Streamline Internal Processes To Combat External Threats

By Howie Fenton

Printers battling competitors banking on low price to win work—and those just trying to improve bottom-line profitability—would do well to focus on productivity initiatives that drive operational efficiency.

The growth of outsourcing, particularly offshore work that uses dramatically lower labor costs to cut prices, is an unfortunate, but not inevitable, aspect of our business. Over the years, we have seen many forward-thinking companies that have focused on new technologies, productivity initiatives, and cost-cutting strategies compete successfully against low-cost competition.

One of the things NAPL focuses on is the productivity and profitability of printing companies. Vice President and Chief Economist Andrew Paparozzi and Senior Economist Joseph Vincenzino of NAPL's Printing Economic Research Center (PERC) survey hundreds of companies each month and this author visits about 25 companies annually to work with them on developing and implementing strategies that will help them increase productivity and reduce costs.

Among the metrics PERC studies is profitability, where there is a significant disparity between industry profit leaders (recording profitability levels of 20% or higher) and the rest of the industry, where profitability averages under 5%.

Operational Focus

The British often say, "Mind the gap," to warn people to be careful not to fall into the space between the train platform and the car. In our industry, companies must pay attention to how much of their top-line income is moving through to their bottom line, and "mind the gap" between their levels of profitability and those of the industry leaders that have proven it is possible to achieve and surpass double-digit profits. The further a company slides into that gap, the more it will have to struggle to survive the onslaught of offshore and other outsourced competition.

> *"Profit leaders have ongoing initiatives to reduce waste and increase productivity."*

Focusing on financial benchmarks can help you see if bottom-line profitability is not keeping pace with top-line sales, but it is likely you will have to look at operational benchmarks to see how the sales gains are being lost as the work moves through your organization.

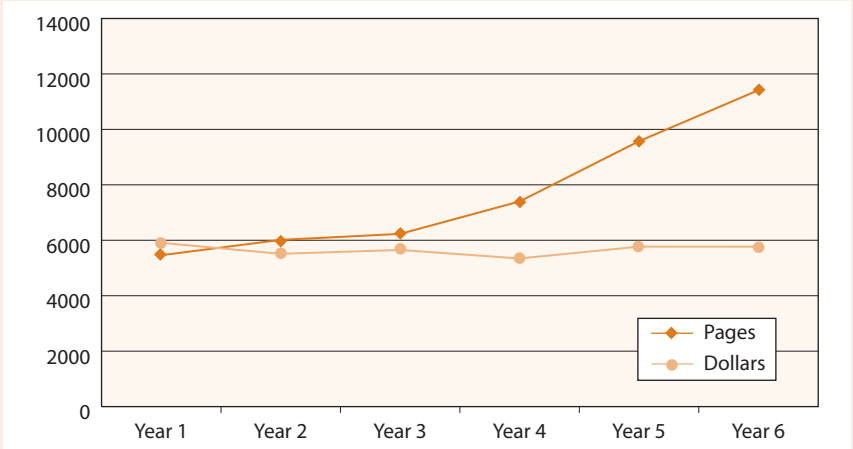
Financial metrics and operational benchmarks are actually most beneficial when used in combination. In other words, don't just focus on a financial benchmark such as $175,000 sales revenue per employee ($1.75 million billable revenue divided by 10 employees), but review it in combination with operational yardsticks such as less then 3% rework or 85% on time delivery.

In our study of operational measures, we uncovered some common operational denominators shared by leading companies. For example, we found that profit leaders know their costs to the penny, and have ongoing initiatives to reduce waste and increase productivity. Productivity management philosophies are constantly being refined and updated and companies have a wide range of program choices, such as Total Quality Management (TQM), Statistical Process Control (SPC), Just-in-Time Manufacturing (JIT), Kaizen, and others. Operational quality programs such as Six Sigma and Lean Manufacturing can increase productivity by 5%-10% year.

By combining financial benchmarks and operational benchmarks, we can

Pages (× 100) vs. Selling

Process improvements spurred by new technologies have enabled one company to improve its output significantly with little increase in costs. After the initial three-year set-up period, the new approach doubled the number of pages created over the subsequent three years.



often identify the opportunities for improvement in the companies we visit. For example, if waste is outpacing favorable operational standards, a quality program such as Lean Manufacturing or Six Sigma may be warranted. On the other hand, if we find piles of work sitting in front of one department (such as order entry, preflight, or prepress) then a focus on the Japanese Kanban system or the more popular Theory of Constraint may be a better approach.

Doubling Output

Productivity initiatives are generally process or systems-based, advocating new approaches to handling jobs, identifying and clearing bottlenecks, ironing out bumps in the workflow, and eliminating waste or downtime. Sometimes, however, productivity can also be improved by introducing new technology that can increase output rates or streamline the process. The chart on page 17 shows how one of our clients, a cataloger, increased the amount of pages it created each year from 6,000 pages to 12,000 pages with little additional cost.

This project took three years to become fully functional and doubled productivity over the next three years. The first three years were spent creating file name protocols, standard procedures for filing and retrieving, and installing and debugging software. It also included several beta testing sessions during which the final process was put into place and the staff trained. This increase in productivity was the result of two new technology initiatives—digital photography and digital asset management (DAM)—that worked together synergistically to achieve impressive results.

Digital asset management comprises two basic categories: media catalogs and asset repositories. Media catalogs help you store files and find them by utilizing thumbnails in an indexed database that can be searched quickly by keyword. The actual source files reside in off-line or near-line storage. Media catalogs offer several benefits: low cost, ease of installation and administration, and scalability.

The growth of digital asset management systems has been explosive in recent years: according to management consulting firm Frost & Sullivan (*www.frost.com*), for example, between 1997 and 2000, market revenue from these systems skyrocketed from $68 million to $839 million. When considering if DAM is right for a company, management must first analyze its needs. Is the objective to reduce up-front investment in materials production and storage by maintaining them in digital file format and allowing customers or employees to order and produce them as needed? Is the aim to increase customers' convenience by allowing them to access, search, combine, and retrieve files on their own via the Internet? Is the goal to reduce the need re-shoot photos by making master files available to multiple parties?

In this case, the objective was to compose pages faster. By using DAM, images could be captured faster, saving time of film processing and scanning, and graphic designers were able to create comprehensives more quickly.

The impact of digital asset management and digital photography was also evident in the impressive growth trend in the ratio of page counts to number of employees. At the outset, the company was producing about 600 pages per person; three years later, as the new technologies were in widespread use, that had grown by two-thirds to 1,000 pages per person (see chart on page 20).

Kanban Can Signal Success

Although often discussed as if they were synonymous, Kanban is a concept related to Lean or Just-In-Time (JIT) production, but it is not the same thing. Lean production is basically all about getting the right things to the right place at the right time in the right quantity while minimizing waste and being flexible and open to change.

Lean manufacturing is based on Japanese management philosophy focusing on reduction of the seven wastes (Over-production, Waiting time, Transportation, Processing, Inventory, Motion, and Scrap) in manufactured products. By eliminating waste, quality is improved, production time is reduced and cost is reduced. Lean "tools" include constant process analysis (kaizen), "pull" production (by means of kanban) and mistake-proofing. The key lean manufacturing principles include:

- Perfect first-time quality—The quest for zero defects, revealing and solving problems at the source.
- Waste minimization—Eliminating all activities that do not add value or that serve as safety nets, maximizing use of scarce resources (capital, people, space).
- Continuous improvement—Reducing costs, improving quality, increasing productivity, and sharing information.
- Pull processing—Products are pulled from the consumer end, not pushed from the production end.
- Flexibility—Producing different mixes, or a greater diversity of products, quickly without sacrificing efficiency at lower volumes of production.
- Relationships—Building and maintaining long-term relationships with suppliers through collaborative risk sharing, cost sharing, and information sharing arrangements.

Kanban is a signaling system that uses cards to signal the need for an item. For example, in the production of a widget, the operator has two shelves, one on either side of the workplace. The raw materials arrive on one shelf and the finished article leaves from the other. These shelves act as kanbans. The outgoing kanban signals the customer's need. When it is empty, the operator must produce one more widget.

Kanban is frequently known as a "pull" system because everything is pulled in response to past demand. Demand forecasts are not used in kanban systems. This is the opposite of the traditional "push" manufacturing philosophy, in which everything is made to forecasted future needs.

A lean manufacturing system is one that meets high throughput or service demands with very little inventory. Despite its significant success, kanban control is not a perfect mechanism to control a lean system, and Kanban control uses the levels of buffer inventories in the system to regulate production. When a buffer reaches its preset maximum level, the upstream machine is told to stop producing that part type.

Peaks and Valleys

Recently, we were contacted by a niche product manufacturer to determine if internal costs to make its products were competitive with others in the same field. The challenge this organization posed was that it had large peaks and valleys of demand, and consequently focused all its resources on maximizing productivity during the high-demand times by preparing or staging work during the periods of low demand.

At first glance, this appeared to be a rather straightforward undertaking that would basically entail conducting a budgeted hourly rate (BHR) analysis that could calculate fully burdened costs to the manufacturer. Then we learned that the company was unable to make available budgeted hourly rates and similar operational information.

As a result I requested that my NAPL colleague, Senior Financial Consultant Bruce Perlstein, work with me to create a financial model for the company. What we learned as we went through this process is the story of company dedicated to using innovation and cost cutting strategies to remain competitive.

Walking into the prepress production site we discovered that there were constant research and development efforts focused on automating every aspect of production. Unlike the vast majority of sites we visit, the company had a staff of computer programmers versed in several programming languages. This full-time team was tasked with looking at every part of the manufacturing process and trying to create a system that would either reduce or eliminate hands-on production tasks.

Over the years, they had designed systems that eradicated numerous tedious, time-consuming manual steps. For example, one task was to make periodic updates to the title of a product as it appears on the cover page. The company's technical staff had created a program that opened each file, cut the previous window box and automatically repositioned it in the new, updated position.

In the main production site, another R&D team was focused on increasing efficiencies with existing equipment or creating new equipment to speed production in the printing and finishing area. In the bindery lines, for example, we saw how they had added compressed air tubing that reduced static and jamming problems on the finishing line so they could run equipment at faster speeds and with fewer stoppages. They had also created their own die cutters and coil binding equipment for greater process efficiency.

One of the challenges the company faced was that of finishing very short runs. The approach they took was to install various large wooden wheels in the binding area that were based on the Japanese Kanban manufacturing philosophies (see sidebar on page 18).

Since the company had multiple plants, it also had to ensure that processes were uniform across all sites, so it created its own order entry system and centralized prepress system for file preparation and working with new finishing equipment.

After three months of analyzing financial and production information, we had identified their costs per product and compared that to requests for proposals from other printing companies. What is most interesting is that the combination of automation and inventions, plus the use of Japanese type manufacturing philosophies, resulted in lower internal costs that were between 21% and 400% less then the lowest bidders of different products.

> *"Financial and operational metrics are most beneficial used in combination."*

Using very different tools, both companies focused ongoing efforts on increasing productivity and driving costs down. As a result, they successfully thwarted attempts to reduce or outsource production. Companies who want to fend off external threats should follow their lead, take a close look at their internal systems, and implement the new technologies, productivity initiatives, and cost-cutting strategies that will improve their operating efficiency, competitiveness, and, ultimately, their bottom-line profitability.

(NAPL Members: Discuss workflow issues, new technology opportunities, or any other technical or production-related issue with your peers in the In Production *member forum at www.napl.org.)*

***Howie Fenton**, NAPL senior Digital Technologies consultant, provides an array of technology and workflow-related services, including new equipment audits, workflow maximization, productivity enhancements, and quality control initiatives. For more information, call (800) 642-6275, Ext. 1394, or email* hfenton@napl.org.

Pages vs. Dollars (× 1000)

The impact of digital asset management and digital photography resulted in an impressive growth trend. During the three years the program was being set up, output was relatively flat, at about 600 pages per person; in the three years the program has been fully functional, output has risen by two-thirds to 1,000 pages per person.