



# A STUDY ON THE BACKGROUND AND THE DIRECTION OF THE KAIZEN APPROACH IN LEAN MANUFACTURING

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## ABSTRACT

*Today's world is not the same as our ancestors. Technology in today's environment allows for instantaneous communication amongst individuals from all over the globe. The globe has never been more open to business than it is right now, thanks to our efforts. These days, competition is fierce for every business. Since there is now greater competition in the market, businesses will seek low-cost methods to increase productivity. There is a greater need than ever to set yourself apart from the competition by providing superior products at reasonable costs. The constant pursuit of quality management and waste reduction is a must for all businesses. Most companies now operate using the Lean methodology. Lean relies heavily on a concept called "Kaizen." Many companies' survival and expansion depend on the development of novel, adaptive technology and processes. Studying the Kaizen theory is crucial since it is predicated on the idea of always seeking ways to enhance the underlying foundation. To that end, this study aims to shed light on the company's continuous process of improvement via the use of the Kaizen tool in an effort to boost productivity. This article provides an introduction to kaizen, including its fundamentals as well as its practical applications.*

**KEYWORDS:** Kaizen; Lean Manufacturing; MUDA; Kaizen Application

## INTRODUCTION

Kaizen was explained in different ways, which changed the meaning of the word a little bit but kept the main idea. Kaizen means improving processes, products, offices, and people's jobs. Steps to improve quality management usually involve Kaizen, which is based on common sense, self-discipline, order, and efficiency. The Kaizen method is an important part of a lean production paradigm for manufacturing processes. It comes from the words for KAI-change and ZEN-good [1]. The way people think is changing for the better because of Kaizen, a method for getting the most out of the power of all workers. This method encourages the method to move forward in a logical way, which leads to organizations that are always changing and adapting in order to develop the best standards. This is what is meant by the word "change." This is about both the way applications are made and how hard people work. Kaizen is a set of practices that improve all company operations and procedures and involve everyone on the production line. The Japanese word kaizen is used to describe how they do things every day when they want to develop an industry or a market [2].

## LEAN MANUFACTURING

Lean Manufacturing is a philosophy that is based on how people work. How the output method is improved and optimized to find and get rid of all types of waste, such as the ones described here or activities that use more resources than

strictly necessary. It figures out the different types of outputs that lead to waste, such as overproduction, extra processing time, inventory, motion and defects, waiting, and transportation. Look at what we don't do. If it doesn't help the customer and doesn't bring any benefit, it's best to get rid of it. It uses a structured and standard application of a wide range of methods to reach its goals in almost all areas of manufacturing operations, including workplace organization, quality control, external manufacturing movement, servicing, and supply chain management. Its end goal is to make an organization that is based on communication and teamwork more modern, which is why the system needs to be changed. The Lean theory is simple and always looks for ways to do things that are more scalable, flexible, and easy to use. Lean Output is neither a fixed term that can be described as a direct one nor a theory of everything that is known as a progressive split [3].

A practical understanding of Lean Manufacturing shows us that it is organized and improved by modern ideas, methods, and techniques that can be applied to specific problems to keep activities stable and lower costs. This is done by periodically updating traditional operating practices for development. The biggest goal of any initiative in this industry has a pretty good effect when this method is used. In the last ten years, companies in the dairy, medicine, and machinery industries have successfully used the same model. Experiences show that the demand for Lean Production has grown over the past few years in all types of businesses,

including the services market, even though there is still a lot to learn, especially among small and medium-sized businesses. Administrators in some organizations can't get long-term benefits from putting lean into place. But there are still a lot of active Lean applications that show really good results [4]. The lack of confidence has to do with the people in charge of putting the plan into action. In these kinds of situations, opposition from employees and the human factor play a big role. Implementation and maintenance are important key factors; senior management and its operations, inspiration, and cooperation at all levels are needed for a business to work. One important fact is that there are many businesses. Lean

methods are being used without knowing everything about them. Lean application benefits include saving time, making the best use of plant space, and making changes to how things work. The problem is that these programs aren't part of a policy. Instead, they stand alone, and all of the company's administrators implement them to keep them growing [5].

### TOOLS OF LEAN

Quality Control instruments such as Pareto charts, histograms, Scatter diagrams, and control charts are used to improve quality. General Lean tools are given in Fig.1.



Fig.1

A 5S methodology is a systematic approach for effective practices that can help to bring about healthier work culture. It would be difficult to find a Japanese executive disgruntled. Japanese people never insult their organization. Yes, Kaizen plays a key role in service quality and customer satisfaction via small continuous changes and eliminating waste. Organized workplaces result in better productivity and yield better results. All of this could lead to strong loyalty to the company [6].

### KAIZEN AND LEAN MANUFACTURING

Contributions to quality and statistical process management laid the groundwork for new methods emphasizing problem-solving and accountable ownership, which impacted the value of employee participation in groups or teams. Through these measures, Kaizen has been seen as a doorway to the development and profitability of businesses. Step-by-step development of modest innovations and tweaks by all workers, including supervisors, contributes to quality assurance, cost savings, and the timely delivery of the proper product to the customer [7]. The continuous improvement approach is advocated for enhancing the effectiveness of the procedure; nevertheless, Kaizen thinking may have downsides and obstacles; in most cases, the change in attitude of management and the majority of employees is at stake. It is important to remember that nothing is more difficult to

construct, more dangerous to manage, or less likely to succeed than developing a new way of doing things, because among those who profit from the status quo, only the timely assistance of those who benefit from the new implementations will be sufficient [8].

It is also acceptable to suppose that continuous improvement is a prerequisite for high performance, and that time is a critical factor in ensuring that the benefits of using any Lean Production methods are long-lasting. The production technique must take priority over Kaizen management activities, since it is the ultimate performance that determines the achievement of results. This is due to the fact that defective methods cannot contribute to the objective. The comparable objective of Kaizen is to become an integral part of the industry through strengthening corporate practices as opposed to selling products [9]. An important objective of Kaizen is to improve the quality of work inside an organization by using TQC (total quality control). Kaizen serves as a foundation for various techniques for maximizing efficiency, such as proposal processes, workflow, SMEs, Kanban systems, just-in-time systems, zero mistakes, complete, efficient maintenance, exhaustive quality checks, etc.[10].

Kaizen is a lean manufacturing platform for boosting workplace productivity, competitiveness, safety, and community. Kaizen focuses on adopting tiny day-to-day



adjustments, which may eventually lead to considerable gains. The firm was founded in an effort to rebuild Japan after World War II [11]. During this time, business professionals from the United States collaborated to boost the efficiency of Japanese companies. Cooperation led to the development of several contemporary management techniques, including Kaizen. Kaizen refers to techniques that continually improve all functions and include everyone. The strength of Kaizen is that all employees participate and give suggestions for corporate growth. The purpose of Kaizen extends beyond only increasing efficiency and performance; it also minimizes unnecessary difficulties and teaches individuals how to detect and eliminate waste in businesses. Kaizen strives to increase productivity, minimize waste, and eliminate unnecessary effort [12]. The three waste types effectively identified by Kaizen are Muda, Mura, and Muri. The philosophy of Kaizen enables us to take responsibility for and improve their operations. Staff at all levels of the organization regularly monitor and identify Kaizen improvement opportunities. Kaizen is not merely a one-time event. Moreover, it is a common occurrence [13].

Currently, the majority of organizations actively pursue waste prevention and efficiency improvements. The benefit of the Kaizen method is that it increases productivity. Correct use of the Kaizen approach will provide significant effects at all stages in many ways. The benefits of the lean strategy for industries include reduced processing costs and extra overheads [14]. The danger of delivery delays and high quality is increased by waste management and productivity growth from the existing level. Lean development is a complex strategy for tackling issues in the workplace. Its primary objective is the elimination or partial reduction of the eight largest waste resources. In manufacturing and neighboring areas, there is still room for expansion. At competitive rates, consumers want superior service. The lean principle must be recognized by upper management, who must also provide enough support for its implementation. There is evidence that tracking assistance has a crucial role in encouraging lean growth. It is vital to interact with managers and employees in order to achieve the goals and objectives of lean output [15].

Lean as a system affords its business the potential to cut its pricing by eliminating waste, which leads to an increase in quality and customer happiness. By eliminating waste from the process, the Lean ideas in a manufacturing organization may minimize the functional cost of development, resulting in increased implementation productivity. Lean must be implemented in an orderly and deliberate manner, which may be based on the following ideas. The elimination of waste is a notion of one of the most essential parts of the lean manufacturing approach (referred to as MUDA in the Toyota Manufacturing System). Various forms of waste are loads of Motion and then Inventory, the creation of faults, the waiting time, waste transportation, and processing [16]. The manufacturer's mission is to create as many units as possible at the lowest cost and with the least amount of packing. Companies create inventories in order to produce continuous distributions and prevent difficulties such as requiring anomalies, unreliable deliveries from suppliers, and a break in the production process. However, inventories must be

maintained to a minimum since extra inventory would need more space at the storage facility and result in higher expenses. Moreover, they pose a significant risk of things becoming obsolete, which may damage human health [17]. This has shown to be a very successful stock acquisition approach, enabling managers to obtain control of undesirable shares. The consumer decides what to buy, at what price, when to make the purchase, and where to receive the item. Despite the cheap value of a product, customers demand a solid connection; thus, it is essential to understand how to get along with them. Establishing a strong connection with customers will enable a business to understand and meet their wants and anticipate their future requirements, since it is essential to gather the optimal match between market demands and production flows. In Lean manufacturing, like in all other management systems, the human element is not only significant but also essential. [18].

### THE ORIGIN OF KAIZEN

Kaizen aims to develop goods by leveraging current resources (your people) in order to achieve progressive and continual change. Instead of focusing on major changes or costly equipment construction, Kaizen is focused on making minor adjustments. The secret to Kaizen approach is to provide well-oriented jobs, to reduce needless movement or activities and to provide all staff with adequate preparation. Kaizen is about building a collaboration and improvement climate through which innovative concepts are welcomed. Group participants are required to really go through the procedures and create changes. Kaizen often profits from a healthy working climate. Security enhancements are made as innovative strategies are created and introduced to clean up and organize the workplace [19].

### APPLICATION OF KAIZEN

In Lean production, Kaizen actively improves incremental measures toward a healthy, sustainable and effective workplace. This basic Lean production approach endlessly strengthens the business atmosphere, ensuring that administrators, team leaders and staff continually look for means of enhancing processes and tightening performance. Kaizen reviews and testing show potential hires how to implement the concepts of Kaizen in their jobs, ensuring Kaizen is viable in future years [20]. In addition to the apparent gain of optimizing systems, Kaizen creates collaboration and ownership. Teams share accountability for their jobs and may improve their own work experience. Most employees want to be good and take pride in their job, and Kaizen makes the company do this. Kaizen aim is to continually change constantly. Kaizen is often incremental and can be continuous in establishing a way of continuous change within an organization. The first move is to prepare your workers [21]. Offer the teams the correct preparation, equipment, and framework for Kaizen in order to thrive. Encourage and foster issues between the staff and explore opportunities to change regularly. The team members would assume mental accountability for their internal procedures by training and completing initial process assessments or Kaizen events. With this transition of control, the staff tends to focus





on their responsibilities for future changes [22].

Everybody in the improvement work includes Kaizen. It does not focus on large expenditures in resources or aim to make big moves at a time. Kaizen's origins are to develop minimal, immediate, and progressive procedures and standards. There are opportunities to change every day. These small steps can, in due course, lead to great quality, protection, performance, productivity and positive consequences [23]. The theory of Kaizen suggests that our lives, be it work, social life or home life, must be changed continuously. Instead of dramatic, rigorous adjustments, Kaizen is looking for enhancements. While modest and gradual changes under Kaizen, the method has yielded drastic effects over time. Kaizen is also a low-risk and low-cost solution. Method changes are important and do not entail a significant expenditure of resources. Kaizen thus allows staff to innovate and experiment with different concepts. If an innovation does not work, it is still feasible to undo the improvements without a high expense [24].

Kaizen primarily involves continual development, which seeks to anchor the industry for long-term and efficient activity in terms of human capital and procedures. Kaizen achieved beneficial results for companies like Toyota, becoming a common development theory worldwide. The first thing most people remember is as they think of how to deploy Kaizen [25]. It is a targeted short-term operation directed at individual procedures or divisions. The foundation of Kaizen is not based on a specific occurrence though every day and event-centred activities are included. Kaizen is a growing yet slowly moving theory of progress in an ideal state. Kaizen is working every day for opportunities to change [26].

## CONCLUSION

Kaizen philosophy is well known in industries, but more research is still needed. Studies have shown that it can be used in many different fields, so there is a lot of research available. However, more research is needed to strengthen the responsiveness aspects, as these are very important to the effectiveness of Kaizen philosophy in many processing industries around the world. The main goal of production today is to increase productivity by making the process easier to understand and use new methods like Kaizen, operational potential, and growing changes. Many companies that make things now have to change to meet the changing needs, wants, and tastes of customers. To be competitive in business and stay in the market, it has been important to develop the production system processes. Competition and rising levels of customer loyalty have shown that organizations are always trying to improve their efficiency. Kaizen is about improving efficiency, cost, and quality in a steady way. Kaizen is meant to motivate employees, make them happier, give them a sense of accomplishment, and build a sense of satisfaction at work. This means that it often gets rid of waste, which adds value. Kaizen is already a widely used theory of development in a number of fields around the world.

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