FEATURE STORY

Jane H. Malin

knowing the SCOR: using business metrics to gain measurable improvements

Applying leading practices long used by other industries may help your hospital gain a competitive edge while improving its financial performance.

How is it possible for a hospital or healthcare system to remain competitive and improve the bottom line in today’s market? It’s achievable through clear articulation of a “go to market” strategy and the exhaustive pursuit of actual unit costs and performance metrics. Benchmarking is not a new concept to many larger healthcare facilities. Yet collecting and linking data to the execution of clear-cut improvement strategies can be an ongoing struggle for businesses across industry lines.

Administrators at a small not-for-profit hospital in upstate New York proved that benchmarks were linked to strategy most effectively by shifting to a business paradigm, which led to significant service and operational improvements. Without the change, the likelihood of remaining profitable and competitive had been uncertain at best because no one at the hospital had ever questioned the cost of doing business. The chief administrator and controller knew what they could charge and were simply using standard hospital measurements, such as occupancy rates and turnover of services, to assess operations.

However, the combination of decreased revenue and increased competition challenged these administrators to break out of the healthcare industry mold and think about their hospital as a business. With this new mindset, they applied leading practices long used by other industries for identifying products and services to gain a competitive edge while finding new ways to improve financial performance. The goal was to achieve greater operating efficiencies and control costs.

Asking the Right Questions

To begin tying strategy to day-to-day operations, the hospital management team asked the following questions:
Who are our customers?
How do we keep our customers loyal?
How do we create a competitive edge?
How do we attract discretionary funding?
How do we optimize inventory and resources?

To begin shaping a strategic vision, many manufacturers look at their businesses from a supply chain view. One methodology from the Supply Chain Council—the Supply Chain Operations Reference model—allows companies to define and measure their supply chains, determine where weak links exist in their processes, and identify how to make improvements.

Supply chain definitions start with customer requirements, products, or geography. This is a way to segment the business by types of customers and determine how to penetrate and gain market share. As a service provider, the hospital chose to define its supply chains by key customer care units: acute care, maternity, day surgery, emergency, and clinical care.

The strategy also considered customers other than patients who affect these care units—for example, physicians who chose to affiliate with the hospital, emergency personnel who transported patients, and other regional hospitals and clinics that referred patients for services.

The SWOT Analysis
With customers and supply chains in mind, the strategy began with a “strengths, weaknesses, opportunities, and threats” analysis of each supply chain to gain a strategic vision for focusing attention and creating a competitive advantage.

The hospital’s acute care supply chain SWOT analysis revealed these points:

- Strengths
  - Newly renovated patient rooms; emotionally uplifting environment
  - Strong list of physicians affiliated with this hospital
  - Low patient-to-nurse ratio, great service, and individualized attention
  - High patient satisfaction scores

By looking at the hospital’s services in terms of each supply chain’s strengths and weaknesses, the hospital’s administrators were able to achieve a more balanced analysis.

- Weaknesses
  - Aging diagnostic equipment
  - Declining occupancy rates
  - Dependence on the emergency department’s perceived customer satisfaction performance

- Opportunities
  - Loss of acute care patients because of ED inefficiencies
  - Excess capacity; possible use for long-term care (e.g., palliative care or assisted living)
  - Offer more subacute care: rehabilitation, recurrent patient assessment, or clinical treatment for limited time

- Threats
  - Rising labor costs forcing staffing cuts
  - Hospital stays continually shortened or converted to outpatient

Similar SWOT analyses were completed for each supply chain.

The SWOT analysis became the roadmap to guide the administrators’ measurement of performance and selection of process improvements. By looking at the hospital’s services in terms of each supply chain’s strengths and weaknesses, the administrators were able to achieve a more balanced analysis.

Keeping SCOR
SCOR metrics fall into two major categories:

- Customer-facing (external) metrics are measurements of delivery performance and overall responsiveness. Examples in a hospital setting include percentage of occupancy, patient-to-nurse ratios, turnaround time, rework (redo tests, diagnostic accuracy, etc.), and customer satisfaction scores.
Company performance (internal) metrics are measurements of cost management and asset utilization. Examples include unit costs per service or treatment, material costs, labor costs (personnel), overhead costs, support service costs, accounts receivable aging, inventory days of supply, and utilization of key work centers.

Businesses closely track both sets of measurements and use external benchmarks to set competitive performance targets. A key part of the strategy was analyzing the hospital’s performance against competitive benchmarks. Each supply chain’s SWOT analysis highlighted the metrics where the administrators determined a need to be superior to their competitors (competitive edge), to gain an advantage (better than most competitors), or to perform at parity (level playing field).

By comparing the hospital’s actual performance with that of the competition, the administrators identified realistic goals. By calculating gaps between actual performance and the new targets, strategic performance opportunities were identified for focused improvements.

Unfortunately, actual performance for the majority of the SCOR metrics was not available because it simply had not been tracked in the past. Also, industry benchmarks were not easily found because hospitals typically do not measure performance in this way. As a place to start, the hospital focused on profitability, a metric for which some benchmarks were available.

Benchmarks were gathered from late 2003 data from several sources including Internet sites (e.g., Centers for Medicare and Medicaid Services), healthcare industry market data, and professional organizations. Comparing the hospital’s actual performance with benchmark data, the administrators confirmed that the hospital was marginally profitable at 1.8 percent in comparison with other rural, not-for-profit hospitals that ranged from a parity rating of 2.2 percent to a superior rating of 7.2 percent.

The findings certainly presented an opportunity to improve. The hospital’s revenue picture was primarily based on fixed prices. Without the ability to control reimbursements, the key was controlling costs to improve the bottom line. Therefore, SCOR’s internal performance metrics were considered the portal for uncovering profitability problems.

**Deep Dive into Internal Metrics**

The administrators turned to material, labor, and overhead costs by supply chain, known in industry as cost of goods sold. The other metric that received their attention was total supply chain management costs—the cumulative support costs for each supply chain.

Although aggregate material costs were known at the departmental level, actual material costs by service or work order had not been tracked to that level of detail. Data were insufficient to spread departmental costs—or even budgets—by allocation unit (e.g., occupancy numbers) as a measure of ongoing performance.

For years, the hospital had measured itself by how much it could charge, by its total costs, and whether it had money “left over.” Time would be required to drill down into unit costs for all the products and services by identifying and calculating cost components.

Some high-level labor costs and parity benchmarks were available. The hospital was operating at 39.8 percent for overall labor costs versus 36.6 percent parity. Specifically, the cost for nurse labor was assessed at 16.2 percent versus 15.9 percent parity.

As the hospital’s SWOT analysis for the acute care supply chain showed, the hospital’s low patient-to-nurse ratios, great service, and individualized attention were considered strengths. The external-facing metric for acute care had indicated an average of eight patients per RN. However, available benchmark data indicated this was below parity, which was at 7.2, advantage at 5.9, and superior at 4.7. Was patient-to-nurse ratio really...
a strength? Furthermore, at 16.2 percent, the hospital was paying a 0.3 percent total cost premium for its nursing services compared with parity. This perceived strength was now questioned and seen as coming at a very high cost.

The nursing consumption ratio (hours of nursing care/hours of length of stay) was also a revealing metric when coupled with the type of care required. For instance, patients requiring around-the-clock care (e.g., ventilator dependency) consumed more nursing hours per stay than the average patient. However, unless those patients were in the intensive care unit, their daily residence costs were calculated on the same per diem basis. The patients incurred costs for the equipment usage, but not for the added labor requirements.

Total supply chain management cost had been estimated at 36 percent. Ideally broken down by individual supply chain, it includes all support costs for the supply chain—IT and technology support, purchasing support, inventory carrying costs, freight and transport costs, finance and administration support, etc. This cost was instinctively considered high due to multiple touch points in the patient/staff flow, lack of automation, high rework ratio, and paper-driven processes (forms filled out, data keyed, rekeyed, copied, filed, and distributed). Because benchmarks were not available for this number directly, this became a “continuous improvement” metric for the hospital, one that would be highlighted to achieve an annual 1 percent reduction over baseline performance for each supply chain over the next five years. This improvement target was considered very conservative.

“Gap” Analysis
The administrators then applied the SCOR process for identifying improvement opportunities by mapping the flow of material and information throughout each supply chain. The goal was to help locate “disconnects” or “gaps” within the hospital’s processes as compared with the SCOR model. Dozens of gaps were uncovered, such as the following.

Limited inventory visibility. One of the key internal-facing metrics to determine asset utilization was tracking inventory and mapping the flow of drugs, medical supplies, gowns, bedding, gloves, etc. In many cases, nonessential inventory was being stocked in every department, which meant that the hospital was carrying too much investment in inventory—some of it well past its shelf life. In industry, high importance is placed on visibility of common inventory across the organization. Additionally, it’s critical in the hospital environment to have strong “first-in-first-out” disciplines in place to ensure product freshness.

Multiple handoffs. The flow of patients throughout the hospital for various procedures was charted over a period of approximately 30 days to assess such activities as the movement of hospital staff, use of inventory and monitoring equipment, dispensing of medicine, and delivery of food trays. Hundreds of touch points were identified as inefficient, wasted movements. Handoffs created problems, such as points of failure, long queue times, miscommunications, and rework.

In the acute care supply chain, for example, there was no central scheduling for sending patients out of their ward for various treatments, tests, and procedures. Patients were transferred

THREE INDUSTRY BEST PRACTICES: A SNAPSHOT

Lean Manufacturing drives elimination of “waste”—producing what is needed, when it is needed, in exactly the right quantities, with a minimum amount of resources.

Six Sigma is a process-focused, data-driven, problem-solving discipline that drives variation reduction and the elimination of process defects.

The Supply Chain Operations Reference model identifies process improvements to decrease costs and streamline material, work, and information flows from your supplier’s supplier to your customer’s customer.

Source: PRAGMATEK Consulting Group.
excessively, adding to their discomfort and causing disruption to daily nursing routines.

**Poor data integrity.** The flow of information uncovered paper records in duplicate and triplicate that were handwritten and difficult to read. Islands of disparate software required data to be retyped numerous times and resulted in an inefficient flow of information to other stakeholders—including accounts receivable, where invoice delays were lengthening the cash-to-cash cycle.

**Solutions**
The administrators decided to focus on the following recommendations to decrease costs and increase competitive advantage:

> Aggressively calculate each unit cost, look at the business as groups of work centers and work orders, and assign a value to each element that makes up those work orders—material, labor, and overhead. Focus on streamlining each process by removing waste (non-value-added movements and materials).

> Turn each process into a work order and accumulate work orders for each patient to gain a more accurate accounting of the costs incurred by each patient. Construct a detailed, defensible invoice for each patient.

> Apply leading practices from industry, such as Lean principles, to fix broken processes and remove waste. For instance, use the "Five Ss" (sort, set in order, shine, standardize, sustain) to focus on cleaning, labeling, and organizing work and storage areas. Use Lean and Six Sigma tools to foolproof processes and reduce inconsistencies. Minimize rework and time wasted searching for materials and information.

> Use Kanban (visual) signals to pull inventory, trigger transports of patients, and help schedule work centers and other processes.

> Implement bar-coded wristbands keyed to all work orders, drug dispensing, and services. (This was a longer-term goal to implement, but by matching bar codes on work orders and scanning the wristband, multiple benefits would be achieved: protection of privacy, allowance of access to data, opening of security locks, verification of patient identification before all procedures and tests were performed, improvement of efficiency, and mitigation of risks.)

> Eliminate manual paper processes with centralized patient records; secure data and patient confidentiality by authorized access and enforcement of Health Insurance Portability and Accountability Act requirements.

> Centralize planning functions to ensure that all requisitions come to a central point where demand can be aggregated for volume purchasing.

> Centralize inventory management by item and apply Kanban signals to "pull" inventory—especially drugs—from a central point to restock essential items at point of use. Gain better control over the amount of inventory maintained, provide better shelf life control and better security, and increase inventory turns.

> Sell excess capacity on key equipment to other hospitals and clinics by centralizing scheduling and managing access to those work centers.

**Early Results**
Phase 1 improvements saw a 2 percent reduction in overall drug inventory the first year, with anticipated 8 percent to 10 percent reduction in excess and obsolete inventory by year-end. Improved visibility and scheduling generated a 21 percent capacity increase in the open magnetic resonance imaging unit alone. The hospital was able to generate an 8 percent increase in demand from neighboring hospitals and clinics for that service in the first quarter of the following year.

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**MORE ABOUT SCOR**
The Supply Chain Operations Reference model is a management tool developed to describe the business activities associated with all phases of satisfying customers’ demands. By isolating supply chain management processes and comparing those elements with industry-specific best practices and benchmarking performance data, it provides users with a framework for understanding where improvements are necessary. SCOR integrates the techniques of business process reengineering, benchmarking, and process measurement to address management issues at the enterprise rather than at the functional level.

Not an operations strategy in itself, SCOR is a tool for ensuring that the operations strategy achieves its goals.
Process waste was identified in “procedure prep” for all lab and procedure departments. By applying the five Ss to these areas, prep time for key procedures was cut by as much as 40 percent, resulting in increased capacity, reduced costs, and reduced labor.

Another inflated cost identified included excessive labor to track and update medical records. Reduced labor initially achieved by centralizing a data server and securing its access has allowed a single point of entry at the source. A single point of update has improved visibility to timely data, reduced rework (errors) because source of data came from data owners (not interpreted handwriting), reduced paperwork, and improved the cash-to-cash cycle.

Phase 2 improvements (approximately two years out) would add integrated software, which is expected to take full advantage of new security measures such as wristbands, access locks, and centralized patient data. Costs will be offset in large part by benefits realized during phase 1 and beyond.

As a process improvement model, SCOR was found to be just as applicable to the healthcare field as it has been in manufacturing and distribution industries. Large and small hospitals alike can benefit from applying leading practices long used by other industries for gaining a competitive edge while improving financial performance.

About the author

Jane H. Malin is a client partner and senior management consultant, PRAGMATEK Consulting Group, Minneapolis (jane.malin@pragmatek.com).