INTEGRATING THE EXIGENCIES OF LEAN MANUFACTURING IN THE ACCOUNTING SYSTEM OF LEAN THINKING ORGANISATIONS

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ABSTRACT: *Lean Manufacturing is a set of practices, techniques and tools used by an organisation in an integrated manner and improved continuously by means of which we remove the losses and activities that are not necessary, with the purpose to obtain customers' satisfaction by delivering higher quality products at competitive prices in a short period of time. In this paper, the authors present a number of considerations on the fact that adapting the Lean Manufacturing by a lean thinking organisation has significant impact also on the management of its accounting system. Lean Accounting is fully consistent with the Lean philosophy, its success and precision depending on the application of Lean tools, the cost of the product being obtained through the value stream.*

KEY WORDS: *Lean thinking, Lean accounting, Lean manufacturing, value stream costing, target costing.*

JEL CLASSIFICATION: *M41, M12***.**

1. APPEARANCE OF LEAN MANUFACTURING – AN APPROACH FROM THE HISTORICAL PERSPECTIVE

Lean Production or *Lean Manufacturing* developed in Japan after the World War II. The first organisation that adopted this production system was Toyota. At that time, the Japanese economy had the following particularities in the automotive sector (Hines, et al., 2004):

- small domestic market with a wide range of vehicles;

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- good position of workers and trade unions in collective negotiations, which did not want to be treated as interchangeable parts, as was the case with the mass production;
- lack of immigrant workers willing to work in unfavourable conditions;
- lack of capital required to implement the latest Western technologies;
- Japanese government's interdiction of direct foreign investments.

Toyota, Nissan and other entities in the automotive industry decided to introduce new models into the manufacturing line. Taiichi Ohno, a Toyota engineer was one of the greatest architects of the project (Womack & Jones, 2000), called *Toyota Production System* (TPS).

One of the success factors registered by Toyota consists in improving the reduction of machine preparation times, which was a significant reduction of the manufacturing batch size, an improvement of the quality of products by rapidly detecting the defective parts and at lower costs and adapting to the market demand with various models. On the other hand, reducing the setting times has led to simplifying these changes and the possibility for the operator themselves to intervene in solving the problems that may arise.

Other determining factors were life-long jobs and earning a gradual salary based rather on seniority than on position, in exchange for flexibility to change the positions and involvement in the improvement initiatives. Thus, it has been constantly invested in making the employees more loyal and in their vocational training, who became members of the Toyota community. Workers were organised into teams managed by a leader instead of a foreman, these teams were involved in continuous and cumulative improvement processes called *kaizen* (in Japanese). Another improvement was to give workers the possibility to stop the production lines when a problem occurs, workers being directly involved in solving them, which has led to major improvements in the quality of products manufactured.

Toyota implemented their new system since the 1960's. Other Japanese entities have also adopted the same perceptions years later, although not to the same extent. Due to using this production system, in the mid-sixties, Japanese entities in the automotive industries have already gained an immense advantage on the entities throughout the world, which were using mass production and were able to steadily increase the market share in world car production.

The *TPS* model was adopted by several Japanese entities as a consequence of the oil crisis in 1973. At that time, OPEC (Organization of the Petroleum Exporting Countries) reduced the oil production and export, so that its price increased greatly, and the negative effect on world economy was negative and lasting. In this context, TPS was considered to be a revolutionary system, the benefits of which are to reduce the costs by removing all types of losses within the entity.

The success of the Toyota production system was not confirmed in the West until the beginning of the eight decade, when the foundations of this philosophy began to be established under the name of *TPS* or *JIT* by successively publishing books of some American and Japanese authors (Hall, 1981; Monden, 1983; Schonberger, 1986; Ohno, 1988).

In 1990, Womack, Jones and Roos published the book "The Machine That Changed the World", where *TPS* is renamed as *Lean Manufacturing*. This book, the result of the so-called International Motor Vehicle Program (IMVP), developed by the Massachusetts Institute of Technology (MIT) since 1985 until 1990, has collected in a detailed study Japan's success keys in the automotive industry and places the theoretical base for car manufacturers in the mass production paradigm to start the transition to Lean production. In addition, TPS led to a larger parallel movement called *Total Quality Management* (TQM), which has gained great reputation being closely related to the ISO-9000 certifications. A more modern approach of the TQM is the Six Sigma based on the development of statistical techniques for quality improvement.

Nowadays, unlike other entities, Toyota continues to use this system in the final assembly line, the entire line being divided into segments of 20 posts with 5-unit buffers in between so that workers would be able to stop the segment without compromising the whole line (Baudin, 2002). The full implementation of the TPS led to improvements in the following areas: the supply chain; product engineering; consumer demand; customer relations. Currently, there is a tendency for confluence between *Lean Manufacturing* and *Six Sigma* through the development of concepts in the literature (Drickhamer, 2006).

Liker and Meier (2006) presents TPS as a model to reduce the losses. Starting from the fundamental thinking to eliminate the losses, it shall be found in all principles of the entity and shall be implemented in all its activities, with the effect of reducing the time for manufacturing the products. The creation of continuous processes allows the entities to formulate a development strategy based on interdependent processes, which are connected through "pull" type systems by means of Kanban type cards. As a result of the interconnection of processes based on a continuous flow, problems are clearly identified, and their development shall be done rapidly.

2. LEAN MANUFACTURING PARTICULARITIES

Following the definition of *Lean Manufacturing* in literature, we observe that there is no generally accepted definition, being seen as a dynamic process of change, a set of principles, a practice, a manufacturing paradigm, a management philosophy, a program, a multidimensional approach or a model:

- ✓ a ***dynamic process of change*** managed by a ***set of principles*** and by the best practices that aim at permanent improvement (Womack, et al., 1990);
- ✓ a ***practice*** the general objective of which is to generate a well organised and efficient system based on continuous improvement and removal of all types of losses (Simpson & Power, 2005);
- ✓ a ***manufacturing paradigm*** the fundamental objective of which is to minimise the losses continuously to maximise the flow **(**Seth & Gupta, 2005);
- ✓ a ***management philosophy*** focused on the identification and removal of losses throughout the value stream of a product, which extends not only within the entity, but also along the whole supply chain (Shah & Ward, 2007);

- ✓ a ***program*** that mainly aims at increasing the efficiency of operations **(**Hallgren & Olhager, 2009);
- ✓ a ***multidimensional approach*** consisting of minimum waste production (JIT), a continuous and uninterrupted flow (production cell), well-maintained equipment (TPM), a well-established quality system (TQM), responsible and well trained employees, which has a positive impact on the performance and competitiveness (quality, cost, rapid reaction and flexibility) (Taj & Morosan, 2011);
- ✓ a ***model*** where the employees assume a role of thinkers, and their involvement promotes the continuous improvement and provides the entity with the agility it needs to cope with the current and future market requirements and environmental changes (Alves, et al., 2012).

In our opinion, the Lean manufacturing system can be defined as a set of practices, techniques and tools used by an organisation in an integrated manner and improved continuously by means of which we remove the losses and activities that are not necessary, with the purpose to obtain customers' satisfaction by delivering higher quality products at competitive prices in a short period of time.

Although some authors (Khadem, Sk Ahad, Hamid, 2008) consider the Lean manufacturing system as a mere combination between these practices, techniques and tools, from our point of view, the central element without which one cannot speak of Lean is customer satisfaction. These practices, techniques and tools must be seen as a means of achieving this goal and not a purpose in itself. Their role is not only to participate in the removal of losses within the entity, but the finality is to ensure the products that meet customer needs at the right time.

Practices, techniques and tools of the Lean manufacturing system	➢ ***Just in Time (JIT) manufacturing*** **–** is the starting base of a Lean manufacturing system. This system requires that the necessary products are manufactured in the required quantity at the right time.
	➢ ***Value Stream Mapping (VSM*)** **–** is a simple and efficient tool that helps in visualising and understanding the flow of materials and information as the product undergoes transformations.
	➢ ***work standardisation*** **–** is a sheet of operations with the work instructions for each stage of the manufacturing process, as well as the operating times for each operation, which is available and visible for all employees.
	➢ ***continuous flow*** **–** is the manipulation of the products, one by one or in small and compact batches, within the manufacturing processes; it is the most efficient way to meet the demand without stimulating overproduction.
	➢ ***the "pull" system*** **–** production is triggered by the end customer in a direction opposite to the delivery flow, and this order is maintained in the manufacturing process, so that each internal process triggers the previous one which it is interconnected with.
	➢ ***production levelling*** **–** its main objective consists in correlating the manufacturing rate with customers' demand by reducing the production batches, with the result of reducing the stocks,

	reducing the production time in the value stream and thus the cost of the product is also reduced.
	➢ ***Kaizen*** **–** its meaning in Japanese: Kai (改) - Change, respectively Zen (善) - Improvement.
	➢ ***5S*** **–** is a concept by means of which the losses are reduced and productivity is improved by fulfilling daily tasks, which maintain the routine connected with the work organisation within the entity, being essential for an efficient flow of the activities. It comes from the five words that define the method and which in the phonetic transcription in the Latin alphabet begin with the letter S, as follows: Seiri (整理) = separation/organisation; Seiton (整頓) = sorting/ordering; Seisō (清掃) = glow/cleanliness; Seiketsu (清潔) = standardisation; Shitsuke (躾) = support.
	➢ ***working cell*** **–** is the way in which the production structure is organised, so that efficiency and flexibility would be achieved.
	➢ ***Single Minute Exchenge of Die (SMED)*** – a method designed to reduce the execution time and improvement of unfinished production flows, by reducing the time for setting the machines.
	➢ ***unit by unit production*** **–** consists in organising the production, based on a continuous flow of a single unit, passing from one work station to another at the same time when its processing ends, without waiting and grouping by batches.
	➢ ***Kanban*** **–** Japanese term translated as label of instructions; it is an automatic system of production management, which manages the supply of production processes, following their variations based on a self-adjusting function.
	➢ ***Total Quality Management (TQM)*** **–** a concept focused on the customer and refers to the continuous improvement of quality of both the product and processes in terms of organisational aspect; it covers all the activities, with special emphasis on the control of processes and customer satisfaction.
	➢ ***Poka-Yoke*** **–** comes from Japanese and it means self-protection, being a device that helps to avoid the errors; it aims at stopping the production process when an error is detected, finding the cause and preventing it to act again.
	➢ ***Jidoka*** **–** can be translated by "automation with a human touch"; the difference between *Poka-Yoke* and *Jidoka* consists in the autonomy of the machine. *Poka-Yoke* is based on the direct relationship with the machine operator, signalling the malfunction to the latter, and the *Jidoka* not only detects the error, but it also stops the machine, identifies the cause of the error and removes it forever.
	➢ ***Total Productive Maintenance (TPM)*** **–** a system that maximises the efficiency of the entire production chain, preventing the losses in all the entity's activities and is based on the involvement of all employees, from the top management to the operative level

	➢ ***the concept of "zero defects"-*** refers to the following aspects: no defect can be accepted; no defect should be delivered; no defect should be produced; all defects detected must be solved immediately.

Figure 1. Practices, techniques and tools of the Lean manufacturing system

As any independent field, the Lean manufacturing system is guided by a number of generally accepted consequential norms, which are starting points whereon this new production system is based. Literature presents several approaches to the fundamental elements on which the Lean manufacturing system is based, generically referred to as *Lean principles.* According to Womack J. and Jones D. (2012), a Lean-thought organisation is based on the following *principles*:

- specification of the value of the product from the end customer's point of view;
- the identification of the value stream, removing the activities generating losses;
- the achievement of a flow of value creating activities, so that the product would reach the end customer through a continuous process;
- the possibility of the product customer or beneficiary to apply the "pull" system in order to "pull" the product from the production stream;
- operating the process and its improvement until it reaches the maximum value, without losses.

Richards (1996) as well as Karlsson & Ahlstrőm (1996) have also formulated a number of principles in this regard. We consider that the most relevant principles are those formulated by Womack & Jones (2012), because the others are in one form or another among these or appear as a result of applying these principles, as follows:

- *defining the value from the customer's perspective* – the entity must evaluate its products from the customer's point of view. The customer is willing to pay only for those activities that add value to the product from their perspective, so that the value is anything which the customer is willing to pay;
- *identification of the value stream* – the value stream consists of all the activities that must be performed to deliver the product to the customer. My mapping the value stream, the activities that add value to the product can be easily identified, compared to those that do not do it. Thus, the entity shall be concerned with the management of the following three flows:
  - ✓ *flow of materials*, from the raw matter in the starting stage to the delivery of the final product;
  - ✓ *the flow of information*, from the customer's order to delivering it;
  - ✓ *the flow of activities to develop a new product*, from design to manufacturing it.

The value for the customer is created during these flows. From the customer's perspective, the activities that do not add value and which are not necessary to the other activities that add value can be removed from the value stream;

- *continuous flow* – it requires that the product goes through all the stages of the manufacturing process continuously within the value stream, without expectations or blockages in the production processes;

- *the "Pull" system* – it assumes that the production is triggered by the customer, only when there is a real demand for the products manufactured;
- *perfection* – the Lean philosophy assumes a permanent concern for the improvement of the entity's activity and quality of its products.

3. LEAN MANUFACTURING BENEFITS

The justification for choosing a production system from several possible alternatives is given by the results obtained after applying it. The implementation of the Lean manufacturing system has a major impact on the performances of the entity, so several appreciations are made in literature regarding its benefits (figure 2).

Womack & Jones, 2012	➢ freeing the area used by 50%; ➢ increasing the productivity by 15-25% annually; ➢ reducing the delivery time from weeks to days; ➢ improving the quality of products.
Basem & Raid, 2006	➢ reducing the Lead Time; ➢ reducing the stocks; ➢ less defects; ➢ better use of resources; ➢ improvement of product delivery rate; ➢ increasing the productivity; ➢ reducing the unit cost.
Evans & Lindsay, 2008	➢ reducing the manufacturing time by at least 60%; ➢ improving the use of the area by 40%; ➢ reducing the stocks by 50%; ➢ increasing the quality by 50%; ➢ increasing the productivity by 20%.

Figure 2. Benefits of the Lean manufacturing system

4. IMPLEMENTATION AND BENEFITS OF LEAN ACCOUNTING

For the results obtained to be the expected ones, the organisations that have adopted the Lean manufacturing system must apply the Lean thinking model at all levels, also in the accounting activity. Lean accounting mainly refers to the managerial accounting, the information of the financial accounting being established according to strict rules, they must be presented according to the legal requirements and as such they cannot be resized (Johnson, 2006). Because managerial accounting is intended only to internal users, the organisation may decide in a discretionary manner what type of information it requires to support the decisions and in what format and structure is information presented, which the managerial accounting generates.

Lean Accounting is fully consistent with the Lean philosophy, its success and precision depend on the application of Lean tools, the cost of the product being obtained through the value stream. The methods for calculating the costs use different procedures to determine the cost of products and to provide relevant information for

adopting the decisions. In terms of direct expenses, there is no doubt regarding their allocation, because they can be attributed according to a mathematically expressible functional relationship. In terms of indirect expenses, no objective explanation or justification can be found to distribute them on each product obtained. From our point of view, the focus of managerial accounting on distributing the indirect expenses is a diversion of its objective, and the focus should be directed on how an advanced activity can be achieved appropriately using the production capacity, meaning what products, in what quantity and when they should be manufactured to achieve a maximum short-term profit, respectively long-term performance and development.

The methods for calculating the costs should be subject to an adaptive and continuous process, in order to provide relevant, useful and timely information to be valid in making decisions. Starting from the need for a new system of costs for Lean manufacturing. Maskell and Baggaley have developed a model for managing the costs based on the value stream, the so-called *Value Stream Costing* (VSC). However, the authors warn that for the presented model to be efficient, the entity should be in an advanced stage of Lean manufacturing. VSC should be adopted only when the organisation fulfils short times of execution and delivery (the amount of times required from the customer's order to the delivery of the product demanded), has low level of stocks (small and stable stocks) and is organised along the value stream. Maskell, Baggaley & Grasso (2012) have developed a four-staged model to implement the Lean Accounting within an organisation that applies the Lean principles. Thus, a number of changes are suggested, which must be achieved by the accounting system, in order to ensure the success and sustainability of Lean Accounting (figure 3).

Stage 1.	*Development of the path followed by the entity to Lean maturity in order to implement the Lean Accounting*	➢ one keeps the accounting used currently, but the losses that are obvious in the process are removed (for example, reducing the number of detailed reports, the number of cost centres is reduced, which simplifies the accounting). It is used as main VSM tool.
Stage 2.	*Assessing the level of the organisation's Lean maturity*	➢ the detailed monitoring of the processes is largely removed along with the production times and stocks under execution are reduced, so the costs are reduced and the unnecessary accounting reports are removed.
Stage 3.	*Removal of losses*	➢ the entity's operations do not need to be correlated with the accounting periods. To be of help, the reports at the end of the month should be replaced by weekly reports, so they motivate the employees and implement the concept of continuous improvement.
Stage 4.	*Total implementation of Lean Accounting*	➢ a detailed action plan is developed to pass from the current stage to the future stage, following to remove as many unnecessary transactions and reports that are losses.

Source: adaptation after Maskell, Baggaley and Grasso, 2012

Figure 3. Stages of Lean Accounting implementation within an organisation

Lean Accounting has another approach to traditional methods for calculating the costs used by the managerial accounting, which is exactly why the changes need to be made prudently and carefully, in order to avoid creating chaos in controlling the organisation's decisions. Authors suggest that it is not prudent to abandon the traditional methods for calculating the costs before Lean Accounting is fully implemented and the employees are accustomed to the new philosophy.

Just like the Lean manufacturing system, which aims to simplify the processes and reduce the losses in the production process, Lean Accounting simplifies the accounting reports and facilitates their understanding (Carnes & Hedin, 2005). One of its main objectives is to measure the monetary impact of implementing the improvement projects that aim to support the business (Brosnahan, 2008).

Lean Accounting reflects the business strategy, the information being collected and presented simply and visually (Maskell & Kennedy, 2007). The main goal of Lean Accounting is to remove the losses by identifying their sources.

4.1. Assessment of Lean Manufacturing

Lean Accounting organises the costs in a value stream that includes all that has value for the customer, regarding a product or a family of products. This approach is simple and easy to understand. The methods for calculating the costs based on the production volume that take into account the allocation of indirect costs and which requires high costs of resources for keeping and implementing them are contrary to Lean thinking.

The concept of value stream is based on the belief that, in order to obtain the expected financial improvements, the activities as a whole should be analysed, from the customer's order to their payment of the product. Through the value stream, the processes required to deliver the customer's product of a unitary form can be viewed. Not using it would mean that the departments of an organisation could optimise its own activity, without taking into account the impact of the measures taken on the other departments. Mapping the value stream is a very important tool that directs the Lean transformation from an overall perspective, helping to identify the current status and improvement opportunities.

4.2. Management of costs in Lean Accounting

The methods for calculating and managing the costs should meet customers' requirements as early as the design stage, in terms of the quality and price of the products; it should also contribute to reducing the costs of existing products by continuously removing the losses. For this, Lean Accounting simultaneously uses the *Target Costing* and *Kaizen Costing* methods. These methods should be connected sequentially, so that the global costs of management throughout the lifecycle of the product would be applied properly (Monden & Hamada, 1991). The advantage of these methods is that they allow understanding how the organisation creates value for the customer and what should be done in order to create more value.

Target Costing is based on the premise that the price of the product and the processes of continuous improvement would be established taking into account customers' needs, starting from the price the customer is willing to pay, depending on the value attributed to the product. Their initial objective is to clarify customers' needs and values, and then, taking into account the information obtained, the target cost is obtained, triggering the continuous improvement process upwards (Kennedy, F. & Brewer, P. C., 2005). Target Costing is a cost that should be reached. Using this method requires that the product designers, supply and production specialists would work together to determine the characteristics of the products and processes that shall allow the achievement of the target cost (Briciu, 2006).

Target Costing exemplifies the first and fifth principle of Lean thinking, focused on customer's value and attainment of perfection. *Target Costing* is extracted from the value stream in order to initiate cost improvement and reduction projects and bring the costs of the value stream on the same line as the target costs, ensuring both high levels of customer satisfaction, as well as the appropriate level of entity's profitability. The result is a number of initiatives of improvement aiming at: the sales, marketing, design of the product, supply, operations, administrative processes (Maskell, et al., 2012). Kaizen Costing follows Target Costing over time. Target Costing is applied at the product design and development stage, and Kaizen Costing is used to manage the costs during production.

4.3. Evaluation of Performances

The evaluation of the performances of an organisation that has implemented the Lean manufacturing system should be based on operational measures at the level of working cells and value chain keeping the connection between them and the objectives, respectively the organisation's strategy. To support the continuous improvement of the organisation's activity, the evaluation of the performances must meet the following conditions (Cunningham & Fiume, 2003):

- to serve as support for the business strategy;
- to be structured in order to promote appropriate behaviours;
- to be simple and easy to understand;
- to measure the processes and not the people;
- to use few indicators;
- to measure the actual results;
- to provide timely information.

The Lean Measurement of the performance is the application of the visual management at the level of the accounting activity, being the assessment and control element for the Lean manufacturing cells, for the value streams and entity as a whole (similar measurements are used also for the non-productive processes and cells).

In Lean Accounting, in order to assess the performances, a set of indicators is used, in a form accessible to any employee, viewing it allows the identification of the areas that require improvements and thus the reached progresses can be monitored. The set of indicators is a report-summary of the value stream on three levels:

- *operational*: sales per person, delivery on time, well since the first time, average cost per unit, occupied space;
- *financial*: value of stocks, revenues, costs of materials, conversion costs, profit of the value stream;
- *usability*: productive, non-productive, available.

Its purpose is to present a concise and accurate situation of the value stream return. Other indicators may also be included, without however making abuse, in order to keep following the main objectives. In analysing the capacity of each process of the value stream, the time dedicated to the productive activities is compared to the time dedicated to non-productive activities, developing afterwards strategies that would remove the activities that do not create value, which would generate capacity available to use in other activities generating profits. The appropriate set of measures implemented depends on the entity's size, technology and strategy, on the characteristics of the industry and environment where it operates (Bhasin, 2008).

4.4. The Value Stream Costing (VSC) Analysis.

Using the Lean philosophy within the organisation implies improvements in terms of productivity, quality of products and its competitiveness. Thus, the products with similar flows are grouped into flexible manufacturing cells as value stream, the costs being analysed integrally. The value stream analysis derives from the Lean thinking, being based on creating value for the customer. It is important that the value created would exceed the costs necessary to this value, the VSC analysis having as objective precisely the pursuit of this goal.

The VSC analysis serves to show how the resources are used inside the value stream, within each process of the value stream: the capacity used productively, the capacity used non-productively and the available capacity. Thus, it is possible to assess how each of the Lean initiatives impacts the performance, which of the value streams bring the least benefit and what activities should the organisation's attention be focused on.

The cost of the value stream makes no distinction between the direct and indirect expenses, all costs related to the value stream are included into the value stream cost, being considered direct expenses.

The cost of the value stream was developed by Maskell and Baggaley (2003) as a tool that would facilitate the calculation of the production cost for the entity, when the Lean manufacturing methods implemented are in a significant state of maturity. In other words, VSC can be used successfully when the entity is organised along the value stream, has low levels of stocks and has significantly improved the times of execution and delivery. Maskell and Kennedy (2007) refers to VSC as being the most suitable system for presenting the cost and profitability within the Lean philosophy. Maskell, Baggaley and Grasso (2012) present VSC as an important tool of Lean Accounting, which shows how the resources are used within the value streams. In our opinion, VSC is the most important tool of Lean Accounting, representing an operative feedback of the performance of the value stream based on which managers can adopt decisions in real time and whose impact can be followed permanently.

In the logic of developed, competitive economy, the customer is willing to pay only for the activities that add value to the product, so only for those activities it considers necessary for manufacturing the product. It is very important to identify the losses and remove them, because the customer shall not be willing to pay for them. The activities identified along the value stream can be: activities that add value to the product and activity that do not add value to the product (necessary activities and activities that can be removed). Activities that do not add value can be removed only if they do not negatively affect the other activities that add value. All losses in the value stream can be reduced, this being the goal of the VSC analysis and also one of the keys of the Lean philosophy – continuous improvement.

Traditional calculation methods follow the costs at every stage of production, being complicated, generate a lot of unnecessary information and with high costs. Instead, VSC collects the costs along the value stream, all costs inside the value stream being considered direct expenses. Because it underlies making decisions, this tool is all the more efficient as the collection of costs is done over shorter periods of time.

Usually, VSC is calculated weekly and takes into account all the expenses of the value stream, being considered direct expenses, and the expenses outside the value flow are not included. The expenses included into the VSC are: labour costs, raw matter and materials, depreciation of machines, maintenance, production related costs, any other expenses related to the value stream (design, engineering, sales, customer relations, etc.). Should there be employees who perform activities in two or several value streams, the labour expenses are distributed on each value stream depending on the actual time they spend in that value stream.

Expenses with raw materials and production materials are all expenses with the raw matter and materials that were purchased during that period for the stream value. VSC can be used when the entity is organised along the value stream, and the level of stocks used in the manufacturing process is small and stable.

Data collection is greatly reduced because no detailed costs are used for each area of production or product, thus removing the losses by the time dedicated to some burdensome and complicated activities for data collection and provision, which consume significant resources.

For each value stream, the result is established comparing the revenues from the sales of the value stream with all the costs. The result of the organisation's activity is determined gathering the results of all the value streams which the general expenses are subtracted from (interests, taxes, depreciations, etc.). In VSC, the maximum return comes from the rapidity at which the product goes through the value stream until meeting the customer’s demand, the attention being focused on the rapidity of the flow and not on the individual efficiency of the employees or on the distribution of indirect expenses.

For those who are not used to Lean thinking, questions shall arise: How do I know if a product is profitable? Is it worth to be manufactured further, since the result is calculated cumulatively over the entire value stream? The answer is that it's not even necessary, because the decision to manufacture further is taken depending on the result of the value stream as a whole. This decision is made according to how renouncing on the manufacture of the product influences the result of the value stream.

Lean philosophy implies maximum efficiency in the manufacturing processes, their analysis being done by means of the VSC analysis. This shows in a simple and easy to understand form what (productive or non-productive) capacity is used and what capacity remains available, for each activity within the organisation. Thus, if there is capacity available, one can decide to introduce new products into manufacture, for which there is demand or to increase the production volume for the current production. It is also possible to decide to differently use the available capacity, for example the integration into other value-generating activities.

4.5. Lean Accounting Benefits

Adopting the Lean Accounting by an organisation that has implemented the Lean concept stimulates the long-term Lean development due to the important benefits it generates, which are:

- it supports the organisation's strategy;
- it is structured to motivate the correct behaviour;
- focuses on measuring the process, not the employees;
- measures the results in relation to the objectives;
- ensures accurate and timely information, which makes them usable and opportune;
- the indicators used in drafting the information are focused on the Lean specificity, thus ensuring the consistency of Lean thinking at all levels and for all organisation's processes;
- the indicators used help to easily identify possible directions of development;
- it simplifies the reports, removing the waste and thus reducing the working time and the costs;
- clear and easy to understand by any employee;
- enables a financial control for the whole value stream;
- it is oriented towards a pricing strategy starting from the value of the product for the customer;
- it is operative, capable to react in real time, generating the necessary information at the right time;
- it involves a low cost.

5. CONCLUSION

Lean thinking is totally opposed to traditional methods for calculating the costs, the arguments being that they encourage overproduction, focus on optimising the use of the resources individually, the performance reports are prepared at great time intervals, usually too late to intervene, the measures to be implemented are hard to understand by workers, are based rather on reports than on creating stable and trustworthy processes, and the information provided is designed to satisfy the needs for external reporting and does not identify the relevant aspects for taking the decisions.

These are just some of the aspects that make traditional methods for calculating the costs be compatible with the Lean philosophy.

The road to implementing an accounting system in full harmony with Lean principles is lasting, but where the organisation has already implemented a Lean manufacturing system, the next step should be the implementation of the target cost, as a way of thinking at the centre of which there is the customer and their expectations.

The processes within a Lean thinking organisation need specific indicators to measure the performance. The indicators are different because it is necessary to motivate the employees in order to achieve the goals set. The approach according to which both indicators specific to the traditional methods for calculating the costs and Lean indicators can be used is wrong, because it can create confusion, the employees being forced to look in two diametrically opposed different directions: on the one hand, traditional indicators focused on a production as high as possible in order to reduce the costs, and on the other hand, Lean indicators focused on the continuous improvement and decrease of the execution and delivery time.

The analysis of the value stream processes is a simple, rapid and relevant tool, which can be easily used in order to measure the behaviour of the value stream. However, this tool can be used only when the entity has a Lean manufacturing system implemented, so that it would represent the support required for the Lean system to operate in optimal conditions.

Lean Accounting is based on an information system that reflects the structure and operation of the organisation and sets a system of costs integrated along the value stream. Organising a system of costs in direct relation with the value stream facilitates the understanding of the connection between the consumption of resources and the activities that create value, respectively the development of an analysis system in order to help the organisation's management to identify opportunities of continuous improvement and full use of the processes.

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