TECHNIQUES TO CONTINUALLY IMPROVE BUSINESS QUALITY AND PERFORMANCE (II)

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ABSTRACT: *Continuous improvement processes, based on Japanese management principles, organizational culture, or even their lifestyle, can be a way of organizing and managing business on principles of efficiency and efficacity. In the first part of the paper I presented the theoretical foundations regarding the processes of improvement in quality management and business management regarding: the concepts, objectives, characteristics and base principles of continuous business improvement processes - based on the Japanese Kaizen philosophy. In this part I present a synthesis of the continuous improvement trends applied in various business environments. In these business environments, specific methods and techniques that belong to the Kaizen strategy have been successfully applied, such as Lean, Six Sigma, Balanced Scorecard, Poka-Yoke, JIT, 5S and Kanban.*

KEY WORDS: *management; quality; improvement; performance; techniques; business.*

JEL CLASSIFICATIONS: *M10 M11*

1. CONTINUOUS IMPROVEMENT TECHNIQUES

Continuous improvement techniques have evolved from traditional factories with systems primary focused on production lines, reducing losses and improving the quality of the finished product, to hybrid techniques that focus on all aspects of the organization. Continuous improvement techniques aim at a wide range of organizational aspects and offer a variety of benefits, most of which are measurable in terms of quality, efficiency and speed (quality, cost, time).

The applicability of continuous improvement techniques within the different types of organizations has been widespread in recent years due to specialized firms and specialists in this field (providing advice, implementation assistance, training courses etc.). Over the years, many techniques for continuous improvement have been developed and they have been recognized as having some great contribution to:

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improving the products and processes of organizations; to increase efficiency and increase economic performance in industry, especially those related to production management and quality management (some of which are systematized and listed in Table 2).

These techniques represent a system that evolved from a basic concept of quality or process improvement, or both, in order to reduce losses, simplify the production line, and improve quality. They were developed when there appeared a need for them, and the best known of these are: Lean Production, Six Sigma, Balance Scorecard and JIT.

2. LEAN PRODUCTION

2.1. Lean History and Description of the Technique

Henry Ford systematized Lean Production in the 19th century, when he implemented the concept of mass production within his factories. The term Lean Manufacturing was introduced by James Womack in the book "The Machine that Changed the World: The Story of Lean Manufacturing". However, it is said that Toyota Motor Company in Japan has developed Lean's type modern thinking, also known as the Toyota Production System.

Lean type production is a systematic approach to identify and eliminate losses through continuous improvement by pursuing to attract customers through products that aim to perfection. Lean production includes practices such as JIT (Just in Time), cellular manufacturing and work teams, (Shah and Ward, 2003). The elimination of losses is the core of Lean production, and the goal is to eliminate losses on each part of production, including customer relationships, product design, supply networks, and production management.

Examples of losses include human effort, inventory management, time for product development and storage. The ultimate goal is to become very receptive to consumer demands, producing high quality products in the most economical and efficient way possible. Usually, the transition to a Lean environment does not occur instantly. The mentality of continuous improvement must reach the general goals of the enterprise.

The results of Lean type production are the ability of the enterprise to learn. According to Lean philosophy, mistakes are generally not repeated because they are exactly what is required to be eliminated.

2.2 Implementing Lean

Lean production can be applied to organizations that pursue a move away from traditional manufacturing vision and invest less in storage, reduce labor costs and speed up manufacturing processes. The basic ideology underlying Lean is to minimize losses and develop skills to change.

The principles of implementing Lean thinking are:

- Specifying the value for each family of products, from the point of view of the final customer;

- Identifying the activities within the value stream of each family of products, eliminating as much as possible the ones that generate losses;
- Sorting the value-making activities in a clearly defined succession(stream) of steps, so that the product reaches the final client through a more continuous process, without too many interruptions, turns, stops and intermediary expectations;
- Once the value stream has been established and entered, any internal or external client can apply the "pull" type system in order to "pull" the product directly from the producer when he wishes, instead of placing the product on the market;
- Once the value, the identified activities of value creation, those that generate the eliminated loss, the stream of value specified and introduced have been established, they can move on to operationalize and perfect the process, until it reaches and optimal level, in which the added value is maximal and most of the losses are eliminated.

Implementation Costs. The cost of implementation depends on a number of factors such as: the size of the organization, the level of Lean technology the enterprise wants to adopt, and the available resources. Costs can escalate if a restructuring of the organization is required.

Implementation Period. The implementation of Lean Production from scratch in an organization will also depend on the size of the organization and its objectives, but also on its resources if internal human resources are to be trained through external consultants or training. The duration of implementation time in a large organization may reach even half a year.

2.3. Examples of companies that have applied the Lean technique

Table 1. Companies that have used the Lean Technique

Companies that have implemented Lean	Romanian companies that have implemented Lean
The Boeing Company	*Continental*
Yamaha Electronics	*Totalgaz Industrie*
Fujitsu Component	*Cersanit România*
Bosch Braking Systems	*OMCO*
BASF Group	*Dacia Mioveni*
Parker Aerospace	*Ford Craiova*

Tabel 2.Companies that provide Lean Consulting services

LEAN Consulting Companies	Romanian Lean Consulting Companies
TMB Consulting	*ALFRA Consulting*
Simpler	*Genium Trening and Consulting*
Catalyst Connection	*Enviso*
Lean Plus	
AEM Consulting	
Manufacturing Success Consulting	
Granite Bay Consulting	

Tools required for Lean implementation: 5S, TPS tools, and those responsible with the implementation must have knowledge about Lean philosophy and experience with Lean tools like: Kanban, 5S, Poke-Yoke and others.

3. SIX SIGMA

3.1. Six Sigma History and Technique's Description

Six Sigma has its origins after Lean Production evolution, when Motorola developed a program called Six Sigma designed to achieve the goal of improving by a hundred times in 5 years. And it succeeded in such a way that the Six Sigma pioneers gained fabulous confidence in their product and delivered to customers without any prior control of the product.

Six Sigma starts up as a means of measuring process quality using Statistical Process Control (SPC). The minimization of defects at a level close to zero was the basis for the methodology. Six Sigma has evolved into a much wider terminology that also represents a major opportunity to reduce costs. Since 1988, the impact on Six Sigma over the improvement of business processes has been so significant that today it is widely used by many top organizations.

Six Sigma has the ability to produce dramatic, measurable changes, reducing the cost and cycle time while improving product reliability, increasing consumer satisfaction, and delivering quality measurements that can be used throughout the organization, not just in the production department but also in design, administration and service areas.

Six Sigma is defined as a management technique that aims to improve business processes to create and deliver near perfect products and services (http://www.trilex.ro/Metodologii/six-sigma-DMAIC.htm).

It is defined by Pande as "a comprehensive and flexible system used to achieve, maintain and maximize business success. Six Sigma is driven by an understanding of customer needs, disciplined use of facts, statistical analysis, and careful management, improvement, and reinvention of business processes. "(Peter Pande and Robert Neuman, 2000).

This technique, as mentioned above, is based on a statistical control process (SPC), which uses quantitative and graphical techniques to reduce the variance of assigned and variable measures of predetermined boundaries. The goal is set for a particular or variable part, along with the acceptable minimum and maximum limits where measures may be erroneous (standard deviation), and processes can be controlled using diagrams.

3.2. Six Sigma Implementation

Implementation Costs. The cost of implementing Six Sigma depends on the following major factors:

- The size of the organization (number of employees, its location);

- The existence of systems for improvement in the organization;
- Internal or external resources requiring training or employment.

The optimal time for implementation. The implementation period of Six Sigma is one of the most important factors for an organization and it depends on the following factors:

- The size of the organization (number of employees, its location);
- The existence of improvement systems in the organization;
- Commitment of top managers. The lack of this factor can lead to delayed implementation by not releasing the necessary funds and resources.

Duration of implementation. The entire implementation process in a medium-sized organization (500-1000 employees) can take between 6 months and 24 months, and for a large-scale organization (with over 1000 employees), implementation can take from 6 months to something more than 24 months.

3.3. Examples of companies that have applied Six Sigma Technique

The principles of improvement techniques applied in industrial business processes have had the greatest successes in the Automotive Industry, Intormation Technology, Telecommunications, Electronics and Electrotechnics. These improvement techniques have been applied with the goal of achieving multiple objectives, in terms of maximizing or minimizing results, as follows:

- To increase the satisfaction of the final customer with the products delivered in real time;
- Increasing the quality level of the finished products - achieving the "best quality" and "no defects" performance indicators;
- Providing various services to clients in real time;
- To establish some standardized manufacturing rules and processes;
- To increase work productivity;
- To motivate and empower employees;
- To promote the best ideas of each employee;
- To reduce customer complaints on delivery time;
- To reduce waste and losses in the different stages of manufacturing processes;
- To reduce the number of defective products and reduce scrap costs (with defect rectification).

Table 3. Companies that use Six Sigma

Companies that have implemented Six Sigma	Romanian companies that have implemented Six Sigma
General Electric Company	*Xerox Romania*
Motorola Inc	*Dacia Mioveni*
The Boeing Company	*Ford Craiova*
NASA	
Honeywell Interntional Inc.	

Table 4. Companies that provide Six Sigma Consulting services

Six Sigma Consulting Companies	Romanian Six Sigma Consulting Companies
Mulbury Consulting Limited	*Six Sigma Consult SRL*
Catalyst Consulting Limited	*Enviso*
The Athon Group	*IGC Integrated Consulting Group*
Ketch Consulting	*Ascendis*
Motorola University	*SGS Group*

Regarding the duration of implementation, a small organization can usually complete the initial implementation model in a period of 4-6 weeks, compared to 12 to 14 weeks in large organizations.

Therefore, the fundamental idea of Six Sigma technology is that if the performance is improved, then the quality, capacity, time cycle, inventory levels, and other key factors such as loss reduction, energy sources, and environmental performance will also improve. Therefore, when these factors are improved, both sides gain, both the supplier and the customer experience greater satisfaction in business transactions.

4. BALANCED SCORECARD (BSC)

4.1. History and Description of the Balance Scorecard Technique

The Balance Scorecard technique was introduced to the world in 1990 and since then it has had a major impact on how organizations carry out their business. The

Balanced Scorecard defines exactly what management wants to achieve when it comes to performance. It is a concept that allows balanced strategic planning at the level of an entire organization or its unit component. It is a system of management and optimization of the implementation of an organization's strategy, which allows it to achieve accelerated growth in operational performance and achievement of defined strategic objectives. Therefore, this technique can be used to translate the mission of the organization and the visions established in a set of objectives and performance measures.

"The Balanced Scorecard concept is a strategic planning and management system widely used in business and industrial organizations, in the public system and non-profit organizations around the world to align the activities to the organization's vision and strategy, improving internal and external communication and monitoring the organization's performance in order to achieve the strategic goals" (Balanced Scorecard Institute, 2010).

The system consists of 4 processes:

- translating the vision into operational objectives;
- explaining the vision and linking it to individual performance;
- business planning;
- feedback, learning and strategy adjustment based on evolution.

It is generally used to:

- clarify the business strategy;

- keep everyone informed about the business strategy;
- it relates the organization's intentions within the annual budget;
- makes space for organizational change;increase acceptance of the vision and mission of the company throughout the organization.

The companies that use Balanced Scorecard are able to achieve their goals if the Balanced Scorecard is transformed from a measurement system into a management system. This technique covers the deficiency that many organizations have, namely when a strategy feedback is to be received. The implementation of a long-term strategy becomes a primary goal and a focus of the organization built around the Balanced Scorecard.

4.2. Implementation steps

Implementation of the system is only possible in relation to defining the vision, strategic objectives and general strategy of the firm. Determination of partial and derived strategies, setting of secondary and individual objectives, as well as establishing a hierarchy and prioritization is necessary to accompany the implementation process, (Stefănescu and Silivestru, 2012). Implementation of the Balanced Scorecard involves 2 phases, the planning phase and the development phase reflected in the following steps. Tools used to implement the Balanced Scorecard are: Brainstorming, Six Sigma tools, Lean Instruments.

4.3. Examples of companies that have applied the technique

Table 5. Companies that use Balanced Scorecard

Companies that have implemented BSC	Romanian companies that have implemented BSC
Motorola	*Rompetrol*
Royal Air Force	*Bitdefender*
Kraft Food	*P&G*
Marriott	*Guvernul României*
Hilton	*Transelectrica*
UPS	*Deloitte*
Siemens	*ING Bank*
Cisco	*Euralis*

Table 6. Companies that offer Balanced Scorecard consulting services

Balanced Scorecard Consulting Companies	Romanian Balanced Scorecard Consulting Companies
Balanced Scorecard Institute	*Ensight Management Consulting*
Hudson Associates Consulting Inc	*Strategic Systems Consulting*
Value Creation Group	*Codecs România*
Crescent Consulting	
Balanced Scorecard Collaborative Inc	

5. CONCLUSIONS

Based on the study, we have represented various techniques for continuous improvement available on the market, such as: Lean, Six Sigma, Balanced Scorecard and JIT.

The research presented in this paper is a study of improvement techniques that are valid for organizations; it is important to decide which one is perfectly integrated with the organization's needs in order to have a clear vision of the necessary resources and the benefits that each technique can provide.

Continuous improvement techniques applied in business processes involve all employees' participation in improving working conditions, through suggestions and innovative ideas, to reduce losses as much as possible. The basic principles of these techniques, or rather we can name them targets, are the following:

- Right the first time;
- The best quality;
- The best brand.

Thus, we can synthesize that, regardless of variety and designation, continuous improvement techniques follow strategic objectives like: *obtaining the best quality possible, with the lowest costs and in the shortest time possible, as well as - timely delivery of the products to the main customers.*

The practical applicability of continuous improvement techniques is geared towards achieving excellence where they are implemented, either in production, services or consultancy, pursuing strategic objectives in terms of efficiency and effectiveness: quality, cost and time, sustained: innovative thinking, self-control and self-discipline.

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