Maximizing Return on Store Space with Optimization

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Abstract

The purpose of this white paper is to provide an in-depth analysis of how space and underlying assortment optimization helps retailers strategically and methodically address the transformation of a store’s space in response to changing market conditions.

Changing shopper and competitor behavior in response to everything from the recession, to rising commodity costs, to the advent of mobile technologies and social media, to channel and format blur, will continue to impact consumer expectations, drive times, basket size, and shopping frequency and must be anticipated, monitored and strategically responded to in the transformation process.

This vortex of events has caused a massive shift in space allocation away from the Center Store and towards more productive and differentiating categories. Entire categories have disappeared from the traditional grocery store while other categories have seen assortment rationalization resulting in an enormous reduction in the number of SKUs.

These trends are also seen in every other retail vertical as Wal-Mart ramps up its store format diversification and Amazon continues to expand e-commerce entries into many categories—challenging the ability of retailers to protect their turf, drive loyalty, grow market share and meet profitability objectives.

The lessons learned in the grocery industry in meeting this challenge through the use of demand-based science and predictive analytics to respond to changing behaviors and conditions are easily transferred and applied to other retail verticals also facing these challenges.

In this paper, Revionics explores the implications of all of these challenges in a case study that shows how optimization science enabled our retail partners to make fact-based, loyalty driving and profitable store space reallocations, category expansion and contraction decisions, and category role reassessments.

In addition, this paper presents some questions raised about the traditional goals of category management through the application of scientific principles to concepts currently accepted as a “given.” Simultaneous optimization of item, category, department and total store space, assortment and inventory identifies areas of improvement by considering economic and consumer decision trade-offs, within and across all products and categories, rather than focusing on the category, brand or fixture in isolation. Interesting challenges to fundamental concepts are reviewed in the final section of this paper.
Current Retail Landscape

**Economic Uncertainty**

Major factors have resulted in shifting shopper behavior over the past few decades: the Dot.com bubble collapse, the banking collapse and the ensuing global Great Recession, and the continuation of political gridlock have created an uncertain environment for both retailers and consumers.

**Shopper & Societal Changes**

Because of the impact of social media and smart phones, the retail industry is experiencing the smartest, savviest and most informed shoppers ever. The retail industry has emerging shopper groups that will shortly be in the majority as the baby boomers age; millennial and Hispanic shoppers have completely different expectations of retailers and are smart enough to know they have the power to ensure their demands are met.

The instrumented and interconnected consumer is in complete control of the retailer-consumer relationship. Behaviorally, because of limited disposable income and increased time constraints, retailers are seeing reduced trip frequency, smaller basket sizes, and shorter drive times. The increased number of households with multiple earners and the changing role of the mother with rising female employment have led to more dining out and more convenience shopping.

**Hyper-Competition**

The traditional grocer’s share of food, drug and mass merchandise consumer spending has been dramatically reduced over the past four decades with share of available dollars in the food-drug-mass channel shrinking from 45% of the market in 1995, to 25% in 2010. This hypercompetitive market has a diverse set of encroaching competitors, many of whom have cost structures that are superior to those of the traditional grocer. In addition, there is increasing complexity as channels and formats continue blurring: dollar stores are eating away at the Center Store, convenience stores are upsizing, traditional grocers are downsizing and, of course, Wal-Mart and Amazon are always trying to figure out how to get another, bigger, piece of the pie.

**Implications & Best Practices**

**Total Store Category Life Cycle Optimization**

The evaluation of the level of store space productivity should be a continuous process of review and assessment to ensure that optimal levels are achieved and maintained continuously and systematically over the life cycle of a store—not just when major remodel events occur.

The frequency and scope of these transformations range from ongoing aisle refreshes to a once every seven year ‘turn the fleet’ remodel depending on the stage in the store’s life cycle, the current competitive environment and the behavior of shoppers.

When the data required to determine the optimized state of each store’s space, assortment and inventory levels is initially loaded, and then periodically...
refreshed, sub-optimal space productivity can be identified. In this manner, the retailer can use the same science-based indicators used to support a complete store realignment to initiate and guide periodic tactical adjustments such as new item/brand introductions and category reviews and resets.

**Transformation Considerations**

Many of the responses to the ‘new normal’ have been tactical to date while best practices dictate that retailer response to changing shopper and competitor behavior should be strategic with clearly stated objectives and goals that can be monitored and measured.

In addition, the complexity of the retail landscape is compounded by the internal complexities inherent in the retail organization with its siloed planning processes and data structures, communication barriers and aversion to change. None of which lend themselves to enhancing the ability of a retailer to respond to this new, demanding consumer who wants to be surprised and delighted with choice, value and shopping experience — and expects to be recognized and rewarded for their loyalty.

When undergoing an organizational and philosophical metamorphosis to achieve total store space optimization, retailers need to consider the following in order to avoid making serious, or even fatal re-allocation or rationalization mistakes:

1. Evaluate all options both strategically (top-down) and tactically (bottom-up), incorporating transaction, loyalty, demographic, and market data.
2. Clearly articulate goals and objectives, meticulously measure outcomes and adapt strategies and tactics for changing conditions or unanticipated results.
3. Ensure that change management processes consider and include all key stakeholders, cross over organizational boundaries and have executive sponsorship and buy-in at the highest organizational levels.
4. Consider all options and their implications simultaneously — not limiting the scope to overall macro-space and floor planning impacts but also considering the impact on underlying assortment rationalization, SKU presence/facings and other plan-o-gram changes that are implicit in macro-space change decisions.

**Assortment & Space Components**

Today’s retailers are challenged to meet the demands of shopper-centric localization by “right-sizing” store formats, increasing inventory service levels and customizing assortments and store layouts for specific customer segments—while maximizing profit and ROI from every product carried and from every inch of each store’s space.

Assortment and space optimization enables retailers to make fact-based, profitable product selection, category space allocation and inventory investment decisions at both the individual store level and at the enterprise level.
Utilizing a plethora of internal and external data sources, including local shopper demand signals, space allocation information, and loyalty and market data, optimization ensures that the shopping experience meets the expectations of today’s savvy, demanding consumer.

**Simultaneous Optimization**

What Revionics has found in assortment and space optimization best practices is that micro and macro-space requirements and constraints have to be considered or the plans will be suboptimal. The results are simply better when assortments are shopper-centric, executable and fit into the available space.

All three components (macro-space, micro-space and assortment) should be simultaneously optimized so that there is always a connection between category strategies and their tactics, across the entire store, for both product mix and space allocations.

Simultaneous activity ensures that assortments, plan-o-grams and floor plans are synchronized to both category strategies and local shopper demand while predicting the expected economic outcome of all scenarios (i.e. what-if simulation).

There are significant negative implications to making space allocation adjustments in isolation: if the floor plans are developed without visibility into the assortment, actual product dimensions and the merchandising constraints within the plan-o-gram itself, the plan-o-gram will end up with suboptimal space allocation and unnecessary d-listing of items to the store. When plan-o-grams are suboptimal, they become difficult to execute at store level and decisions on how plan-o-grams are adjusted are left to the store manager (or even worse a store clerk). The store is left to do the best they can with what they have — and is definitely not precisely executing a well thought out category, marketing or business strategy.

**Case Study**

In response to this vortex of competitor, shopper, channel and format changing events, Revionics has seen a massive shift in space allocation away from the Center Store and towards more productive and differentiating categories. Entire categories have disappeared from the traditional grocery store while other categories have seen assortment rationalization resulting in an enormous reduction in the number of SKUs. Those categories that were once considered “blue chip” or “bread and butter” to the grocer are now reduced in presence while the perimeter space has expanded, extending into new categories and services that continue to morph as shopper preferences and new differentiators are meted out.

The retailers involved in the following case study were facing these challenges and determined that they would use optimization science to better understand shopper needs and expectations as well as the implications of format encroachment and channel blur on their space allocations and assortment breadth and depth decisions for each and every store. As you will see, they have achieved significant results with simultaneously optimized store space, assortment and inventory planning.
Methodology

Addressing the challenge of maximizing performance of the Center Store while reducing total space, adding more presence for growing categories and providing a product mix aligned with shopper demand required reassessment of strategies, tactics and concepts on a number of fronts:

- Strategically right-sizing the entire Center Store as well as categories within the Center Store
- Narrowing competitive market share gaps by incorporating syndicated market data into competitive positioning and product strategy decisions
- Locating optimal space for new or expanded category presence resulting from new category/product introductions and line extensions
- Determining when it makes sense to apply changes to groups of similar stores and when clustering is inappropriate
- Fact-based reassessment of categories, strategies and their supporting tactics
- Incorporating product contribution to basket purchase frequency, category size and profitability in assortment decisions
- Quantifying the value of products as loyalty drivers to ensure product mix and space allocation is localized to target segment demand
- Aligning inventory with demand and enforcing stocking standards to reduce out-of-stocks and excess inventory
- Utilizing demand-based science and predictive analytics to size the problem, quantify the solution and prioritize opportunities to ensure the biggest bang for the buck

Strategic Right-Sizing

The first thing Revionics looked at when approaching the problem of right-sizing was to assess what the correct size for each category should be if the total space allocated to Center Store was not altered.

Revionics discovered that more than half of existing categories needed either an increase or decrease in space presence to maximize potential financial performance improvement.

This reallocation represented a major strategic shift in the way the retailer presented their portfolio of categories to shoppers.

When looking at the total store category life cycle, best practices recommend that these types of changes should not only be implemented during major reset projects — they should also be executed on an ongoing basis to support regularly scheduled, periodic category review driven tactical reset activities.
The Shrinking Center Store

Conventional wisdom might suggest that when the amount of space allocated to Center Store is decreased, sales will decrease proportionately.

To the contrary, when best practice simultaneous optimization of categories permitted overall Center Store space to flex by right-sizing each affected category (i.e. shrinking some and growing others) the result in many stores was a decrease in overall Center Store space while still increasing overall sales performance.

In fact, by increasing space allocated to growing categories at the expense of declining ones, and to accommodate an optimized assortment and the required level of inventory to satisfy demand, sales and profits typically increased. This combination of increased performance from less overall space and inventory resulted in significant return on two of the retailer’s biggest assets — the store real estate and the inventory they own and sell.

Caution About Diminishing Returns

What Revionics has learned in the process of optimizing store space across entire chains is that there is a point of diminishing returns, and then negative returns, when reducing the space of a store, an area of a store, or even a category.

The key is to use macro space optimization to identify the extent to which unproductive space can be removed before entering the range of reduction where positive lift returns begin diminishing. It is imperative not to reduce space beyond the critical point at which current sales are lost due to excess reduction of total space allocated to current categories.

Narrowing Competitive Gaps

Assortment and space optimization applies competitive category strategies by allowing the retailer to estimate the degree to which expected year over year market share gains or losses will impact the retailer’s own performance. By combining syndicated local market sales data reflecting competitors’ performance with each store’s own performance data, sales forecasts are adjusted to reflect anticipated changes in market share. These forecast adjustments reflect narrowing of negative competitive share gaps and reinforcement of positive advantages in response to execution of category strategies. Anticipated changes in share for each category are explicitly reflected in the sales forecast used in the optimization of the total store or a selected department, aisle, etc.

Experience across hundreds of stores that have been optimized indicates that the impact of successful competitive strategy execution has the potential to improve the sales lift in an optimized non-perishable Center Store by approximately 10%.

Optimized total stores including frozen and refrigerated departments have the potential to show even greater performance improvement if there is flexibility to transfer space from ambient temperature areas to perishable
space and vice versa. Of course, such cross department changes can be costly and should be evaluated in terms of marginal financial analysis available from the assortment and space optimization system.

**Locating Space — New Categories & Line Extensions**

One of the major challenges faced by retailers and product suppliers is finding space for new and expanded category presence that results from new product introductions and line extensions.

Optimization provides an analytical framework within which to determine the opportunity cost and thus the financial hurdle rates for new initiatives. Optimization tradeoffs can be used to determine where to best carve out space for new brand extensions that will further grow sales while minimizing the loss of overall department performance.

Revionics has found that even in cases where overall Center Store space was not reduced, simultaneous optimization resulted in total sales and profit increases by providing added space for new and growing categories.

In this case, the reallocation of 250 ft of space to new and growing categories not only did not impact the sales of the reduced categories, but actually maintained a comparable store increase of 1% — contributing to an overall space performance increase for not only the existing categories but also for the new products and categories that were introduced into the freed space.

**The Importance of Store Specificity**

Many of the examples presented in this case study came from individual stores rather than store clusters. The reason for this is that macro-space optimization, except in unusual situations, should be done on a store specific basis due to wide variation in store characteristics.

This has been consistently proven across the many stores Revionics has optimized over the years because each location has specific:

- Shopper demand patterns
- Market and competitive situations
- Format, layout and fixtures

The percentage of refrigerated categories requiring space adjustments to reach an optimal state, as seen in the example shown here, illustrates that a one-size fits all or a store clustering approach would be problematic: instead of each store being optimized to its unique characteristics, most if not all stores will be sub-optimized to an average.
Realignment of Categories

Categories whose roles may have become obsolete as a result of market and competitive dynamics will not respond to strategies that are not aligned to shopper demand. Category roles are not static and should be evaluated in the context of the performance of strategies applied to each, and across all, categories. The competitive dynamics around some categories have shifted quite radically in a very short time.

While assessing the size of Center Store categories, recommendations to significantly reduce the physical presence of disposable diapers triggered a deeper dive into why a once traffic driving sub-category needed to be repositioned to have a greatly reduced presence.

A deeper dive into the underlying cause identified unfolding developments in the disposable baby diaper sub-category where Amazon has carved out a double digit share in disposable baby diapers in less than two years in some markets as time compressed mothers forgo buying bulky items during traditional store visits in favor of the convenience of on-line ordering and home delivery.

Simultaneous space and assortment optimization alerted the category manager to review the category, resulting in:

- Reducing the presence of the disposable diaper category by half
- The sub category outperforming the rest of the market by 500 basis points
- A 76% increase in the performance of space
- Opening up opportunities for other new and growing categories

Incorporating Shopper Market Basket Impact

When the influence of each product’s contribution to each shopper’s total purchase is included in the weighted optimization objective, each item is given credit for being frequently purchased in the baskets of shopper segments important to the retailer. Products frequently favored by highly rated shopper segments are awarded a higher rank standing relative to other items within their categories even if they are not strong contributors in terms of traditional performance measures like sales and profits.

The specific use case presented here involves using shopper basket frequency and contribution scores for each item, weighted as part of the strategic optimization objective used to determine the ranking of products, within and across categories, in a stores’ assortment for the purpose of allocating space to maximize the contribution of each category to total store performance.
Using basket impact data in the optimization process has a subtle but significant influence on category space and assortment optimization recommendations. This effect is illustrated in the top table which shows the comparison of space recommendations with and without the use of basket data. In this example, category space is optimized first using only sales data and then optimized to include the degree of impact the category’s presence has on driving sales and profit in important shopper baskets.

Drilling down into the underlying dinners/side dishes assortment, as illustrated in the bottom table, shows how the use of basket impact scores, as part of the weighted optimization objective, changes the rank of items and brands within the category. In addition, it increases the objective scores of items that are frequently purchased in the baskets of significant segments of customers.

### Quantifying Loyalty Drivers

In a fashion similar to the shopper basket impact example, this use case involves using shopper value scores instead of basket impact as part of the weighted optimization objective that determines the ranking of products, within and across categories, in a stores’ assortment for the purpose of allocating space to maximize the contribution of each category to total store performance.

Adding loyalty data to the optimization process also has an important influence on category space and assortment optimization recommendations, as illustrated in the top table which shows the comparison of space recommendations with and without the use of loyalty data. In this example, category space is optimized first using only sales data and then optimized to include the degree of impact the category’s presence has on driving sales and profits in important shopper baskets.

Drilling down into the underlying condiments assortment, as illustrated in the bottom table, shows how the use of shopper value scores as part of the weighted optimization objective changes the rank of items and brands within the category and increases the objective scores of items that are frequently purchased by loyal customers. These scores are used:

- When making cross category decisions to add or reduce space
- In intra-category decisions when determining which items in an assortment should be considered for deletion in the case of downsizing

This method of strategically scoring and ranking products and categories ensures that assortment and space rationalization is not limited to just unit turnover, sales and profit contribution, but also includes category strategies that take preferred shopper segment preferences into consideration. Combining this with affinities to other items and categories throughout the store as seen in the previous market basket impact example provides the benefit of truly addressing shopper need states as they are reflected in purchases across categories.
Understanding the impact of changes to macro-space on the underlying assortment and shelf space is critical to the simultaneous optimal assignment of space, assortment and inventory for maximizing contributions of each item, brand and category to total store performance and shopper satisfaction.

Reducing Out-Of-Stocks & Excess Inventory

Paradoxically, retailers are overstocked on most products they carry while also experiencing double digit percentage losses in sales due to out-of-stocks. This can be attributed to a number of causal factors including: poor localized shopper demand forecasts, inability to enforce shelf capacity standards for case pack out and days-of-supply, no explicit relationship between desired in-stock service level and the level of shelf stock carried, distribution center stock-outs, and store operational issues. No matter the cause, it is critical to balance inventories at the shelf as part of the macro-space optimization process.

In this example, simultaneous optimization of space, assortment and planned inventory across categories recommended significantly reduced levels of inventory held by the retailer.

The results shown here represent a relatively conservative example of what can be accomplished in terms of inventory investment reduction:

- Days of Supply Reduced 7.5%
- Total Inventory Reduced 10%
- Excess Inventory Reduced 20%

Scoping the Problem

Two questions all retailers should ask before embarking on any strategic change in the way they go about rationalizing assortment and space decisions are:

- How big is the problem — and thus the opportunity?
  - What is the ROI?
  - Is it store-specific or enterprise-wide?
- Which practices, tools and data are required to best address the problem?

One of the most important benefits of applying demand-based science and predictive analytics to store format and assortment decisions is that the potential financial impact is quantified and the ROI analyzed before any investment is made in physical store changes or category rationalization decisions. In this manner, informed decisions about prioritization of opportunities across the entire store and chain are now possible.
Prioritizing Opportunities

Understanding the chain-wide implications of recommendations helps retailers determine:

- What is the best allocation of scarce resources
- Where the biggest bang for the buck is to be gained

Optimization science can be used to determine everything from what stores should be prioritized on the remodel schedule to which stores will benefit the most from an aisle refresh.

This example shows the relative benefit of a transformation based on key performance indicators such as sales, associated costs and profitability for each store. In addition, it identifies the scope of the transformation which ranges from store remodel, to reset, to department or aisle update.

Understanding the chain-wide implications of recommendations helps retailers determine the best allocation of scarce resources.

When to Exit a Product Segment

In today's world of intense cross channel competition, retailers are regularly making strategic decisions about which product segments to exit and which ones to introduce in their continuing effort to build traffic, loyalty, sales and profits by defending and gaining market share in a hyper-competitive environment.

Best practice retailers are now using optimization tools to validate when to exit a product segment because it is no longer a viable contributor to the portfolio and has lost relevancy with the target shopper.

In this case, simultaneous store-wide optimization of space, assortment and inventory raised the question on whether to exit the product segment by considering:

- Incremental contribution of the product segment to the possible portfolio
- Internal competition for selling space
- Omni-channel competition in all categories
- The number of stores in which this recommendation is being made
Questions Raised

There has been some discussion over what the future holds for Category Management, a process born in a different time, given the highly volatile conditions that retailers operate in today.

The Category Management Association, in its recently released white paper entitled Category Management Mastery: The Key to Growth, concedes that a power shift has occurred:

“Retailers control the shopper’s moment of truth at the shelf. This simple and unassailable fact means the power of the retailer in the CPG ecosystem is increasing minute by minute, shopper by shopper. The retailer’s power is growing at the very moment when traditional brand building tools are losing their potency and when brand equity is in free fall.”

In today’s hyper competitive market, where every penny of margin counts, retailers need to question every premise, and accept nothing as a “given,” to ensure they are maximizing potential return. Optimization science and predictive analytics enable retailers to simulate scenarios in order to understand the trade-offs implicit in every decision they make prior to implementation so fact-based decisions can be made.

Interestingly, while going through the transformation process discussed in Revionics case study, Revionics’ retail partners raised some interesting questions that challenged typical stipulations and constraints of Category Management — scientific analysis provided some thought provoking results.

The premises Revionics was asked to quantify trade-offs for included:

- Is brand blocking the most effective and profitable use of space?
- If I release the constraint on merchandising to fixture boundaries will I increase profitability?

This is not to suggest that Revionics recommends that these strategies should be implemented, only to suggest that by using optimization science Revionics can quantify the costs and the trade-offs made between the art and aesthetics of blocking or merchandising to fixture boundaries (or any number of constraints and strategies) by taking a scientific approach that relaxes those constraints. These and many other “givens” can be tested and validated using simulation.

Merchandising Strategy Validation: Brand Blocking

Market research has shown that brand blocking can positively increase sales for individual brands and even an entire category. Most of this research has been conducted within categories with focus on individual brands. Significant improvement in category traffic and shopper dwell times have been observed while individual brand performance has improved in loosely controlled studies usually involving display changes in a single brand of interest to the researcher. There is not much research on the category and total department impact of the use of brand blocking, but a category level impact of 1% in sales is typical.
Of course retailers are not interested in only brand or even category level performance but also department and total store impacts. By simultaneously optimizing item, category, department and total store space, assortment and inventory, and loosening restrictions on brand blocking requirements, one retailer identified areas of improvement for certain types of fixtures by considering economic and consumer decision trade-offs within and across all products and categories.

In this example, the size, assortment and inventory capacity have been optimized not only within the category, but across categories, by remerchandising without strict brand blocking:

- Producing the same level of sales
- Utilizing 25% less space
- Reducing inventory 31%

By opening up the space saved to other similarly optimized categories (some increasing and some decreasing in size, assortment and inventory) potential for more than 4% improvement in department sales and profit is projected through the simulation model. This outweighs the expected loss of around 1% of sales attributable to brand blocking within categories but must be contrasted with the aesthetic appeal of brand presentation.

**Merchandising Strategy Validation: Plan-O-Gram Size Increments**

Retailers often allocate the space assigned to categories and sub-categories in the space increments inherent to the physical fixtures employed to display and hold the products offered for sale in their stores. So if four foot wide shelving is used, increments in category display (plan-o-gram) size often are in increments of four feet. When this constraint is imposed, the rounding up or down on four foot increments can result in sub-optimized plan-o-gram sizes due to over or under allocating space to categories and sub-category assortment and inventory (facings). This is why some retailers have begun to employ shorter length increments (e.g., three feet or two feet) to provide added flexibility in plan-o-gram sizes. While it is often possible to allocate product space across fixture boundaries the plan-o-gram increments are often still set equal to fixture size increments.
By using cross category macro-space optimization, it is possible to determine the best plan-o-gram increment independently of the fixtures used and then allocate space in the best manner across categories to maximize flexibility and performance.

Revionics has seen that the sub-optimization impact of merchandising to larger plan-o-gram size increments in a typical supermarket can depress potential sales increases very significantly.

There will always be a tradeoff between fully optimized plans and the art of merchandising. The important thing is to be aware of what the opportunity cost of the art is so that it can be evaluated in terms of the benefit it must deliver to exceed the truly optimized solution.

Summary

The allocation of total store space among categories, and the adjacencies of those categories, is an important component of a retailer’s communication with shoppers as well as in their strategy for competitive positioning. The instrumented, interconnected, empowered and informed shopper, whose loyalty is no longer given but must be earned, demands a shopping experience which recognizes their personal preferences for products, categories, convenience and shoppability.

A recent white paper by Booz & Company, entitled The Path Back to Retail Growth Rethinking Space Management, summarizes the current challenge well:

“Going forward, the (space management) challenge for retailers will be to put aside some of the accepted truths of the past and embrace the possibilities of the future. That means moving from a solely tactical stance, centered on SKU rationalization, to a more strategic approach that encompasses leveraging consumer insight to define the right categories and product assortments; leveraging localization initiatives to promote differentiation and efficient selection…”

Total store category life cycle optimization lends itself to a reassessment of treating categories as profit centers unto themselves. Flexing space allocations based on shifting demand patterns and behaviors, changing category roles based on the new shopper and competitive environment, and the need to maximize ROI on both space and inventory requires retailers to shrink and grow categories — not just grow them. Not all categories are destined to grow and some have outlived their usefulness in the brick and mortar space, a concept which flies in the face of category captaincy and category management. This requires questioning everything and accepting nothing as a “given.”

If the goal of the retailer is shopper-centricity and driving loyalty, then the entire organization must work symbiotically to enhance all aspects of the shopping experience while maximizing the return on total store space.
This means updating some of the concepts of category management so that categories are permitted to play the roles they fit best, some being sacrificial to gain traffic and loyalty and others exploited to maximize their growth potential.

Optimization permits continuous assessment of shopper demand and the competitive environment to ensure that each and every store is aligned with the needs of the shopper while maximizing return on assets and achieving financial objectives.

**About Revionics, Inc.**

Revionics delivers the industry’s most powerful End-to-End Merchandise Optimization solution, enabling retailers of all sizes to execute a fact-based, shopper-centric merchandising strategy resulting in enhanced financial performance with improved customer satisfaction. Revionics’ solutions leverage advanced predictive analytics and demand-based science to ensure retailers have the right product, price, promotion, placement and space allocation for optimal results. Offered on a scalable, high performance Cloud-based SaaS platform, these solutions future-proof retailers from Big Data/Fast Data challenges, while providing speed-to-ROI. Over 31,000 retail locations and $95B in annual revenue across grocery, drug, building materials, convenience, general merchandise, discount, sporting goods stores and eCommerce sites are optimized with Revionics’ solutions. Revionics has been recognized as a 2012 Deloitte Technology Fast 500™, Red Herring Top 100 Global, Red Herring Top 100 Americas and JMP Securities’ Hot 100 Software Company. For more information, please visit [www.revionics.com](http://www.revionics.com).