

The Importance of Lean Accounting

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Abstract:

The objective of this article is to show how important to introduce lean accounting in company management. the goal of this study is to respond to understand why lean accounting matter.

First, we present the general oversights of lean accounting, then we move on to an empirical example where we demonstrate through a numerical case the supremacy of lean accounting in cost calculation over traditional accounting methods.

Lean measurements must be tightly integrated into the organizations, and regular and visual performance measurement system should be at every level of the organization.

Keywords: Lean; lean accounting; value stream; traditional accounting.

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Introduction:

Lean accounting has developed over the last twenty years or so and although it continues to evolve, we felt it would be helpful to document the current "state of the art" as seen by a group of both consultants and practitioners in this area.

It seems to create a twenty first century revolution in accounting. Lean enterprise is related to three concepts: eliminating waste, continuous improvement and respect for people. A lean enterprise produces more with the existing resources by eliminating activities that do not create value.

In this background, for lean Accounting, taking the customer value is the guide, the value stream is the core and eliminating the waste is the purpose (*Chen Ming-kun 2007*). Lean accounting is not only necessary, but it helps the development of lean production (*Wang and Yuan, 2009*).

The objective of this article is to show how important to introduce lean accounting in company management.

Furthermore, the importance of the article lies in the fact that lean accounting can play the role of an alternative accounting system to the traditional accounting system.

In this regard, the goal of this study is to respond to the following question: **why does lean accounting matter?**

To do that, we formulate the following hypotheses:

1. Lean accounting serves as a relevant instrument for a company pursuing lean management.
2. Lean accounting system is a more efficient to measure financial performance than traditional accounting system.

To answer this question, we have adopted to study the following elements:

- . Lean concept
- . Lean accounting
- . Literature review
- . Customer value
- . Value stream management
- . Minimizing the waste
- . Importance of Lean Accounting

I- The Lean concept

From the 1980s, the manufacturing industry launched a lean management revolution. So far, lean production has been extended to various industries, and become an efficient modern enterprise management mode.

The term lean was first brought to public attention in 1990 when it was published the book *The Machine that Changed the World* by James Womack, Daniel Jones and Daniel Roos, a description of an extensive system of production developed by Eiji Toyoda and Taiichi Ohno at Toyota Motor Co., in Japan.

Lean seeks to make items one at a time, so as to maximize the flow of production, making an item only when demanded by a customer. With the extensive application of lean production, lean accounting gets more and more attention. Lean manufacturing system has become over the years a model for Boeing, Porsche, Pratt Whitney, Danaher Corporation, Wiremold Company, Pella Windows and others.

The principles underlying lean thinking were set out by James P. Womack Womack and Daniel T. Jones in *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*, a book published in USA in 1996, and they are (*Laura,2010*):

- specify the value for each product family, from the final customer's standpoint;
- identify all component activities of the *value stream* for each product family, eliminating as much as possible those loss making activities;
- ranking value creation activities in a sequence (stream) of clearly identified steps, so that the final product reaches the final customer as going through a *continuous flow*, without much interruption, intermediate stops;
- once value flow was established and implemented, any internal or external customer can apply the *system "pull"* to pull the product upstream, on the stream of production;
- when the value has been specified, the value-creating activities identified, the waste eliminated, the value stream set and implemented, you can pass on to the operational process and *improve* it, until it reaches an optimal level, those that the value added is maximum and is eliminated most of the waste.

Most companies begin their journey into lean by creating pilot lean production cells, called "Lean Pilots" in the Diagnostic. They get enthusiastic about lean manufacturing and take some training classes. They learn how to create a value stream map and how to design production cells that flow much better than their current operations. They begin to implement lean cells in the factory. These cells use small batches, flow and pull methods, standardized work, and other lean methods (*Maskell et al, 2011*).

However, lean production has been widely disseminated, but lean accounting is unknown.

Lean accounting doesn't exist independently and cannot be separated from lean thinking and lean production. Only when the lean process has become stable and controllable, lean accounting can play a role.

II-Lean accounting:

Lean Accounting is simple and easily understood by everybody within the organization and provides business control systems rooted in Lean thinking.

Our vision is that lean accounting will:

1. Provide accurate, timely, and understandable information to motivate the lean transformation throughout the organization, and for decision-making leading to increased customer value, growth, profitability, and cash flow.
2. Use lean tools to eliminate waste from the accounting processes while maintaining thorough financial control.
3. Fully comply with generally accepted accounting principles (GAAP), external reporting regulations, and internal reporting requirements.
4. Support the lean culture by motivating investment in people, providing information that is relevant and actionable, and empowering continuous improvement at every level of the organization.

Table 1. Principles, practices, & tools of lean accounting.

PRINCIPLES	PRACTICES	TOOLS OF LEAN ACCOUNTING
A. Lean and simple business accounting.	1. Continuously eliminate waste from the transactions processes, reports, and other accounting methods.	a. Value stream mapping; current and future state. b. Kaizen (lean continuous improvement). c. PDCA problem solving
B. Accounting processes that support lean transformation.	1. Management control and continuous improvement.	a. Performance Measurement Linkage Chart; linking metrics for cell/process, value streams, plant & corporate reporting to the business strategy, target costs, and lean improvement b. Value stream performance boards containing break-through and continuous improvement projects c. Box scores showing value stream performance.

	2. Cost management.	a. Value stream costing b. Value stream income statements.
	3. Customer & supplier value and cost management.	a. Target costing
C. Clear & timely communication of information	1. Financial reporting	a. “Plain English” financial statements b. Simple, largely cash-based accounting
	2. Visual reporting of financial and non-financial performance measurements.	a. Primary reporting using visual performance boards; division, plant, value stream, cell/process in production, product design, sales/marketing, administration, etc.
	3. Decision-making	a. Incremental cost & profitability analysis using value stream costing and box scores
D. Planning from a lean perspective.	1. Planning & budgeting	a. Hoshin policy deployment b. Sales, operations, & financial planning (SOPF)
	2. Impact of lean improvement	a. Value stream cost and capacity analysis b. Current state & future state value stream maps c. Box scores showing operational, financial, and capacity changes from lean improvement. Plan for financial benefit from the lean changes
	3. Capital planning	a. Incremental impact of capital expenditure on value stream box-score. Often used with 3P approaches
	4. Invest in people	a. Performance measurements tracking continuous improvement participation, employee satisfaction, & cross-training. b. Profit sharing
E. Strengthen internal accounting control	1. Internal control based on lean operational controls	a. Transaction elimination matrix b. Process maps showing controls and SOX risks
	2. Inventory valuation	a. Simple methods to value inventory without the requirement

		for perpetual inventory records and product costs can be used when the inventory is low and under visual control.
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Source: Maskell Brian and Baggaley Bruce (2006)

The current standard costing followed by companies tend to overproduce, creating excess inventories and reducing the flow of production—exactly opposite the intent of Lean manufacturing. Standard costing is not wrong, but it is inappropriate for lean manufacturing.

Lean accounting practices, and tools are summarized in Figure

1. Its principles are separated into five principles, from A to E.

On the other hand, four lean accounting methods are required for any company in its early stages of lean thinking (*Maskell et al, 2011*):

1. Cell Performance Measurements
2. Calculation of the Financial Benefits of Lean Improvements
3. Elimination of Transactions
4. Lean Financial Accounting

Meanwhile, new cell measurements using a lean approach are needed to track and control the new production flow. You can begin to remove a lot of the detailed reporting in the new Lean cells and (perhaps) relieve inventories automatically based on units completed (or, in other words, backflush some of the information) instead of laboriously entering it manually.

In fact, lean accounting provides:

- Lean performance measurements, which replace traditional measurements.
- Methods to identify the financial impact of lean manufacturing improvements.
- A better way to understand costs, product costs, and value stream costs.

- Methods to eliminate large amounts of waste from the accounting, control, and measurement systems.
- Time freed up for finance people to work on lean improvement.
- New ways to make management decisions relating to pricing, profitability, make/buy, product/customer rationalization, etc.
- A way to focus the business around the value created for customers.

Lean accounting uses visual measurement as the primary method of control. These measurements are few, primarily manual, focused on the creation of customer value, and require empowerment of people throughout the organization. Lean Accounting focuses business management around the value streams. All cost collection and financial decisions are made at the value stream level.

III-Literature review

Sila (2007) does not find any difference regarding performance between five contextual factors related to lean accounting. Menezes et al. (2010) find that firms with integrated advanced manufacturing practices consistently outperform others. Similarly, in their review of empirical studies on lean implementations and their effects on performance, Comacho Minano et al. (2013) have found that evidence examining how and whether contextual factors impact the relationship between lean practices and financial performance cannot be conclusive.

However, other scholars explain lean accounting as a long, arduous process that can be very essential and useful depending on differing contextual factors (Benders and Slomp, 2009).

On the other hand, researchers in the field like (Aberdeen Group, 2006) reported that there was a large performance gap between those manufacturing firms that had applied lean practices solely on the shop floor, as opposed to those that had developed a lean culture throughout the organization.

IV- Methodology

The approach followed here in this study shows how so interesting to replace traditional accounting system by lean accounting practices. First, we present the general oversights of lean accounting, then we move on to an empirical example where we demonstrate through a numerical case the supremacy of lean accounting in cost calculation over traditional accounting methods.

V-The customer value :

Lean accounting needs more accurate cost information than traditional cost accounting system. The basic principles of mass production are to expand production and reduce unit cost, but the basic principles of lean thinking are to seek to maximize customer value. Only when taking the customer value as the starting point, can we know more accurate cost information?

A characteristic of lean enterprises is the focus on the customers. The first principle of lean thinking focuses on creating value for the customers. Using target costing, this principle becomes the primary driver of change and improvement throughout the organization.

A second characteristic of lean enterprises is their cooperative nature. They prefer to cooperate with customers, suppliers, and other third-party business partners as much as possible. This leads to the use of macro value stream maps, covering not only the company's operations, but also those of their customers, suppliers, and third-party partners. This leads to a need for such powerful tools as costing and profitability analyses to help maximize the benefit of Lean methods across the company and its trading partners. (*Maskell et al, 2011*).

Instead of just negotiating prices with customers, the Lean enterprise works with the customer openly to improve the flow, reduce the waste, and increase the value. Everyone is better off. Instead of bludgeoning suppliers for price reductions and better

service, the Lean enterprise works with the supplier to eliminate waste, improve the flow, and create more value. This way everyone is better off—especially the customers.

VI- Value stream management

The next step in the maturity path is the realization that it is needed to change and improve the entire value stream, not just the shop-floor cells. Value stream management is a very different way of running a business. In this case, cost information is reported by value stream rather than by product or production work order.

Lean accounting, cost accounting, cost analysis and cost management are carried out in accordance with the value stream. In accordance with the concept of lean production, product cost changes with different combinations of the production and product.

Value stream represents all the work enterprises do for creating customer value; those are all logistics activities and information flow activities to provide products and services. These activities in the value stream may increase the value, may not increase the value and may even reduce the value. The ultimate goal of value stream management is to eliminate the waste in the process of production and operation, reduce the time in the process of flow, reduce cost and improve quality.

New measurements are needed for each of the company's value streams, and the value stream managers are accountable for the improvement of these measurements. The value stream manager's role is far wider than just production.

Manufacturing expense has a relationship with the value stream rather than labor time individual products spend ; The cost of a product depends largely on its flow speed at the entire value stream, especially flow speed at bottlenecks in the value stream; In the pull of customer demand, maximizing the product flow will achieve the maximization of profit in the value stream.

Value stream cost usually accounts once a week. The content of value stream cost no longer has direct and indirect costs. All the value stream cost is considered direct cost, while the cost outside the value stream is not included in the value stream cost (Li Bei, 2008).

Some people do not work in the value stream, such as the accountants and support personnel for ISO14000 system. Their jobs have nothing to do with the value stream, or across all the value stream. These costs and expenses are thought as the maintenance cost of the enterprise, and are reported in the income statement.

The value stream measurements are usually reported weekly and are used primarily to drive lean continuous improvement. The cell and process measurements are measured very frequently - often every hour - and are used to control the process and identify problems that need to be solved. When environmental issues are important, it is essential that "green thinking" is incorporated into the performance measurement process (Maskell,2010).

At the value stream level, the total solvent usage is recorded each week. Again the information is collected by the people within the value stream and shows how much solvent is being used and a Pareto chart shows the causes of excessive usage.

The financial information is generally reported every week to the value stream and is shown on "plain English" statements that are readily understandable to everyone.

The "box score" is widely used in lean Accounting for reporting value stream performance, for decision-making, and showing the true impact of lean improvement. Value stream measurements⁴ are primarily designed to motivate continuous improvement of the value stream processes. It is the value stream continuous improvement team that works with these measurements, assuring that they move in the right direction each week.

VII- Minimizing the waste

In recent years there has been a lot more interest and acceptance of lean accounting. Most companies introducing lean thinking realize that their finance and control systems are very wasteful and ineffective. They want to have practical methods to control the business, without the hugely wasteful, time-consuming, and misleading costing and measurement systems (*Maskell et al, 2011*).

We must find out the reasons for producing the work flow. At first, eliminate the demand for the work flow and then cancel those jobs.

This can also be stated as "applying lean methods to the accounting processes." Some accounting processes contain muda type 1 (waste that cannot be eliminated at the moment) but most accounting processes are muda type 2 (waste that can be eliminated). The tools of lean must be rigorously applied to our accounting, control, and measurement processes so that waste is relentlessly driven out.

This is achieved in the same way waste reduction is achieved anywhere else, through continuously eliminating waste from the transaction processes, reports, and accounting methods throughout the organization. The tools to achieve this are the value stream maps (current and future state), kaizen (lean continuous improvement), and the venerable Plan-Do-CheckAct (PDCA) problem-solving approach. These improvements can be made early in the transformation to lean and will open up time for the accounting personnel to work on other lean accounting changes. Inevitably these early projects improve processes that will later be eliminated, but they make a good start to the introduction of Lean Accounting into the business.

Instead of just negotiating prices with customers, the lean enterprise works with the customer openly to improve the flow, reduce the waste, and increase the value. Everyone is better off. Also, instead of bludgeoning suppliers for price reductions and better service, the lean enterprise works with the supplier to eliminate waste, improve the flow, and create more value.

As we make progress with the introduction of control built into the processes, we can eliminate the wasteful tracking processes.

In Lean Accounting, we define the maturity path for the elimination of transactions and wasteful systems. It would be wrong and irresponsible to eliminate transactions and systems that are currently providing financial and operational control of the business. However, we can define the changes needed to render those transactions unnecessary. As these changes are introduced and Lean thinking takes hold within the organization, we can eliminate the unnecessary transactions and systems. Using this maturity path, the wasteful processes are eliminated step by step.

Some of the more fundamental lean accounting changes can be made when the company's Lean manufacturing has matured and Lean methods are widespread within the plant or an individual value stream.

The biggest change at this point is the introduction of Value Stream Costing (VSC), which is used to eliminate most of the wasteful transactions associated with production control, materials, and product costing. VSC eliminates the need for standard costing and overhead allocations and creates a simple and effective cost accounting method.

A touchstone of a lean enterprise is the profound level of cooperation with third-party organizations, including customers, suppliers, and other partners. Lean enterprises draw value stream maps that include external organizations. They work cooperatively with their customers and suppliers to improve their processes and eliminate waste.

VIII- The importance of Lean Accounting

Lean manufacturing (and other lean methodologies) eliminates the need for most of the traditional accounting processes because they bring the operation under control. For example, it is vitally important to maintain accurate and detailed inventory records if the company has high inventory and long production cycle times. The introduction of

Lean methods brings inventory levels down and creates short production cycle times.

There are both positive and negative reasons why lean accounting is important (*Maskell et al, 2011*) . The positive reasons are that Lean Accounting

- Provides information for better Lean decision making. These better decisions lead to improved revenue and profitability.
- Reduces time, cost, and waste by eliminating wasteful transactions and systems.
- Identifies the potential financial benefits of lean improvement initiatives and focuses on the strategies required to realize those benefits.
- Motivates long-term Lean improvement by providing Lean-focused information and statistics.
- Addresses customer value directly by linking performance measurements to the drivers of value creation and driving changes to maximize this value.

Traditional systems are not the wrong way to work, but they are designed to support mass production.

Lean manufacturing and other lean methods violate the rules of mass production. When you try to use traditional accounting systems and Lean manufacturing, you will find that they conflict with each other.

Problems caused by traditional accounting, control, and measurement systems include the following:

- They motivate people to use non-Lean procedures, such as running large batches and building inventory.

- Traditional systems are wasteful. They require huge amounts of unnecessary work, gathering and analysing data, producing unhelpful reports, and generating additional non-value-adding tasks.
- Standard costs can harm Lean companies because they are based on premises grounded in mass production methods. Lean manufacturing violates all the assumptions of mass production. Whereas mass production is based on achieving economies of scale through long production runs, Lean focuses on making products one at a time.

IX-Empirical example

This first example shows in a simple way how improvements achieved by lean in some cases can lead to aberrations in cost of product calculations. Two working lines, A and B, dedicated to two different families of products, work as cost centres. The cost of a lot of products (about the same amount and demand in a week) from both lines is calculated according to Table 2.

Table2. Cost centre of A and B

Cost Centre A	Cost Centre B
Cost of semi-finished products and raw materials = €30	Cost of semi-finished products and raw materials= €28
Cost of direct workforce = € 160	Cost of direct workforce = €120
Plants amortisation =€10	Plants amortisation = €12
Overhead share $\frac{1}{4}$ (amount of indirect costs of the period*direct workforce time in the centre)/total amount of direct workforce $\frac{1}{4}$	Overhead share $\frac{1}{4}$ (amount of indirect costs of the period*direct workforce time in the centre)/Total amount of direct workforce = $(€560*12 \text{ h}) / 28 \text{ h} = €240$

$(€560 \times 16 \text{ h}) / 28 \text{ h} = €320$	
Total cost of lot A = €520	Total cost lot of lot B = €400

Apparently, the lot of product A is more expensive because it requires more direct workforce and consequently absorbs higher indirect costs.

Later, a Kaizen event took place in order to cut down transportation costs. Kaizen activity is based on worker participation in small group in order to reduce wastes and improve processes. Distinctive features of a Kaizen event are execution rapidity as well as intervention rapidity when a problem arises (Manos, 2007).

The Kaizen event was successful and the cost of transportation, which is a part of the €560 of indirect costs of the period, was cut back by about €10. The €10 reduction was not equally distributed between the lines: line A gained €9 of transportation cost saving whereas line B gained €1.

Indeed, line B was affected by fewer transportations than line A. Looking at the calculations in the penultimate row of Table 2 and considering that the total amount of direct workforce is the same (28 hours), the €10 saving was equally distributed. In this way the cost of products would be wrong and products of line B benefit by improvements as much as products of line A. The industrial accountant took note of the situation and stated that he would make the costs of the conveyors direct in relation to cost centers.

Conclusion:

After studying the subject of lean management and lean accounting, we present some principal ideas we came through. For a company to be successful, the "lean" measurements must be tightly integrated into the organizations, and regular and visual performance measurement system should be at every level of the organization. Yet, when they learn more, they discover that lean accounting is a new

method of managing a business that is built on lean principles and lean methods.

On the other hand, financial and operational indicators seem to have a positive and significant impact of lean accounting on financial performance. However, weak interest has been accorded to observing the impact of implementing lean accounting or the individual management practices analyzed on financial performance.

Lean accounting and lean management are tightly linked. The latter needs the former. And the former finds its suitable environment only under lean management strategy.

Indeed, lean accounting system fits to measure financial performance far better than traditional accounting system. Because it enhances financial performance through the used newly techniques.

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