
White Paper

A Better, Easier Way to Improve Warehouse Operations

12 Industry Leading Case Studies

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RBC: A Better, Easier Way to Improve Warehouse Operations

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By Steve Anderson

This article looks at the results 12 companies have achieved through using Resource Based Costing, a quicker, lower-cost, less complex new approach to understanding how to operate most efficiently and profitably. The approach was developed by a former McKinsey Consultant who studied under Dr. Robert S. Kaplan at Harvard Business School and has produced double-digit increases in profitability for the companies listed in this article as well as hundreds of other companies in a variety of industries. Charles Schwab, Sysco Foods, and Fisher Scientific are using this methodology, as are the leading companies in the tight-margin distribution industries in which the approach first met widespread adoption. The 12 case studies that follow illustrate how Resource Based Costing (RBC) was applied to a number of different challenges within the warehouse setting. Among the companies' common benefits was greater customer profitability. Here are their stories.

1. Goal: Pinning down cost to serve

J&B Wholesale

Challenges:

J&B Wholesale, a food distribution company headquartered in St. Michael, Minneapolis, was seeking a better means of understanding and improving their warehouse operations in order to improve customer profitability.

J&B had been providing special services, such as add-on orders and same-day shipping which were draining profits. There was no clear data showing what these extra services cost. In addition, one product group was unprofitable due primarily to problems associated with one vendor. And another portion of the business was losing money.

Process improvements were required, too. For example, J&B had been utilizing dynamic slotting of products. That process, however, was creating problems for order selectors who had a difficult time identifying the location of specific stock.

Solutions:

J&B selected Acorn to model warehouse operations: receiving, order selection, staging and loading. A simulation of the warehouse processes was built with information gathered from interviews, limited time and motion studies of warehouse processes and ERP data.

Inefficiencies were identified in J&B Wholesale's picking processes. Specific challenges included the lack of data. Where data existed in the ERP system, it was extracted. Where J&B lacked data from a warehouse management system, simulation techniques were used to dynamically create that data. J&B moved its high velocity products to the front of the warehouse, and now uses dynamic slotting for low velocity products only. This enabled J&B to significantly reduce its

picking costs.

Bottom Line Results:

The company re-negotiated with its vendors in areas of pricing, rebates and delivery schedules. Certain products were re-priced, and information on the cost to serve its customers improved dramatically. J&B also implemented more realistic minimum order quantity shipments, and now pays sales reps commissions based on net operating profit. These improved efficiencies helped J&B increase its annual net operating profits by 30% on a recurring basis.

2. Goal: Improving delivery efficiencies

Conco Foodservice

Challenges:

Conco Foodservice, a food distributor headquartered in New Orleans, distributes over 8,000 items, from dishwashing detergent to fresh vegetables. Conco was facing a number of challenges to operational efficiency and customer profitability.

For example, its suppliers were delivering half truckloads of products daily that often could not be palletized, hampering economies of scale. Certain products were more costly to handle due to the receiving process. The costs of daily delivery services were exorbitant (\$40,000/month) and not valued by customers. Sales people were working only on a gut feel about which products were the most profitable. In addition, the company was spending \$400,000 annually to support a separate produce department.

Solutions:

The company selected Acorn Systems to analyze and improve efficiencies of its entire operations, with a focus on warehouse and transportation.

"With the help of Acorn Systems, we built a simulation of our warehouse processes with information gathered from interviews, and conducted time and motion studies of our warehouse processes and ERP data," says Pete Algero, the company's CFO. "We didn't have a warehouse management system, so Acorn Systems simulated the missing data elements in its modeling."

Now the company has made the shift to that more efficient delivery schedule has substantially reduced its receiving costs. It also renegotiated with its vendors for additional rebate dollars. And the separate produce department was eliminated without disruption to normal business. The company also eliminated the variable expenses associated with special customer request services without any loss in revenue. The produce product group was determined to be unprofitable, so the company raised prices by 5% across that product group line. Plus, the impact of vendor rebates on profitability was pinned down.

"We identified our most profitable items, and emphasized to our sales people that these were the items we wanted to focus on," Algero says. "Now they have a much better idea of what it takes to improve profitability with our customers, by focusing on the right mix of products to sell. We also know what drop size we need in order to make money, and we know how to limit our number of deliveries per week. Together, those three things form the keys to our increased

customer profitability."

Bottom Line Results

Those efforts helped the company generate a 100% increase annually in net operating profits.

3. Goal: Minimizing material handling costs

McNeilus Steel

Challenges:

McNeilus Steel is a \$100 million steel services firm located in Dodge Center, Minn. They had ventured into activity-based costing in the past, but found it to be too cumbersome, expensive and time consuming to be of much value. They were still facing high costs of material handling (picking, staging, preparation, and loading) within their existing framework. In addition, they knew the amount of transportation time being consumed within the warehouse and truck loading was excessive.

Solutions:

McNeilus engaged Acorn Systems to assist with operational performance improvements on their main steel service center. A time-based cost and consumption model was subsequently developed for the entire company, comprising all departments, all major processes, all customers served across the system, and all products stored in inventory. The initial focus was on customer contract negotiations and product mix decisions. It was discovered that many internal changes to processes needed to occur to ensure McNeilus could become more efficient with the rest of a highly competitive industry.

Through the RBC modeling, the warehouse was divided into departmental cost centers. Workflow was mapped through these centers. Resource drivers were identified within each center (e.g. head count, square footage, assets) to assist with cost allocation. Key processes (components of the work flow) were then identified, and time-based algorithms were developed to simulate work. Actual orders were fed into the model to understand the true costs of the different processes.

The solution proposed and validated with the model produced faster picking, direct staging on actual truck, and faster loading, became the standard for other facilities.

Bin Location Numbers for remote inventory items were either not available or not credible. So understanding the actual picking time for these items was difficult. To circumvent this problem, the team used warehouse zones (instead of BLNs).

Bottom Line Results:

The company was able to speed up its order processes by stacking the material more efficiently on pallets and increasing the yield from those materials. The costs of customer service were improved via more efficient loading orders and processing inventory. As a result, McNeilus saw a dramatic increase in profit margins.

4. Goal: Eliminating redundant activities

Electronics Distributor

Challenges

A \$2.3 billion international distributor of high-performance electronic components for the computer and technology industries, competes in an intensely fierce, cost conscious industry. Yet the company was struggling to understand its cost to do business.

As an example, regardless of the product being received, it still went through the same process. The item was scanned, staged/docked, and underwent a pre-receiving quality check. Then the item was received, staged, categorized, went through another quality check, and then went into the stocking procedure. However, some items designated for cross-docking and return items required different procedures, as did small, carousel bound components versus bulking items, or active versus passive components. Yet management was extremely resistant to push for change with its suppliers until it was absolutely sure that its existing internal operations had been optimized.

Solutions

The company engaged Acorn Systems to understand the cost to do business with its customers and vendors, the cost of its various products and services, and specifically what changes should be made to reduce those costs.

An enterprise-wide time-based activity based costing model was built comprising several warehouses and 40+ sales branches across the country. This model encompasses all departments and processes within each facility. One such department (of a field of 400+) scrutinized was Receiving. The model showed the inefficiencies of the existing procedures, demonstrated the advantages of categorizing the processes based on product type, and helped make recommendations on different equipment / systems to be employed.

Inventory data was purged at the end of every month, but the transactional data was stored for longer periods. This meant the model could not be run for previous months. It had to be run immediately. With Acorn Systems' help, the company instituted a new process to store the data before it was purged.

Other problems solved were of a cultural nature. The distributor had taken years to perfect their different processes, such as Receiving. The prospect of allowing the finance department to help effect process changes generated controversy. Getting the plant managers on the team and involving them in the process changes helped overcome resistance.

Bottom Line Results

Initiating new, more effective processes helped the company gain across the board improvements in warehouse efficiencies, without disrupting sensitive cultural issues.

5. Goal: Consolidating material for packing and transportation

Paper and Packaging Distributor

Challenges

The packaging firm was confronted with inefficiencies in the buying habits of its primary customers and in the packing and pre-transportation preparation of their orders. Customer such as U-Haul and Public Storage customarily would routinely place several small orders of the same products, such as boxes, tape and other packing supplies.

Solutions

The distributor selected Acorn Systems to analyze and improve the warehouse efficiencies of its southwest facility. Its warehouse operations were modeled, including: receiving, order selection, staging and loading. A simulation of the warehouse processes was constructed with information gathered from interviews, limited time and motion studies of warehouse processes and ERP data. The firm did not have a warehouse management system, so these missing data elements were simulated in the modeling. The line items of individual orders were analyzed to identify product consumption and the profile of an average order.

Bottom Line Results

The company created pre-packaged pallets as "kits" that included products and quantities that were typical of an average order. Customers were given incentives to order these kits, which reduced the facility's cost of picking and pre-transportation preparation.

7. Goal: Streamlining workspace processing

Denman and Davis

Challenges

Denman and Davis (D&D) is a steel service center in Clifton, NJ. In a fiercely competitive industry, D&D's delivery costs were exceptionally high.

A case in point: the firm often delivered multiple shipments for the same order. A single order would have separate deliveries to the same location. Each of those products was processed in a different area of a facility (bar department, plate department, polishing department) and each item was completed at different times. Once processed, each item was shipped on a different truck. In addition, D&D was challenged to create a staging zone due to space limitations and an inability to build on additional warehouse space.

"We knew there were activity traps, and that some of our customers were eating into our gross margins. For instance, we found that our 'A' account was a net loser due to their special delivery requests. It was eye-opening," says Dave Denizer, the company's CEO.

Solutions

D&D selected Acorn Systems to identify performance improvements across the enterprise. D&D's entire operations were modeled. A simulation was built of the all processes (including warehouse) with information gathered from interviews, limited time and motion studies of processes and ERP data.

Acorn Systems recommended that D&D institute a staging zone to accumulate the products for an

order to be delivered as a single shipment.

Several opportunities were identified to free up warehouse space for a staging zone. Scrap, which is sometimes resold, consumed an excess amount of space. Recommendations included the consolidation of scrap inventory as well as the elimination of many scrap items that had no resale value. The grinding processes were determined to be unprofitable and consumed warehouse space. It was recommended that D&D eliminate grinding from its service portfolio. The firm sold the grinding equipment and freed up this additional space in the warehouse.

Bottom Line Results

Among the results generated: "We went through our 20 worst accounts and were able to salvage every one of them by finding ways to drive costs out of the business," Denizer says. "In addition, we reduced the amount of time it took to exchange information with our design group by automating those communications and gaining the ability to send blueprints electronically."

8. Goal: Reducing workloads via better processes

Steel Service Center

Challenges

A regional steel service center in the Southwest US realized some of their processes needed to change in order to become more cost competitive. For instance, their Houston division was using a single loop crane, requiring two people, one on each side of the item, to complete the pick, which was causing a significant increase in both time and cost.

The company chose Acorn Systems to help improve their processes. Acorn Systems built an enterprise wide model, spanning all of their processes and facilities. The team modeled all of the facilities, using its time-based algorithms to simulate actual work on each process. Based on experiences in working with over 20 other steel service centers, the team was able to identify significant performance inefficiencies.

In the area of picking, a double loop crane was employed. This required only one floor operator (with handheld control) to pick an item instead of two operators handling that chore.

Bottom Line Results:

The double loop crane yielded a significant savings in labor costs. The team demonstrated through the model the cost and time-savings associated with making the upgrade to the new double loop crane technology.

9. Goal: Greater expertise in scrutinizing individual transactions and tracking costs

\$2B Scientific Product and Equipment Distributor

Challenges:

A multi-billion dollar scientific product and equipment distributor with facilities across the US, was a seasoned user of activity-based costing. The company had implemented ABC several years

earlier. However, the system lacked ability to scrutinize individual transactions being processed through the facility, and an ability to track costs at the line item and SKU level.

Solutions:

The distributor engaged Acorn Systems to build a more robust model to help identify internal process improvements and external supply chain opportunities. In the process of building an enterprise time-based cost and consumption model, the team analyzed the operations of the warehouses, and was able to measure the cost and time variance between the automated conveyance systems versus manual ones within a facility and across facilities. The company was able to validate the economic and process/work flow advantages of the different systems. Specifically, the model could analyze the specific processes and explore the impact on both cost and cycle time for proposed improvements (e.g. automated picking system, scanning).

Among problems resolved: the company's previous experience with ABC made it difficult for them to "unlearn" previous methods to relearn the time-based approach. And the idea of modeling individual processes at the transaction level was a monumental shift in their expectations of activity based costing.

Bottom Line Results:

The company enhanced its ability to analyze process efficiencies, and to better weigh the cost consequences of potential improvements.

10. Goal: Enhancing performance via personnel and process ownership.

American Beverage

Challenges:

American Beverage is beverage manufacturer located in Pittsburg, Pa., with three plants nationwide that manufacture their own label as well as private label products for convenience stores and schools. Problems confronting the company included the cost of servicing small orders (less than 10 pallets), which was greater than the revenues for those orders. Orders smaller than 10 pallets required customer pick-up. In addition, one of the company's biggest clients, HEB of Texas, had exceptionally high delivery costs.

"In our business our two largest costs are cost of materials and production costs, but in order to improve customer profitability, we knew we needed to focus more on our delivery costs and our gross to net for each customer," says Dave Anderson, the company's director of finance. "We realized that delivering small orders just wasn't profitable."

Solutions:

American Beverage turned to Acorn Systems to analyze the cost of various processes and to identify performance improvement opportunities. The company's entire operations were modeled. A simulation of the all processes (including warehouse) was built with information gathered from interviews, limited time and motion studies of processes and ERP data. It was determined that it would be more economical for American Beverage to ship to HEB from its Arizona facility, rather than from its Pennsylvania facility.

"We determined that if our order was too small, then we simply wouldn't deliver it," Anderson says. "In addition, we initiated up charges for small palette orders."

Bottom Line Results

Cost reduction opportunities were identified, including policy changes and process ownership changes. American Beverage instituted a policy to only ship orders that were larger than 10 pallets. The company reconfigured its delivery area to incorporate a pick-up zone. In addition, the shipping department took responsibility for providing the methodology for pick-up.

11. Goal: Improving economies of scale in production.

Lewis Goetz

Challenges:

Lewis Goetz manufactures and distributes industrial products, such as industrial hoses. The 13 facility company was born from a roll up of several different companies. After acquisition, each facility continued to produce and distribute its product line, which was identical to the product lines of the other facilities. Lewis Goetz had overlapping geographies and never closed a facility. They were not realizing economies of scale in production.

Solutions:

Lewis Goetz selected Acorn Systems to identify performance improvements across the enterprise and to understand which processes needed to be consolidated. The company's entire operations were modeled, including the 13 facilities and all departments. A simulation was built of the all processes (including warehouse) with information gathered from interviews, limited time and motion studies of processes and ERP data.

The time-based cost and consumption model identified resource bottlenecks and excesses. For instance: Lewis Goetz was experiencing low capacity utilization on specific processes (i.e. 27% utilization in hydraulic hose operations), as well as areas of high capacity utilization (i.e. industrial hose operations). Recommendation: shift resources from the hydraulic hose operations to industrial hose operations. This required shifting persons out of the departments, but resulted in no headcount loss.

Specific challenges to this project were cultural. Lewis Goetz never closed a facility and never eliminated headcount. In addition, the facilities which were operating at capacity (industrial hose operations) were reluctant to increase its resources to relieve the bottleneck.

Bottom Line Results:

Among the highlights: More efficient use of resources, better capacity utilization.

12. Goal: Identifying resources required to make needed changes.

Marigold Foods

Challenges:

Marigold Foods, headquartered in Minneapolis, Minnesota, is a leading ice cream manufacturer. Two of the least efficient operations were those associated with procuring and storing purchased products, and direct store delivery to small grocery and convenience stores. The cost standards that had been applied to both far underestimated the actual costs.

Specific challenges were cultural. Marigold had spent a lot of time developing its process and cost standards. As their proprietary information proved to be inaccurate, push back ensued, and additional validation was required to prove the accuracy of Acorn Systems' results. Marigold had its start in the direct store delivery business. Being told that its business was not aligned with its processes drew opposition from management.

Solutions:

Marigold engaged Acorn Systems to help it analyze costs and process improvement opportunities. A model was built for their North Division, spanning several states. The model was able to single out two areas that were tightly contained. In other words, there were individuals within the company that were accountable for both. The model was then used to provide detail cost information to the purchased product manager, as well as the direct store delivery transportation manager. This information helped reveal specific problems within both operational areas: receiving, storing and picking inefficiencies for purchased product; and delivering, shelving, and dumping process costs for the direct store delivery business.

Bottom Line Results:

Several key policy and process changes were enacted, significantly reducing Marigold's costs.

In summary, companies that are using the RBC approach are realizing much greater benefits in the form of cost reductions and profit improvements than were possible with ABC. For this reason, there has been a resurgence in companies adopting ABC. The key to making this business initiative work is to build on the past, but make it better, faster and cheaper.

About the author:

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