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The importance of applying the *Kaizen* methodology in companies

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ABSTRACT
All companies have opportunities for improvement, but waste is present, whether it is caused by waiting, costs, transportation, movement or others.In order to eliminate such waste, many companies, whether small, medium or large, use the Kaizen methodology.

Keywords: *Kaizen* methodology, Companies, Waste.

INTRODUCTION

All companies have opportunities for improvement, waste is present, whether it is caused by waiting, costs, transportation, movement, among others. Aiming at the need to eliminate such waste, many companies, whether small, medium or large, use the *Kaizen* methodology.

According to Fonseca et al. (2016), *Kaizen* is based on being a system of simple problem solving, which can arise from any idea or opinion. As common or easy as it may seem, you should be very careful, as not all improvements originate from something sophisticated or fully formal systems, but often from something simple and inexpensive.

It is very common in organizations to be eminently concerned with the quality of products and services, with the primary objective of meeting the needs of the customer. The elimination of factors that delay the incessant pursuit of this goal is essential for the development of the company and increased competitiveness.

According to Fontes and Loos (2017), for the growth of the company, employees in the productive sector are essential, this thinking is due to the constant change that companies are pressured to become adaptable to keep up with market demands, in terms of product quality, flexibility in processes, speed of responses, having to explore new alternatives to survive and always maintain innovation.

People work in ways that generate various problems, and ways must be found to help them identify them. Their training to use tools that solve these problems must be constant, so that they are prepared for unforeseen events that may arise. Whenever these problems are resolved, as a result the situation must remain coherent to prevent them from ocurring frequently. The *Kaizen* methodology should be a habit of everyone in the company to always be practiced in their work environment, because a company can

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improve its cultural structure by adhering to quality in its employees, but it must have a lot of dedication (Guerra, 2010).

Kaizen arises from the study of the way a company's employees perform their work, becoming a well-known methodology. In 1986, Kaizen was introduced for the first time in the Toyota company by Masaaki Imai, with the aim of improving productivity, competitiveness and efficiency (Duarte, 2013).

It must be taken into account that it is essential that all employees have the habit of wanting to improve in order to have improvements, everyone must have an interest in participating with ideas, opinions, questions, suggestions, in order to solve daily problems, no matter how simple they may be. *Kaizen* is even connected to people's daily lives, being in any area, at some point improvements are made.

This methodology is known and used in many organizations as a method for eliminating waste, due to the fact that it is used at a low cost and has a quick return with multiple benefits. With this perspective, this article aims to point out the importance of applying *Kaizen* in companies.

OBJECTIVE

The article is a theoretical work on the subject and demonstrates analysis of applications of the *Kaizen* methodology, in this way it is intended to show the importance of continuous improvement through implementations and concept.

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METHODOLOGY

Initially, we started with a review of the literature for a better understanding of the subject. According to Echer (2001), the literature review is very important for the construction of a scientific work, and it is the researcher's duty to be aware of this importance in order to maintain the quality of the research and to know that everything can be used for other reports.

Then, a theoretical study on the subject and analysis of results on case studies carried out by other authors were carried out to contribute to the objective of the work.

DEVELOPMENT

The *Kaizen* methodology is of Japanese origin and can be translated as "continuous improvement", it aims to eliminate waste, using solutions from the company's own employees to make continuous improvements in their productivity, time, money, effort, quality in products and processes (Fonseca et al., 2016).

According to Pires (2011), the *Kaizen* methodology instructs employees to work appropriately to improve their processes, document and analyze information. This methodology has two important concepts, namely added value and waste. In Kaizen's view, added value is the value that adds value to the product or service, it is the compensated return to the customers that they receive in exchange for payment. Waste, on the other hand, is the activities that the company carries out, which do not contribute to the value of the products or services. In companies, only a considerably low percentage of activities add value, in most cases the percentage is waste and they should be eliminated and not surrounded, so employees invest their time in the processes that really generate value.

According to Guimarães and Ishisaki (2013), one of the first steps in the application of the *Kaizen* methodology is for the company to recognize that there are problems that must be solved in its processes, whether related to production or waiting time. Then you should evaluate the best way to reduce the problem, not having to have a high cost or being too complex. It is of great importance that employees increasingly adopt the awareness that they can do their job better, to facilitate implementation, especially in activities aimed at continuous improvement. Companies that wish to implement the *Kaizen* methodology must analyze in their processes which of their activities add value to the customer, and advance in the activities that do not, as it is a point of improvement to eliminate waste, since it is necessary to eliminate unnecessary activities in the processes. However, the *Kaizen* methodology also aims to restructure the company's culture, aiming to improve employee satisfaction.

Kaizen is an ally in the processes of continuous improvement not only for managers, but for all those involved in the company, being an easy-to-use concept for optimizing production processes and helping to achieve the organization's goals. There are always improvements that can be applied, which is something that everyone should be aware of and always seek to advance services and quality (Fonseca et al., 2016).

You can't get results without paying attention and working on the processes, because if they are inconsistent, the effect is that your results are also inconsistent. Improvement occurs when the processes remain standardized and stabilized, making visible the losses and inefficiencies in the processes, making it possible to learn as improvements happen. Improvement must be global in the company, always aiming at everyone being an internal customer and supplier. *Kaizen* teaches that the sign of courage is when a person sees broadly what did not work, assumes and suggests improvements so as not to repeat the same process (Pires, 2011).

KAIZEN COST

The *Kaizen* cost seeks to eliminate the company's waste with continuous improvement by analyzing the existing processes, but favors the achievement of the objectives of the target cost, a method that considers the costs of the processes and the amount in which the consumer proposes to pay (Guarnieri et al., 2008).

According to Arrenega (2019), the *Kaizen* cost is used to support the cost reduction of a product in its production or service phase, based on the standard cost generated. Through simple improvements in its processes, which involve both its employees and suppliers, the company undergoes continuous progress.

In order to achieve the effectiveness of a company's cost management, so that it can keep up with the continuous changes in the market, it is necessary that in addition to an excellent knowledge of its own costs, the company must also constantly seek continuous improvement. This suggests that companies must be committed every day in all their areas, seeking possibilities to reduce costs and maintain the quality of their products or services. Such action can be obtained with the application of the *Kaizen* methodology, that is, constant improvement. Market pressure requires price reductions, so companies are left with no alternatives, consequently they must reduce their costs to maintain their capacity. Ideally, companies should use cost management methods to obtain a positive return given their situation, and *Kaizen cost activities can be used* (Guarnieri et al., 2008).

DAILY *KAIZEN*

According to Pinto (2015), daily *Kaizen* aims to develop teams to become capable of identifying and maintaining the improvements that apply to their daily processes. Daily continuous improvement contributes to improving the organization's culture, with this practice the intention is that the thinking and actions of employees sustain these improvements, being a tool built over time with the collaboration of all. The idea is to develop the creativity of all the people involved, so that their own process is improved, helping to maintain efficiency and teams.

Also according to Pinto (2015), daily *Kaizen* involves benefits for teams such as:

- Alignment of objectives across the organization;
- Better communication;
- Creation of mechanisms for rapid problem resolution;
- Creation and maintenance of norms in the teams;
- Minimizing the impact of unplanned tasks;
- Support of the improvements made in *the Kaizen* projects;
- Contribution to the creation of a culture of Continuous Improvement.

According to Arrenega (2019), the daily *Kaizen* process aims to establish a routine or some way to improve the flow of information. Alignment with teams on a daily basis helps to have better feedback on subjects to be scored and greater clarification of doubts, generating good results in less time. The implementation of this process must be planned with as much information as possible to get quick and accurate feedback on potential problems, so that they are addressed by the right people at the right time.

KAIZEN EVENT

The *Kaizen* methodology is the continuous search for improvements in the company, with the participation of all employees with the aim of eliminating waste. The *Kaizen* event can be understood as a group of collaborators who dedicate themselves to a rapid implementation of some tool or lean methods in a given sector in a short period of time (Araújo and Rentes, 2006).

According to Kuribayashi (2018) the *Kaizen* event is achieved with the dedication of all those involved in the implementation, and each employee must contribute in some way so that it becomes possible to achieve the objective of the event, each implementation of improvement tends to return benefits to the company and to the employees who participated so that the improvements were made.

PRESENTATION AND DISCUSSION OF RESULTS

It is known that the *Kaizen* methodology is very important for companies, being a very effective tool in eliminating waste and applying improvements. These improvements can have a major effect on various business issues, such as security, organization, and performance, as shown in Exhibit 1:

Table 1 – Example of *Kaizen application* in the organization of materials

ANTES	DEPOIS
• Porta pellets instalados nos corredores; • Excesso de materiais espalhados; • Ausência de rota de pedestres.	• Retirada de porta pallets; • Retirada dos materiais; • Demarcação da rota de pedestres.
	

Source: Castanheira and Loos (2019)

According to the authors Castanheira and Loos (2019) referring to Chart 1, this improvement process began during an application of *Kaizen* in this company, collected information and applied it to graphs and indicators to verify urgent situations and know where to attack first. Soon after, they used the

5S tool to identify the problem in this sector, which would be the excess of scattered materials, in addition to causing storage failures and excess inventory, causing risks to other employees who had this same place as a way to pass. As there were no pedestrian routes and a lot of materials scattered around, it could lead to an accident at a certain time. In Chart 1 it is possible to verify the before and after of the improvement applied, with the elimination of risks and the change of organization being visibly remarkable.

Only in this aspect of material organization, many improvements can be applied and noticed through *Kaizen*, as can be seen in Chart 2, where the improvement was applied based on the study of storage capacity:

Table 2 – Example of *Kaizen* in inventory organization

ANTES	DEPOIS
• Materiais e equipamentos espalhados pelos corredores dos depósitos.	• Organização dos produtos em seus devidos locais e demarcação do local para equipamentos motorizados.
  	 

Source: Castanheira and Loos (2019)

According to the authors Castanheira and Loos (2019), the improvements applied to Chart 2 resulted in the availability of places for the proper storage of materials, as can be seen in the before and after, the materials were scattered throughout the corridors, which can make it difficult for employees to remove and store materials. After the improvements were applied, the products were stored correctly and in their demarcation, facilitating the logistics process, reducing the unnecessary movement by searching for products that need to be removed with high priorities.

A methodology *Kaizen* it can be applied in various circumstances, where there are improvements, it can be used, and all employees can participate, either with a complaint or idea about a certain area that can be improved, as can be seen in a case study made in a metallurgical company in the municipality of Jaguará do Sul, where according to the author Kuribayashi (2018), Improvements were identified in a machine used to fill the upper and lower molds of the products produced, whose one of the biggest problems is related to ergonomics and safety. Figure 1 shows the machine of this study:

Figure 1 - Vick GCM Molder Indicating Molding System

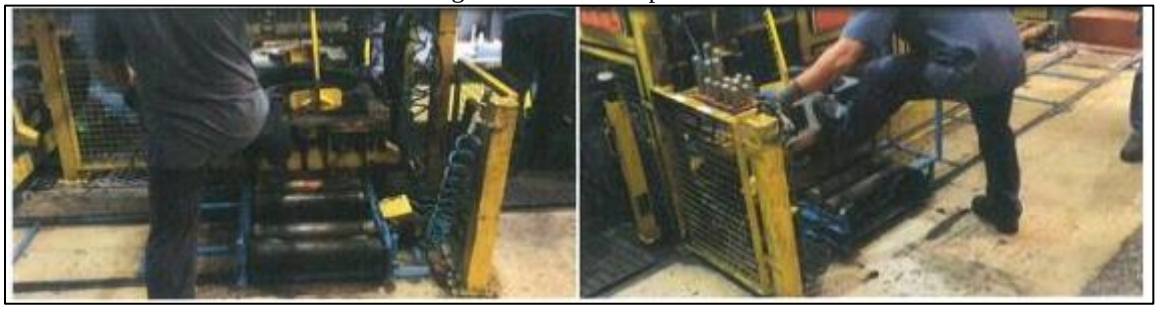
Fonte: Kuribayashi (2018)

According to Kuribayashi (2018), the tool change of this machine referred to in Figure 1 is external, using a manual cart that the machine operators push to make the input and output displacement. As they are moved manually, employees need to push with their feet, generating a risk to the employee's safety, in addition to the fact that there are an average of 50 preparations per shift, causing ergonomic problems such as discomfort in the legs and hips of operators, as shown in Figures 2 and 3:

Figure 2 – Incorrect ergonomic process

Fonte: Kuribayashi (2018)

Figure 3 – Incorrect posture



Fonte: Kuribayashi (2018)

In addition to the problem related to ergonomics, the author also mentions the risks of accidents that operators are exposed to when performing preparations, since they use their feet as a force mechanism. The *Kaizen* event took place with the areas involved in the process, including the safety sector that pointed out such safety and ergonomic issues, and had the suggestion of the employees who work on the production line. The result can be seen in Figure 4:

Figure 4 – Applied Improvements

Fonte: Kuribayashi (2018)

According to the author, in order to solve the problems related to ergonomics and safety of the VICK GCM 150 molding machine, improvements were made in the roller lines and number of positions for preparing the tooling for entry into the machine. In order to improve the movement generated by the tool change, they developed an automated handling system, being a return with the roller line.

FINAL THOUGHTS

This article concluded by focusing on the importance of applying the *Kaizen* methodology in companies, as it can be applied in various situations and in all possible areas and all sectors can participate in various ways. Where there is waste, there are also improvements to be made, these can be suggested by all employees, especially those who are directly in contact with the objective to be improved. The search for continuous improvement must become a habit for all the company's employees, so the company's culture will also be improved, where everyone is strongly linked to the idea of eliminating waste and problems, whether they are related to health, safety, waiting, production, costs, storage, maintenance, among others. The *Kaizen* methodology instructs all employees of a company to work correctly, in which it is possible to better understand the processes and see what can be improved, carry out documentation and analysis with quality and awareness, being directly linked to the quality of work of the company and the satisfaction, safety and health of its employees.

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