



## **EFFECT OF KAIZEN STRATEGY ON FIRM COMPETITIVENESS AMONG THE MANUFACTURING FIRMS IN NAKURU TOWN**

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**Abstract:** Kaizen means continuous improvement involving everyone in the organization from top management, to managers then to supervisors, and to workers, this study sought to establish the effects of Kaizen strategy on the competitiveness of manufacturing firms in Nakuru. The general objective of the study was to establish the effect of the Kaizen strategy on firm competitiveness among the manufacturing firms in Nakuru town. The study was guided by the theory of lean management. From the reviewed literature very little research linking the Kaizen strategy with firm competitiveness has been done, this research, therefore, filled the gap by providing empirical evidence on the effects of Kaizen strategy on the competitiveness of the manufacturing firms. The research adopted a descriptive survey research design, the target population for this study was 40 manufacturing firms in Nakuru registered under the Kenya Association of Manufacturers (KAM). Since the population was not large the study used census approach, the targeted respondents included heads of Operations/Production managers; the data was collected using structured questionnaires administered personally by the researcher. The effects of Kaizen on manufacturing firm competitiveness were found to be positive and significant at ( $\beta = 0.258$   $P = 0.011 < 0.05$ ). The study recommends that manufacturing firms consider implementing the Kaizen strategy to enhance their firm competitiveness. Lastly, the study suggests that further research be undertaken in other firms in other sectors such as banking, insurance, hospitality, health, and telecommunications to establish the effects of Kaizen strategy on the competitiveness of such firms.

**Keywords:** Firm Competitiveness, Kaizen Strategy

### **Introduction**

The term kaizen was coined by Masaki Imai in 1986, Kaizen has been freely used in connection, with Japanese management practices and as a possible key to the operational success of Japanese companies. Nevertheless, the idea has gained so much popularity that in the last three decades of the 20th century, Kaizen has been regarded as the key to the competitiveness of Japanese companies (Barraza, Kerbache, & Pujol, 2011). The Kaizen practice is regarded as the best Japanese management practice and is committed to the improvement of profitability, effectiveness, quality, and, when all is

said in done the business excellence. The Kaizen strategies are globally recognized as techniques for ceaseless improvement, through little strides of the economical results of companies. The little upgrades applied to key procedures will produce a significant increase in the organization's benefit while comprising a safe method to acquire the customers' reliability/loyalty (Titu, Oprean, & Grecu, 2010).

According to Thessaloniki, (2006) In Japan, The Kaizen idea is so deeply rooted in the minds of both managers and workers that they often do not even know that they think of Kaizen as a customer-driven development technique. Numerous organizations have applied kaizen reasoning since it gives them numerous points of interest. Kaizen was first applied by Japanese enterprises after World War II to improve quality and efficiency. This implementation becomes the essential key for the success of Japanese industries, Japanese organizations applied kaizen theory to keep up their accomplishments,(Ratnawati, Ingsih, & Nuryanto, 2016). Kaizen philosophy has been implemented in organizations around the world as a way to improve production values while also improving employee morale and safety, kaizen is a team process so that the interaction between the labors and management get increased (Gauri, Gajbhiye, & Gadekar, 2015).

Kaizen is a very powerful concept underpinning many of the Japanese management styles (JMS) that have effectively changed the Japanese manufacturing industry (Zailani, Shaharudin, & Saw, 2015). Kaizen is centered on the identification and elimination of losses that occur at the level of equipment and processes to achieve efficiency improvements (Alves, 2014). The concept of Kaizen is to make simple, common-sense improvements and refinements to critical end-to-end business transform processes supporting the overall continuous improvement strategy of the organization. Today, organizations around the globe have utilized Kaizen for more noteworthy efficiency, speed, quality, and benefits with insignificant cost, time and exertion, to get results and to become perceived industry leaders(Shettar & Nikhil, 1992).

Kaizen depends on rolling out little improvements all the time: continually improving profitability, wellbeing, and viability while diminishing waste. Recommendations are not constrained to a particular region, for example, creation or promotion. Kaizen depends on making changes anyplace where enhancements can be made (Khan, 2011). Kaizen asserts that workers of an organization ought to uninterruptedly consider improving and keeping up progress accomplishments in their organizations, Kaizen involves and activates all senior (Rahmanian & Rahmatinejad, 2013).

### **Manufacturing firms in Nakuru**

The manufacturing firms in Nakuru involve firms engaged with the mechanical, physical, or compound change of materials, substances, or segments into new items, just as those occupied with collecting of segments portions of made items for purposes other than development, (Gichuki, 2018). The primary point of these manufacturing firms is to deliver products to purchasers and consequently make benefits enough to stay in business. Their business is influenced by different difficulties including rising costs of products, expanding transportation costs because of an ascent in oil costs, and a decrease in customers. Growth of modern methods in the manufacturing industry for example innovation, research, and development, the industrial knowledge base has been limited to lack of investment. Poor foundation and government approaches have prompted increment in costs of produced merchandise,(Were 2016). Furthermore, the majority of Kenya's made merchandise (95 percent) are basic essential items, such as food, refreshments, building materials, and fundamental synthetic substances. Just (5 percent) of produced items, for example, pharmaceuticals, are in skill-intensive sectors. Thus the capacity building, processes improvement, and general management

improvement in the sector are critical, an avenue that the Kaizen strategy can be applied (Kenya Vision 2030, 2007).

### **Objective of the study**

The objective of this study was to establish the effect of the Kaizen strategy on firm competitiveness among the manufacturing firms in Nakuru town.

### **Research Hypothesis**

**H<sub>01</sub>:** Kaizen has no significant effect on the competitiveness of manufacturing firms in Nakuru town

### **Literature review**

#### **Theoretical Literature Review**

This section looks into the study's theoretical foundations. Theories are theoretical instruments to understand, explain, and forecast a given subject. They form the base on which research is founded by providing prior expectations (Mwangangi, Atikiya, Nzulwa, & Odhiambo, 2017). This study was based on the theory of constraints.

#### **Theory of constraints**

The theory of constraints was proposed by Eliyahu Goldratt (1990). The theory of constraints (TOC) is based on the idea that each system has at least one bottleneck that can be defined as any situation that impedes the system from reaching a high-performance level (Simsit, Günay, & Vayvay, 2014). The theory of constraints (TOC) concentrates on the process that slows the speed of the product through the system, (Nave, 2002). The focus in the theory of constraints (TOC) efforts is to improve the system beginning with the current state of the system (Moore & Scheinkopf, 1998). Theory of constraints (TOC) helps to decide exactly where in a process control should occur, it has developed rapidly in terms of both methodology and area of applications, central to theory of constraints (TOC) philosophy is that any organization (systems) has a constraint ( or a small number of constraints) which dominate the entire system (Slack, Chambers, & Johnston, 2010).

#### **Empirical studies**

##### **Kaizen strategy**

In a study by Zailani, Shaharudin, and Saw, (2015) they contended that Kaizen is seen by the top administration of the Japanese Owned Corporations (JOC) to be imperative to keep up its serious position, findings also suggest that kaizen application is not dependent on having the Japanese social-oriented values. They also noticed that kaizen could aspire to develop organizational dynamic capabilities and be strategically deployed in the Malaysian cultural workplace.

Muse, Njeru, and Juma, (2015) in their study on the effect of Kaizen on managing cost levels in the pharmaceutical industry in Kenya, the study affirmed by 82.3% that Kaizen had a measurably huge relationship with the cost level administration. In a study by Agmoni, (2016) to explore the evolving role of Kaizen in service contexts, the results of this study indicated radical improvements such as 30% financial growth and 81% productivity improvement. According to Alcaraz, Vento, and Macias, (2017), Kaizen is a tool that successfully supports problem-solving and that the amount of Kaizen research has increased during 2007 and 2013 when the worldwide economic crisis emerged. The manufacturing industry drives the execution of Kaizen due to its work dynamics likewise Kaizen is also applied to human resources.

In a study by Cierna, Sujova, and Tavodova, (2000) they argued that improvement and culminating of procedures with the utilization of Kaizen strategies is continuous and frequently not perceptible, while its effects are more visible in the long run, application of the Kaizen method in a company can be successful only if the company's management and employees are open to changes. Rahmanian and Rahmatinejad, (2013), concluded that the advantage of Kaizen is obvious to those who have already performed it. Kaizen leads to greater quality and more productivity. Where Kaizen was first implemented, the administration found an expansion of 30%, 50%, and even 100% or more in profitability, and this achievement was finished with no significant ventures. Kaizen brings about abatement of the breakeven point and powers the administration to give more consideration to clients' needs and makes a framework to think about clients' demands.

### **Firm competitiveness**

The existence of competition occurs when a firm can deliver similar benefits as those presented by competitors although at a low cost (cost advantage), or convey benefits exceeding those of competitors products (differentiation advantage). Competitiveness enables the creation of superior value for the firm's customers and higher profits for itself. Cost and differentiation advantage describes the firm's position in the industry or a leader in either cost or differentiation, resources and capabilities assist in making a competitive advantage to achieve either a lower cost structure or a differentiation product (Ngulu, 2014).

Kenyan manufacturers are not an exception, one of the determinants for the success or failure of countries and companies is whether they can change at a similar or even faster pace than the global pace. At the national level, there is a need for sound fiscal and non-fiscal policies to enable manufacturers to compete domestically and internationally. The government should create a level playing field for all manufacturers to ensure equal opportunities to enhance fair trade and competitive manufacturing in the country (Kinyanjui, 2015).

According to Koufteros, Vonderembse, and Doll, (2002) Manufacturers compete during a complex and unsure environment with growing global competition, changing and emerging markets, and increasing levels of production technology. Order winning hinges on their ability to realize a group of competitive capabilities that have an external, customer orientation and manifest the relative strength of the individual firm against its competitors. The constructs used are quality of the products, customer satisfaction, investment in technology, innovation, and on-time delivery.

### **Research Gaps**

Since being coined by Lmai Masaki in 1986, Kaizen has been freely used in connection with Japanese management practices and as a possible key to the operational success of Japanese companies. Kaizen methods are internationally acknowledged as methods of continuous improvement, through small steps, of the economical results of companies (Titu et al., 2010) Recognizing the effect of Kaizen strategy has led to a plethora of research locally in the area of Kaizen strategy (Ngothi, 2015) manufacturing sector,(Muse et al., 2015) pharmaceutical industry, (Shambaro & Kisimbii, 2017) health care, (Olang' & Kimencu, 2018) Davis and Shirliff, other researchers globally have also researched the area of Kaizen,(Rahmanian & Rahmatinejad, 2013),(Barraza et al., 2011), (Alcaraz et al., 2017), (Zailani, Shaharudin, & Saw, 2015) among others. Despite the large number of studies identified in the area of kaizen strategy, none of them specifically focuses on the effect of the Kaizen strategy on the competitiveness of the manufacturing firms in Nakuru. Explaining the competitiveness of the manufacturing firms requires that key Kaizen strategy factors be identified and addressed. The present

study, therefore, sought to assess the effect of the Kaizen strategy on the competitiveness of the manufacturing firms in Nakuru town.

### Research Methodology

This study adopted survey research design, a survey involves asking structured questions to a representative cross-section of the population at a single point in time, the survey methodology was used as it is an inexpensive yet a quick, efficient and accurate method of accessing information about the target population (Mwangangi et al., 2017). A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a populace by way of reading a sample of that populace from sample results, the researcher then generalizes and make claims about the population (Creswell, 2009). The target population of this study was the forty manufacturing firms in Nakuru registered under the Kenya Association of Manufacturers, the study used the census approach since the population was small. data collection instruments for this study was a self-administered questionnaire, questionnaires were used because of simplicity in their administration, scoring of items, and analysis (Mugenda & Mugenda, 2003).

### Data Analysis

The data for this study were analyzed using the IBM Statistical Program for Social Sciences (SPSS) version 25. Descriptive statistics including percentages and frequencies were used to summarize the data. Tables, charts, and graphs were used to presents the facts accrued for ease of understanding. Measures of central tendency which include mean and standard deviation were used to measure the spread of the data. Simple regression was used to establish the effect of the Kaizen strategy on the competitiveness of the manufacturing firms in Nakuru town. The regression model was;

$$Y = \beta_0 + \beta_1 X_1 + \mu$$

Whereby: Y= independent variable (competitiveness);  $\beta_0$  is a constant;  $\beta_1$  is a regression coefficient;  $X_1$ - Kaizen;  $\mu$ - Error term

### Research Findings and Discussion

A total of 40 questionnaires were distributed to the manufacturing firms registered with Kenya Association of Manufacturers (KAM) from Nakuru town, 30 questionnaires translating to 75% were returned dully filled. Mugenda and Mugenda, (2003) contend that a response rate of 50% is considered adequate for statistical analysis. According to (Nafula, Namusonge, & Muathe, 2017) Babbie (2010) considers that a response rate of 50% is sufficient for analysis and reporting, while 60% is considered good and 70% and above is considered very good. According to (Musau, Namusonge, Makokha, & Ngeno, 2017), Draugalis, Coons, and Plaza (2008) contend that the response rate of approximately 60% should be the goal of researchers. Hence the 75% response rate was considered adequate for statistical analysis.

### Reliability and Validity

#### Reliability

To assess their reliability the study scales were tested. This was done using the alpha coefficient given by Cronbach. The empirical findings provided in Table 1 indicate that all of the analysis constructs had alpha coefficients above 0.7. All the questionnaire items were therefore deemed to have internal consistency and were therefore used for further analysis.

**Table 1: Reliability Coefficients**

| <b>Objective</b>     | <b>Cronbach Alpha</b> | <b>No of Items</b> | <b>Comment</b> |
|----------------------|-----------------------|--------------------|----------------|
| Kaizen strategy      | 0.789                 | 7                  | Reliable       |
| Firm Competitiveness | 0.908                 | 22                 | Reliable       |

### Validity

To assess the validity of the research instrument, a questionnaire was developed. The questionnaire was assessed by experts at the Faculty of Commerce, department of accounting, finance and management science of Egerton University. Changes were made, and suggestions were integrated into the instrument.

### Descriptive Statistics of Study Variables

The study examined Kaizen Strategy on firm competitiveness among the manufacturing firms in Nakuru. The respondents were asked to state to what extent they agreed with the statements on the items Kaizen Strategy. The results are set out in Table 2

**Table 2: Mean and Standard deviation for measures of Just in Time**

| <b>Descriptive statistics for Kaizen Strategy</b>                                           | <b>N</b> | <b>Mean</b>   | <b>Std. Deviation</b> |
|---------------------------------------------------------------------------------------------|----------|---------------|-----------------------|
| Employees undergo regular training on operations and quality                                | 30       | 3.6667        | 1.15470               |
| The firm strives for long term relationship with suppliers                                  | 30       | 3.6000        | 1.03724               |
| Personnel continuously develop professionally                                               | 30       | 3.5000        | 1.10641               |
| The Firm continuously minimizes defects and continuously improve productivity for customers | 30       | 3.8667        | .93710                |
| Cost reduction strategies result in company profits                                         | 30       | 3.7333        | 1.20153               |
| Productivity is improved with ease                                                          | 30       | 2.8000        | 1.18613               |
| Safe operations are assured                                                                 | 30       | 2.8333        | 1.11675               |
| <b>Kaizen Strategy</b>                                                                      |          | <b>3.4286</b> | <b>1.1057</b>         |

As shown in Table 2, the mean score and standard deviation for the Kaizen Strategy were: ( $M=3.428$ ,  $SD=1.1057$ ). The results indicate that the respondents generally agreed with the statements about Kaizen Strategy. Therefore, the results were interpreted to mean that Kaizen Strategy positively affects the competitiveness of the manufacturing firms.

Implementing kaizen in the sewing floor the productivity has been increased while reducing wastes and defects, Kaizen implementation reduced defects per 100 units, (Quddus & Ahsan, 2014). A study by (Desta, Asgedom, Gebresas, & Asheber, 2014) established that companies have reduced the costs of production, improved quality, reduced lead time, and improved customer satisfaction in the three companies that piloted the implementation of Kaizen. Cierna, Sujova, and Tavodova, ( 2000) in their study argue that Kaizen focuses not only on improving quality but also on improving everything that can be improved within a company because even a slight improvement affects the quality of products or services. Kaizen however is not a method, but a process-oriented way of thinking, which provides a basis for behaviors in one's daily life. According to (Rewers, Trojanowska, Chabowski, & Żywicki, 2016) after the application of the Kaizen solution for the analyzed production line, there is still the same number of workers but increased productivity. Each operator produces now 6 units more per turn. Cycle time was reduced by 30 seconds. With the new layout production line was using 15.8 square meters less than before. Effective implementation of the Kaizen strategy ensures employees devote a lot of personal time and energy to obtain the results exceeding desired ones; the correct

functioning of the kaizen system should be confirmed by statistics of implementation (Karkoszka & Honorowicz, 2009).

### Inferential Analysis

From the model summary in Table 3, the coefficient of correlation,  $r^2 = 0.664$ , which denotes that other factors held constant, 66.4% of the variation in firm competitiveness is explained by the Kaizen strategy. This correlation is good at 0.664, it however means that other factors not studied in this study contribute 33.6% of the factors affecting firm competitiveness.

**Table 3: Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .815 <sup>a</sup> | .664     | .576              | .49513                     |

a. Predictors: (Constant), kaizen Strategy

From the ANOVA summary in Table 4, the F statistic is 7.575. Because the corresponding p-value = 0.000, ( $p < 0.05$  for 5% level of significance) the model is statistically significant in predicting how the Kaizen strategy affects the competitiveness of the manufacturing firms. This, therefore, means that the regression model has a confidence level of above 95% hence high reliability of the results.

**Table 4: ANOVA results for Kaizen Strategy on Firm Competitiveness**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 11.141         | 6  | 1.857       | 7.575 | .000 <sup>b</sup> |
|       | Residual   | 5.638          | 23 | .245        |       |                   |
|       | Total      | 16.780         | 29 |             |       |                   |

### Hypothesis Testing

The study sought to establish the effect of the Kaizen strategy on firm competitiveness. The significance of the effect was based on the p-value such that the null hypothesis was rejected in support of the alternative hypothesis whenever the p-value was less than 0.05, and the converse applies.

**Table 5: Regression coefficients for Just in Time**

| Model           | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-----------------|-----------------------------|------------|---------------------------|-------|------|
|                 | B                           | Std. Error | Beta                      |       |      |
| (Constant)      | .271                        | 1.499      |                           | .181  | .858 |
| Kaizen Strategy | .258                        | .455       | .720                      | 2.765 | .011 |

### **H<sub>01</sub>: Kaizen has no significant effect on the competitiveness of manufacturing firms in Nakuru town**

This research found a positive effect between kaizen and firm competitiveness with a standardized coefficient of 0.258. This meant that a unit improvement in the Kaizen index leads to an increase in manufacturing firm competitiveness index by 25.8%. The relationship is also significant with p-value = 0.011 (since  $p < 0.05$ ), hence the null hypothesis was rejected in support of the alternative hypothesis. This study concluded that kaizen, other factors held constant, has a significant effect on the competitiveness of manufacturing firms in Nakuru.

The results corroborated with previous studies which showed a positive and significant effect of kaizen strategy on firm competitiveness, Zailani, et al (2015), Smadi (2009).

## **Conclusion and Recommendations**

### **Conclusion**

This study established a positive effect of the Kaizen strategy on firm competitiveness, this means that an improvement in the Kaizen strategy index leads to an increase in manufacturing firm competitiveness. Based on the findings of this study, it is reasonable to conclude that the Kaizen strategy contributes to the competitiveness of manufacturing firms in Nakuru. The finding that the Kaizen strategy positively affects the competitiveness of the manufacturing firms also empirically confirms the views of the theory of constraints that underpinned this study. The concept of theory of constraints aids the management in identifying and directing their efforts on the few critical drivers that can be counted on to the bottom line performance. The theory of constraint can be used by existing personnel to increase throughput, reliability, and quality while decreasing inventory, work in progress, late deliveries, and overtime. Organizations can also adopt the theory of constraints to help make tactical and strategic decisions for continuous improvement.

### **Recommendations**

Given the conclusions made above, the following managerial and policy recommendations were made:

#### **Recommendations to the Managers of the Manufacturing Firms**

The study established that the Kaizen strategy positively affects the competitiveness of the manufacturing firms. Therefore the study recommends that it would be appropriate for the management of the manufacturing firms to focus on Kaizen strategy implementation since it affects positively the competitiveness of the manufacturing firms. Kaizen strategy should be utilized to improve quality and reliability while decreasing inventory, work In progress, late deliveries, and overtime to stay competitive in today's marketplace, manufacturing firms must understand their customers' wants, needs, and designs processes that help meet their expectations and requirements.

#### **Recommendations to the Policy Markers**

Based on the conclusions the researcher recognizes that manufacturing firms play a key role towards the achievement of the country's vision 2030 and therefore recommends that policymakers in private and public entities such as Kenya association of manufacturers, Kenya revenue authority and Kenya bureau of standards should establish relationships to ensure that the policies which govern the manufacturing sector are utilized harmoniously. These policies include customs levies, exportation and importation regulations, and quality standardization. The findings show that Kaizen strategy accounts for 25.8% of the variation in manufacturing firm competitiveness, the remaining 74.2% un-explained variation in firm competitiveness is significant enough that policymakers should incorporate all stakeholders to identify other potential determinants of firm competitiveness

### **Suggestions for further research**

The study recommends further research on the same topic but in other organizations such as in the service sector including banking, insurance, hospitality, health, education, and telecommunication sectors, both within the country and outside the country. This will help to establish whether the same results will hold in organizations other than manufacturing organizations and other parts in and out of the country.

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