

How to Grow Profit with Throughput Accounting



Today, companies are focused on increasing throughput – the rate at which a company generates money through sales. They want to expand products, customer base, markets, and so on. They want to grow as much as possible, as quickly as possible. They do not want to focus on shrinking their company or labor force. Yet, the most commonly used financial tools tell companies to focus on cutting costs in order to maximize profits, making expenses the focus of companies, not sales generation. This often leads management to make decisions that actually harm a company.

Companies need to use financial tools that move them toward their goal. Throughput Accounting provides managers with a transparent and focused method to make decisions that consistently lead them in the right direction. Through better managerial decision making, Throughput Accounting improves a company's ability to make more money now and in the future because it approaches accounting from a cash management basis. It meets the need that companies have to meet management challenges, including outsourcing products, process improvement, and purchasing capital equipment.

Is Traditional Cost Accounting Bad for Decision Making?

The Decision Maker's Dilemma

It is often difficult to see how decisions made in a local area affect the organization as a whole. This is particularly true of managers who are not able to see or affect every area of the organization. The organizational view of most managers is typically limited to their own area of responsibility and those nearby.

For a business leader in an enterprise, the issue is more troublesome, because he or she must concern themselves with the decision making of multiple managers involved in many aspects of the enterprise. We know from experience that local managers often make decisions that are counter to the purpose of the enterprise. A single person periodically making a bad decision is usually not significant, but if there is a systemic error in many managers' understanding of the enterprise's functioning, many poor decisions will be made, which could create significant, long lasting damage.

Larger, subdivided enterprises lose their system-wide perspective, and managers are forced to rely on decision rules that are typically based on Traditional Cost Accounting; the bigger the enterprise, the bigger the problem.

The decision maker is often forced to choose between decisions that make intuitive sense, but must be justified using Traditional Cost Accounting methods.

The Decision Maker's Challenge

Managers and executives need a way to predict and accurately measure the effect of local decisions on the global enterprise. The challenge is to get local managers to make good decisions that optimize performance of the organization as whole, rather than optimizing the local performance of their organization or department.

Often, in an effort to manage the dollars in an organization, the local managers focus on their budgets, which, while important, typically are focused on one element of the profit equation, spending. Decisions around budget management often assume a fixed revenue number, over which local managers have no control. The result is that local management decisions become one dimensional – based on expenses and local optimization. The reality is that every local manager, being part of the system, can have a significant impact on the revenues of an enterprise.

Secondly, managers often use their judgement to shape financial decisions. This results in decision analysis, that on the surface seems objective, but can hide assumptions about the decision being evaluated. This results in varying decision criteria through the organization, making it difficult for senior managers to evaluate the quality an analysis.

To overcome these problems, managers use cost accounting information to support decision making. Modern costing systems have one thing in common: allocation of total costs to products and services. Although systems of allocation vary, they all share this flawed assumption.

The Pitfalls of Traditional Cost Accounting

Traditional Cost Accounting fails to provide this guidance to managers. It simply can't. It is based on several assumptions that while, at one time, were valid, are no longer a reflection of the reality that managers find themselves in.

Traditional cost accounting's primary operating assumption is that labor expense is directly and positively correlated to process output. It treats every resource as things with approximately the same quality, ignoring the existence of a process constraint. However, the Theory of Constraints clearly shows the importance of understanding constraints in maximizing throughput, and how vital it is for all parts of a company to manage around and to the constraint resource.

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It is only when all parts of an organization work together to support the constraint – from sales to R&D to manufacturing – that throughput can be achieved. If any part of the organization ignores the effects of the constraint, throughput will be affected. Thus, it is not any random part of the system, such as labor efficiency, that determines the entire system's throughput, but what limits the system from achieving more throughput. Traditional Cost Accounting ignores this point of focus and gives equal treatment to all areas.

Giving equal treatment to all areas and ignoring the constraint results in an inability to consider the true impact that each area of the company has on throughput. This can cause management to make decisions that harm the health of company. Consider the following examples:

- If an engineer finds a way to improve processes at a non-constraint, will it increase throughput if the constraint is unaffected?
- If products are outsourced to cut labor costs, will the actual spend decline or real throughput increase?
- If purchasing discovers a cheaper supplier for a part, what will the impact be on throughput and the constraint?

While these decisions can show improvement using traditional calculations, they may ultimately reduce throughput. It is only when management considers the constraint in its decisions that throughput will be increased.

Traditional Cost Accounting also leads decision makers astray by allocating fixed expenses to the production of an incremental unit of production. By treating material, labor and overhead costs as variable costs, it ignores the reality that labor and overhead expenses are usually fixed on incremental volume. Labor and overhead are not variable production costs, they're period costs. When a company receives a new order, it typically does not hire additional employees, terminate current employees, open new manufacturing sites, or close current sites. The number of employees and plants stay the same, as do the costs related to them. Yet, managers are making decisions based on faulty numbers that state otherwise.

Another problem with Traditional Cost Accounting is its (unintentional) encouragement of inventory creation. The primary purpose of manufacturing is to produce products to sell, but the leaders of this function can lose sight of the goal when labor and overhead costs are absorbed into inventory. Absorbing costs into inventory actually encourages the creation of inventory and discourages the reduction of inventory. By producing a large inventory in order to defer labor and overhead costs until a product sells, it may appear that a company is more profitable than it really is. Conversely, when excess inventory is removed from the system, it

may appear less profitable. Essentially, Traditional Cost Accounting encourages the creation of excess inventory even if sales are low, consuming cash at a time when a company may least afford it.

Throughput Accounting

Throughput Accounting (TA) is a principle-based and simplified management accounting approach that provides managers with decision support information for enterprise profitability improvement. It identifies the critical factors that limit an organization from reaching its goal, and then focuses on simple measures that drive behavior in key areas towards reaching organizational goals.

TA was proposed by Eliyahu M. Goldratt as an alternative to traditional cost accounting to support management decision making. As such, it is neither accounting nor costing because it is focused on cash flow. It does not allocate fixed costs to products and services sold or provided by an enterprise. It is also unique in that it for many decisions, direct labor is treated as a fixed expense.

TA forms the business intelligence used to maximize profits emphasizing those decisions that generate more throughput¹. The singular uniqueness of TA is the identification and respect of the organization's Constraint².

Throughput Accounting improves profit performance with better management decisions by using measurements that more closely reflect the effect of decisions on three critical monetary variables: throughput, investment (AKA inventory), and operating expense.

Product Outsourcing – A Case Study

Maltese Finders, Inc. produces gold detectors³. Managers use the cost of producing parts in-house (standard labor rates) to evaluate productivity and make the decision to outsource parts

¹**Throughput** is defined as revenue minus totally variable expenses, generally, the cost of raw materials or services incurred to produce the products sold or services delivered ($T=R-TVE$).

²The **Theory of Constraints** is based on the premise that the rate of goal achievement by a goal-oriented system (i.e., the system's throughput) is limited by at least one constraint.

The argument is as follows: If there was nothing preventing a system from achieving higher throughput (i.e., more goal units in a unit of time), its throughput would be infinite — which is impossible in a real-life system.

Only by increasing flow through the constraint can overall throughput be increased.

³ A true story, but the names have been changed to protect the guilty.

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if it is cheaper to buy than to produce it in-house. If someone can sell them a component for \$5 that costs \$10 internally, outsourcing will increase profit.

This decision resulted in rigorous enforcement of a policy to outsource all parts that were cheaper from outside vendors. Parts that could be purchased cheaper were no longer produced in-house, but purchased from a competitive supplier. As a result, 60% of its parts were outsourced.

Despite reducing capacity and workforce, the policy and actions did not increase profit. Management examined the costs of parts again, discovering that even more parts were now cheaper to outsource. The additional outsourcing of parts failed to increase profit. Instead, profit declined further.

Management closed one plant, increased production hours in the remaining plants, and purchased additional inventory to keep production running. The company was able to produce more products than ever. Even though sales were not increasing, inventory was increasing, and they showed a large profit.

But the company had a lot of inventory and no one was buying it. It was still spending money to create products, but despite the profit on the ledger sheet, money was not coming in to meet expenses. Maltese Finders had to file for bankruptcy and change the name of their company.

Purchasing Capital Equipment – A Case Study

Simple Strategies produces parts for radios. Prior to shifting to Throughput Accounting, Simple Strategies undertook a strategy to reduce costs by reducing the process time. One of these decisions was the purchase of new manufacturing process equipment to reduce process time by 8%. Unfortunately, this was for a non-constraint resource.

The decision was focused on a local area, viewing labor and overhead as equals, without consideration of constraints. The number of employees was not reduced, and the price paid to vendors for raw materials was not reduced, so the cost-savings did not materialize. In fact, the only effect was the cash paid out for the new process equipment reduced the cash on hand.

Switching to Throughput Accounting, management changed its focus from speeding up the process time in individual areas to reducing the time on the constraint. By investing \$3,000 in the constraint, the time on the constraint was reduced from 15 minutes to 10 minutes per unit. Output increased 80% and the company added \$10 million to its bottom line.

How Can Throughput Accounting Help?

Throughput Accounting focuses on increasing revenue (throughput), improving cash flow (investment) and providing capacity (operating expense). Every management decision is made based on expected changes in throughput, investment and operating expense. Throughput Accounting allows managers to take a more balanced approach to decision making, giving an accurate picture of the results of decisions. Throughput Accounting also demonstrates ways to make more profitable pricing and marketing decisions.

Throughput Accounting shifts the emphasis in decision making from managing costs and budgets to maximizing throughput and profitability. It emphasizes the improvement of flow through the system, providing feedback on the financial impact of the constraint. It drives management decisions to improve the constraint's efficiency; ensuring all company resources support the constraint, so that profit can be maximized.

This approach differs substantially from Traditional Cost Accounting because the company is not focused on every machine and employee working at optimal efficiency. Instead, its basis is that if a company optimizes any non-constraint, it will overload the constraint and create excess inventory.

Throughput Accounting provides a way to measure productivity improvement efforts based on how they affect cost and throughput. It can be applied to decisions that affect all aspects of a company including product price, process improvement, reward structures, investment justification, transfer pricing, and performance management. The result is a thorough understanding of how a company is functioning as a whole and the ability to analyze the true impact of management decisions before they are made.

Process Improvement – A Case Study

Talented Enterprises produces parts for cameras. Its primary measure of productivity is labor absorption under the assumption that if more work is being done to create inventory, profits will increase. However, using this measure resulted in actions to increase inventory and build stock products rather than fill actual customer orders.

Process improvements were implemented to reduce costs. Efforts were made to decrease the labor involved in producing parts. This was done for all operations. Many non-constraints became faster, producing even more work than the constraints could handle. Even though

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labor went down, inventory increased and it became more difficult to fulfill orders on time and to properly prioritize manufacturing jobs.

When management learned about throughput, it shifted its focus from absorbing costs into inventory to increasing how quickly work could be completed. Emphasis was given to improving constraints. By investing \$25,000 in the facility and adding two additional employees to the day shift, output increased 73%. Under Traditional Cost Accounting, these expenses would not have been justified because local output efficiency would have declined on a per labor hour basis. However, the cost was minimal compared to the increase in throughput.

How to Use Throughput Accounting to Make Decisions

When determining what affect a decision will have, management needs to consider the following:

1. Will the decision increase throughput? How?
 - a. Will the change increase or decrease sales?
 - b. Will the change affect your raw material costs?
 - c. Will the change affect your prices?
2. Will the decision reduce investment? How?
 - a. Will the change increase or decrease your inventories?
 - b. Will the change increase or decrease your receivables/payables?
3. Will the decision reduce operating expense? How?
 - a. Will actual cash outlays be reduced?
 - b. Will the change increase or decrease your staff levels? Who is leaving the company?
 - c. Will the change increase or decrease the number of outside contractors you need? Will you send more or less dollars to outside entities?

The change in throughput less the change in operating expense is the change in profit ($T - OE = \text{PROFIT}$). If the change in profit is positive, you can be assured that the decision will lead the organization towards making more profit.

If profit divided by investment $[(T - OE) / I]$ is greater than 1, the return on investment (ROI) will be positive and you can be assured that the decision is a favorable investment (not a loss).

Δ Throughput – Δ Operating Expense = Δ PROFIT; If profit is positive, the decision will increase profit.

If **$(\text{Throughput} - \text{Operating Expense}) \div \text{Investment}$** is > 1 , ROI will be positive.

How to Use Throughput Accounting for Product Profitability

Throughput is created when a product is sold and is expressed as a *RATE*. The amount of throughput is the selling price less total variable expense (TVE). TVE is defined as money that is only spent when there is a sale. The rate at which products generate profit is determined by the throughput per unit, divided by time on the constraint.

Throughput = Selling Price - TVE

Rate of Profit = Throughput per unit \div time on constraint

Knowing where the constraint is now and where it will be in the future helps qualify decisions that impact profit. Time on constraint tells management the rate at which a product is contributing to profit, thus helping management judge the benefit of changes in the manufacturing process.

Profitability Analysis – A Case Study

Dynamic Solutions, Inc. sells three major products. Production of each of these products requires different variable expenses and different rates of resource consumption.

Product	Selling Price	Monthly Demand	Contribution Margin (CM)
A	\$200	100	\$150
B	\$175	50	\$40
C	\$100	75	\$45

Operating expenses are \$16,000 per month. The constraint is the Q Resource.

Profitability Analysis Using Traditional Cost Accounting – Dynamic Solutions, Inc.

	<u>Product A</u>	<u>Product B</u>	<u>Product C</u>	<u>Total</u>
Revenues				
(100 x \$200)	\$20,000			
(50 x \$75)		\$8,750		
(75 x \$100)			\$7,500	
Total Revenues				\$36,250
Total Costs				
Material Costs				
(100 x \$50)	\$5,000			
(50 x \$35)		\$1,750		
(75 x \$55)			\$4,125	
Total RM Costs				\$9,750
Wages	\$3,221	\$425	\$1,729	\$4,975
Overhead	<u>4,319</u>	<u>928</u>	<u>1,721</u>	\$6,668
Total Costs	<u>\$12,540</u>	<u>\$3,103</u>	<u>\$7,575</u>	
Gross Profit	\$7,460	\$5,647	(\$ 75)	
Gross Margin/Unit				
[\$7,460 ÷ 100]	\$74.60			
[\$5,647 ÷ 50]		\$112.94		
[\$(75) ÷ 75]			(\$1)	
Product Preference	#2	#1	#3	

According to Traditional Cost Accounting, Product C should be dropped and Product B is the company's best profit generating product.

Dynamic Solutions discovers that it cannot deliver all of the units for Product A and B demanded by customers. It does not have enough capacity. So, it decides to deliver what it can while looking for a higher gross margin product and exploring its options for restructuring.

**Maximum Profit Available Using Traditional Cost Accounting –
Dynamic Solutions, Inc.**

	<u>Units Sold</u>	<u>CM per Unit</u>	<u>Total CM</u>
Product B	50	\$40	\$ 2,000
Product A	100	\$150	15,000
Product C	0	\$45	<u>0</u>
Total CM			\$17,000
Operating expense			<u>16,000</u>
Operating income before taxes			<u>\$ 1,000</u>

But what if Dynamic Solutions had used Throughput Accounting?

Profitability Analysis Using Throughput Accounting – Dynamic Solutions, Inc.

	<u>Product A</u>	<u>Product B</u>	<u>Product C</u>
Average selling price/unit	\$200	\$75	\$100
Variable costs/unit	<u>50</u>	<u>35</u>	<u>55</u>
Throughput (CM)/unit	\$150	\$40	\$45
Constraint min. required- Q resource	30	30	10
Throughput ÷ time on constraint (Q resource)	\$5.00/min.	\$1.33/min.	\$4.50/min.
Product Preference	#1	#3	#2

Throughput Accounting shows that Product C is the better profit-making product in the long-term than Product B because it has higher throughput (contribution margin) and a greater rate of profit.

**Maximum Profit Available Using Throughput Accounting –
Dynamic Solutions, Inc.**

	<u>Units Sold</u>	<u>CM per Unit</u>	<u>Total CM</u>	<u>Q Resource Time</u> <u>Used</u>
Product C	75	\$45	\$ 3,375	750 min
Product A	100	\$150	15,000	3000
Product B	15	\$40	<u>600</u>	<u>450</u>
Total CM			<u>\$18,975</u>	4,200 min
Operating expense			<u>16,000</u>	
Operating income before taxes			<u>\$ 2,975</u>	

While Traditional Cost Accounting's focus on gross margins of individual products would have Dynamic Solutions increase production of Product B and drop Product C, Throughput Accounting shows that by maximizing the rate of throughput using the constraint, Dynamic Solutions can realize nearly three times the amount of profit.

Conclusion

Cutting costs is important, but it is not the most important factor in maximizing profit.

In today's world of global capitalism and shareholder expectations, companies are seeking ways to expand in every area – profit, quality, and so on. Focusing solely on cutting costs does not produce the best result. You can only cut costs for so long before there is nothing left to cut.

Today's marketplace requires companies to focus on throughput. This requires an understanding of a company's constraint and how changes will affect the constraint.

Throughput Accounting enables managers to examine the link between process constraints and financial performance in decision making. This makes it possible to determine the real impact of their decisions. Before a decision is made, a company can look at the impact on throughput and compare it to the effect on operating expense and the required investment, solving the decision making problem for managers.