White Paper

Intelligent Benchmarking: New Techniques that Change How We Measure Performance

Learn how three firms are dramatically improving their benchmarking efforts with Time Driven Activity-based Costing. With more accurate, detailed, and timely information, they are able to gain the buy-in from not only management, but more importantly from operating personnel, to quickly affect needed change.

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Humans are competitors by nature. Blame it on our survival instinct. We continually seek ways to track performance against our rivals. To measure our success in our work lives, we form departments within our companies, implement systems, and complete projects to institutionalize our performance analysis. The results are the Key Performance Indicators, Benchmarks, and Balanced Scorecards that help us govern. Benchmarking is a perennial hot topic, and will be the focus of our discussion here.

The Problem

One thing these traditional metrics have in common is their simplicity. In the past, they needed to be easy to calculate and easy to understand. Why? Because business is anything but simple…

- Accessing detailed information is difficult. Benchmarking studies require us to aggregate data inputs from a dozen different systems (e.g., ERP, CRM, WMS, Financial).

- Performing the calculations and distributing the information to hundreds of different departments with varied needs is challenging. Each surveyed department or company could have their unique method for calculating the "same" metric. For example, when calculating cost per drop, I&K distribution includes the cost of the dispatchers and route specialists. However, a competitor may only include the cost of the drivers.

- Comparisons need to be made to equivalent facilities, departments, and processes. We are not comparing companies, we are comparing their facilities and departments in similar regions, sizes, and types of business. For example, we want to compare ADW's automotive distributor's Akron's warehouse to the performance of other automotive distribution warehouses in the Midwest.

As a result of these challenges, benchmarks are based on transactional aggregates. For example, companies would base their metrics on the number of quotes, the number of orders, or the number of set-ups. These numbers are easy to track, and it is easy to spot trends. They can be used for external and internal purposes. We call these high level metrics Phase I Benchmarks.

Examples of Phase I Benchmarks include

- Sales growth
- Revenue, Gross Profit, or Operating Profit per employee
- Cost per drop
- Cost per install
- Number of calls per rep

- Average order size
- Breakeven Order or Delivery size
- Gross Margin/Operating Margin

The difficulty with these Phase I Benchmarks is that they often fail to diagnose the true problem. It is fairly easy to determine whether the numerator (e.g. cost) or the denominator (e.g., output quantity) is out of line. ***But knowing why the denominator is so low or the cost so high is more meaningful.***

The Solution

With the new Time Driven Activity Based Costing (TDABC)[1], we can develop a more effective model for benchmarks. This new methodology enables practitioners to model actual processes and determine where time is being spent. For example, for the order entry process, a time equation would estimate how much time it takes for customer service to log on to the system, enter items being ordered, place rush status, validate credit, and schedule delivery. If companies track actual times, those numbers can be used as well. The Time Driven model is usually applied to all major processes across the enterprise.

Because this new approach can more accurately model the variability in processes, it can identify which elements are the true performance drivers. In the example above, we may learn that the step to rush an order consumes a significant amount of time / cost. Time Driven ABC "operationalizes" benchmarks so that users can compare performance and also drill down to discover real opportunity for improvement. For more information on the Time Driven ABC approach, we recommend reading the Harvard Business Review article cited below.

At this point, Time Driven Benchmarking is a new concept (since 1997) The use of this technique is not widespread (<2,000 firms use it). In this paper, we will only share a few illustrative examples. We believe, however, that this technique holds great promise. In this white paper we will track how three companies in different industries are using Time Driven Benchmarking.

Background

As businesses grow, so does their complexity. That complexity comes in the form of new facilities, new production lines, new markets, new vendors, and new customers. Measuring business performance can no longer be done by looking only at overall sales growth or profitability.

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[1] Kaplan, Robert S. and Anderson, Steven R. Time Driven Activity Based Costing. Harvard Business Review. November, 2004. The authors are planning to have a book under the same name published in 2006 by Harvard Business School Press.

A Time Driven ABC model can dissect performance and identify which specific customers, SKUs, vendors, and sales representatives are profitable. Some may argue that this is overkill. We disagree. We do acknowledge that **comparing simple metrics like cost per employee, or revenue per sales rep can sometimes highlight opportunity areas. It can also drive change. But the difficulty is that the change often doesn't last, because the metrics don't identify the true cause of the problem.**

Most consultants have heard of the "Hawthorne Effect". To put it simply, if you measure something, it will improve. One way to take advantage of this very real phenomenon is to create a scorecard of key performance metrics. Targets are established for each metric, and actuals are tracked by week or month.

This is exactly what McKinsey did for Georgia Pacific (GP) in the mid 1990's. One of GP's largest papers mills was behind other mills in profitability, and the joint GP/McKinsey team hypothesized that the operational performance of key processes was the culprit. A 12' x 20' Operational Performance Banner was erected outside the main plant to communicate the plant's performance in a number of key processes (see Exhibit 1). Similar banners were used at other mills, and performance was benchmarked across facilities. As you can see, the benchmarking effort was a success. Dramatic improvements were achieved in the areas being tracked.

Exhibit 1: Internal Benchmarks at Georgia Pacific(GP)[2]

Measure	Base Line (%)	Goal (%)	Pilot Act. (%)	4 WK Act. (%)
Overall Mtce Uptime	90.9	91.9	91.5	91.7
Scheduled Mtce Downtime	0.8	N/A	0.8	N/A
Scheduled Prodn Downtime	0.5	N/A	0.83	N/A
Unscheduled Mtce Downtime	1.20	0.6	1.13	0.45
Sheet Process Breaks	6.5	N/A	5.48	4.77
PM Break-In	32.0	10	5.97	2.09
% of Work Planned	37.0	90.0	92.71	97.93
Eqpt Strategies	0	40	52	N/A
Root Cause Identification	?	N/A	N/A	N/A

These numbers may look impressive, but there was a problem. GP still had no clear understanding of what was driving the inefficiencies. For the most part, the metrics were outcomes, or the "effects." All of them had lower level drivers ("causes") that affected them. For example, there are many variables that drive maintenance downtime: equipment run-time, cleaning cycles, equipment age, # of set-ups, and batch volume. The GP team would have benefited from understanding which of these contribute more to maintenance / repair time.

[2] Source: Georgia Pacific

Once the banner was removed, the performance dropped to original levels. The scorecard did little to identify the source of the problem. GP did have a process in place for root cause identification, but it was manual and time consuming. It required scheduling formal "KT sessions" with a cross-functional team of six to seven operating personnel. It is no surprise that very few sessions got off the ground, even with McKinsey consultants on site. With no real fixes on the process side, the organization naturally returned to its former steady state.

Time Driven Benchmarks in Distribution: TW Metals

Time Driven ABC can isolate the drivers of inefficiency. Let's look at the example of steel service center and distributor TW Metals. In 2002, facing depressed steel prices and a bloated organizational structure from a previous merger, management realized that its current business volume could not support 44 semi-autonomous facilities. They planned to consolidate to 30 high performing facilities.

However, there were highly profitable customers at each facility, and Management feared their business would be jeopardized. Edward Waas, Ohio Area General Manager, argued that it might be more effective to consolidate processes. Ed comments, "Let's preserve our most efficient and profitable processes, and merge the least profitable ones into them." For example, if the Ohio region Time Driven ABC Model shows that the Cleveland Inside Sales process is most efficient for entering an order (see Exhibit 2), but it is also determined that the Cleveland plant is going to be closed, then TW management might consider:

1) relocating Cleveland Inside Sales to a nearby, functioning facility (e.g. Toledo)
2) maintaining a call center in Cleveland
3) studying what is unique to Cleveland in their inside sales activity.

Exhibit 2: Time Driven ABC Cost Benchmarks for Order Entry at the Ohio Area plants

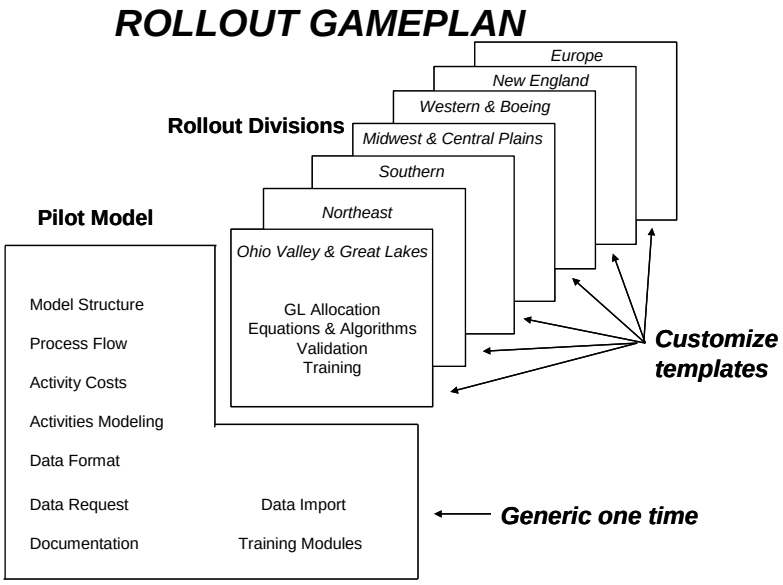
	TW Metals Bloomington	*TW Metals Cincinnati*	*TW Metals Cleveland*	*TW Metals Indianapolis*	*TW Metals Pittsburgh*	*TW Metals Toledo*
Cost Benchmark						
Cost per order taken	24.92	26.11	**19.25**	37.22	48.34	25.12

To complete the consolidation program, management needed to benchmark the true process performance at all 44 branches. The executives had learned through their industry association (North American Steel Association) of the success that over a dozen of their peers had by implementing a new approach to activity-based costing. However, most of these companies were smaller than TW. Management was concerned that the

effort could take years to implement, and time was not a luxury for TW. They needed the results by the end of the summer, which was only five months away!

To their relief, management learned that this new Time Driven approach was extremely scalable and facilitated fast roll-outs by leveraging model templates. To ensure success, the TW ABC Team engaged Time Driven Model experts to forge a fast-track rollout (see Exhibit 3).

Exhibit 3: TW Metals Fast Track ABC Model Roll-Out



Following were the major steps taken to implement the project.

1. **Build the facility template** that incorporated all of the core processes.

2. **Roll out the template across the remaining facilities** (see Exhibits 3 and 4) by customizing resource drivers and process time equations for each specific facility. Since many of the processes were homogenous across facilities (order entry is order entry), local branch management was asked to assist in this step. This increased accuracy and operational buy-in.

3. **Create one enterprise-wide model** by combining all facility models.

4. **Write ETL scripts to automatically load actual transaction data on a monthly basis** (company GL, customer master, order header, order detail, product master). As a result, every month (at three am the day after close of the books), the model would run on its own, generating extensive profitability reports (e.g., customer P&Ls, product P&Ls,). These reports were distributed across the organization before their recipients arrived at work.

The project was a total success, and it was completed on schedule (see Exhibit 4).

Exhibit 4: Actual Roll-Out Schedule

					Model Building		Value Capture	
Areas	**Sales & Proc.**	**Proc. Only**	**Sales Only**	**Rollout Site**	**Session Dates**	**Completion Date**	**Session Date**	**Completion Date**
Ohio Valley	3	1		Cincinnati, OH	Complete	Complete	27-Jun	16-Jul
Great Lakes	3		2	Cincinnati, OH	Complete	Complete		
Atlantic	2	1	2	Cranbury, NJ	22,23-May	8-Jun	2-Jul	27-Jul
Southern	5		1	Atlanta, GA	5,6-Jun	22-Jun	17-Jul	27-Jul
Midwest	2		1	Chicago, IL	28,29-Jun	13-Jul	9-Aug	10-Aug
Western Boeing	4		1	Los Angeles, CA	10,11-Jul	27-Jul	25-Sep	25-Sep
New England	2		1	Cranbury, NJ	18,19-Jul	10-Aug	21-Aug	14-Sep
Central Plains	3			Wichita, KS	31Jul, Aug1	17-Aug	27-Sep	28-Sep
Corporate modeling				Exton, PA	3 to 17 - Aug	1-Sep	21-Sep	1-Oct
TW US integration				Acorn Office	3 to 30 - Aug	1-Sep		
Europe	3			Southampton, UK	10,11 - Sep	11-Sep	12-Sep	12-Sep
Global Integration				Exton, PA	1-Oct	1-Oct	21-Sep	1-Oct
Total	27	2	8	7 Sites				

The results were revealing. Over half the branches were unprofitable. However, each branch had big winners in terms of customers, services, and processes. Cutting out the branch entirely could jeopardize these prized accounts and/or capabilities. For that reason, it was decided to consolidate across regions. For example, in the western region, there were two facilities in LA, two facilities in Seattle, one facility in Phoenix, and one facility in San Francisco. To determine how to best optimize the regional operations, the team would isolate inefficiency at profitable facilities. Phoenix was profitable, but its nearby non-Boeing LA facility (which was 4x the size) was very unprofitable. Facility performance was compared at the departmental and process level and compared to its regional peers (including non TW facilities).

Using the Time Driven model for benchmarking yielded great insight. To illustrate: when the team compared the order entry process between the two facilities, there was a great difference. The fully loaded cost per order was $80 for Phoenix versus $45 for the LA facility. This was counterintuitive because the overall cost structure was higher for LA. But when the team looked into the model for the cost at full capacity, they noticed that the cost again was high for Phoenix ($0.92/minute vs. $0.58/minute for LA). These numbers were still low to the regional average of $1.11 / minute. The model revealed that

the LA Inside Sales Department was much more efficient than Phoenix. Phoenix was a relatively young facility that had been over-staffed to anticipate future growth.

The team also inspected the respective time equations for order processing for the two departments. They found some differences (see Exhibit 5). They did learn that many of their regional peers had average order costs as low as $21. This concerned management.

Exhibit 5: Process Differences between Plants

	Cost Per Order	
LA Order Entry	$45.45	Transforming a quote into an order takes a minimum of 5 minutes. If it is a buyout or a direct order, it takes an additional 5 minutes. MP orders do not take more time. Credit memos take 5 minutes. If it is an SPO (Service Provider Purchase Order), it adds 12.5 minutes. Freight forwarded items (which are boxed) takes 30 minutes
Phoenix Order Entry	$79.64	Transforming a quote into an order takes 5 minutes at a minimum. If it is a buyout, a direct order, or an MP, it takes an additional 5 minutes. Credit memos take 15 minutes.

Returns / credit memos took only five minutes in LA versus 15 minutes in Phoenix. There were additional efficiencies in LA that resulted in the average time to process an order to be much less than Phoenix. If the LA business is shifted to Phoenix, the inside sales process should also be shifted.

TW leveraged the TDABC Benchmarking data with corporate-wide process improvements and facility consolidation. The steps they took can be summarized as follows:

1) compare facility profitability
2) identify high cost, inefficient processes
3) benchmark theses processes to other locations
    a. compare cost per minute
    b. compare time equations
4) identify how to leverage. Examples:
    a. roll-out best practice processes to other facilities
    b. merge poor performing departments with high performers
    c. fix poor performers

The Time Driven ABC model expedited more than the roll-out. It fast tracked benchmarking and provided a deeper understanding of where rationalization could occur. According to TW's CIO, Aldo Miscelli, "It was equivalent to using a scalpel on our business. We could cut out the fat without hacking the muscle that supported our best customers."

Time-Driven Benchmarks in Banking: Alberta Treasury Bank

Alberta Treasury Bank[3] had similar issues with the performance of their 160 branches. **As the bank continued to expand its product and service offering, management became concerned with capacity utilization at each branch. How could they effectively deliver services if the branches were overstaffed (squeezing profits) or understaffed (decreasing quality)?**

Management also suspected that some branches were more efficient. They wanted to "understand and manage the drivers of costs by process." Standardizing best practices would be important. **With Time Driven ABC, the bank analyzed branch efficiency across their network** (see Exhibit 6). Branch efficiency is correlated with its capacity utilization. This is calculated directly from the time equations for core processes. Incidentally, the benchmarks showed that neither branch type nor branch size were factors in branch efficiency.

With this information on branch efficiency, the team could do two things.

- **They could use it for staffing decisions.** Branches with excess capacity could shift personnel to new initiatives within the branch, or to other branches.

- **The team could focus on the differences between high and low performing branches**. For example, taking deposits is a high cost-maintenance activity across all branches. For ATB, this process represents 28% of all maintenance costs. With Time Driven data, the team was able to identify which regions and branches were more efficient in certain processes (see Exhibit 7).

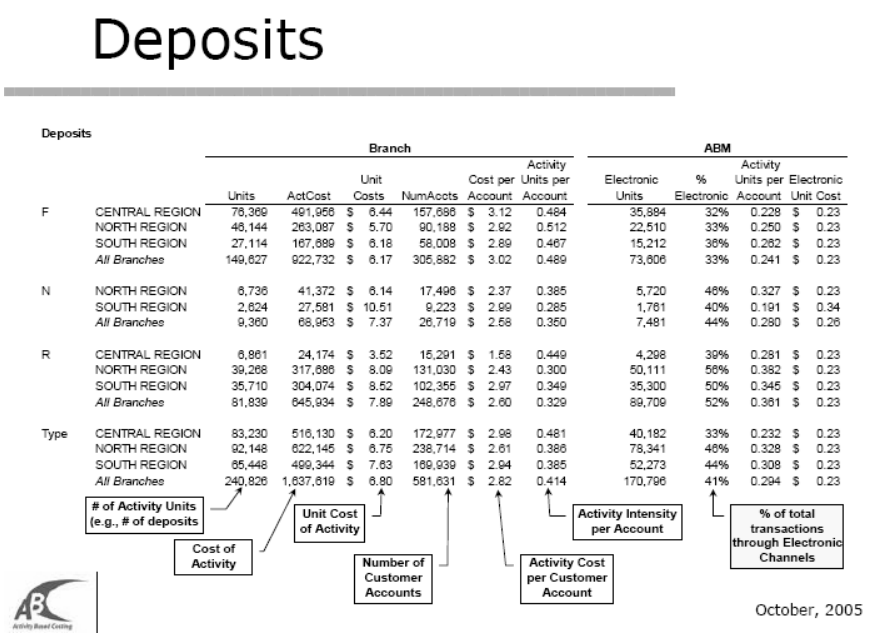
Exhibit 6: Example Branch Efficiency (Capacity Utilization)

Top Performing Branches (Efficiency Ratio < .60)

Average of Efficiency Ratio		Size	Br_BranchType					
		A	B		C	D		
BR_Region	BR_Name	F	F	R	F R	F	N	R
CENTRAL REGION	PE87800 BOYLE		29.73					
	PK88600 PONOKA	40.32						
	PF81600 DRAYTON VALLEY				44.40			
	PL74700 STETTLER		54.80					
	PK71200 RED DEER RETAIL (3)			56.67				
	PK83300 SUNDRE				56.85			
	PK83200 INNISFAIL		57.59					
CENTRAL REGION	Total	40.32	47.37	56.67	50.63			
NORTH REGION	PJ72500 OLIVER VILLAGE (2)			27.89				
	PJ85500 EDM. ATB PLACE							42.35
	PH84800 SHERWOOD PARK WYE GARDEN							49.52
	PJ79500 EDM. STRATHCONA				52.26			
	PC71900 GRANDE PRAIRIE RETAIL (2)				58.27			
	PJ88500 EDMONTON WEST POINTE (3)			58.48				
	PJ84700 FORT MCMURRAY RIVER VALLEY(2)							58.61
	PQ76500 EDM. CITY CENTRE							58.64
NORTH REGION	Total			43.18	55.27			52.28
SOUTH REGION	PR76000 CALGARY MAIN (2)							20.51
	PN71400 STRATHMORE		50.02					
	PP75200 BROOKS		50.30					
	PN79300 CLARESHOLM (2)		52.78					
	PM71000 CALGARY 6TH AVENUE				53.11			
	PM74400 BANFF						56.65	
	PM74000 CAL NORTH HILL				57.96			
	PP88200 TABER					58.00		
	PN85300 OKOTOKS		58.23					
	PN72300 BLACK DIAMOND		58.70					
	PM73000 CAL CHINOOK							59.07
SOUTH REGION	Total		54.00		55.53	58.00	56.65	39.79

[3] For more information on ATB, please consult Chapter 10 case study in the Time Driven ABC book.

Exhibit 7: Deposit Process Benchmarks



As with TW Metals, the ATB team could compare time equations to understand differences between branch processes. They could also leverage the model to do predictive analysis. For example, they could visualize the impact that a process change would have on both the cost and capacity utilization within a process.

Time Driven Benchmarks to Track Time in Retail: Lowe's

Over the past ten years, Lowe's Home Improvement[4] has witnessed a surging demand for technical expertise. With a strong housing market, do-it-yourself homeowners were tackling bigger projects. To meet this demand, Lowe's increased the number of sales consultants and SKU's. The former came at great expense and risk. Lowe's sales consultants earned substantially more than traditional retail sales clerks.

Benchmarking and managing store labor capacity utilization was a priority. This is where Time Driven ABC was extremely useful. The ABC team created a model of how long it took store personnel to complete their work. For example, Exhibit 8 shows the average selling time for different transaction types (e.g., special order sales items (SOS)) in different departments. The team assumed that these times were uniform across the network[5].

[4] For more information, please consult Chapter 9 in the book Time Driven ABC.

[5] The actual Time Driven software models permits the branch managers to customize their process times.

Exhibit 8: Time Driven Department Benchmarks for Selling

Selling Times by Retail Department

Department	Times per transactions			
	Stock	SOS (non install)	SOS - Installed	Stock - Installed
Appliances	3.9	19.0	40.3	25.2
Building Materials	0.8	16.7	40.3	24.5
Cabinets	1.7	23.3	56.4	34.8
Electrical & Light	0.5	17.1	40.3	23.8
Flooring	3.3	12.8	.4	33.9
Hardware	0.5	13.4	40.3	27.5
Inside L&G	1.1	25.1	40.3	16.4
Millwork	2.9	12.8	43.1	33.2
Outside L&G	1.2	17.1	40.3	24.5
Paint	0.8	17.1	40.3	24.0
Plumbing	0.9	25.1	40.3	16.2
Tools	0.8	17.1	40.3	24.0
Windows & Walls	2.5	19.1	40.3	23.7

With this information, the team could calculate capacity utilization for each department at each store. The goal at Lowe's is to maintain optimal staffing levels for each store. Like ATB, store management is prepared to shift excess personnel within the store or to other stores.

Conclusion

Phase 1 - High-level benchmarks should be done upfront by leveraging relatively available information (revenue, gross profit, operating profits, number of employees, square footage, number of orders, number of deliveries,… These can generate benchmarks to compare companies and their facilities to their peers to assess how they compare and if they should enhance their benchmarking effort and leverage Time Driven ABC. If a company, its facilities, and its departments consistently outperform its regional peers, then proceeding to Phase II (detailed TDABC Benchmarking) is NOT NECESSARY.

Phase II - Time Driven ABC Benchmarking isolates process differences to uncover root causes. Traditional benchmarks only report the overall, macro result (e.g., cost per order entered). Through the time equations, practitioners can now identify sources of inefficiency and poor performance (e.g., excess time processing returns in Phoenix).

- **Time Driven ABC practitioners can understand the impact that capacity utilization has on the numbers.** With traditional benchmarking, apparent performance differences can be a result of capacity utilization. For example, Phoenix may show worse performance (higher cost) if their volume of business (the denominator in a benchmark calculation) was proportionally lower. In other words, if the branch is at low capacity utilization, then the overall performance may lag even if the process they employed was superior. **Old-school benchmarks may miss what new-school, Time Driven expose.**

- **Time Driven ABC benchmarks are more accurate because the results reconcile both operationally and financially.** Because the model is built from the transaction level of a business process, actual operational data is fed into the algorithms. As a result, the model matches what actually occurred. Transaction revenue / cost data is married with financial expenses, and overall financial results should match actual financials. This is in sharp contrast to traditional benchmarking and ABC efforts where metrics were calculated in a previous time period. Management wondered why applying these metrics to current operations would not reconcile with current financials.

- **Time Driven ABC benchmarks enjoy greater organizational buy-in.** To create a Time Driven model, department managers are involved in determining how time is spent. For example, they may have the TD ABC team interview two to three members of their department to define the specific steps, what drivers need to be incorporated, what costs are applicable, and what benchmarks are most impactful. This interaction fosters much greater support for the model and usage of the results.

We believe that benchmarking will continue to play a very important role in how we manage our businesses. For many processes, simple, traditional benchmarks are sufficient:

- Low-cost or low-variability processes
- Processes that are not resource (e.g., staff) constrained. For example, if your credit department has one person, then it is doubtful this person could be let go.

In these cases, launching a TDABC effort may be over-kill.

However, for high-cost, high-variability or resource-constrained processes, the Time Driven approach can make a big difference.

If you have an activity-based costing model, you may want to seriously consider upgrading it to a Time Driven version. It will enable you to dive much deeper into the performance of your company.