

Lean Accounting Method for Reduction in Production Costs in Companies

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Abstract

Today companies develop new production systems in order to provide better and more convenient service for their customers. Replacement the traditional manufacture system with the modern ideas requires businesses to review their processes and adopt modern approaches. In this context, lean manufacturing system is one of the production systems which are developed. In a company which adopts lean production system, it is a necessity that the accounting system changes have to be made. Lean accounting is a series of methodology designed to support lean manufacturing methods. In lean accounting system, every single process is considered as additional cost, and be evaluated in this regard Therefore, lean accounting its self should be lean and remove additional waste. Value stream costing is one of the tools used by lean accounting approach to improve decision making process through identification and elimination of unproductive activities. We focused on this study lean thinking, the emergence of lean manufacturing and lean accounting.

Keywords: Lean thinking, lean manufacturing, lean accounting, lean enterprise

1. Introduction

Companies have been affected by rapid changes in the world economic environment in recent years in many respects. Increased global competition and technological developments have revealed needs for changing management approaches and practices. In today's global competitive environment, companies give services to buyers who become more demanding. To maintain their presence, companies must adapt their structure to meet customers' demands with higher quality lower price as well as short delivery time, and also companies have to meet the expectations for the instant orders with, the more variety of products in smaller quantities rapidly. Lean production system has emerged under this conditions and obligations. By revealing malfunctions and presenting more effective ways of working, Lean Manufacturing provides a competitive advantage for both organizational level and countries Lean manufacturing is not just a manufacturing technique. It is an approach that can be applied in many areas such as service delivery product development, public service, and commercial activities. A company which is adopted lean production system it is necessity that the accounting system changes have to be made. We focused on this study lean thinking, the emergence of lean manufacturing and lean accounting.

2. Lean Thinking

2.1. Lean Thinking Concept

Lean thinking provides ways to define value, put in order to value creating activities in a way to give the best, to implement these activities continuously when requested, gradually allows to make them increasingly effective (Womack & Jones, 2007). Lean thinking involves the set of measures taken against wasting. Lean thinking knows that the product will not be affected if the wasteful activities are going to be removed (Kömürçü, 2007).

2.2. Elements of Lean Thinking Systems

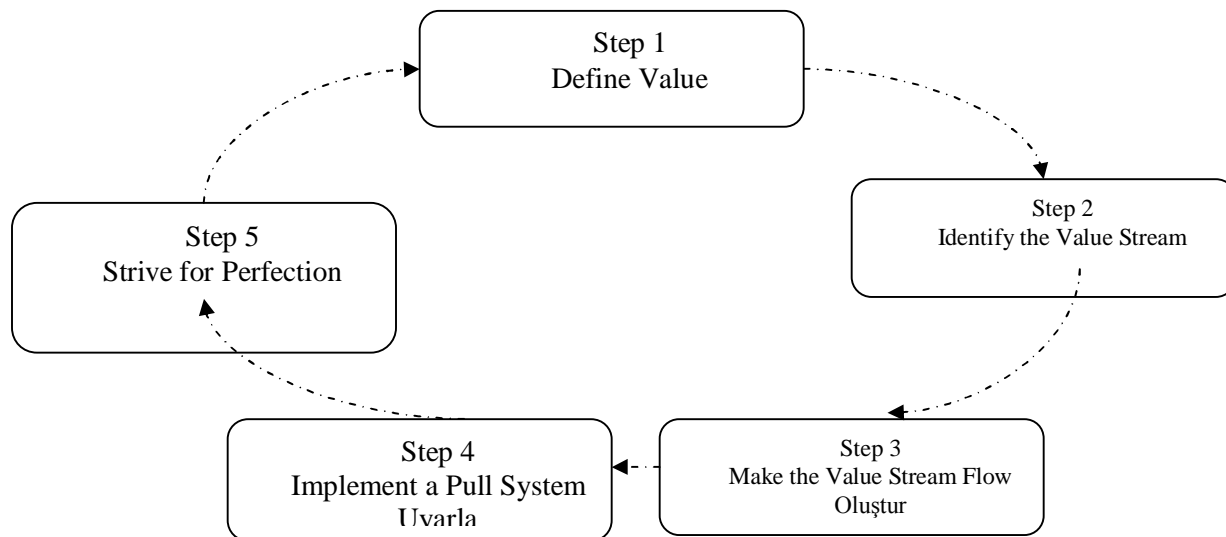
The main objective of Lean Thinking is rapidly delivered to the value from the raw material first ever continuous pouring along the value creation process to the final customer. To achieve this, it is necessary to consider the entire value chain as an integrated framework, to eliminate waste, and to redirect all activities to the objective to create great value for customers. ¹

¹ "Yalın Yaklaşım", www.yalinenstitu.org.tr, 10 Aralık 2014.

Basic principles of lean thinking are listed as follows (Şakrak, 2008):²

1. **Identify Customers and Specify Value** - The starting point is to recognise that only a small fraction of the total time and effort in any organisation actually adds value for the end customer. By clearly defining Value for a specific product or service from the end customer's perspective, all the non value activities - or waste - can be targeted for removal.
2. **Identify and Map the Value Stream** – The Value Stream is the entire set of activities across all parts of the organisation involved in jointly delivering the product or service. This represents the end-to-end process that delivers the value to the customer. Once you understand what your customer wants the next step is to identify how you are delivering (or not) that to them.
3. **Create Flow by Eliminating Waste** – Typically when you first map the Value Stream you will find that only 5% of activities add value, this can rise to 45% in a service environment. Eliminating this waste ensures that your product or service “flows” to the customer without any interruption, detour or waiting.
4. **Respond to Customer Pull** – This is about understanding the customer demand on your service and then creating your process to respond to this. Such that you produce only what the customer wants when the customer wants it.
5. **Pursue Perfection** - Creating flow and pull starts with radically reorganising individual process steps, but the gains become truly significant as the entire steps link together. As this happens more and more layers of waste become visible and the process continues towards the theoretical end point of perfection, where every asset and every action adds value for the end customer.

Figure 1: The Lean Thinking Model



Source: Kennedy, Frances A., Brewer, Peter, “Lean Accounting: What’s It All About?”, p.28.

These principles and stages are considered basic elements of lean manufacturing.

3. *Lean Product*

Lean Manufacturing is a system based on everyone participated to achieve perfection and solving problems through continuous research. Lean manufacturing is a mode of production that respond exactly to customer demands with least amount of resources, in a short time, with a cheapest and accurate products, and use all the factors of production in the most flexible manner, utilizing all of the potential (Kocakoç, 2008). Lean manufacturing is based on the principle to perform all of these objectives simultaneously. In other words, overall activities in a production process can be summarized under two headings (Zaman, 2012). Value-added activities; all activities that change or improve the form of the product, the function or service level. Non value-added activities; all activities that not to change or improve the form of the product, the function or service level.

² “The Five Principles Of Lean Thinking”, <http://www.cardiff.ac.uk/lean/principles/>

Lean manufacturing will have positive results in the medium and long term, but not in a short time. Companies will need active management approach in order to increase their profitability.

4. Lean Accounting

4.1. Lean Accounting Concept

Standard cost system has emerged as a result of the implementation of mass production systems and "Lean Accounting" has emerged as a result of the implementation of Lean Manufacturing system. Following the lost of functionality of traditional production system based on the amount of production, traditional cost accounting systems such as standard costing has also lost functionality. Traditional cost systems has entered into a process of change and transformation in order to meet the requirements of global competition. Lean Accounting is a concept that emerged in the results of this transformation from traditional cost accounting to strategic cost management (Altınbay, 2006, p.119). Lean thinking is confined to the production function, so the developments in the production process in firms could not be reflected in the financial statements. Lean accounting is a general concept that is used to describe, to support lean thinking and lean production that changes in the company's accounting, control, measurement and management processes (Gürdal, 2007, p.59). In lean accounting, transactions is undertaken by the meaning of attributed to inventory in lean manufacturing. Each process are considered as waste, and hence cost in lean accounting. Lean accounting is a series designed to support lean manufacturing methods. Therefore, lean accounting itself should be plain and remove additional waste. In lean accounting all transactions is considered as waste because all these transactions not add a value to product and service when the system is getting simple, it becomes easier to control employees (Gürdal, 2007,p.60).

4.2. The Purpose of Lean Accounting

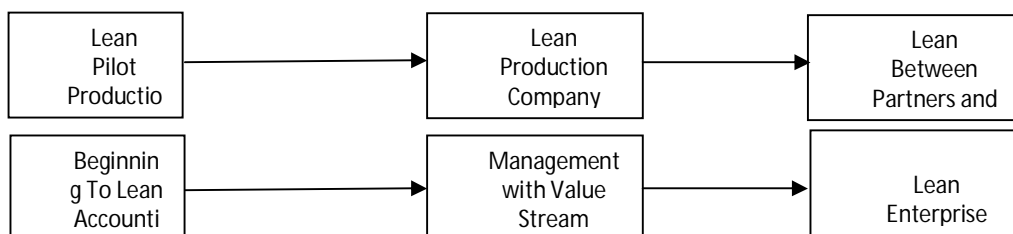
The purpose of lean accounting can be explained as follows:

- To submit to performance measurement and cost information to the value stream leaders to provide them that control effectively the flow of value and support continuous improvement,
- To provide information for cost reporting and measurement of performance to senior employees.
- To provide related cost information this will be recorded in accounting and the income statement.
- Lean accounting aims to provide useful information for working actively to implement lean production manufacturing process and maintain.

4.3. Stages of Lean Accounting

Lean accounting should be applied in parallel with consistently implementation of lean thinking and lean manufacturing techniques. For the transition to lean accounting firstly, need to know what path we are in the maturity stage of lean manufacturing and than a maturity path should be selected accordingly (Maskell & Baggaley, 2004).

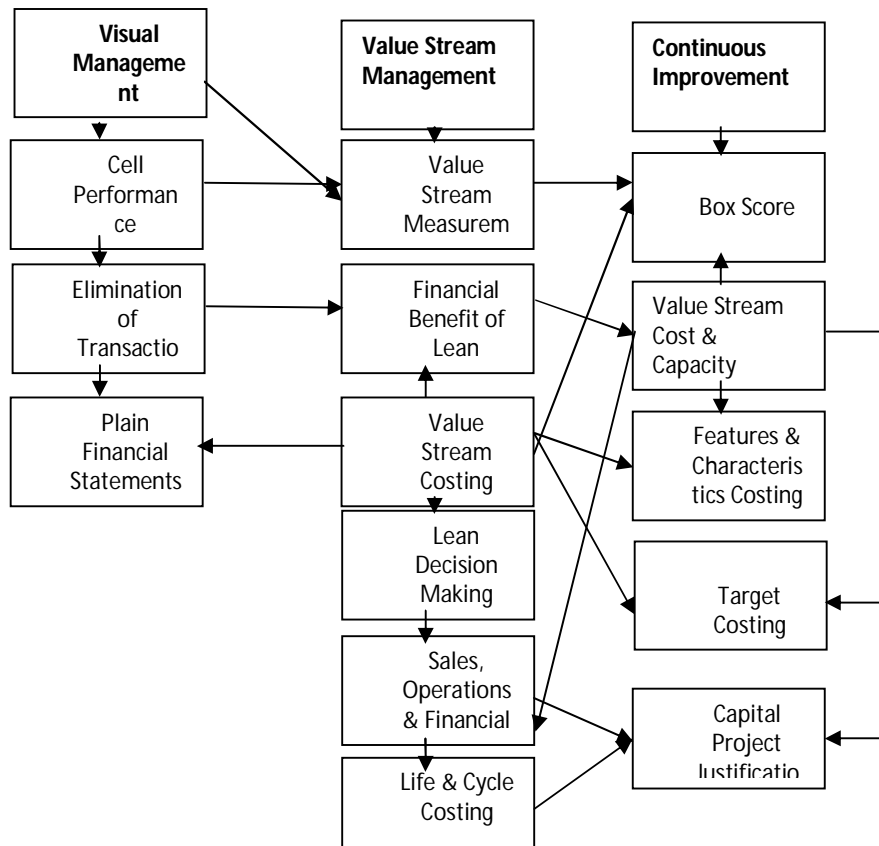
Figure 2: Lean Manufacturing Maturity Path



Source: Maskell, Brian H. , Baggaley, Bruce, "Practical Lean Accounting: A Proven System for Measuring and Managing the Lean Enterprise", 2. Part

4.4. Instrument of Lean Accounting

Traditional mass production is the opposite of lean production. Lean manufacturing brings a very different perspective on business management. Lean manufacturing is not taken out of production process in many firms. With the implementation of lean manufacturing accounting, performance measurement, control, decision-making process and the perspective of business management will change.

Figure 3: Tools of Lean Accounting

Source: Brian, Maskell, "What is Lean Accounting",

http://www.maskell.com/lean_accounting/subpages/lean_accounting/components/What_is_Lean_Accounting.pdf, p.2.

4.4.1. Visual Management

Visual management is one of the most effective ways of setting up a lean organization. And also is one of the most effective ways for companies to show the highest performance with minimal error. The aim of visual management is to provide all the information with visual and auditory methods. This information also should be so simple and clear that everyone can understand, and know, and easy to monitor. Contribution of such a system that allows to reduce complex procedures to the simplest as much as possible, and also decrease the need of sophisticated computer system even if necessary would be highly considerable. Visual management will greatly affect management costs in terms of providing an ability to easily control (Sileey, 2010). Lean accounting encourages long-term lean improvements with lean -oriented information and measurements. Lean performance measures are the corner stone of management, lean manufacturing cells, value stream and all factory or business control. Similar performance metrics used in the cells and inefficient processes. This lean performance metrics is designed to encourage completely lean behavior and maintain continuous improvement at all levels of the organization (Gürdal, 2007, p.64).

Visual management and control (Sileey, 2010):

- Such a system is enabling an instant solution by showing everyone irregularities with the simple methods
- Such a system is providing operating system and rules in a way that everyone can understand and apply
- Such a system is providing quality system and rules to everyone in the easiest way to understand
- Such a system is delivering rules and policies the simplest and easiest way to everyone.
- It is the system that gives employees feedback as quickly as possible

The following table shows an actual performance metrics used by business to measure the cellular level, flow level and at the enterprise level.

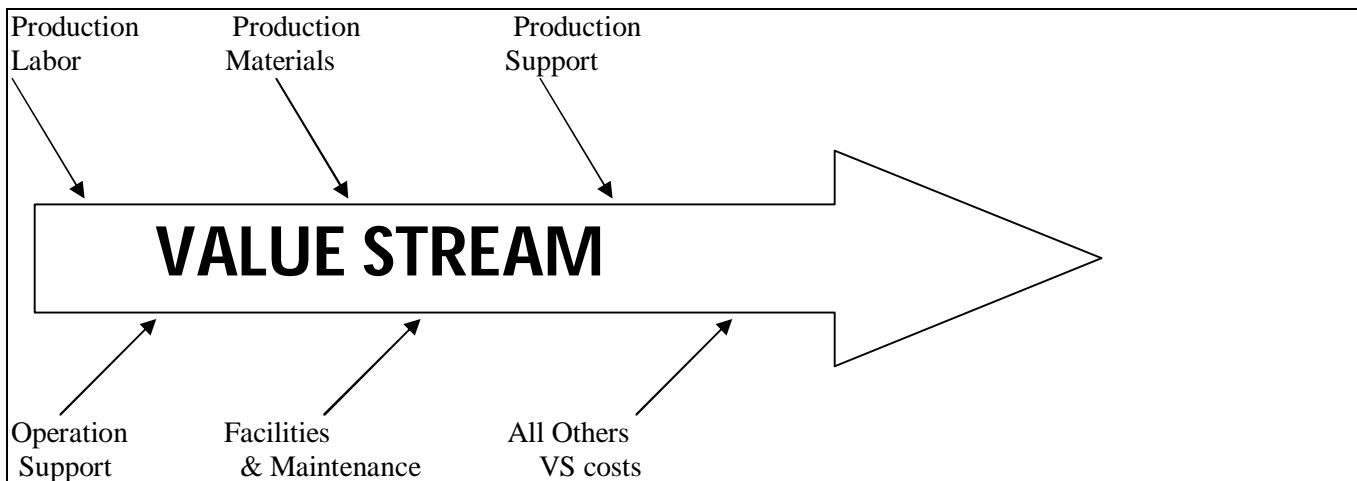
Figure 4: Examples of Performance Measurements Reflecting Lean Motivation

Strategic Issues	Strategic Measures	Value Stream Measures	Cell/Process Measures
<ul style="list-style-type: none"> - Increase Cash Flow - Increase sales & market share - Continuous improvement culture 	<ul style="list-style-type: none"> - Sales Growth - EBITDA - Inventor Days - On-Time Delivery - Customer Satisfaction - Sales Per Employee 	<ul style="list-style-type: none"> Sales per Person On-Time Delivery Dock-to Dock Time First Time Through Average Cost Per Unit AR Days Outstanding 	<ul style="list-style-type: none"> Day-by-the Hour Production WIP to SWIP First Time Through Operational Equipment Effectiveness

Source: Brian, Maskell, “What is Lean Accounting”, http://www.maskell.com/lean_accounting/subpages/lean_accounting/components/What_is_Lean_Accounting.pdf, s.7.

Lean companies must face is what purpose their standard costing systems serve and the conditions under which they could be done away with and replaced by a method that is simpler and consistent with the goals of lean. The method is value stream direct costing, in which all costs incurred by the value stream are charged into a cost pool for that value stream. The product cost is then the average cost of items manufactured by the value stream during the period. A depiction of the cost pool is presented below:

Figure 4: Value Stream Costing



Source: Maskell, Brian H., “Lean Management Accounting”, http://www.maskell.com/lean_accounting/subpages/lean_accounting/lean_management_accounting.html; 10 Dec 2014.

Labor costs have both traditional direct costs as well as indirect costs. Material costs, usually depends on material that purchased amount for value flow in a week. When the material is transferred to factory the cost is transferred to the value stream. Total value stream materials cost is the sum of the cost of of all materials purchased in a week. Accordingly, material cost of the raw materials for being valid semi-finished products and production of material that held in stock not to be completed yet is lower and these stocks should be in control. If inventories are low related materials will be used quickly in the related weeks and material cost of the products manufactured during the week will be reflected correctly (Gürdal, 2007,p.70). The cost of any product produced in the value flow, it is assumed that the average cost of all products generated in each stream for a certain period. Value Stream Costing eliminates detailed cost tracking requirements by the traditional approach and monitoring based on these costs and therefore thousands of transactions leading to waste. Value Stream Costing provides understandable, timely and available information for the cost and profitability for the relevant part of the business (Maskell & Baggaley, Practical Lean Accounting: A Proven System for Measuring and Managing the Lean Enterprise, 2004,p.28).

To work of value stream cost effectively following elements must be adhered to (Maskell & Baggaley, 2004, p.31):

- Reporting must be performed in accordance with, value stream, not departments.
- Sharing value stream information's with employees appropriately
- Decreasing number of commonly used workplaces as much as possible
- Controlling production processes rationally, and limiting variables
- Monitoring irregularities out of control such as wastages and duplications etc.
- Monitoring inventories, keeping inventory turnover low.

4.4.2. Sales, Operations and Financial Planning (SOFP)

Customer orientation and flexibility is not arbitrarily in lean organizations, but the result of good planning and coordination. SOFP is a meeting and planning format that brings these coordinated together along with sales, marketing, manufacturing, logistics, new product development and other operations. The planning process is a plan that ranging from 9 to 18 months, producing long and short term plans and providing customer satisfaction as well as to meet the strategic and financial objectives of the lean company (Maskell & Baggaley, 2004, p.35).

4.4.3. Lean Accounting Financial Benefits

Lean thinking will need to demonstrate the tangible financial improvements to gain acceptance by the managers. Lean accounting reveals clearly the financial impact of lean improvement. While enlargement of business; lean accounting allows malfunctions such as reproductions, over productions either to be converted to useful components or eliminate the unproductive jobs by changing system.

4.4.4. Lean Decision -Making

Lean accounting which is believed that provide better information for decision-making increases the sales due to its properties. It is also possible to make wrong decisions when using the traditional cost information in respect of decisions such as pricing, producing /purchasing, product development, capital investment and new product. Therefore lean businesses need better tools such as Costing Value Stream and Lean Decision Making (Kroll, 2004).

4.4.5. Continuous Improvement

The most important feature of continuous improvement (kaizen) is that improve steadily but forwardly. It should be main result of these studies. Each improvement which is made should become permanent. Impermanency is the most significant obstruction to step forward.

4.4.6. Costing Stream Value & Volume

Lean accounting clearly reveals the financial impact of lean improvement. Many enterprises which are implemented lean production use traditional cost saving method, when they evaluate the benefits of lean improvement. These enterprises expect cost reduction in short term as a result of lean changes. However most of these enterprises have not been provided expected cost savings. Lean accounting acknowledges that the first effect of preventing wastage is to create available capacity. Financial impact of lean improvement is based on this available new capacity and how it is used by the company. Within this framework, it is possible that employee dismissal, capacity increasing and sales increasing or using capacity differently. (Solomon, 2006). The question which is value stream managers must ask themselves when they make lean plan is that "how much capacity can be acquired from lean enterprise and how this capacity can be used enlargement of business and improvement of its profitability". To understand how to use the capacity, activities which are stated in the value stream, employees and machine time are required to better understanding. Information concerning to activities derive from information relating to each production process. This information appears in the value stream map which is called the data boxes (Gürdal, 2007, p.67).

4.4.7. Data Box

Using data boxes, resource capacity is derived; whether capacity is used efficiently or not; whether it is appropriate to make arrangements in a more efficient way or not; and previous and subsequent situation of planned lean improvements are compared. Thus; result of comparison indicates the effect of lean on the way of sourcing and provides the basic planning which is required to use of idle capacity effectively (Maskell, Lean Manegement Accounting, p.7).

Data Box is widely used in lean accounting. It is used to obtain a report that summarizes the operational, financial and capacity utilization of the value stream. Data box may be used at other times in order to weekly reporting of the value stream, taking strategic decisions, the calculation of the financial impact and showing a summary of the value stream.

4.4.8. Property and Quality Costing

Other assessment related to features and quality approach is supporting the start - end target costing philosophy. This philosophy is necessary to support of customer value in the lean approach. Lean accounting is rarely required for a separate calculation of the cost of a single product. The justification is that important reporting and decision-making is done at the level of a value stream from a product level too. When product costs must be known separately, calculations can generally be made using only the Features and Characteristics Costing. Features and Characteristics Costing creates a cost for the individual products by understanding of what affects the cost of a product as product flows throughout value stream. Product flow rate ratio is a major determinant of the transformation costs. Features and Characteristics Costing is faster, easier and more accurate way to calculate product cost (Maskell, What is Lean Accounting, p.9).

4.4.9. Target Costing

The final leg of the Lean accounting is target costing and budgeting. Target costing enables lean company to continue business in terms of customers' value. Target costing are pushed businesses to focus on customers.

With target costing;

- The value created by businesses for customers is determined
- The maximum costs that may occur from the value stream that the company expects is determined
- Creating customer value and taking into account the company's profitability is expected to create plans for practical and value stream.
- Customer creates plans practical and for the value stream by creating value and taking into account the company's profitability is expected.

Below six fundamental principles compose the conceptual basis of target costing process. These principles;

- Costing by price ,
- Focus on customers,
- Concentrate on the finished design,
- Extensive participation,
- Reducing costs during Life Cycle
- Dealing with the value chain.

5. Lean Company

The company that manages the company value stream lean methods begins to transform into lean enterprises due to implementing lean methods, has a lean culture, to be lean in relationships with lean suppliers and customers. Lean company has three characteristics:

- Lean methods,
- Lean culture
- Lean partnerships.

The objective of the lean company is very simple. This purpose (Womack & Jones, 2007, p.64):

- To define value in terms of customers by avoiding the tendency to make value definition for each company highlighting their role in the process (for example; manufacturers that think the customer actual interest is physically the product, independent sales and service companies that are believing constitute the majority of the value perceived by the customer relationship interactively with the customer, etc.)
- To define ongoing activities as long as it is used and to bring a product from order to delivery and raw material to customer.
- Then, to destroy activities do not create value and provide a continuous flow of activities that creates value drawn by the customer.
- Finally, restart the evaluation process by analyzing the results.

- To continue this cycle which is part of the management, or even as a core activity for the lifetime of the product or product group,

Lean enterprise is a company that is continuously improved, so-called continuous innovation, searched better. Lean is a business in itself the existence of a verification mechanism and will continue throughout the life of the product.

6. Conclusion

A company that is convinced of the lean manufacturing philosophy should adopt simplicity in all its activities and must continue to operate under the principles of lean thinking. Companies should use lean thinking in all departments effectively. The company that implements lean manufacturing put forward the benefits of this approach in the financial reports with the implementation of lean accounting. Lean accounting is required by these companies within the framework of management accounting for producing information.

References

- Altınbay, Ali. «Kaizen Maliyetleme Sistemi:Dinamik Maliyet Yönetim Sistemi.» Afyon Kocatepe Üniversitesi, İ.İ.B.F. Dergisi, 2006: 103-121.
- Gürdal, Kadir. Maliyet Yönetiminde Güncel Yaklaşımlar. Ankara: Siyasal Kitabevi, 2007.
- Kennedy, Frances A., ve Peter Brewer. «Lean Accounting:What's It All About?» Strategic Finance, 2005: 27-34.
- Kocakoç, Mustafa. «Montaj Süreçlerinde Yalın Üretim Verileri Analizi.» Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü, 2008.
- Kömürcü, Ahmet Murat. İnşaat Sektöründe Yalın Proje Yönetimi. Kayseri: Erciyes Üniversitesi Sosyal Bilimler Enstitüsü, 2007.
- Kroll, Karen M. «The Lowdown on Lean Accounting.» 01 July 2004. www. journalofaccountancy.com (May 30, 2015 tarihinde erişilmiştir).
- Maskell, Brian H. «Lean Manegement Accounting.» http://www.maskell.com/lean_accounting/subpages/lean_accounting/lean_management_accounting.html (December 10, 2014 tarihinde erişilmiştir).
- . «What is Lean Accounting.» http://www.maskell.com/lean_accounting/subpages/lean_accounting/components/What_is_Lean_Accounting.pdf (December 12, 2014 tarihinde erişilmiştir).
- Maskell, Brian H., ve Bruce Baggaley. Practical Lean Accounting: A Proven System for Measuring and Managing the Lean Enterprise. New York: Productivity Pres., 2004.
- Sileey, Ralph. «Lean Daily Management.» 2010. <http://www.results.wa.gov/sites/default/files/Lean%20Daily%20Management.pdf> (September 30, 2015 tarihinde erişilmiştir).
- Solomon, Jerry. «Keeping Score With Lean Accounting Cost Management.» 08 Feb 2006. www.sme.org (May 04, 2015 tarihinde erişilmiştir).
- Şakrak, Münir. «Faaliyet Denetimi – Yönetim Muhasebesi İlişkisi (Yalın Düşünce Yaklaşımı).» Türkiye Maliyet ve Yönetim Muhasebesi Sempozyumu 2. Antalya: Sakarya SMMMÖ, 2008. 1-12.
- The Five Principles Of Lean Thinking. <http://www.cardiff.ac.uk/lean/principles/> (May 2015, 20 tarihinde erişilmiştir).
- Womack, James P., ve Daniel T. Jones. Yalın Düşünce. Çeviren Nesime Acar. İstanbul: Optimist Basım, 2007. «Yalın Yaklaşım.» www.yalinenstitu.org.tr (December 2014, 20 tarihinde erişilmiştir).
- Zaman, Zafer Uran. «Yalın Üretim Metodolojisi?». www.lean.org.tr/makaleler (May 03, 2015 tarihinde erişilmiştir).