

# **Kaizen Philosophy Application as Production Standardization and Process Optimization**

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## **Abstract**

*Market competitiveness has increased and companies are increasingly looking for methodologies that enable them to have higher productivity and organization at work, at low cost. More flexible and innovative processes and products are key to the survival and success of many companies. The importance of a study of Kaizen philosophy is due to the fact that it is based on continuous efforts to improve the system. Therefore, the present study aims to clarify the process of continuous improvement through the implementation of the Kaizen tool so that it can guide the productive improvement of companies in the Manaus (AM) industrial hub. This scientific article was elaborated, based on the bibliographic research resulting from an analysis, which considered the two-axis cross perspective - Kaizen philosophy and continuous improvement. This article demonstrates the Kaizen continuous improvement tool as it emerged and the benefits generated in environments that encourage learning and cooperation among individuals, working on human resource development so that improvement initiatives are truly continuous.*

**Keywords:** Quality control; Kaizen philosophy; process optimization.

## **1. Introduction**

Firstly, the work contemplates some notions through which process improvement strategies can be located through the Kaizen continuous improvement tool. Notes have been taken about its philosophy and benefits it can provide to an organization. These topics are briefly addressed as to how organizational change

through Kaizen can influence production processes and increase the quality of products / services.

With the increasingly competitive market, organizations are looking for differentials against their competitors and for this they use tools to continuously improve their processes and thus provide a product / service always with high quality and meet the needs of their customers (OLIANI et al., 2016).

Then comes the continuous improvement activities, which Caffyn and Bessant (1996) defined as a broad business process of evident and intermittent incremental innovation. These activities, whose performance is related to each company's ability to manage its traditional processes - such as developing products, selling, manufacturing, distributing - the literature reports on the relationship between quality program failure and the low level of involvement, commitment of employees and management.

According to Ismael (2015) the success achieved with the implementation of improvement methodologies in different industries led many companies in difficulties to have also chosen to introduce these methodologies in order to achieve sustainable growth and survive the competitive and hostile environment of the companies. current markets.

Among the many continuous improvement tools that are being used by companies as competitive market strategies is Kaizen. According to Imai (1998), in Japanese, Kaizen means continuous improvement. The word implies improvement that involves all people - both managers and workers - and causes relatively little expense. Kaizen Philosophy assumes that our way of life - whether it is our work, social or home life - must focus on constant improvement efforts. This concept is so natural and obvious to many Japanese that they don't even realize they have it.

The Kaizen tool can be considered a simple process, as it can work in all areas of a company, through basic concepts such as organization and discipline, without using large investments, because it works with existing equipment in the company seeking to improve its results (OLIANI et al., 2016).

Pinto (2012) highlights that industries generally concerned with the results of their various segments seek through management tools to optimize processes effectively in order to reduce costs. However, they encounter bottlenecks and waste located in some sectors of the production chain.

There are few published works on the implementation of the Kaizen methodology in the productive chain of the industrial hub of Manaus (AM). The small number of studies found in the literature is indicative that the Kaizen philosophy in factories of the Manaus industrial pole has not been sufficiently studied. Thus, this article aims to elaborate a study based on the literature review with the objective of exploring some notions through which process improvement strategies can be situated, namely Kaizen, presenting successful implementation cases that may guide the process. productive improvement of companies of the industrial pole of Manaus (AM).

## **2. Theoretical reference**

For the study in question that addresses a literature review study on continuous improvement through the Kaizen tool, a better understanding of the concepts and factors related to the subject under study is indispensable. Therefore, the main conceptions related to this theme will be explained in order to better qualify the proposed theme.

### **2.1 Concepts and Approaches for Continuous Improvement**

The term “continuous improvement” has become very popular in recent years, being associated mainly with the Total Quality movement. It is worth noting that the concept has evolved over the years and is currently quite structured (ATTADIA; MARTINS, 2002).

The concept for continuous improvement is based on the definition of Caffyn and Bessant (1996), the authors present a simple, objective and full-scope proposal: “Continuous improvement is a company-wide process focused on incremental innovation and to be continued”.

So continuous improvement means the involvement of all the people of organization, in the constant and systematic pursuit of product and process improvement proposing small changes in organizational habits and major changes with greater planning (BESSANT, CAFFYN; GALLAGHER, 2001).

In an organizational environment, continuous improvement is reflected in the culture of this environment, which demands constant achievement of its individuals by overcoming personal paradigms, usages and customs, in the search for improvement in order to apply available resources, helping to eliminate risks and risks. customer and organization demand.

Process improvement is a necessity present in the routine of all organizations occurring in a structured or unstructured manner. Thus, continuous improvement is necessary for the organization to survive and evolve in a market with intense competition (MESQUITA; ALLIPRANDINI, 2003; DELBRIDGE; BARTON, 2002).

The Japanese model of continuous improvement, involving employees of all hierarchical levels, is called kaizen. Although this model emphasizes the practice of small and incremental improvements, it brings significant results over time (IMAI, 1997).

For Shonberger (1982), kaizen has generated a particular process-oriented way of thinking and an administrative system that supports and recognizes improvement efforts. Through this concept, employees now incorporate continuous improvement into their work routines. The autonomy given to each employee is a motivating factor for the development of these activities. Thus, the model is centered on people, because they perform the activities inherent to the organization.

### **2.2 Kaizen Philosophy**

According to Pinto (2015, p. 15) “of Japanese origin, the word “Kaizen ”means“ change for the better ”and is related to quality management in companies”. The origin of the Kaizen methodology is from the middle of Japan's economic recovery after World War II and its concept has an industrial origin. After the conflicts faced by the country the devastation situation was intense, so the Japanese government initiated several projects in the areas of management and administration, with the institute to resume and restructure the industrial processes so that the Japanese companies to return to the market in a competitive way.

Kaizen (or continuous improvement) was developed by Masaaki Imai in Japan and is now known and practiced around the world. In 1962, Imai founded Cambridge Corp. where he was a consultant and founded the Kaizen Institute in Austin, Texas to help introduce Kaizen concepts to Western companies in 1986 (Murugan, 2005).

Kaizen is born of a study of how workers do their jobs and has become a well-known methodology in the

United States. Masaaki Imai, in 1986, first introduced the Kaizen methodology in the Japanese company Toyota to improve efficiency, productivity and competitiveness (Duarte, 2013).

The concept was introduced in America in 1986 from the book written by Masaaki Imai, "Kaizen - The Key to Japan's Competitive Success". Masaaki Imai, known as Kaizen's father studied at the University of Tokyo International Relations and worked for several years at Toyota (SINGH; SINGH, 2009).

Mesquita (2001) reports that Kaizen is a well-known and well-known term, including its definition that it is an improvement involving everyone in the organization - both management and shop floor - generating relatively little expense. This philosophy dictates that our way of life - both at work, in social life and at home - should be focused on continuous improvement efforts.

Imai (1997) believes that this philosophy is already rooted in Japanese culture, and that this may have contributed to Japanese competitive success. However, according to him, any company, regardless of nationality, may be able to benefit from Kaizen.

### ***2.3 Kaizen as Continuous Improvement***

According to Pinto (2015), in recent decades, Toyota's success has led to a huge search for more knowledge related to Kaizen thinking. There are hundreds of books as well as thousands of journalistic articles that explore the subject. Companies, institutes, associations and communities dedicated to study, develop and provide advice on these methodologies and culture have also emerged.

In recent years, other sectors (health, construction, logistics and public service) have been contemplated with the expansion of Kaizen application. Kaizen is no longer seen by organizations as an application tool for continuous improvement processes, but currently encompasses an entire system integrated into the management of an organization.

Pinto (2015 p. 20) points out that "all these changes were accompanied by an evolution of organizations, which also contributed to the creation of the Culture of Continuous Improvement through the change of some paradigms".

MC can be understood as a set of activities that constitute a process of reasoning and intervention that seeks to achieve performance improvement (JHA et al., 1996). It aims, through employee involvement, to create a culture of sustainable improvement and eliminate waste in all organizational systems and processes (BHUIYAN et al., 2006).

In the search for the achievement of organizational success, the immutability and constant performance of the processes do not go through this search, since a constant concern, adaptations and changes in the organization and human resources are necessary. Success to be consistent, though never guaranteeing, is more likely to be in managing organizational processes consistently. For the question is not restricted whether to innovate or not, but how to apply the whole process of innovation successfully, that concrete organizational practices encourage skills and innovation in order to build a true culture of business innovation.

Guimarães et al. (2011) describe that the big difference between innovation and continuous improvement is in the pursuit of perfection, because continuous improvement is concerned with the complete and continuous improvement of products and innovation is concerned with great progress and rapid growth.

The Kaizen methodology has helped a war-ruined country become one of the world's largest industries. And this is largely due to the mindset that costly investments are not required to promote significant improvements in an organization. Since it is possible to implement small daily improvements and thus achieve good long term results.

Today, more than ever, we need to optimize processes and drive organizations to excellence. Thus, Kaizen can be a tool for creating a new culture in the company. A culture of improvement and growth that puts people in a constant process of improvement and thus more results for the company.

#### ***2.4 Kaizen and Productivity***

According to Murugan (2005) Imai, from several studies on US productivity, realized that methods were used by US companies to increase productivity. productivity. These American methods were related to the search for improvements.

Innovations through technological innovation, big investments and good engineers. Already in Japanese companies the most used method to increase productivity was to encourage and engage company people in the search for small improvements at low cost.

The optimization of productive processes has been studied for a long time, being evidenced since Taylor's initial studies, the division of labor and through it the increasing productivity and production capacity of goods on an ever-increasing scale largest (GOUNET, 1999; PINTO, 2015).

The author Hohmann (2002) reaffirms that Kaizen is a technique that involves all people of all hierarchical levels, in order to rethink production processes in favor of increased productivity, decreased inventory, increased quality and employee safety.

Imai (1998) reinforces that productivity is an evaluation and not a reality, that is, it is just a description of the current condition of things and people's previous efforts. This means that kaizen is based on the PDCA cycle, productivity is a result-oriented index, and process-oriented improvement. What is implied is that improvements occur gradually and the return is long term.

Pinto (2015) highlights that to keep up with the constantly changing environment, it is essential to have thoughts and actions aimed at continuous improvement, and thus develop a culture based on it. Its practice facilitates the creation of a continuous learning environment, seeking the best use of existing knowledge in the organization and enhancing the ability to create new knowledge.

Kaizen is a tool of excellence on many levels. This tool involves everyone in an organization; why everyone involved knows the needs of their industries and how each individual can identify the gaps and improvements that need to be made. According to Santos and Pierre (2016) success in increasing productivity involves flexible manpower and continuous improvement tools. Therefore, members of an organization must always be involved in their responsibilities and feel that they are a fundamental part of a work team and not just another element.

#### ***2.5 Kaizen and the PDCA Cycle***

The PDCA - Deming Cycle - originated from a Seminar on Statistical Quality Control chaired by Dr. W. Edwards Deming in Japan in 1950. According to Ismael (2015) the foundations of this cycle date back to

the 1600s, when Galileo, based on philosophies of scientific evolution, created a method of scientific improvement. This method was adapted in 1939 by Walter Stewart for Specification Production Inspection, giving rise to the Stewart cycle with application in Mass Production processes.

The result of the Japanese interpretation of the Deming cycle gave rise to the PDCA continuous improvement cycle, Olani et al (2016, p. 65):

- P stands for Plan and aims to establish improvements by drawing up action plans to achieve the objectives;
- D comes from the verb DO, which means to do, that is, to put into practice the plans and their application;
- C stands for Verify. Its purpose is to analyze whether the implementation of the plans has been achieved.
- A means Act, which is the realization and standardization of new procedures, corrective actions.

The PDCA cycle means that the business situation must always improve. According to Imai (1990) the PDCA cycle goes on and on. Once an upgrade is made, it becomes the standard that will be challenged with further improvement plans. According to Ismael (2015) regarding the Kaizen methodology, the PDCA allows the information to be accessible to everyone and all employees to follow the implementation steps of the suggested improvements (Deming).

### **3. Methodology of Scientific Work**

In order to meet these objectives, this scientific article was elaborated from a bibliographical review in which support was sought in the analysis of the thinking of authors, such as Gil (2008); Lakatos; Marconi (2008-2009); Beard (2010); I live (2010).

The research had a bibliographic and explanatory nature, as described by Gil (2008), where previously published literature relevant to the subject was used. This type of research is developed from the so-called bibliographic sources, which are considered secondary data and comprise a diversity of materials that in its preparation have received analytical treatment, such as books, theses, dissertations, articles, among others. The main advantage of bibliographic research is the possibility of elaboration of a state of the art of the studied subject, favoring its appreciation from innovative points of view and the formulation of original conclusions (GIL, 2008). Also, according to the author “the bibliographic framework used to work on the Kaizen philosophy theme is described below:”

#### **3.1 Step 1 - Fonts**

- a) We used 11 books divided into subjects on scientific methodology and other work-related subjects, in Portuguese and English, published from 1989 to 2009.
- b) Scientific articles on the subject were accessed in the Scielo databases and in specialized journals, published in the last eleven years (1996 to 2016). We used seven national and international articles, available online in full text.
- c) Articles available on the web with themes related to the study were used, from a total of four sources, between the period (2002 to 2010).
- d) Six master's dissertations available in the Google academic databases and online libraries published from 2010 to 2015 were used.

### **3.2 Step 2 - Reading the Material**

The previously selected works underwent fluctuating readings that allowed to exclude those without the potential to contribute to the objective of the study. Already selected works went through new readings, now more thorough and exhaustive, the relevance to the study. From these bibliographic sheets, the analysis and interpretation of the results was organized.

### **3.3 Step 3 - Taking Notes**

At this stage, an analytical reading was performed with the purpose of ordering and summarizing the information contained in the sources, in order to obtain answers to the research problem.

The final text was based on ideas and research by authors such as: Imai (1990, 1997,1998), Pinto (2012); Pinto (2015); Ismael (2015); Oliani et al. (2016).

## **4. Kaizen Deployment Cases**

In this section we will present some case studies that illustrate the inherent benefits of applying Kaizen.

Ismael (2015) studied implementation actions of Kaizen tools at Iberol (biodiesel production company) as part of a Kaizen Manual prepared for the company. As a result of the implementation of Daily Kaizen, the creation and monitoring of

Team performance in each area has become a daily task. In order to incorporate all the information generated, an Excel format file (KaiDi) was created to facilitate the elaboration of the indicators of each area, requiring only the input of the data chosen by the head of each area.

Pinto (2012) described the application of Lean Production System (SPE) tools, whose main tool worked was Value Chain Mapping (VSM), in a process called Surface Mount Technology (SMT). Principles governing lean production, waste elimination and the creation of value flow in a real situation, through Kaizen events, were used to obtain results of this application, evidencing a lean transformation, with significant reductions in waste generated in the process. . Therefore, the author sought to combine Kaizen event techniques with integrated use of TPE tools and establishes a methodological innovation in change management in order to achieve the process maturity that were applied in a slab production line of the Manaus industrial hub. In the study, by mapping the value chain, we propose to draw the current state of the chain, proposing a future state, identifying and eliminating what does not add value

Guerra (2010) assessed the extent to which participation in Kaizen Sessions influences the attitude of the Human Resources involved and their knowledge and skills in Continuous Improvement. To this end, a study has been developed with a company that is adopting a Management Model based on Continuous Improvement, which has conducted a survey with participants in Kaizen Sessions. The study concluded that the Kaizen Sessions carried out in the company had a positive effect promoting a more proactive attitude, more skills and better knowledge among workers involved in Continuous Improvement activities. This study reinforces the idea that Kaizen can be successful in other business sectors than industry.

Therefore, studies show and reinforce that successful Kaizen adoption depends on a company's organizational culture. This is why employee participation is very important to express their opinions about what should be improved in the company and also their ideas on how to do it.

Studies such as those by Pinto (2012) and Guerra (2010) show that, as far as today is concerned, Kaizen and its methods are being deepened among top managers and industry leaders who already contemplate the management systems of large world companies. In the incessant search for better answers and performances, new methods, tools and techniques are refined so that they can provide better conditions for achieving increasingly challenging goals.

## 5. Conclusions

This paper introduced the Kaizen tool as well as a continuous improvement process, demonstrating its importance for the pursuit of continuous quality evolution. The key idea guiding the development of this work is to show basics that support the applicability of Kaizen, as support for the preparation and cost reduction in production lines. It must be borne in mind that the acquisition of new technologies may not be the solution of problems in an organization but, for example, changes in process management.

Therefore, these notes can serve as a basis, guiding entrepreneurs for future restructuring within their respective companies, always aiming to obtain the best level of continuous improvement possible by the Kaizen tool in the Manaus industrial hub.

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