

Quality Continuous Improvement Strategies Kaizen Strategy – Comparative Analysis

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Abstract: This paper aims to contribute to the development of research on continuous quality improvement, taking into account the current context: the competitive environment that requires complex dimensions of performance; the need for integrated management (quality, environmental performance); the need for training and enhancing the knowledge of all personnel. It addressed one of the strategies of continuous quality improvement - Kaizen strategy and its values for quality management. A comparative analysis is performed between Kaizen strategy and innovation strategy.

Keywords: quality management, quality, continuous improvement, Kaizen and innovation.

Introduction

Organizations today must face, due to competition, a competitive performance complex dimension. Ability to integrate management teams and capitalize on the dynamic ability to exploit (quality) and explore (innovation) will determine the competitiveness and sustainability over time. Continuous improvement is a quality attribute that is distinct from change or innovation. According to McAdam [11, 396], continuous improvement includes quality assurance for all activities of the company and is characterized by applying best practices and continuous improvement to achieve customer satisfaction.

The three key elements of continuous improvement are:

- The importance of customers,
- The need to manage processes,
- The quality chain.

Continuous improvement can be defined as an evolutionary process that leads to a better way to compete and add value to existing processes and covers the entire workforce of the organization. [9, 15]

New business models are based on continuous improvement, transparency and intangible resources of companies (trade, human resources, intellectual capital, technology, customer relationships and partnerships etc).

1. Continuous Improvement Strategy

Among several proposals quality strategy, particular attention is given to the present *strategy of continuous improvement*.

Continuous improvement is synonymous with progress and can be a key strategy of the organization. It describes how to use resources to achieve objectives. Each organization needs to set the strategy and rhythm ways to improve [10, 321]. Taking into account the level to which they can develop strategies define two main categories: enterprise (economic, social, etc.) and business (competitive).

The latter is, in fact, quality strategy. "Mastering quality is imperative for a business strategy, a key element to ensure product superiority." [7, 16]

The main routes of continuous quality improvement are:

- Reduce non-conformities;
- Improving current bid, acting on the number and characteristics level;
- The renewal of the offer;
- Increasing the effectiveness and efficiency of processes.

The pace of improvement should enable the organization positioning, in terms of quality, at least at the level of the best competitors in the market.

The strategy of continuous improvement is an alternative to the *innovation strategy*, both aiming at achieving change in the organization. Most organizations have preferred improvement with small steps, but continuous, the attention being directed towards improving processes ("criterion P"), unlike innovation strategy whose attention is directed towards results ("criterion R"). But total removal of the R criteria of organizational life is neither possible nor desirable.

Continuous improvement strategy, seeks the *continuous improvement*, a *gradual one* of product quality, of services, of productivity and competitiveness *with the participation of all staff*. Among the strategies and techniques for continuous improvement of quality management include: Benchmarking, Kaizen, Quality Circles, Method QFD, Six Sigma, etc. Poka Yoke

2. Kaizen Philosophy

A model of continuous improvement strategy was defined by the Japanese Masaaki Imai*, in 1986, named Kaizen**. Kaizen concept is the most important Japanese management concept. Imai, President of the Corporation Cambridge, an international consulting firm in management, headquartered in Tokyo, proposed this useful technique in his work of reference - "Kaizen, key to competitive success of Japan" (Kaizen: The Key to Japan's Competitive Success , 1986).

The book was a worldwide success, leading to the introduction of 'Kaizen' corporate lexicon. In 1997, Imai published the second book, "Gemba Kaizen, a practical approach, with low cost, of management." This book received the "Shingo Research and Professional Publications" Prize for the year 1999.

After 1986 there was a rich literature on this subject. The Kaizen philosophy woke up a special interest among researchers and practitioners because it is mobilizing, with a total implication of the staff within the process of continuous improvement.

Kaizen philosophy is based, mainly, on a *culture change* to encourage operators' suggestions at their ongoing effort to improve activities or participate in. Kaizen means that *excellence is built over time*. Imai's message was: "not a day goes by without an improvement in the business".

Today, organizations worldwide from manufacturers, to hospitals, to banks, to software developers, to governments are making a difference by adopting *kaizen* philosophies, mind-sets, and methodologies. Even though the names of these strategies may change over the decades from continuous quality improvement and total quality management, to just-in-time and operational excellence, to six sigma and lean manufacturing, the most successful of these strategies are customer-focused, *gemba*-oriented, and *kaizen*-driven.

* Masaaki Imai, the pioneer and leader in Kaizen philosophy spread all over the world, Kaizen Institute founder in Switzerland (Kaizen Institute Consulting Group KICG, 1985) and having offices in over 30 countries. Masaaki Imai has been present in Romania nine times, taking part in the 7 Conferences organized by the Kaizen Institute Romania and visiting two Romanian companies that have implemented Kaizen Management System

** Kaizen - the Japanese concept launched Masaaki Imai. It has the following meaning: KAI = change and ZEN = for the better, and the translation is "continuous improvement". In martial arts, through Kaizen means "the small steps forward fast".

The 1993 edition of the *New Shorter Oxford English Dictionary* recognized the word *kaizen* as an English word. The dictionary defines *kaizen* as “*continuous improvement of working practices, personal efficiency, etc., as a business philosophy.*”

What is Kaizen?

- It is an effective tool for continuous improvement in small steps, making the process more efficient, effective, controllable and adaptable;
- The concept is not a simple reference word or part of a slogan. These concepts have been associated methods and techniques of training of all employees in the company to continuous improvement, continuous improvement activities and results;
- The method focuses on simplifying complex processes by decomposing secondary processes and then improves them;
- In business, it aims to gradually improve the company's management by involving all employees;
- Requires implementing a set of rules in the company, from the tidiness in the workplace, and lead to a standardized work style;

The philosophy of Kaizen has kindled considerable interest According to Imai (1986), Kaizen is a continuous improvement process involving everyone, managers and workers alike. Broadly defined, Kaizen is a strategy to include concepts, systems and tools within the bigger picture of leadership involving and people culture, all driven by the customer.

Brunet defines Kaizen philosophy as "method of continuous improvement based upon the cooperation and engagement spirit" [1, 16].

Kaizen objectives [19, 430]

- Build "ownership" and establishing culture / work environment acceptable because Kaizen relies heavily on a culture change that encourages suggestions put permanent operators to improve their activities or participate in.
- Establish capital costs of projects.
- Improve slow but steady.
- The participatory approach focused on creativity, updated design based on customer requirements.
- Zero defects.

Kaizen Concepts

Management must learn to implement certain basic concepts and systems in order to realize Kaizen strategy [6, 2]:

- Kaizen and Management,
- Process versus Result,
- Following the PDCA/SDCA,
- Putting Quality first,
- Speaking with data,
- Treating the next process as the customer.

Within the Japanese management there is the rule that every year should start with a campaign based on a program of continuous quality improvement. Such a campaign was, for example, one called "3K Campaign 1-2-3" meaning the 3K: Kangae (thinking), Kado (action) and Kaizen (continuous improvement) and the 1-2-3 order of these three processes: to think, to act, to continuously improve. That is why the Kaizen philosophy penetrated far enough into the strategy TQM organizations worldwide.

Liker [8, 89] considers that the best practices in the field of Kaizen philosophy can be found in the successes of Toyota Company known as Toyota Production System- TPS. The TPS became the basis for the LEAN manufacturing and Six Sigma philosophies have been prevalent in the industry That Since the early 90's. The TPS includes 14 management principles that can be correlated into four main Categories of Philosophy, Process, People and Partners and Problem solving (Figure no. 1).

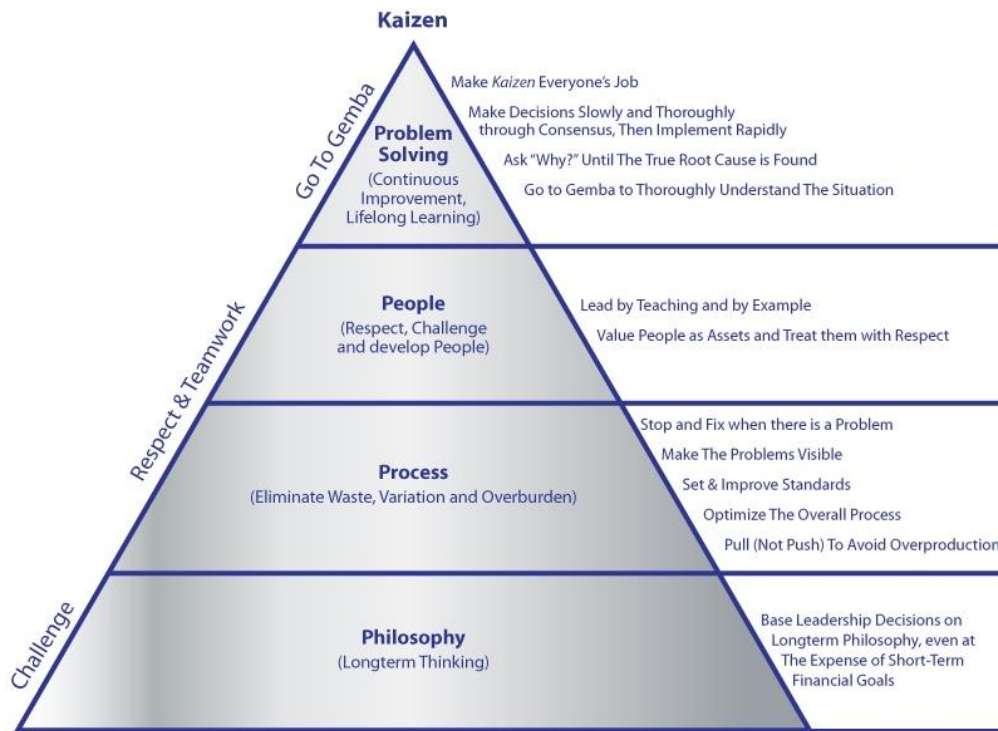


Figure no. 1 "4P" model of Toyota

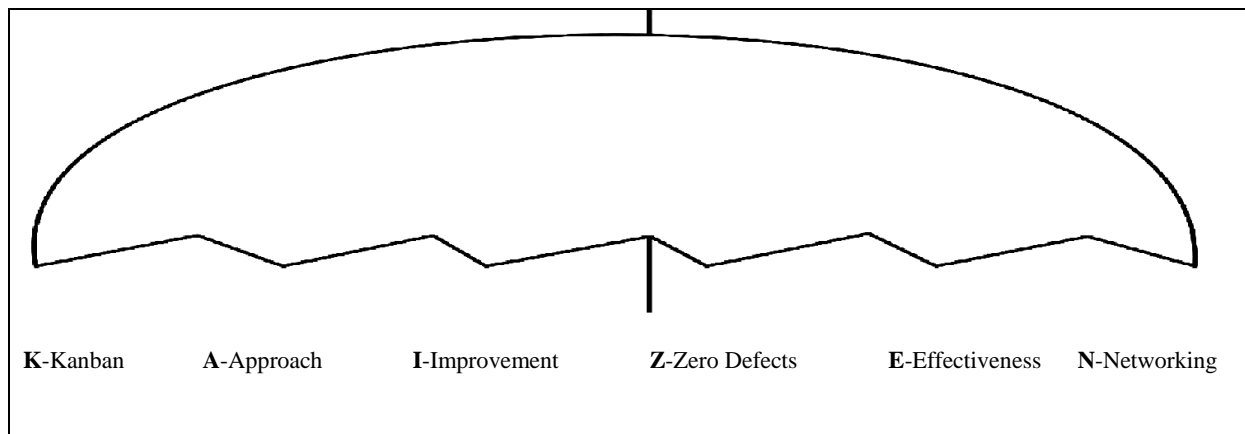
3. KAIZEN Strategy

The strategy of continuous improvement is considered "an integrated strategy, cross-functional, of the company, aiming the gradual, continuous improvement of the quality of products and services, as well as productivity and competitiveness, with involvement of employees" [12, 107]. Kaizen strategy is an alternative to the innovation strategy. Kaizen is represented as an umbrella concept reuniting the majority of concepts and practices typically Japanese (16 in total): Company Wide Quality Control (CWQC)*, Kaban, the quality circles, the suggestions system, productivity improvement etc. (Figure no. 2).

Masaaki Imai (MI) believes that in this "umbrella" concept fall most Japanese concepts and practices (TQM CWQC Japanese version), similar (in part) to those proposed by Sadgrove (KS) [17, 17-18]:

- Customer focus (CWQC, MI, KS);
- The quality of the first plan (quality first) (CWQC, MI);
- Rationale data (speak wit date) (CWQC, MI);
- Control of variability and prevent recurrence (key point quality check) (CWQC, MI);
- Just-in-time (just in time) (MI, KS);
- Zero defects (MI, KS);
- Participatory Management (MI, KS);
- Quality circles (MI);
- The method of the "3S", "5S", "6S" (MI), etc;
- Prevent client-provider relationship (the next process is your customer) (CWQC, MI);

* CWQC is the Japanese form of Total Quality Management



<i>The Key Kaizen Practices</i>	
<p style="text-align: center;">Mindset & Culture</p> <ul style="list-style-type: none"> • customer orientation • quality control (QC) circles • suggestion system • discipline in the workplace • small-group activities • cooperative labour-management relations • total quality control (TQC) • quality improvement 	<p style="text-align: center;">Production Process</p> <ul style="list-style-type: none"> • automation & robotics • automation • zero defects • total productive maintenance (TPM) • Kanban • just-in-time (JIT) • productivity improvement • new product development

Figure no. 2 The Kaizen Umbrella and The Key Kaizen Practices

Source: <http://afr.kaizen.com>; Imai (1986)

The following are major systems that should be in place in order to successfully achieve a *kaizen* strategy [Imai, p.7]:

- Total quality control (TQC)/total quality management (TQM)
- A just -in- time (JIT) production system (Toyota Production System)
- Total productive maintenance (TPM)
- Policy deployment
- A suggestion system
- Small -group activities

The secret of Japanese Kaizen strategy was probably oriented worker, considered the main factor of success of the organization. "Quality" is the engine TQM employees. According to Imai, employees have helped to acquire, to reach the level of "Kaizen consciousness", ie to understand the need for continuous improvement. So that it becomes a state of mind of each worker. Kaizen method, proposed by Imai, encourages suggestions on improving each own activity or the process, even if the effects are small. The main features of the method are: efforts and achievements continue to maintain a gradual and constant change in which everyone is involved, everyone to participate in continuous quality improvement. In addition, employees should be rewarded from issuing a large number of useful suggestions (e.g., granting titles and certificates the "man of the month Kaizen" or small gifts).

Kaizen strategy of small steps is continuously by *each person in the organization*, through systematic actions and long-term effects leading to excellence. The continuous improvement processes for enhancing organizational performance and stakeholders' benefits should be a strategic goal of any organization.

Recognizing the interest of organizations from other countries for Kaizen strategy, Masaki Imai signalled the need "*change company culture.*" We can talk about some difficulties in applying this strategy: retention or inability of managers to open acknowledgment of problems, employees' resistance to change, poor communication between managers and employees. We come back to the concept of "umbrella" which suggests overcome these difficulties through *participatory management* and *knowledge management*.

Kaizen method uses methods and techniques that lead to remarking the human factor contribution to quality improvement. We recall, among them: quality circles, Deming cycle method, the "zero defects", 5 "WHY", 5M, 5S, 6S, suggestions system, Kanban etc.

- **Deming Cycle.** To improve the quality of Japanese took the top circuit **plan - running - check - act**, applying it to all management activities.
- **"5 Why"** - method invented by Toyota Company, is a technique for discovering the origins of causes and issues that arise. In fact, before discovering the origin causes should ask five times in succession "why"? This simple technique, but very effective, is reduced to a questioning attitude, rigorous examination and not by accepting the first case found.
- **"5M"** - represents the five categories of cases reported by Ishikawa also, underlying all problems related to process development and manufacturing of products:
 - MEN - people (employees);
 - METHODS - methods;
 - MATERIALS - materials used;
 - MACHINES - machines;
 - MEASUREMENTS - measurements.

It is known that lately it has been considered a new category of cases, a sixth M: *MILIEU* - environment.

- **The "5 S"** - refers to workplace organization. The five Japanese words that begin with S and covering fundamental aspects of quality and productivity are:
 - **Seiri** SORT what is not needed. Use the red tag Considered system of tagging items not Needed, THEN Give everyone a chance to really indicated if the items is Needed. Any red tagged item for Which no one Identifies the need is eliminated (employee to sell, sell to scrap dealer, Give Away, put into trash.
 - **Seiton** STRIGHTEN what must be kept? Make things visible. Put tools on peg board and outline the location CAN BE ITS tool so readily identified. Apply the saying "a place for everything and everything of love".
 - **Seiso** SCRUB everything that Remains. Clean and paint to provide a pleasing appearance.
 - **Seiketsu** SPREAD the clean / check routine. When others see the Kaizen Improvements in the area, give them the training and the time to improve their work area.
 - **Shitsuke** STANDARDIZATION and self-discipline. Establish a cleaning schedule. Use downtime to clean and straighten area.
- **"6 S"**. The "6S" Success for excellence in quality management leading to excellence proposed by the Japanese Masaaki Imai are:
 - Excellent Strategy;
 - Excellent leadership style;
 - Excellent quality system;
 - Excellent professionals (specialization);
 - Employees excellent;
 - Excellent payment
- The **suggestion system** is considered as the simplest technique used in the continuous improvement strategy. This system involves collecting suggestions for improvement made by the staff of the company / department and their analysis by managers. It is necessary to prepare regular employees. [16, 190]

Poka yoke Japanese concept belonging to S. Shingo, was taken into Kaizen meaning "be harder to do than one product defect quality", which means that measures to ensure this, so careful mastery quality.

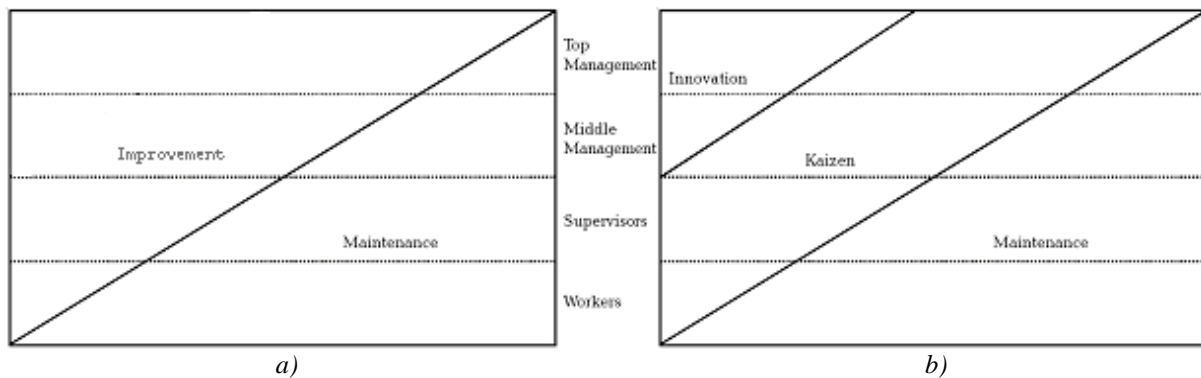
The concept of continuous improvement is applied in all directions [19, 431]:

- *Processes* can be improved;
- The working *methods* can be improved;
- *Damages* may be removed;
- *Losses* may be reduced;

- *Customer satisfaction* can be improved;
- *Labour model* can be improved;
- The *relationship leader - subordinate* can be improved.

4. Comparative Analysis. Kaizen Strategy - Innovation Strategy

Imai [6, 4] suggests that improvements can be divided into Kaizen and Innovation (Figure no. 3). Kaizen means small improvements as a result of continuous efforts. Innovation involves a drastic improvement, as a result of resource investment in new technology or equipment. The author also explains that, in the context of Kaizen, the management has two major functions: maintenance and improvement. Maintenance refers to activities aimed at maintaining current technologies, management and operating standards and supporting these standards through training and discipline. The maintenance function management tasks assigned, so that everyone can follow the standard operating procedure. Improvement, meanwhile, refers to activities aimed at overcoming the current standards.



**Figure no. 3 a) Japanese perception of job function;
b) Improvement broken down into innovation and Kaizen**

So, Kaizen means human effort, moral, communication, training, teamwork, commitment and discipline - common sense, low-cost approach for improvement.

Differences between Kaizen Strategy and Innovation Strategy

The essential difference between the two types of strategy is the embodiment of change: slow and continuous change in Kaizen continuous improvement strategy and sudden change, radical strategy for Innovation. ISO 9000 standards refer to two strategies, continuous improvement and radical changes, their application depending on the nature of products / processes / services, market demand, technological developments and workforce training.

Unlike the innovation strategy, which involves improving processes and products in great leaps, through technological innovation, Kaizen strategy adopts the principle of gradual improvement, with small steps. Such changes do not involve substantial technological improvement, as if innovation can be achieved with conventional know-how.

Kaizen strategy is geared mainly towards results, while in the case of Kaizen Strategy it has a predominant orientation towards the process. The Kaizen Strategy can reach a good result with relatively little effort, constantly made.

Kaizen strategy is oriented towards the worker, considered the main success factor of the organization compared to the Innovation requires investment strategy, sometimes appreciable. Innovation strategy is oriented towards technology and financial aspects involved in innovation.

Another difference between the two strategies is given the necessary implementation efforts. Innovation Strategy requires little material, human and financial large, concentrated within a short time and Kaizen strategy requires continuous efforts and not necessarily increasing. In addition, if Kaizen strategy, resources can be obtained from growth effects resulting from increased quality time. In the Table no. 1 there are presented the main differences between the two management strategies.

Table no.1 Kaizen Strategy versus Innovation Strategy

Cr. no.	Criteria	Kaizen strategy	Innovation strategy
1.	Effect	Long term	Short term
2.	Rhythm	"small steps"	"large steps"
3.	Time delimitation	Continuous	In vaults
4.	Success possibilities	Constantly high	Unexpected, insecure
5.	People involved	Each person in the organization	"Chosen" persons for innovation
6.	Way of action	Systemic actions, groups of working	Individual ideas and actions
7.	Motto	Maintenance and improvement	Renouncement tot the previous situation and reconstruction
8.	Success recipe	Conventional Know-how and the exiting technical level	Important technological change, new solutions
9.	Effort	Small investments, strong mobilization	Important investments, weak mobilization
10.	Success main factor	Human factor	Technical factor
11.	Assessment criteria	Capacity to get high results	Resulted profit
12.	Advantage	Slow economic growth	Rapid economic growth

Source: Imai, M., p.48

In some papers the difference between the two strategies for quality improvement are presented in a suggestive way as in Figure no. 4.

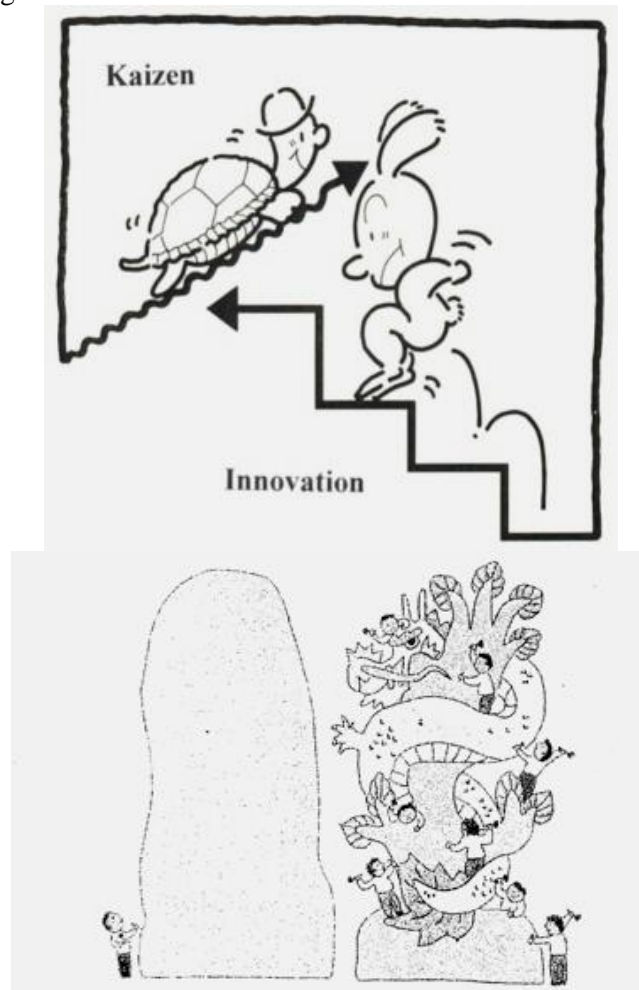


Figure no. 4 Suggestive presentation of the two strategies Kaizen – Innovation

Difficulties in applying Kaizen strategy [12, 112; 16, 191]:

- The reluctance of managers to open acknowledgment of the problems, or this recognition constitutes the starting point of all areas for improvement;
- Often cross-functional nature of the problems to be solved;
- Workers resistance to changes;
- Poor communication;
- Quality is expensive;
- Quality is affected by the poor quality of labour;
- Lack of quality offensive attitudes.

Despite these difficulties, the philosophy, Kaizen concepts and tools have been adopted in many multinational companies from USA, Europe and Asia. This implies that it is possible to apply the Kaizen in countries with different socio-cultural contexts, but this test must be conducted in accordance with appropriate leadership and with adjustments to reflect the uniqueness of the company concerned.

Conclusions

Kaizen is "a policy of gradual improvement, but still the quality of products or services provided by an enterprise through optimum use of human and material resources existing within it" [2, 50].

It is true that the effect of Kaizen strategy in Japan was special and that few countries can hope to achieve similar results in a very short time. It should be taken into account the way of thinking and the quality culture to the Japanese people. The original concept of Kaizen must be adapted to suit not only industrial or business environment in the West, but even taking into account organizations, as appropriate, culture, values, objectives, strategies and their policies. Therefore, in the current global economic context, it is wrong to cling to a strategy that successfully applied in a given country. It has adopted the best solution that is suitable economic environment you through that country, even if it means a combination of strategies [16, 193].

Some authors have equated Kaizen strategy with the "poor" human wisdom: this one does not spend money for improvements that they do not have it, but rather use their wisdom, creativity, talent and patience (Taiichi Ohno's motto - "Use your head not your money"). This is the real power of Kaizen philosophy - obtaining satisfaction step by step through creative efforts, using:

- Specific methods based on technical knowledge and systematic improvement,
- Further training
- Ability to work effectively in a team,
- Ability to identify, define and implement a specific style to open the road to excellence.

The objectives of quality and competitiveness involves all departments in the organization, quality is an issue of collective labor and the application of continuous improvement strategies involves "training, accountability, management," "culture, rigor, initiative, participation" [15, 103].

The effects of ***Kaizen strategy*** are visible if they are prepared on time, being required: ***Kaizen Culture, Kaizen Consciousness, and Kaizen Team.***

Some authors state that Kaizen philosophy can be applied in other fields, such as business services, commerce etc, where Kaizen strategy is more advantageous in relation to strategy Innovation is a new field of research available.

Kaizen values in quality management are represented by *safety, security, high productivity, quality, commitment and partnership, cost effectiveness throughout the business environment, the concept of team and ownership.*

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