

Repositioning in Tough Economic Times

The North American pulp and paper industry needs to restructure, reorganize, refocus, and consider adopting a new business model to remain competitive during depressed economic conditions. — *By BALA PANCHAPAKESAN*

The paper industry is going through unprecedented changes similar to the steel industry a few decades ago. Return on equity, and overall performance of the paper industry has declined steadily during recent years. The industry's average after-tax return on capital employed (ROCE) was 4.4 % in 2001, down from 6.6% in 2000, and far below the generally accepted minimum return of 8% to 11%.¹

The environment in which the industry competes has changed during the past decade and the structure of the industry itself is changing to maintain global positioning. Mergers and acquisitions (mainly horizontal integrations) have been taking place to streamline core competencies, increase market share, maximize economies of scale, and improve operational efficiencies.

This article explores competitive advantages that could be gained by realigning strategies and structure of the business environment to produce a desired performance. Opportunities in operations, capacity management, supply chain management, and inventory management are discussed.

Legislation-Caused Imbalance

Competitiveness of the industry in recent years has been challenged by the significant investment needed to meet environmental legislation. Increased capital costs have resulted in higher unit production costs and higher capital employed for producing the same sales revenues. The cost increase has been as much as \$30 per ton for some grades in terms of fixed and operating costs, and this has derailed the industry in regard to global competitiveness.

Tighter environmental regulations have pushed some U.S. companies to build capacity overseas. This has

caused an imbalance in import and export revenues and an overall excess global capacity, which has negative implications on pricing.

The U.S. EPA's Cluster Rules that were promulgated in late-1997 have since forced closure of some operating units, lowering excess capacity. At the same time, recent mergers and acquisitions have acted to streamline production capacities and improve overall performance.

Today's North American markets are more influenced by the global trading environment and the transparent nature of business than in the past. This has affected the pricing balance between the domestic supply and demand and domestic and global competition.

Capital Spending

The North American pulp and paper industry continued to experience a 25-year trend of declining renewal of its assets, as measured by capital spending over depreciation. The high spending levels in the early 1970s were undoubtedly justified by the rapid expansion in demand, but in the 1980s and 1990s it led to over-capacity and declining profits.¹ Replenishment of capital in the industry as a whole has been steadily declining (see Figure 1).

The industry as a whole performs poorly in regard to innovation, technology, and human capital development. Lack of investment in innovation is to some extent



Figure 1. Net operating margins and capital spending in the pulp and paper industry²

responsible for the excess capacity, since older mills are still cost competitive and operating, and are not rendered obsolete, even though new facilities came online.

Competitive Forces

Table 1 below presents a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis of the mature North American pulp and paper industry.

There are a large number of small players in each of the North American industry's product segments. The industry has high entry/exit costs. Price volatility exists in all segments due to the variations in product demand, excess capacities, and global competition. Profitability is affected by variations in energy costs, legislation, and demand.

<p>STRENGTHS</p> <ul style="list-style-type: none"> • Mature Industry • Broad Spectrum of Products • Market Specific • Perfect Competition • Ability to Generate Electrical Power • High Exit/Entry Costs <p>OPPORTUNITIES</p> <ul style="list-style-type: none"> • Global Expansion • Consolidation of Core Competencies • Mergers & Acquisitions • Lower Production Costs • Better Price Controls 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> • Price Volatility (Raw Material, Product) • Saturated Market • Global Competition • High Energy Use • Age of Equipment/ Technology • Too Many Players <p>THREATS</p> <ul style="list-style-type: none"> • Bigger Getting Bigger • Government Regulations • Energy Costs • Global Players: Ability to Change Pricing • Electronic Information Transfer/Substitution
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Table 1. SWOT analysis of the North American pulp and paper industry

The progressive shift in communications toward electronic media and the continuing competition from plastics have weakened demand. The substitution effects are apparent in some grades such as newsprint, and to a lesser degrees in writing and printing grades. Packaging grades are affected by competition from plastics related material. The boxboard grades have benefited somewhat by Internet orders and shipping.

Current major threats to the North American paper industry include global competition, electronic media, and energy costs. The industry is going through significant mergers and acquisitions to gain size advantage and also to improve the portfolio of products, and to gain efficiency in production and distribution channels. Still

the industry as a whole should focus on metrics and systems to reposition for the future, with the current business environment in perspective.

Improve Asset Productivity

To remain competitive during these difficult times, the industry should evaluate several different strategies to maximize productivity and lower costs. One metric that can be used is asset productivity.

Asset productivity is a measure of revenue or production generated per unit utilization of physical assets. It has differed between facilities based on age, technology, capital investment over the years, operating efficiency, and uptime. Asset productivity can be measured in several different ways, such as return on net assets (RONA) and productivity as measured by revenue and net profit generated in each product line. These metrics in turn will help to highlight inefficiencies in production lines, grade mix, procurement, inventory, supply chain, and distribution.

Some general considerations for improving asset productivity include:

- Optimize product lines/improve flexibility in production (to allow production of different grades)
- Spin off grades or products that do not fit the core business
- Balance output (higher value-added specialties)
- Pursue growth through economies of scale and scope
- Develop markets that best fit the core competencies.

Companies need to evaluate activities that are not well managed, and should look into outsourcing those activities. Good examples of activities to be considered for outsourcing are timberland management, power production and distribution, waste removal from the plant, etc.

Improve Labor Productivity

Labor productivity is defined as tons of product produced per person employed. Productivity is an indication of competitiveness and also a reflection of automation and capital investment over the years. With significant changes in global positioning, labor productivity can be an effective instrument to compare against the different facilities.

The most modern facilities tend to show higher productivity compared with facilities that are older and where labor is utilized ineffectively. An optimum mix between labor and physical assets should be established for each facility to improve performance.

Optimize the Supply Chain

Supply chain refers to activities that take place in transporting the product from manufacturing to the customer. Activities such as order receiving, allocation of orders, production planning, and delivery of products constitute the supply chain.

Logistics of operation have a significant effect on cost, inventory, and efficiency. The longer the distance between the demand and the source of supply, the more intermediate channels are added. This generally results in more variability in capacity management, more inventories, higher costs, and more risk.

Inventory turnover and weeks of supply are generally used as measures of supply chain efficiency. Inventory costs (holding costs, setup costs, ordering costs, and shortage costs) contribute 10% to 30% of the overall unit production cost. By optimizing inventory and supply chain management systems, the industry will boost its potential to reduce costs.

The industry can also use just-in-time (JIT) activities to lower inventory costs. JIT is an integrated set of activities designed to achieve high volume production using minimal inventories of raw materials, work-in-process, and finished goods. JIT requires a plant layout to be designed to ensure balanced workflow with a minimum of work-in-process inventory.

Some major factors contributing to inefficiencies in the supply chain include:

- Products stored and managed through several supply chains (results in higher costs). This is due to inefficiencies in having product movement through several channels.
- Regional and plant based distribution centers (result in a highly capital-intensive supply chain).
- Different business units using different warehouse management and logistics systems (results in higher costs).
- When operating with individual order receiving and processing methods, corporations maintain a significant excess capacity and high unit production costs.
- Multi-domestic structures (result in overall poor asset management and poor capacity utilization).

The bigger the size of a corporation the less apparent these inefficiencies, unless the system has metrics to monitor and correct them.

Efficiently Manage Production Planning

Demand fluctuations due to domestic and international competition and price variations due to market factors causes variations in production. If a corporation can predict the future demand by establishing future contracts or by an efficient forecasting system, this can help to stabilize the production schedule. Gathering and analyzing customer information, forecasting based on projected demand, and managing the customer relationship by focusing on the most valuable accounts, most growable accounts, and lifetime value can improve performance.

To effectively manage the production schedule, the industry needs to take advantage of tools to minimize interaction costs and also more accurately control the manufacturing business performance. Figure 2 below shows an example of a centralized model, using information technology tools, for a corporation with multiple manufacturing facilities.

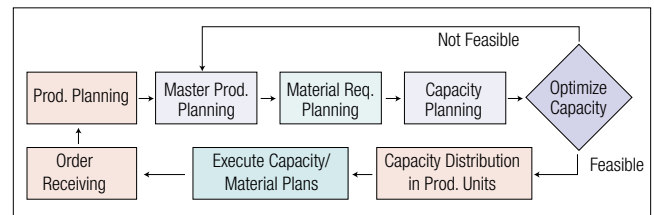


Figure 2. Order receiving, processing logistics to optimize capacity.³

In a corporate structure where individual operations have order management responsibility, when there is an excess capacity in a production unit, the result is less-than-optimum overall capacity utilization. In the centralized order management system shown in Figure 2, the logistics manager controls the order processing and distribution based on relative capacity utilization, geographical locations, production costs between units, and material procurement and planning issues. This helps avoid capacity buffers between facilities and also, over time, results in lower inventories due to better order management.

Companies that use diverse sourcing and a range of production and distribution decisions need to weigh the costs associated with materials, transportation, production, warehousing, and distribution to develop a comprehensive network designed to minimize costs. Table 2 shows the intent of the activities in accumulating inventories and some of the undesired results.

INTENT	ACTUAL RESULT
1. To enable independence of operations	Hides process troubles
2. To support variations in product demand	No accountability, add costs
3. To allow flexibility in scheduling	Adds cost, not a value to the consumer
4. To safeguard variations in delivery time	Adds inventory costs
5. To maximize individual equipment utilization	Adds cost, not a value to the consumer

Table 2: Reasons for adding RM, WIP inventories and the actual end results.

Use IT to Reduce Operating Costs

Using information systems for production processes and decision-making is somewhat under-practiced in the North American paper industry. Technology tools help to achieve vertical integration and have the ability to enable coordination across company boundaries to achieve new levels of efficiency and productivity. Corporations should evaluate unit processes to substitute information for inventory, and ship material only when they have real demand from real customers.

To minimize wastage of material and resources, the industry should evaluate effective on-line controls to narrow the response gap between a defective product and corrective measures. Some of the opportunities that exist in in-plant process real time monitoring and control are:

- On-Line measurements and controls to optimize processes
- Moisture, basis weight variation
- Fiber analysis to predict properties
- Predicted properties controlling processes and raw materials
- On-line cost models for processes
- On-line simulation models with neural networks.

Use Benchmarking as Performance Metrics

Internal and external benchmarking of operation costs is an effective tool to identify inefficiencies in a supply chain and to identify opportunities for improvement.

Generally, differences in the cost of goods sold are reflective of the differences in material, energy, labor, inventory, capacity utilization, and other transactional cost characteristics of a facility's performance. Benchmarking efforts help to match the performance with product quality and customer performance requirements more efficiently.

Manage Risks and Cash Flows

From time to time corporations should evaluate the short-term and long-term risks of price volatility, capacity build-up, capital investment, competition from overseas, volatility in certain specific segments, and the overall business risk as compared with best performing industries. The risk assessment can be compared against different product segments to enable decision making for asset restructuring and elimination of products with low margins and high business risks based on projected cash flows.

A good example is the balance of power production within a facility. The capital cost and operating cost of a power plant upgrade is to be evaluated against purchasing electric power from a third party source. The unknowns are the variations in power costs and the risks associated with that volatility.

Conclusions

This article addresses the reorganization and refocusing required to sustain competitiveness during depressed economic conditions. Using the tools discussed, the asset structure needs to be optimized to focus on core competencies, and non-value adding activities need to be discontinued in the business processes and production functions.

Corporations need to optimize capacity management, production and distribution, and supply chain management, to sustain their competitiveness. Overall, the North American pulp and paper industry should consider adopting a new business model with the changes discussed above to stay competitive. Cost reductions can be achieved by across-the-board reengineering of business processes, operation logistics, and production processes. ■

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