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**The importance of the transferring towards implementation of lean accounting in industrial companies: a comparative analytical study of the experiences Jordan, Indonesia, and Thailand.**

**أهمية التحول نحو تطبيق المحاسبة الرشيقة في الشركات الصناعية: دراسة تحليلية مقارنة لتجارب كل من الأردن، إندونيسيا، وتايلاند**

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**Abstract:**

This study aims to highlight the importance of the transition towards adopting a lean accounting system in achieving the competitive advantage of industrial companies, by reducing cost and time, increasing productivity, increasing profits, eliminating activities that have no added value, responding to customers' requirements, and continuous improvement of the companies' activities, Jordan, Indonesia, and Thailand are among the most prominent countries that have shifted towards adopting lean accounting, with the aim of enhancing the competitive advantage of their industrial companies in the international markets.

The study concluded that the adoption of the industrial companies of Jordan, Indonesia, and Thailand on the lean accounting system had a significant impact in enhancing their competitive advantage, through the role of lean accounting in achieving financial and accounting control of production costs, focusing on profit maximization strategy, providing products Based on customers 'requests, visual performance measurement, cost and time optimization, as well as quality improvement and energy conservation.

**Keywords:** lean manufacturing, lean accounting, lean accounting in Jordan, Indonesia, and Thailand.

**الملخص:**

تهدف هذه الدراسة إلى إبراز أهمية التحول نحو تبني نظام المحاسبة الرشيقية في تحقيق الميزة التنافسية للشركات الصناعية، وذلك من خلال تخفيض التكلفة والوقت، زيادة الإنتاجية، زيادة الأرباح، القضاء على الأنشطة التي ليس لها قيمة مضافة، الاستجابة لمتطلبات الزبائن، والتحسين المستمر لأنشطة المؤسسة، حيث تعتبر كل من الأردن، إندونيسيا، وتايلاند، من بين أبرز الدول التي تحولت نحو اعتماد المحاسبة الرشيقية، وذلك بهدف تعزيز الميزة التنافسية لشركاتها الصناعية في الأسواق الدولية.

لقد توصلت الدراسة إلى أن اعتماد الشركات الصناعية لكل من الأردن، إندونيسيا، وتايلاند على نظام المحاسبة الرشيقية كان له أثر كبير في تعزيز ميزتها التنافسية، وذلك من خلال دور المحاسبة الرشيقية في تحقيق الرقابة المالية والمحاسبية لتكاليف الإنتاج، التركيز على إستراتيجية تعظيم الأرباح، توفير منتجات بناء على طلبات الزبائن، قياس الأداء المرئي، ترشيد التكلفة والوقت، إضافة إلى تحسين الجودة والحفاظ على الطاقة.

**الكلمات المفتاحية:** التصنيع الرشيق، المحاسبة الرشيقية، المحاسبة الرشيقية في الأردن، إندونيسيا، وتايلاند.

## 1. Introduction:

Business environments have witnessed several changes, the most important of which is the intensity of competition between companies in international markets, which necessitated confronting these changes through the transition of companies towards the concept of leaning their economic activities, or the so-called lean manufacturing system.

The orientation of companies towards a lean manufacturing system was accompanied by the development of lean accounting procedures and methods, represented by the lean accounting system, which is considered as a new accounting approach that has a set of principles and methods aimed at rationalizing cost and time, eliminating activities that have no added value, and continuous improvement of the activities of the company, and responding to customers' requirements.

Many countries, such as Jordan, Indonesia, and Thailand have trended to adopt or implement a lean accounting system in their industrial companies, with the aim of enhancing their competitive advantage regionally and internationally.

### 1.1. The Problem of the study:

This study attempts to answer the following problem:

- What is the impact of implementation lean accounting in industrial companies in light of the experiences of Jordan, Indonesia, and Thailand?

### 1.2. The importance of the study:

The importance of the study lies in the importance of companies keeping pace with the changes in the economic environment, which imposed on them the need to move towards adopting modern accounting systems such as the lean accounting system, which aims to achieve the competitive advantage of economic companies, by working to reduce cost and time, and eliminate activities that have no added value, Production of quality products that meet the needs of customers, in addition to the continuous improvement of the activities of the institution.

### 1.3. The objectives of the study:

We seek through this study to achieve the following objectives:

- Determine the most important reasons for the trend towards abandoning the adoption of traditional accounting in industrial companies ;

- Highlight the dimensions of the concept of lean accounting ;

-Evaluation The Implementation of lean accounting in industrial companies of both of Jordan, Indonesia, and Thailand.

## 2. the reasons for the trend towards abandoning the adoption of traditional accounting:

The most important reasons that prompted industrial companies to abandon the

adoption of traditional accounting are as follows:<sup>1</sup>

-Traditional accounting systems are large, complex processes requiring a great deal of non-value work ;

-They provide measurements and reports that motivate large batch production and high inventory levels, These measurements are suitable for mass production-style organizations but actively harmful to companies with lean aspirations ;

- The traditional accounting systems have no way to study the financial impact of the lean improvements taking place throughout the company ;

-Traditional companies use standard product (or service) costs which can be misleading when making decisions related to profitability, buy, sourcing, product rationalization, and so forth.

### **3. the concept's Dimensions of the lean accounting:**

Before defining the concept's dimensions of the lean accounting, the meaning of some concepts related to the lean environment must be clarified, such as lean, lean thinking, and lean manufacturing.

#### **3.1. lean concept:**

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. The Toyota lean manufacturing system has become over the years a model for Boeing, Porsche, Pratt Whitney, Danaher Corporation, Wiremold Company, Pella Windows and others.<sup>2</sup>

#### **3.2. lean thinking:**

Lean thinking is a set of methods that eliminate operations that do not create added value, and waste, a process improvement approach, and a management philosophy.<sup>3</sup>

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.<sup>4</sup>

#### **3.3. lean manufacturing:**

Lean manufacturing is a systematic approach to identifying and reducing waste (non value-added activities) through continuous improvement by flowing the product at the pull of the customer in pursuit of perfection, where was originally developed by Toyota, Japan and is now widely practiced by many manufacturers throughout the world.<sup>5</sup>

#### **3.4. lean accounting:**

The emergence of lean accounting is a result for the failure or inability of the traditional accounting system to adapt to the changes in the economic environment, where it aims to enhance the competitiveness of economic companies by working to reduce cost and time, eliminate activities that have no added value, and provide products that respond to the needs of customers.

##### **3.4.1. Definition of lean accounting:**

-Lean accounting is a new accounting approach that emerged with the rise of business interest to embrace the lean thinking culture, where Lean accounting aims to measure the monetary impact of implementing lean improvement projects to business processes.<sup>6</sup>

- Lean accounting can be understood as a set of managerial accounting tools adapted and structured with specific decision models to supply the decision-making process of companies that are adopting the principles and values of lean manufacturing.<sup>7</sup>

Where the Lean accounting was initially developed to support lean manufacturing companies but today it is fast moving into financial services, healthcare, government and education.<sup>8</sup>

we conclude that lean accounting is a new accounting approach that is an alternative to the traditional accounting system that aims to enhance the competitive advantage of economic companies, by working to rationalize the use of company resources, reducing production time and cost, and maximizing the value of customers by meeting their needs.

#### **3.4.2. Objectives of the implementation of lean accounting in industrial companies:**

Through the implementation of lean accounting, industrial companies strive to achieve the following goals:<sup>9</sup>

- 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.

#### **3.4.3. The importance of the implementation of lean accounting in industrial companies:**

The importance of the applying of lean accounting in industrial companies is:<sup>10</sup>

- It provides timely information that can be understood and used by everyone and the information that everybody can understand, leads to better results and decisions ;

- Better decisions lead to better pricing, production, design, low inventories, short lead-times, better customer services, and high productivity ;

- Lean accounting correctly shows the potential financial benefits of lean improvements and concentrates on the tactics required to realize the benefits ;

- Lean accounting financial and operational measurements motivate lean thinking and push everybody ahead for “what you measure is what will be improved” ;

- It focuses the business around the value created for the customer by linking performance measurements to the drivers of value creation and driving changes to maximize this value ;

- It replaces traditional measurements with few and focused lean performance measurements that motivate lean behavior at all levels of the organization and create continuous lean improvements ;

- It eliminates wasteful transactions from the system so that simple and much less work is for the accountants, operational peoples, engineers, managers, supervisors, and people supporting the customers.

#### **3.4.4. Principles of Lean Accounting:**

Lean accounting is based on 5 basic principles, which are:<sup>11</sup>

- **define value:** The value should be defined in terms of a specific product, with specific capabilities, offered at a specific price and time from the perspective of the end customer.

- **identify value streams:** This principle denotes to identify the entire value stream

for each service, product or product family and elimination of waste. The value stream is the sequence of processes through which a product is transformed from raw material to deliver at the customer’s site.

- **flow and pull:** The production process is designed to maximize the flow of the product through value stream. It means working on each design, order, and product continuously from beginning to end so that there is no waiting, downtime, or waste, within or between the steps.

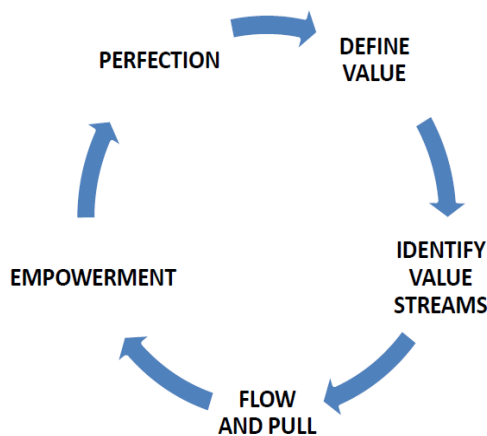
As flow is introduced let the customer pull i.e., to provide what the customer wants only when the customer wants it.

-**empowerment of people:** Lean accounting supports empowerment of people. The system of measurement and control provides each employee with the information and authority to take necessary action at the time it is required. This process starts from the top level strategic people and then rolled out leaders of the value stream team.

-**pursue perfection:** A lean thinking enterprise sets its sights on perfection. The idea of total quality management is to systematically and continuously remove the root causes of poor quality with the ultimate goal of achieving zero defects.

Where can be illustrated this principles through Figure N°1

**Figure1.** Principles of Lean Accounting



**source:** Vineeta Arora, lean accounting: a case study of selected enterprises in india, a thesis of Ph.D, mohanlal sukhadia university, udaipur, 2016, p 22

**3.4.5.the steps of lean accounting applying in an economic company:**

The implementation of lean accounting in an economic company base on the following steps:<sup>12</sup>

- Creating functional indices and information reporting’s of lean management ;
- Relating cellular function of measures and value flow with strategic goals ;
- Developing pricing of value flow and gain and loss statements of value flow ;
- Teaching value flow to the managers and financial staff in order to decide by lean accounting tools ;
- Deleting transactions and other complexities from financial process ;
- Pricing based on the goal and processes of opportunity pricing ;
- Financial, operational and selling schematization ;
- Applying lean methods in financial and supporting divisions ;
- Teaching all staff in all of the levels to participate completely in lean metastasis process;
- Training and developing organization leaders due to the lean philosophy and lean accounting.

**3.4.6.The Differences Between Traditional Accounting and Lean Accounting:**

The most important differences between traditional and lean accounting can be highlighted in Table 1<sup>13</sup>

**Table 1:** The Differences Between Traditional Accounting and Lean Accounting

Lean Accounting	Traditional Accounting
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1- Includes simple and quick operations.	1- Include complex and large operations.
2- The cost object is the value stream.	2- The cost object is the product.
3- Value stream indicators contribute to decision-making.	3- Reports of standard variances contribute to decision-making.
4- The continuous improvement method is used to decision-making.	4- Differential cost analysis is used to assist in decision-making.
5- Pricing based on value.	5- Pricing based on cost.
6- Focusing on financial and operational performance.	6- Focusing on financial performance only.
7- The inventory is little or none.	7- The inventory is large.
8- The culture of the firm is based on cooperation and equality.	8- The culture of firm is based on control and leadership.

**source:** Hatem Karim Kadhim, Abdal Abbas Hassan Kadhim, Karrar Abdulelah Azeez, The Integration of Lean Accounting and Activity-Based Public Budgeting for Improving a firm's Performance, International Journal of Innovation, Creativity and Change, Volume 11, Issue 5, 2020, p 558.

### 3.4.7. Barriers to implementation of lean accounting in industrial companies:

The implementation of lean accounting in industrial companies faces a set of barriers, the most important of which are:<sup>14</sup>

**-Cultural factors:** include the role of leadership, tactical attitude, improper rewarding procedure, the resistance of managers, employees and even customers.

**-Technical factors:** include not using lean as a manufacturing strategy, not using multi-purpose machines, not using timely production systems and zero store, and lack of awareness about lean system on senior executives' and employees' side.

**-Organizational factors:** include not using process-oriented measuring standard, not applying horizontal organizational structure,

not eliminating traditional silos, not using long-term goals and lack of customer relations.

**-Economic factors:** include the cost of deploying the system and the absence of comprehensive and transparent financial rules, the scope of the internal market and limitation of costumers' income, not allocating enough resources for implementation.

### 4. Evaluation The Implementation of lean accounting in industrial companies In light the experiences of both Jordan, Indonesia, and Thailand:

We try to evaluate the importance of implementation lean accounting in industrial companies based on some international experiences.

#### 4.1. Evaluation The Implementation of lean accounting in Jordanian industrial companies:<sup>15</sup>

According to the study of "Atallah Ahmad Alhosban and Mohammed Alsharairi", Jordanian industrial companies have adopted lean accounting, where this study aimed at explaining the effect of the use of lean accounting on the internal control components, namely accounting control and administrative control. A questionnaire was designed to achieve the objectives of the study.

The sample of the study consists of the internal auditors of the public jordanian industrial companies in the first market, as The number of industrial companies listed on the Amman Stock Exchange for the financial markets is 29 companies, and The internal auditors of these companies were 86 internal auditors, as The samples were distributed using the simple sample

method, 77 questionnaires were distributed and 69 valid questionnaires were retrieved for statistical analysis.

The study concluded the following results:

-The industrial companies are based on the restructuring of their products from time to time based on customer requests, and this contributes to the achievement of financial control and accounting for production costs.

-The industrial companies focus on the indirect industrial costs to reach the output of the goods in a tight manner, which may help to control these costs and try to reduce them as much as possible, and this gives credibility and consistency of the lists of costs in industrial companies.

-The industrial companies shift the reduction of production costs by reducing the cost of inventory to the lowest levels in order to control the assets and safety of the company and maintain a certain level of quality in the financial statements.

-The focus on the company's industrial strategy that helps maximize profits, contributes to the identification of employees responsible for any event in the preparation of the organizational plan, and this helps to find a plan for the prior coordination of the industrialization with the workers in the field of accounting and finance, on the fairness of the financial statements.

-The industrial companies apply the policy of cost and benefit in the design or production of a certain commodity based on the desire of customers, and this contributes to the process of planning costs, in order to facilitate the preparation of planning budgets.

**4.2. Evaluation the implementation of lean accounting in Indonesian industrial companies:**<sup>16</sup>

According to the study of "Kevin Hermanto Tupamahu, Imam Ghozali, P.T. Basuki HP", Indonesian industrial companies have adopted lean accounting, where this study identified two dimensions of lean accounting, i.e. value stream costing and visual performance measurement, as being instrumental in supporting lean manufacturing. The purpose of this study is to give understanding on how lean accounting can support people in lean organization with information to make better internal decision making.

Manufacturing firms in Indonesia are used as the study population. This study uses ISO 9001 ownership as a criterion of companies that have begun to implement lean manufacturing in the company's operating activities.

Samples are represented by managers, assuming that they are people who really understand the strategy, operating activities, and implementation of accounting systems within the company. This study uses survey techniques to collect data.

The questionnaires are collected and the ones fulfilling the criteria are analyzed in this study, the number of which are 123 questionnaires.

The findings showed that lean manufacturing is positively related to value stream costing and visual performance measurement, This result also showed that lean manufacturing indirectly affects strategic outcomes through lean accounting systems.

**4.3. Evaluation the implementation of lean accounting in Thai industrial companies:**<sup>17</sup>

According to the study of "Allawi K.M., Mijbil S.H, Salloomi R.K" that aimed to demonstrating the compatibility between lean accounting and cleaner production



technology, as well as demonstrating their role in increasing productivity, through The rationalization of cost and time, improving quality, promoting sustainability, creativity and energy conservation, providing a safe and clean environment for workers and minimizing waste in production process by identifying and analyzing activities and mapping the value stream for the current situation, for achieving the competitive advantage.

The sample of the study consists of the production and accounts managers of 500 manufacturing companies in Thailand, where Around 960 questionnaires were distributed among the managers and after one month, only 745 valid responses were received that are approximately 77.60 percent response rate.

this study concluded that lean accounting provided a safe and clean environment to the organization that they increase productivity and rationalization of cost and time, improving quality, promoting sustainability, creativity, and energy conservation, providing a safe and clean environment for workers and minimizing waste in the production process, In addition, the current study also determined that the clean environment improves the competitive advantage in the market, Thus if the organization implemented lean accounting, it enhances the cleaner production that ultimately increases the competitive advantage of the organization in the market.

Through previous studies, we conclude the following results:

The impact of implementation lean accounting in Jordanian industrial companies is:

-provides products based on customers requests ;

-the achievement of financial control and accounting for production costs ;

-the focus on indirect costs for control them ;

-the focus on the strategy that helps maximize profits.

The impact of implementation lean accounting in indonesian industrial companies is:

-Lean accounting contributes to visual performance measurement and indirectly affects on strategic results.

The impact of implementation lean accounting in thailandian industrial companies is:

- increase productivity and rationalization of cost and time, improving quality, and energy conservation, thus enhancing the company's competitive advantage in the market.

The industrial companies can be ranked in terms of the degree of benefit from the implementation of lean accounting as follows:

- thailandian industrial companies ;
- jordanian industrial companies ;
- indonesian industrial companies.

## 5. Conclusion:

Changes in business environments, such as the intensity of competition, have imposed the necessity for companies to transition towards leaning their economic activities, or the so-called adoption of the concept of lean manufacturing, which was accompanied by the development of a set of methods and procedures represented in the lean accounting system, which is considered as a new accounting approach based on a set of lean principles and tools. it aims to measure the financial impact of the activities of companies that adopt the lean manufacturing system.

Many countries, most notably Jordan, Indonesia, and Thailand have trended towards adopting or implementing a lean accounting system in their industrial companies, where the most important effects of applying the lean accounting system in the industrial companies of these countries are as follows:

- Provide products based on customers' requests;
- Achieving financial and accounting control over production costs;
- Focus on profit maximization strategy;
- Eliminate activities that have no added value;
- Measuring visual performance and influencing on strategic results;
- Increase productivity, rationalize cost and time, improve quality, and conserve energy, thus enhancing the competitive advantage of companies regionally and internationally.

Based on the findings, we **suggest** the following:

- The necessity to instill a culture of lean manufacturing in economic companies;
- Adopting lean accounting in economic companies gradually, by providing the necessary mechanisms for the transition to the application of this system;
- The formation of human resources as an essential element in leading lean practices.

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