

# Lean Accounting - An Ingenious Solution for Cost Optimization

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## Abstract

The aim of this work is to present a new concept in accounting management: Lean Accounting. This work explains the way the lean concept was born; its benefits for the production system of the factories and the necessity of applying lean accounting in the factories which have implemented lean production, taking into account both its advantages and the boundaries of the other cost management methods in those factories.

**Keywords:** Lean Production, Lean Accounting, Value Stream Costing, Pull, Box Score

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## 1. Introduction

Due to the present economical tendencies of rising offer against inquiry, in order to withstand competition on the market, the factories focus their attention on production processes, on lower making time, on synchronizing the productive processes, on reducing the stocks and the manipulation of the working materials. Traditionally speaking, in a factory the focus was on independent production processes, especially looking for raising of the working productivity on each level (Cuatrecasas, 2010).

This change of perspective has determined the seeking of new alternatives in Manufacturing and Management which answer to the clients' needs and to enforce the factory's competitiveness. Lately, the model which was universally accepted by the scientific community as an appropriate Management Model, in order to raise the factories' competitiveness is called Lean (Lean Production, Lean Manufacturing, and Lean Thinking).

The Lean Philosophy is focused on the efficiency of the process from the factory, being one of the weightiest management philosophies used by bigger companies from all industrial fields (Briciu and comp., 2010).

The applying of the Lean Thinking is due to the need of the companies to increase productivity, flexibility, cost-decrease profit-increase, the flux of money and the value of shares (Maskell and Kennedy, 2007). These are the basic requirements in order to cope with

markets globalization, which forces the competition between companies based on quality, flexibility and business opportunities (Kalagnanam and Lindsay 1998).

The newest methods are based on Lean Philosophy, a concept whose implementation brings many benefits: efficiency, quality, short time of execution and delivery, flexibility on market requirements and a lower resources consumption and accordingly lower costs.

The factories which have applied the Lean Philosophy are looking for new accounting methods which should cope with the changes determined by the Lean Thinking. This new approach is called Lean Accounting and the aim of this work is a better understanding of this new cost management system. Although the international specialized literature gives a greater attention to this new concept, there are fewer approaches of this concept in Romania (Briciu, 2010, 2012; Cokins, G.; Capuseanu, S.; Briciu, S., 2012).

## 2. The Context for Lean Production

The model of the Lean Production was born in the 50s at Toyota factories. They were looking for an entrance on the low markets with a variety of cars, and this required a stressed flexibility on the production system of the factory. The main aim was a low cost and no-loss activity. The losses were grouped in 7 categories: 1) overproduction; 2) wasted time in order to wait for something; 3) useless transport; 4) useless manufacturing; 5) useless stocks; 6) useless movements; 7) defaults, corrections, mending or reprocessing. The TPS system acts upon the causes which determine losses in a factory in order to succeed in improving quality, costs, and production-time and deliver (Womack, Jones and Ross, 1990).

Due to the oil crisis from 1973, the TPS model was adopted by many Japanese factories.

Lean production was a solution for the market competition and it was made of: 1) quickness of delivery, 2) implementing and developing new products, 3) delivery in a little amount and oftener, 4) lower prices, 5) faultless products and of a better quality.

The term Lean was introduced for the first time by J. Womack and D. Jones in their work *"The Machine that changed the world"* published in USA in 1990, the benefits of this concept being known in America.

The concept of Lean production is not new, being a combination of the techniques used in the past and presented in a consolidated way. These are: the PDCA cycle, the JIT production, and the systems: KANBAN, KAIZEN, JIDOCA, POKA YOKE, TPM, 5 S, SMED, HEIJUNKA, HOSHIN planning, Visual Management, and Standard Work. The "Just in Time" production represents the basis for a Manufacturing Lean System.

"Just in Time" is a means of removal for dysfunctions, of reducing the waste from the manufacturing systems, which will lead on global performance improvements (Briciu and Tabără, 2012).

Lean Manufacturing Methodology allows making a product in time with a predetermined waiting speed or other delays. The product is launched in the manufacturing line as an answer to the real request, not in accordance with the request based on a planning system. Thought as a fluid in a pipe, the products move as a tide without stopping during the manufacturing process.

The Lean Philosophy is based on maximum flexibility and reactivity on inquiry fluctuation and on reducing of waste in the organization (Briciu and comp., 2010).

## 3. The Lean Principles

According to Womack and Jones (1996), a lean entity is based on the following principles: 1) the specification of the product's value from the final client's point of view; 2)

identification of the value chain eliminating the loss generating activities; 3) a creative value-activity tide, so that the product should arrive at the final client through a continuous process; 4) the possibility for the client or for the beneficiary to apply the “pull” system in order to extract the product from the manufacturing tide; 5) the improvement of the process until the maximum value is reached without any waste.

Richards (1996) thinks that the following principles are important: 1) identifying and eliminating the unnecessary functions and products; 2) eliminating the stocks using JIT; 3) reducing of the structural costs in order to improve communication (reducing of bureaucracy); 4) reducing of the manufacturing and of the design time; 5) improvement of the products' quality; 6) continuous introduction of new products; 7) increasing flexibility; 8) improvement of the outdoor world interaction.

Karlsson and Ahlström (1996) establish the following principles for a Lean factory: 1) eliminating wastes; 2) continuous improvement; 3) zero faults; 4) JIT system; 5) PULL system; 6) multi-discipline teams; 7) non-centralized decisions; 8) integrative functions; 9) vertical information system.

These principles, irrespective their approach, represent a set of actions which should be taken in implementing the Lean thinking system.

#### **4. The Benefits of Lean Production**

Womack and Jones (1996) present the benefits for the factories which have applied the Lean concept as follows: 1) 50% free space from the used one; 2) 15-20% increase of productivity/year; 3) diminishing deliverance time from weeks to days; 4) products' quality improvement.

According to Basem and Raid (2006), a factory which applies Lean thinking should expect the following results: 1) reducing Lead Time; 2) decreasing of stocks; 3) less faults; 4) a better usage of the resources; 5) improvement of the products' delivery rate; 6) productivity increase; 7) reducing the unit cost.

Evans and Lindsay (2008) present the advantages of implementing Lean in a quantity form: 1) 60% shorter manufacturing time; 2) 40% better space usage; 3) 50% fewer stocks; 4) 50% quality improvement; 5) 20% increase of productivity.

Briciu and company (2012) present the results of implementing Lean as follows: 1) reduced costs and shorter reaction time at the market signals; 2) increase of productivity and fewer stocks; 3) quality improvement, delivery deadlines improvement and working condition improvement; 4) employees' motivation; 5) total clients' satisfaction.

We can say that Lean Production reduces the time between the client's order and the receiving of it through: eliminating of waste, usage of flexible assembling cells and lines and highly qualified workers, obtaining high quality products with less costs through improvement of the manufacturing process.

#### **5. The Shortcomings of the cost systems for a company which applies Lean Production**

Adopting the Lean system one can achieve significant improvements of productivity, quality, flexibility, delivery and costs. Although many companies have introduced the Lean Practices, these were not based on a suitable cost management system. Thus the companies realize that the traditional cost management methods are in a conflict with the implemented Lean methods (Womack and Jones, 1996).

The problem is that the majority of factories are using cost systems thought for companies with the manufacturing systems for a great amount of products in order to take

advantage of the maximum usage of the labour force and of the working equipment. Today this paradigm is no longer valid, the majority of companies being in a continuous competition, change of manufacturing speed and instability of inquiries. On these conditions, the companies apply the Lean Thinking principles, but they do not change the cost management system.

As Dopico (1996) says, the manufacturing system has an important effect on the given type of information, being an important factor for the choosing of the optimum accounting system.

Maskell and Bagaley (2012) present a series of shortcomings of the traditional accounting methods applied to a company which has implemented Lean Production:

- the traditional accounting gives a greater importance to the costs' variations (made versus forecasted), but they are presented too late, so that their opportunity in sustaining managerial decisions is void;
- the traditional accounting stimulates overproduction, motivating a great number of products in order to diminish the integrated cost;
- the traditional accounting gives difficult reports for those who are not prepared in accounting, and this can bring to wrong decisions;

The traditional accounting system issues accessible reports only for a small number of people from the company (Mc Vay, Kennedy and Fullerton, 2013). During the lobby made for Lean Accounting, Rafael Carlos Cabrera Calva says in his book: *Bases para Contabilidad Lean*: "In a successful company, the employees should make the decisions. In order to make effective decisions, they should understand the consequences of those decisions". Thus, a Lean company is in a continuous looking for a grater simplicity and transparency.

The traditional Accounting was created for the mass production it promotes overproduction (the most critical loss from the Lean point of view); it absorbs the costs through maximum continuous functioning of all the equipment, without an inquiry from the clients for the whole production (the PUSH system), which allows the development of other categories of losses ( for example useless stocks). It is looking for greater amounts of manufacturing in order to reduce the unit cost, totally against Lean thinking. In order to sustain my idea, I will quote a statement belonging to Taichi Ohno, who distinguished between apparent efficiency and real efficiency: "In a manufacturing department the employees make 100 products in a day. If, due to the process improvement, they will make 120 products in a day, then it can be said that the efficiency increases with 20%. But this thing is real if only the clients' inquiry rises with 20%. If the rise remains stable at 100 products in a day, the only way of increasing the process' efficiency is to determine how can be manufactured the same number of products with less effort and less raw materials" (Womack, Jones and Ross, 1990).

As an answer to the reproach against traditional methods of costs calculation, Cooper and Kaplan suggest the ABC method as an alternating support for the managers, giving them useful accounting information for the assessment of the resources allocated in the companies (Briciu and comp., 2010).

In their paramount work about Lean Thinking, Daniel T. Jones and James P. Womack, criticize the usage of the standard cost in a Lean company. Although they admit the usage of the ABC costs system in companies which has implemented the Lean Manufacturing system, they also say that this is not the adequate costs system.

Although they acknowledge its merits, the ABC method is criticized for not offering a radical programme for eliminating the losses and reducing costs, the secret being the design

operation and not the separation of the activities (Johnson 2006). Another shortcoming is that the ABC method is an expensive one, its maintenance costs being against Lean Thinking.

## 6. Lean Accounting

In order to obtain the expected results, the companies which have adopted the Lean Manufacturing system should apply the Lean Thinking model at all company's levels including the accounting activity.

Lean Accounting refers to the management accounting, the information belonging to financial accounting being established through exact rules which should be presented in accordance with the legal requirements and they cannot be simplified (Johnson, 2006).

Due to the necessity of a new costs system for Lean Manufacturing, Brian Maskell and Bruce Baggaley have developed a model of costs management based on the stream value, the so called Value Stream Costing (VSC). They warn us that in order to be efficient the presented model, the company should be in an advanced process of Lean Manufacturing. VSC should be adopted only when the company fulfils the short lead times (the sum of the necessary times from the client's order to the delivery of the required product), has lower inventory levels (small and stable stocks) and it is organized along the value stream (Maskell, Baggaley and Grasso, 2012).

Lean Accounting, regarded as a series of Lean methods and techniques applied in accounting was born in 2005 at Lean Accounting Summit.

Like Lean Production, which follows the simplification of the processes and losses reduction during the production process, Lean Accounting simplifies the accounting reports and eases their understanding (Carnes and Hedin, 2005). One of its main objectives is to measure the financial impact of implementing the improvement projects whose aims are the business support (Brosnaham, 2008).

Lean Accounting reflects the business strategy, the information being collected and presented in a visual simple way (Maskell and Kennedy, 2007). The main aim of Lean Accounting is to eliminate wastes through identifying its sources.

**Assessment of Lean Production.** It is made with Value Stream Costing method and with Features and Characteristics method.

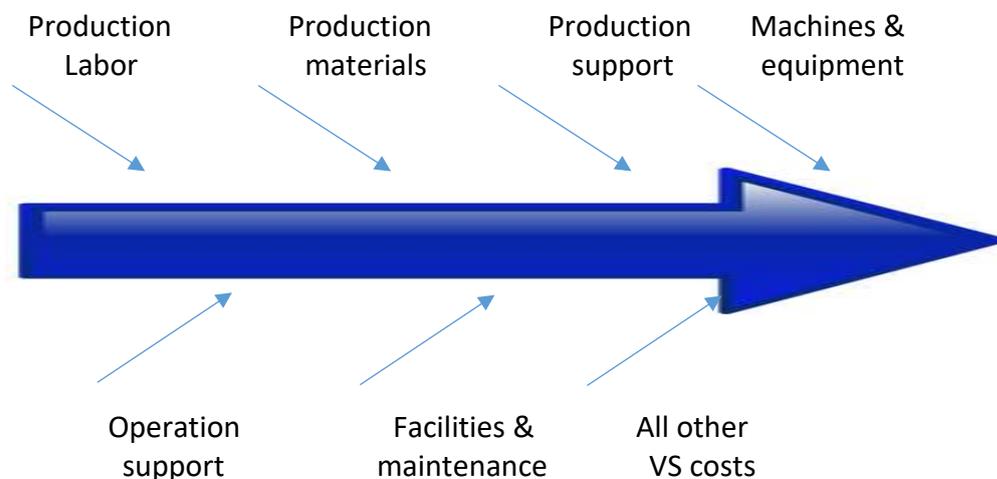
The Lean Accounting system organizes costs in a value stream which includes everything is valuable for the client regarding a product or a set of products. This approach is simple and easy to understand.

The calculation methods for the costs based on the production volume which take into account indirect costs and which need waste of resources for their maintenance and for their implementation are opposed to Lean Thinking.

The concept of value stream is based on the belief that in order to obtain the expected financial improvements, one should analyze the whole activities starting from the client's order until the payment of the product by him. Through the value stream can be seen the necessary processes in order to deliver the product to the client in a unitary form. Not using it means that the departments of an entity could optimize their own activity, without taking into account the impact of the taken measures upon the other departments.

The diagram of the value stream is a very important tool which helps Lean to change into a holistic prospect identifying the current state and the opportunities of improvements.

The Value Stream Costing does not distinguish between direct and indirect costs; all costs connected with the value stream are included in it, being considered direct costs (Figure 1).



**Source:** Maskell, B.; Baggaley, B.; Grasso, L., 2012, Practical Lean Accounting, Second Edition, CRC Press, New York, p. 26.

Figure 1. Value Stream Costing

**Management of Lean Costs.** The Management costs methods should answer to the clients' requirements, starting from the draft phase, regarding both the quality and the prices of the products; these should also reduce the costs of the existing products through elimination of wastes and through lowering the costs. Lean Accounting uses simultaneously the Target Costing and Kaizen Costing methods.

These methods should be connected in a sequence way, so that the global cost of management during the life cycle of the product to be applied accordingly (Monden and Hamada, 1991).

The advantage of these methods resides in allowing understanding the way how the company creates value for the client and what should be done to obtain a greater value.

Target Costing is a method based on the idea that the price of the product and the improvement processes should be established taking into account the clients' needs, the price they want to pay, respective the value of the product. Its primary aim is clarifying the clients' needs and values, and then, taking into account the given information the target costing is obtained, starting the continuous improvement process (Kennedy and Brewer, 2005).

Target Costing is an aim which should be targeted. The usage of this method means that both the designers of the product and the specialists in supplies and in production should work as a team. They should determine the characteristics of the products and processes which allow the target costing to be a real aim (Briciu, 2006).

Target Costing exemplifies the first and the fifth principle of the Lean Thinking, focused on the client's value and on reaching perfection. Target costing is extracted from the value stream in order to start the improvement projects and to reduce the costs; to bring the value stream costing on the same line with the target costing, ensuring high levels of the clients' values and the corresponding level of the company's benefit. The result is a series of improvement initiatives regarding: sales, marketing, the product's design, the supply, the operations, the administrative processes (Maskell, Baggaley and Grasso, 2012).

Target Costing is applied in the design and product development and Kaizen Costing is used to manage costs during production (Lee și Monden, 1996).

**Performance assessment.** It should be supported by the operational measures on the working cells level and on the value chain level, keeping the connection between these, the objectives and the company’s strategy.

Fiume and Cunningham (2003) states that in order to sustain the continuous improvement, the performance assessment should: 1) be a support for business strategy; 2) it is structured in order to promote adequate behaviour; 3) be simple and easy to understand; 4) measure the processes, not people; 5) use fewer indicators; 6) measure the real results; 7) give information in real time.

The Lean Performance assessment represents the applying of the visual management on the level of accounting activity, being the assessment and control element of the Lean production cells, for the value streams and for the whole company. Similar measurements are used for the non-productive cells and processes.

In Lean Accounting the performance assessment is made by using a tri-dimension table called Box Score (Table no.1) which is presented in an accessible way for every employee, its visualization allowing identifying the zones which need improvements and so the progresses made can be followed. Box Score presents a summarized report of the value stream on the operational, financial and usage level.

The measures which should be applied depends upon the company’s technology, dimensions and strategy, but on the other hand upon both the industry’s and the field’s functioning characteristics (Bhasin, 2008).

Table 1. Box Score Example

	Measure	Current State	Future State
<b>Operational</b>	Sales per person		
	On-time delivery		
	Dock-to-dock time		
	First time through		
	Average cost per unit		
	AR days outstanding		
	Floor space occupied		
<b>Capacity</b>	Labor: Productive		
	Non-productive		
	Available		
	Machine: Productive		
	Non-productive		
	Available		
<b>Financial</b>	Inventory value		
	Revenue		

	<b>Material cost</b>		
	<b>Conversion cost</b>		
	<b>Value stream profit</b>		
	<b>Return on sales</b>		
	<b>Cash flow</b>		

**Source:** Maskell, B.; Baggaley, B.; Grasso, L., 2012, Practical Lean Accounting, Second Edition, CRC Press, New York, p. 26.

### 7. Lean Accounting Benefits

Adopting of Lean Accounting by a company which has implemented the Lean concept stimulates long term Lean development due to the important benefits it has:

- Correct information on useful time, which make them useful and opportune;
- Lean focused indicators which give coherent Lean thinking on all levels and for all processes of the company;
  - The used meters help on an easy identification of the possible development directions;
  - Simplify the reports, eliminating waste and reducing the working time and costs;
  - Clear and easy to understand by everybody;
  - Allows a financial control for the whole value stream;
  - It is directed through a price fixing strategy, starting from the product's value for the client;
- It is quick, able to react in real time generating the necessary information on the suitable moment.

### 8. Conclusions

In order to suit nowadays economical conditions, many companies have adopted a production system based on Lean Thinking. The companies which have implemented the Lean Production system saw that the costs management methods used were in discrepancy with the Lean concept, being considered unsuitable and hostile to Lean Thinking. That is why Lean Accounting has developed; being a new management accounting method which expresses thoroughly the Lean Thinking and the Lean Practice and whose advantages are obvious.

The research made has emphasized the necessity of implementing the Lean concept in a company due to the following aspects:

- The necessity of implementing the Lean Production system, due to the fact that many of the problems nowadays are similar to those of Toyota company in 1950: highly fragmented markets with different products inquiry in small volume; a strong competition; fixed or lower prices; quick technological changes; high level of capital costs; able workers who require a greater involvement. All these need a change: a Lean type entity.
- The greatest challenge of the 21st century is costs lowering and the possibility to produce more using less-less time, less space, less human effort, fewer materials, less equipment-at the same time satisfying the clients' wishes. These are the objectives of the Lean system.
- The majority of economical activities have a fix or a lower price. The buyers are more powerful than ever; they have many options, unlimited access to information, asking for excellent quality at a reasonable price and a quicker delivery of the product. This can be made through a Lean approach whose aim is to focus on the client in order to deliver products of the best quality, at the best price and in the shortest time possible.

▪ The new ideas are reactions to the real problems. The economic crisis has emphasized more than ever the necessity of implementing Lean Thinking in companies. Although some companies have implemented the Lean Production, the costs management system has not changed. In order to obtain maximum results, the Lean Thinking should be applied for all activities in a company, especially for accounting.

▪ The costs management systems used by the companies imply greater efforts for a detailed report of costs. The Lean Accounting simplifies a lot the process itself, reducing the necessary time and effort for collecting the data, changing them into meaningful information. The Lean Accounting system presents information so that everybody can understand them, in a simple way. It should be mentioned that this Accounting system can be applied only for a company which has implemented the Lean Production, this being a long and difficult way, but the results are those expected.

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