

# Budgeting—can we learn anything from chemical manufacturers?



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The chemical manufacturers have a unique way of budgeting. They follow the oxidation/reduction equations of their basic feedstocks and the chemicals they form. Can we do the same in the pulp and paper industry?

This annual article has become a repository for new ideas in budgeting. Do not look for GAAP (Generally Accepted Accounting Practices) here. Your accountants can take our ideas and mold them and form them to their requirements. Here we talk about how we think about budgeting.

So, if we begin to think about our budgeting as is done in the chemical industry, we will logically come to the idea of looking at departments on an individual basis (See the illustration accompanying this article). If we start with a wide view and scan the entire illustration, we will quickly see that there are only a few inputs and outputs outside the mill fence. These are as follows:

## Expense:

Administrative

Financial

Suppliers

Services

Personnel

## Income:

Primary Customers

Byproducts Customers

Using these broad categories, we can think of many subsets of each. For instance, in administrative, we have off site corporate overhead, sales, regulatory costs and so forth. Financial includes interest expense, dividends, taxes and similar payments. Suppliers provide us logs, chips, recycled fiber, chemicals, coatings, electricity, fuels and more. Services include maintenance contractors, engineering consultants and similar providers. Personnel are the mill's employees. Income comes from really only two sources: primary

customers, who buy the mill's primary products, and byproducts customers who buy secondary products such as tall oil, mill seconds and so forth. Using this logic, one can see that all providers and all customers can be categorized within these seven major categories.

Moving a bit closer to the mill for which we are budgeting, we can see from the illustration that I have identified ten departments. Your mill may have more or less; I have attempted to be inclusive of all that may be required. These are:

#### Mainstream Departments

Woodyard

Recycled Fibre

Pulping

Pulp Storage

Papermaking

Finishing

Storage & Shipping

#### Ancillary Departments

Power & Utilities

Environmental

Coating

Within each department there are costs and income. You may recognize this as a typical profit center approach to budgeting, but you will perhaps find a few interesting wrinkles as we proceed.

In each department, there are costs and income. Some of the costs may be from external sources, some from internal sources, as shown on the illustration. Likewise with income—some may come from external sources and some from internal sources. The illustration distinguishes each.

At the bottom of each department's block in the illustration, there is a calculation of Margin for that department. One can call it operating margin, profit margin, it makes no difference as long as it is calculated the same way for each department. The formula is as follows:

$$\text{Margin} = (\text{Income} - \text{Costs}) / \text{Income}$$

and is denominated in percent.

In such a system, a department works against its margin target—exceed target and there are cheers all around, fail to meet target and an examination of conditions is warranted (and that does not have to be a “witch hunt,” sometimes the target was just poorly chosen).

The key is the costs and income and a manager’s ability to negotiate those and control them. Some are controlled collaboratively. For instance, Personnel costs on a unit of time basis, probably reverts to salaried and hourly policies and procedures. However, the number of personnel employed and the use of overtime is mostly within control of the department manager (or should be if one expects to hold them accountable). Outside purchases, in both quantity and price, are definitely the responsibility of the department manager.

Department managers have little or no control over several other categories. These include Financial Costs and Administrative Costs. The only way they can affect these is having input into Capital Leases versus Capital Purchases (not normally an area of their responsibility) and Depreciation. Before we dismiss Depreciation, however, let me suggest that the careful manager can extend the economic useful life of some assets and thus lower their overall Depreciation Costs without affecting their productivity.

We have the special case of internal cross charges, a subject of much discussion, negotiation and angst in many mills. These are the most interesting costs, for many a sin is hidden in internal cross charges. The best way to handle these is to have a standard index of key cost components transferred through internal cross charges and pegged to external, published prices.

This starts in the Woodyard. On the cost side, the Woodyard buys power, primarily electricity, from the Power & Utilities Department. Allow the Woodyard to set the price for electricity at the same price they can buy it on the outside. The reader now thinks the author silly, but hear me out. A way can be found to do this. Granted, the first time it is done, there will be much weeping, wailing and gnashing of teeth, but it must be done. The principle is this: the Woodyard should not be required to pay any more for electricity from the Power & Utilities Department than they would have to pay on the outside. Now, I am not picking on the Power & Utilities Department, they just happen to be a handy example at this point. By the way, Woodyard, do not get too smug, for the tables are about to be turned.

The Woodyard Department produces bark and other wastes through its chip preparation operations. It sells these to the Power & Utilities Department at the lowest cost price the Power & Utilities Department can procure them from external sources, no higher. Again, no subsidies—the Woodyard receives the going market rate. The Woodyard also sells

chips to the Pulp Mill and, you guessed correctly, at the best rate the Pulp Mill can procure them from outside resources.

Now we can calculate the margin of the Woodyard, and we have no funny numbers. The Woodyard has made its outside purchases at the best possible prices and is making its internal sales at going market rates. Its margin can now be calculated and it contains no funny numbers or fantasy.

The next question, of course, is what is the target rate set for the Woodyard against which we are going to compare its actual margin? This is the deliverable from our Corporate Administrative people. It is really quite simple—the CEO has promised a certain rate of return for the overall corporation. From this rate of return promise, our brilliant corporate staff can determine a required overall margin for the whole company. That becomes the target for every department in every facility in the company. *All target rates are the same.*

Thus, if we have done a good job of negotiating internal transfer prices and cross charges, mill wide and company wide transparency is instantaneous. All you have to know is the actual margin being produced by a department and you can immediately tell if it is a contributor or detractor from the corporate margin goal. You need know nothing else.

Now, I have slipped some odd charges in a couple of places. Pulp Storage is a department that most will not recognize. This department has been created to make sure that we do not have excess capital tied up in in-process pulp. Its income is rental fees from the Pulp Mill and rental fees from Papermaking. The simplest way to do this is split the fees equally, charging one half of them to the Pulp Mill and one half to Papermaking. The point being, nothing is free, and the cost of storage needs to be borne by those using it.

Likewise, in the Storage & Shipping Department, all storage costs are charged back to Papermaking. These costs have two components, unit price and quantity. Papermaking has every right to go out and find a less expensive unit price and tell shipping that is all they will pay. But Papermaking's other way to reduce this cost is to find ways to produce to order and keep inventories low.

There are several keys to a system as radical as I am proposing here.

1. Honesty and reality must be carefully included components when setting the transfer prices. Since nearly every department is buying something from every other department, this will hopefully be a self balancing act. It is important, however, that each department manager be given the freedom to seek prices for everything they buy, internally and externally and be required to only pay those prices.
2. Department Managers must be given complete authority to manage their departments. They will no doubt live and die (career-wise) by the margin

results they turn produce, so they must be allowed considerable freedom within their department to make their numbers.

3. Mill Managers must be willing to give Department Managers the freedom and authority to do their job. They need to be coach, mentor and moderator. Sometimes, regrettably, they will also need to be executioner if they have an occasional department manager that can not make the grade.
4. Corporate functions, such as purchasing, can expect new demands. If, for instance, corporate purchasing negotiates a corporate wide contract for a certain input, but a local department manager finds a better price, the local department manager should not be penalized and forced to buy that good or service at the corporate negotiated price.

As you can see, this system drive decision making far down into the corporation, but in exchange for that, the corporation gets total transparency of what is going on by looking at just one number for each department in each mill or facility in the entire company. Higher level management becomes simpler because lower level managers are actually allowed to be held accountable for their jobs, all by looking at one little number—the actual margin in each department.

Now, I have slipped another benefit in their that the more astute readers have already caught—following this system, benchmarking is passé, for all departments are automatically benchmarked against the corporate margin target.

What we have done here is driven the corporate margin target to the department level. We can instantly know which departments can meet the margin target and which cannot. We can learn from both. Suddenly, our entire business is as clear as day and we can spend our resources correcting the spot deficiencies, rather than on the latest procurement fad, management fad or protecting sacred cows.

An easily and clearly managed business is the result of distilling the business into simple numbers backed up with responsible people being held accountable for myriad details at their level, not at some higher level. Have a pleasant budgeting season!

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*Note on following chart: Expanding it to 400% on the Adobe Acrobat Reader makes each detail fully legible.*

External Outflows

Administrative
Financial
Suppliers
Services
Personnel

Woodyard	
Costs	Scale Operation Longwood Shortwood Power Motive Fuel Effluent & Waste Disposal Maintenance & Repair Personnel Salaried Hourly
Income	Hardwood Chips to Pulp Mill Pine Chips to Pulp Mill Bark to Power & Utilities
Margin	Actual ((Income-Costs)/Income) Target

Recycled Fibre	
Costs	Scale Operation Fiber A Fiber B Power Motive Fuel Effluent & Waste Disposal Maintenance & Repair Personnel Salaried Hourly
Income	Fiber A to Papermaking Fiber B to Papermaking Dry Waste to Power & Utilities
Margin	Actual ((Income-Costs)/Income) Target

Pulping	
Costs	Hardwood Chips to Pulp Mill Pine Chips to Pulp Mill White Liquor Power Motive Fuel Effluent & Waste Disposal Maintenance & Repair Personnel Salaried Hourly
Income	Hardwood Pulp to Papermaking Pine Pulp to Papermaking Black Liquor to Power & Utilities
Margin	Actual ((Income-Costs)/Income) Target

Pulp Storage	
Costs	Power Motive Fuel Environmental Maintenance & Repair Personnel Salaried Hourly
Income	Rental Fees From Pulp Mill Rental Fees From Papermaking
Margin	Actual ((Income-Costs)/Income) Target

Papermaking	
Costs	Chemicals & Coating Hardwood Pulp Pine Pulp Recycled Fibre A...n Power Motive Fuel Effluent & Waste Disposal Maintenance & Repair Personnel Salaried Hourly
Income	Prime Paper Sales Subprime Paper Sales Broke Sales
Margin	Actual ((Income-Costs)/Income) Target

Finishing	
Costs	Wrapping materials Power Motive Fuel Effluent & Waste Disposal Maintenance & Repair Personnel Salaried Hourly
Income	Wrapping fees from Storage & Shipping
Margin	Actual ((Income-Costs)/Income) Target

Storage & Shipping	
Costs	Wrapping Fees Power Motive Fuel Effluent & Waste Disposal Maintenance & Repair Personnel Salaried Hourly
Income	Rental Fees from Papermaking
Margin	Actual ((Income-Costs)/Income) Target

Power & Utilities	
Costs	Fuel A Fuel B Bark Black Liquor Power Motive Fuel Effluent & Waste Disposal Maintenance & Repair Personnel Salaried Hourly
Income	Steam to Department A...n Electricity to Department A...n Air to Department A...n Tail Oil
Margin	Actual ((Income-Costs)/Income) Target

Environmental	
Costs	Permits Permit administration Tipping Fees Power Motive Fuel Maintenance & Repair Personnel Salaried Hourly
Income	Liquid Effluent from Department A...n Solid Waste from Department A...n Byproduct sales
Margin	Actual ((Income-Costs)/Income) Target

Coating	
Costs	Coating makeup components Power Motive Fuel Effluent & Waste Disposal Maintenance & Repair Personnel Salaried Hourly
Income	Coatings to Papermaking
Margin	Actual ((Income-Costs)/Income) Target

External Inflows

Primary Customers
Byproducts Customers