaxOut™

3

4R Sponsors Retail Industry Events

4R Featured in Magazine Cover Story

4

Welcome New Employees

It's a Baby Boom!

Sailing Talent at 4R

5

4R Co-founder Featured in Women's Wear Daily Article

RETAIL TRENDS:

4R Systems is a leading provider of software tools, analytical models and information services that allow retailers and manufacturers to increase the profitability of products by accurately matching supply with demand.

Taking the Guesswork Out of Markdowns

Whether you consider markdowns a damage control policy, a necessary evil of retail, a day saver against soft demand or a long-time end-of-season practice, rest assured that some truth lies in each one of those interpretations. In fact, a large part of the philosophical debate about markdowns revolves around the relative truth of each of these interpretations. But no matter how one arrives at a markdown, it's important to get the best outcome.



To begin with, markdowns are a direct consequence of the inherent asymmetry of the price lever at the retailer's disposal: when sales for a product come in below expectations, the price can be adjusted downward to stimulate demand and achieve better ROI for that item. This is really a

re-pricing disguised as an early markdown. However, when demand is much stronger than expected and more product can't be procured within the season because of long lead times, the retailer rarely has the option to raise prices and capitalize on the product's strength. What happens most of the time is inventory depletion at a price that—in hindsight—is too low.

These two examples show how the price lever can generally only be operated in one direction once the season is under way. To protect against that asymmetry, the retailer often chooses to start with a relatively higher price and then exercises the prerogative to take a markdown (i.e., "re-price") if and when necessary.

(Continued on pg. 3)

CLIENT UPDATE:

Footstar Engages 4R Systems to Optimize Case-Packs



In May, 4R announced that Footstar, Inc., a leading discount footwear retailer, has engaged 4R to help them achieve the appropriate choice of case-pack design and quantities that provide the maximum flexibility in meeting store-level demand.

"To drive cost efficient replenishment, our products are shipped in case-packs, which are assortments of preset sizes in one package. Having the right case-pack configurations and quantities are crucial to our ensuring that we efficiently meet consumer demand without overstocking the store with excess products in the wrong size," stated Stuart E. Werner, CIO of Footstar. "With the help of 4R, we are addressing pre-pack optimization more

intelligently, enabling us to better match supply with demand in each store, giving our customers the right products in the correct size when they want them."

"In the effort by retailers to increase profitability, it is crucially important to understand the balance between driving efficient operations and creating a satisfying shopping experience," said Jiri Nechleba, President and CEO of 4R. "We are pleased that Footstar chose 4R to help them drive sales, improve gross margins and enhance inventory productivity by utilizing advanced analytics and optimization in a key area of their supply chain."



Linens 'n Things Deploys MaxOut™, 4R Systems' Markdown Optimization Solution, to Maximize Revenue of Retiring Products

4R recently announced that Linens 'n Things, Inc., one of the leading national large-format retailers of home textiles, housewares and decorative home accessories, is implementing MaxOut, 4R Systems' exit strategy optimizer to help them manage product markdowns, consolidation/rebalancing and liquidation for its national network of more than 460 superstores. Linens 'n Things made the decision to roll out 4R's MaxOut to a full scale after realizing positive results following a successful live pilot test.

"We've had a long-standing relationship with Linens 'n Things and I am pleased that we'll be helping them improve the management of pricing and inventories as a product nears end-of-life," said Jiri Nechleba, 4R's President and CEO. "With the help of MaxOut, Linens 'n Things is providing their merchants with better tools that help them generate the best possible return on their investment in inventory."

LINENS·N·THINGS



© Linens 'n Things, Inc. - July 2005

Crate and Barrel Selects 4R to Profit Optimize their Supply Chain

4R is pleased to announce that Crate and Barrel, one of the most influential and respected housewares and furniture retailers in the United States, is implemented on 4R's IP^{Max} inventory replenishment service to profit optimize their housewares stores' inventory replenishment.

"At Crate and Barrel, our systems and technology have focused on providing our people with information that enhances their ability to effectively manage the business," said Ed Rennemann, Crate and Barrel's CIO and VP of MIS. "With 4R, we are partnering with a company that is consistent with our values and has the people, models and technology that allow us to deliver information that shows our people the impact on profitability of the myriad of decisions that we make every day. Whether it is how much store inventory to stock, when and how much to order from a vendor or deciding when and how much to markdown, 4R is helping us make decisions to drive our profitability while also providing the customer with the best level of service."

"We found Crate and Barrel to be one of the most efficient retailers we've worked with to date. Nonetheless, in our benchmark of their entire supply chain, we identified substantial opportunities to improve profitability by optimizing many decisions in the supply chain," said Jiri Nechleba, 4R's President and CEO.

"We're very excited to partner with a retailer like Crate and Barrel to help them drive better service, lower lost sales and increase profits."

Each week, 4R receives up-to-the-moment sales and inventory data from Crate and Barrel. 4R in turn applies their proprietary algorithms and technologies to that data, generating suggested inventory levels that are then merged into existing Crate and Barrel systems and provided to store staff. In direct terms, the solution generates



© Crate and Barrel, Inc. - July 2005



Crate&Barrel

payback in less than one year. In indirect terms, service levels have risen and store staff has reported reductions in time to order.

"We have a great relationship with 4R and will be expanding the use of 4R's profit optimized solutions," commented Ed. "Beyond store replenishment, we will be rolling out other components such as markdown optimization, vendor replenishment and DC inventory optimization."

4R Proud Sponsor of Industry Events:

MIX 2005 (Merchandising, Innovation and Xcellence Summit)

Thanks to all of you who came out and met us at The Merchandising Innovation and Xcellence (MIX) summit held May 24-26th in Chicago. The MIX event provided retail executives with an opportunity to learn about the latest tools and techniques for linking the art and science of merchandising to develop successful merchandising strategies. Executives had the opportunity to share ideas, network with their peers and learn best and next practices for merchandising effectiveness.



NRFtech 2005: IT Leadership Summit

NRFtech, being held August 7-9th at the Hilton La Jolla Torrey Pines, is the retail industry's most influential event for senior level IT executives. Peers gather to discuss strategic issues, network, and learn the latest in technology developments and industry trends.



Taking the Guesswork Out of Markdowns

(Continued from pg. 1)

From a slightly different perspective, markdowns provide the retail industry the capability to execute risk-adjusted purchasing strategies. Without a crystal ball, markdowns provide retailers a mechanism to hedge their bets in such a way that over the course of a season, and over a portfolio of items, the overall ROI is maximized within a given open-to-budget constraint.

ROI maximization is achieved in two steps: first, a purchasing decision that takes into consideration the variability of demand as well as the inherent economics of the game (IMU, margin erosion due to markdowns, vendor funds, disposition cost, etc.) and second, once the inventory is acquired and it represents a fixed investment, a fine balance of managing demand using the price lever (marking down). It is in the course of this demand management that markdowns become a



primary instrument of profit generation. In a sense, markdowns represent a partial insurance policy against uncertainty whose value depends on how skillfully it is executed.

In certain industries, the provider of the product or service manages to exploit the varying degrees of willingness-to-pay of the customers by introducing barriers or fences in order to differentiate similar or even identical products, and price them accordingly to the different customer segments.

A well-known example is the airline industry, where two seats on the same flight on the same day can be marketed as different products by the introduction of fences that help segment customers into value-driven leisure travelers, and schedule-driven business travelers.

(Continued on pg. 5)

4R IN THE NEWS

Rebel with a Cause

4R was recently featured in the *Chain Store Age Retail Technology Quarterly* (May 2005) Cover Story "Rebel With A Cause" on Crate and Barrel.

We are first mentioned in the Editor's Note (Tech Talk) in the beginning of the magazine "In Build vs. Buy, Buy Doesn't Always Win, Crate & Barrel's case offers a challenge."

The article goes on to say "Crate and Barrel is a very specialized retailer with some rather unique IT needs. And even (CIO) Ed Rennemann isn't above choosing an off-the-shelf solution where it makes the most sense. An example of that is Crate and Barrel's ongoing work with with 4R Systems to sharpen its inventory management."

The cover story gives a background on Ed's years with Crate and Barrel and discusses his philosophy on off-the-shelf solutions vs. do-it-yourself IT solutions. It is a compliment to 4R (who is the only solution provider mentioned in the article) that even in this pro 'homegrown, do-it-yourself' environment, they have turned to us to help and have been seeing great results!

In the body of the article, Ed talks about our inventory management and pricing capabilities and how we are working with them. To read the article in its entirety, please see www.4rsystems.com/news/articles.html.



Welcome to the 4R Team!

Allow us to introduce you to the newest members of 4R Systems:

James Tripp has joined 4R as an Operations Research Analyst. He is a Summa Cum Laude graduate of University of Richmond with a B.A. in Mathematics. He is currently pursuing his Ph.D. in Mathematics from the University of Pennsylvania (expected this spring). At 4R he will focus on analysis and data testing relating to 4R's product algorithms. His outside interests include Tae Kwon Do, where he holds a Third Degree Black Belt, and playing the Cello. He has also served as a volunteer at Children's Hospital of Philadelphia where he tutored math to patients.

Jon Green has joined 4R as a Production Engineer. Prior to joining 4R, he worked as an application developer/analyst in business planning at Agere Systems, a semiconductor company and spin-off of Lucent Technologies and as a manufacturing process engineer in semiconductor manufacturing for AT&T. Jon has a B.S. in Mechanical Engineering from Penn State, an M.B.A. from the University of Delaware, and a MEng. in Industrial & Mfg. Systems Engineering from Lehigh. He resides in King of Prussia, PA with his wife of 16 years, Kim. He loves to play golf, and has attended over 80 Grateful Dead concerts ... although today he listens mainly to modern rock while drumming on his desk and bothering his neighbors. 😊

Baby Boom at 4R ...

Is there something in the water? That's the question everyone has been asking due to all the new babies born to employees at 4R! We proudly welcome to the world:

- **Nandita Raman**, daughter of 4R co-founder Ananth Raman and his wife Padmaja. Nandita was born January 26, 2005 and weighed 7 lbs. 8 oz.
- **Preston Michael Lubeski**, son of Marketing Director Heather Zoumas-Lubeski and her husband Damien. Preston was born January 31, 2005 (surprise! 5 weeks early!) and weighed 5 lbs. 7 oz.



- **Nico Alberti**, son of Analytics VP Stefano Alberti and his wife Tina. Nico was born on April 5, 2005 (3 weeks early!) and weighed 5 lbs. 6 oz.

*Congratulations to all the new parents!!
Hang in there, you'll get some sleep soon. 😊*

BEHIND THE SCENES AT 4R

Ahoy! Have you ever wondered why our own VP of Analytics, Stefano Alberti would choose to reside in San Francisco rather than our own beautiful Wayne, PA? Here's a clue: Popeye.

While Stefano does not smoke a corn cob pipe or wear a sailor's cap he is our resident sailor man. Stefano is a sailboat instructor at the Cal Sailing Club of Berkeley, CA, the only non-profit co-op sailing club in the state of California (www.cal-sailing.org). Stefano teaches novices the basics of sailing, both theory (dry) and practice (wet). Stefano has been sailing in the San Francisco bay for 5 years now, and loves sharing this wonderful activity with friends and family when they come visit. (Sounds like an invite!)



During an ordinary summer one would find Stefano sailing every other weekend, but for now he is just one of an unusual outbreak of 4R employees who received a new bundle of joy from the stork. Therefore, for now, Stefano is more preoccupied equipping his home with cribs and car seats than a binnacle or compass!

So all you land lubbers out there, keep an eye to the sea and the horizon and you might catch Stefano sailing by.



4R IN THE NEWS

How Star Retailers Turn Fast

4R Co-Founder and Wharton Professor Marshall Fisher Featured in *Women's Wear Daily* Article

If you picked up a recent issue of *Women's Wear Daily* maybe you caught the feature article "How Star Retailers Turn Fast" highlighting an interview with 4R's Marshall Fisher! Each day the paper includes comprehensive industry and category coverage plus the most important breaking fashion, retail and beauty news to over 150,000 readers.



"Any woman who regularly shops specialty retailers like Gap, Abercrombie & Fitch, H&M or PacSun can tell you that clothes, just like first-run movies, don't have the shelf life they used to," the article states. "Partly inspired by the example of H&M and Zara, which are known for their ability to ship new styles to stores in only three weeks, American retailers are turning inventory more frequently each season ..."

"The trick is providing the right degree of the right product at the right time in the right place—and to do that plus turn fast, that's hard," said Fisher. The stores he's seen succeed at it have three things going for them: "accurate forecasts, optimized inventory levels, and supply chain speed or flexibility ..." to read the article in its entirety, please go to www.wwd.com.

Taking the Guesswork Out of Markdowns

(Continued from pg. 3)

By using Saturday-night stay requirements, non-refundable fares and advanced purchase rules, the airline effectively establishes a hard barrier between price-sensitive, time-insensitive customers who plan ahead of time and shop for cheap flights and price-insensitive, time-sensitive customers who are willing to pay for the convenience of being able to reserve a seat much closer to the departure date.

Similar examples abound in everyday life: hardcover books are followed after a few months by cheaper paperback editions; big-screen films are made available at your local video-rental store once their Hollywood sizzle fades; etc. The common theme for all these examples is differentiation; what changes is either an attribute of the product, the vehicle of delivery or a combination of both, catering to different groups of customers with different willingness-to-pay.

In the retail industry, such differentiation is often impractical (if not outright illegal). Hence, a firm tends to extract maximum value from its inventory investment by selling its products at full retail price early on, and taking markdowns later in the season. This practice of differential timing of pricing is more than an intuitive exit strategy to maximize sell-through—it is also an effective partition of customers in price-sensitive, time-insensitive and price-insensitive, time-sensitive segments.

The key to this segmentation is uncertainty; the consumer's choice to postpone purchase in anticipation of a price reduction may or may not pay off. In

other words, the uncertainty of demand poses this dilemma to the consumer—buy now at full price, or wait and face one of these eventualities:

- *buy later at a lower price if retailer decides to take a markdown,*
- *buy later at full price or walk away if retailer decides not to take a markdown, or*
- *miss out altogether because the product may sell out.*

This dichotomy is indeed a continuum defined by varying degrees of price- and time-sensitivity. Therefore, there is some unavoidable amount of overlap, resulting in "spoilage," leading to either revenue dilution (markdown sales to customers that would have paid full retail) or lost sales (price-sensitive customers walking away from a full-retail sale). Minimizing this spoilage leads to gross margin maximization, and requires analytical insight into the effect of timing of pricing on demand. That is why the most profitable markdowns are often referred to as "optimal price trajectory."

So, whatever your perspective on markdowns may be, what matters to your bottom line is the execution of the optimal price trajectory. Other non-quantifiable elements need to be considered as well, such as the risk of brand dilution and the negative impact of "training" the customer to expect end-of-season markdowns. However, a company-wide optimal decision has to rely primarily on the strength that the combined power of data-driven analytical methods and advanced algorithms bring to the industry.

4R Systems, Inc., 1400 Liberty Ridge Drive, Suite 102, Wayne, PA 19087



• 610-644-1234
• fax: 610-644-2152
• 1-866-4RSYSTEMS

• info@4rsystems.com
• www.4rsystems.com