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Kaizen Approach to Reducing Production Costs and a Case Study

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ABSTRACT

Purpose – The purpose of this study is to reduce the costs of a plywood manufacturing enterprise in Ordu province with the kaizen costing method and achieve the targeted profit.

Design/methodology/approach – Kaizen costing method is an approach that aims to reduce the costs of the enterprise through continuous improvement activities. As a result of the interviews with the business managers and the studies carried out in the manufacturing field, it was determined how much cost reduction the business should reduce to reach the targeted profit. Then, the units and amount of this reduction were calculated. These calculations were made using the kaizen costing method, which was developed based on the kaizen philosophy aimed at continuous improvement.

Findings – As a result of the calculations, it has been revealed that a cost reduction of 2.1 million TL in production is required for the enterprise to reach the targeted profit. 1.05 million TL, which is half of this cost reduction, should be in the peeling unit, 630.000 TL in the drying unit, 315.000 TL in the pressing unit and 105.000 TL in the storage unit.

Discussion – Today, businesses are constantly implementing new methods to cope with the increasing competition all over the world. One of them is the kaizen costing method. This method, which first appeared in Japan, aims to control costs, and reduce these costs to reach the targeted profit. With kaizen costing, continuous improvements are realized by focusing mainly on critical processes. Unlike traditional costing methods, it is a superior method in assigning duties and responsibilities for improvements to the employees who do the work directly in the production.

1. Introduction

Due to the intense competition experienced today, businesses can't increase the prices of their products to increase their profits. Cost reduction is the easiest and surest way to increase profits in the short run. If used correctly, it can also be the main driver of long-term growth. In cost reduction, the firm focuses on costs within its control, rather than factors that are difficult to control, such as market prices, competitors, or government regulation (Bragg, 2010, p. 7). Businesses need to perform cost control effectively to survive in the global competitive environment and gain a competitive advantage (Ağ, 2018, p. 1199). As a part of the kaizen management approach, the Kaizen Costing approach is mainly preferred by Japanese businesses. Continuous improvement activities applied for cost reduction in the production phase of the product life in kaizen are carried out intensively. In addition, the search for alternatives to produce existing products with higher quality and cheaper is also the goal of the Kaizen method. In companies that perform short-lived production, the life of the production processes is longer than the life of the products. Therefore, it prioritizes the search for production alternatives and improving production in the Kaizen approach, where more significant savings can be achieved by concentrating on the production processes in the manufacturing stages rather than the product itself (Uyar, 2018, p. 111). Kaizen costing is the process of determining a target cost to reduce costs in the production phase and continuously improve the production processes to achieve this cost (Bozdemir & Orhan, 2011, p. 464). Kaizen Costing System is also a cost management system within the concept of Lean Accounting. The Kaizen Costing System aims not to have a static production process that runs according to predetermined standards but to provide cost reduction with continuous improvements by focusing on the most critical processes. In this system, cost reduction is not the job of a single person but a team job (Altınbay, 2006, p. 121).

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2. The Kaizen Concept

Kaizen means "change for the better" or "development" in Japanese. In the second half of the twentieth century, the term Kaizen became associated with improving industrial and workplace productivity. II. After World War II, most Japanese leaders focused on mastering the possibilities for improving industrial production (Hine & Brubaker, 2007, p. 189-190). Kaoru Ishikawa's introduction of the cause and effect (fishbone) diagram in problem-solving in 1950, Shigeo Shingo's introduction of the concept of zero quality control (source control and poka-yoke system) in the early 1960s, the development of the concept of "quality circles" by Tetsuichi Asaka and Kaoru Ishikawa in 1962 and the establishment of the Kaizen Institute by Masaaki Imai in 1962 formed the building blocks of the spread of the concept of kaizen to the world (Mika, 2006, p. 6).

Especially in 1986, with Masaaki Imai's book Kaizen: The Key to Japan's Competitive Success, the concept began to attract attention in the Western world. Imai has taken the concept of Kaizen broadly and stated that the concept means continuous improvement in personal life, home life, social life and working life. According to him, Kaizen means a continuous improvement in business life that includes both managers and employees. (Imai, 1986, p. 3). Although the improvement in the scope of kaizen is small and incremental, the kaizen process produces dramatic results over time. Based on common sense and low-cost approaches, the kaizen process ensures gradual progress that pays off in the long run. Kaizen is also a low-risk approach. Managers can always go back to their old ways without incurring huge costs (Imai, 1997, p. 1-2). Kaizen is a concept that includes many world-renowned Japanese practices under its umbrella.

Figure 1. Kaizen as an Umbrella Concept

Source: (Imai, 1986, p. 4)

3. Kaizen Costing

Kaizen costing is a Japanese term that refers to a series of cost reduction steps that can be used after a new product design is given to the workshop. Kaizen costing methodology involves eliminating losses in the manufacturing, assembly, and distribution processes and work steps in any of these areas (Bragg, 2010, s. 67-68). Kaizen costing (or genkakaizen in Japanese) is the system that supports the cost reduction process in the production phase of the current production model. The Japanese word kaizen is slightly different from the English word "improvement". Kaizen refers to the continuous accumulation of small improvement activities

rather than innovative improvement. Thus, kaizen costing involves reducing costs during the manufacturing phase of existing products (Monden, 2004, p. 30).

Kaizen costing, which is sometimes confused with target costing, differs from target costing in that target costing is used in the design phase of the product life cycle and kaizen costing in the manufacturing phase (Lal & Srivastava, 2009, p. 330). Target costing supports cost reduction in the design and development phase of a product or market offering, while kaizen costing supports cost reduction in the manufacturing phase of already existing products (Taschner & Charifzadeh, 2020, p. 106).

Table 1. Comparison of Standard Costing and Kaizen Costing

Standard costing concepts	Kaizen costing concepts
▪ There is the concept of the cost control system. ▪ Assumes stability in existing production processes. ▪ The aim is to meet cost performance standards.	▪ There is the concept of a cost reduction system. ▪ It assumes a continuous improvement in production. ▪ The aim is to achieve cost reduction standards.
Standard costing techniques ▪ Standards are determined annually or semi-annually. ▪ Cost variance analysis is done by comparing actual costs. ▪ Cost variance research occurs when standards are not met.	Kaizen costing techniques ▪ Cost reduction targets are set and implemented monthly, and continuous improvement (Kaizen) methods are applied throughout the year to achieve the targets. ▪ Cost variance analysis is done not by the actual amount of reduction in costs, but by comparing the targeted kaizen costs with the standard costs. ▪ Investigation occurs when target cost reduction (Kaizen) amounts are not reached.
Who has the best information to reduce costs? ▪ Managers and engineers develop standards because they have technical expertise.	Who has the best information to reduce costs? ▪ Employees are closest to the process and therefore know best.

Source (Atkinson, Kaplan, Matsumura, & Young, 2012, p. 275)

Kaizen costing is entirely different from standard costing in that it aims at the continuous reduction of costs during the production phase. In contrast, standard costing aims at obtaining and maintaining standard costs (Monden & Hamada, 1991, p. 34).

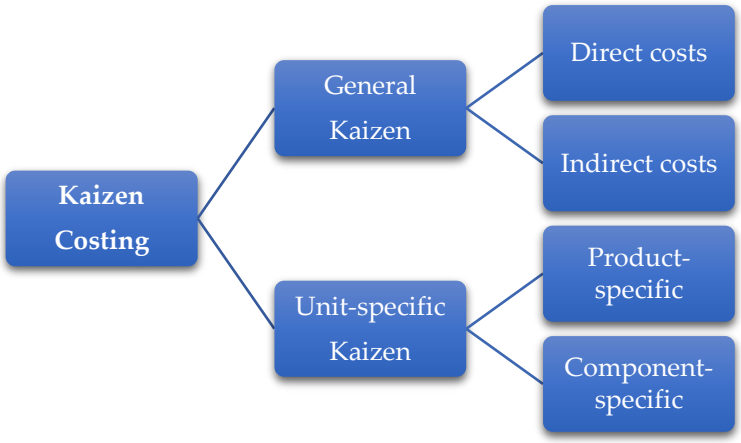

Figure 2. Various Kaizen Costing Approaches

Source: (Cooper & Slagmulder, 2005, p. 272)

General kaizen costing: Businesses use kaizen costing to continuously reduce the direct costs of products such as materials and labour during the production stages. In this type of program, the firm sets cost reduction targets for each period. Each budget period has modest savings goals, but savings accumulate over time.

Kaizen costing for indirect costs reduces the demand for production support activities. The firm usually achieves these savings over more than one budget period (Cooper & Slagmulder, 2005, p. 271-272).

Item-specific kaizen costing: In this approach, the costs of individual products and the components they contain are reduced. The product-specific cost of kaizen increases the rate of cost reduction for individual products, especially those facing intense price competition in the market. The firm uses this technique to achieve product lifecycle profit targets. Firms apply component-specific kaizen costing to reduce the costs of components with high costs significantly and quickly. Savings from these interventions add to those achieved with general kaizen costing programs (Cooper & Slagmulder, 2005, p. 272).

Kaizen costing systems have several important features in common (Kaplan & Cooper, 1998, p. 61):

- The focus is on understanding and motivating process costs, not getting more accurate product costs.
- Cost reduction is a team responsibility, not an individual's.
- Frequently, even on a batch basis, actual production costs are calculated, shared, and analyzed by front-line workers. In most cases, the team itself, not the accounting staff, collects and prepares cost information.
- Cost information used by teams is customized for production environments so that learning and improvement efforts are focused on areas with the most significant opportunity for cost reduction.
- "Standard costs" are continually adjusted to reflect both past reductions in actual costs and targeted improvements in future costs. It maintains proven innovations in process improvement and sets a new level for further improvement.
- Work teams are responsible for generating ideas to achieve cost reduction goals, they have the authority to make small-scale investments if they can show that they can reduce costs.

4. Literature Review

Modarress, Ansari & Lockwood (2005)defined a method used to determine kaizen costs that would provide relevant cost data to support lean production decisions, and in their study, the total processing time was reduced from 4.25 hours to 3.55 hours, and value-added processing time was increased from 48.24% to 57.75%. Okutmuş & Ergül (2015) tried to minimize the costs of services by using target costing, value analysis and kaizen costing methods in an integrated way in their study of accommodation businesses. Öğünç & Doğru (2017) examined the relationship between kaizen, total quality management, productivity increase, and costs through businesses that achieved positive results in terms of productivity increase by applying kaizen costing and total quality management systems. In the study of Hacıhasanoğlu (2012), an improvement of 29% was achieved in the production amount with the kaizen activities carried out in the enterprise operating in Kayseri. Kurtlu & Çakır (2019) determined with the kaizen costing method that the costs should be reduced by 8-10% for the partners to reach the desired profit in a 5-star accommodation business operating in Antalya. Kahveci & Okutmuş (2021) determined how much cost should be reduced in logistics sub-activity with kaizen costing in an arms factory that exports 97% of the production. Paksoy, Atabey, & Yılmaz (2020) investigated the amount of cost reduction required to reach the targeted profit amount for 2020 with the kaizen costing method the company, according to the findings obtained from the 2019 data of the company in a study conducted in a textile company.

5. Methodology

5.1. Research Method

In the research, a case study was conducted in a manufacturing company that produces plywood in Ordu. Data were obtained by face-to-face interviews with the production manager, accounting manager, and those in charge of other departments and carrying out the necessary investigations in the business area. The data of the company's sales and production costs for 2020 were discussed, and the kaizen costing study was carried out based on the estimated budget studies for 2021.

5.2. Purpose and Importance of the Research

The study aims to determine the costs first with the kaizen costing method in a manufacturing company producing plywood and then reduce the costs to reach the targeted profit. In line with the analysis of the 2020

budget of the enterprise and the targeted profit rates for 2021, how much cost should be reduced with the kaizen costing method was calculated. Then, it was determined at which levels and in which departments this cost reduction should be. It is thought that this study is important in terms of being an exemplary application in providing cost efficiency with the kaizen costing method, which will help a manufacturing company to be more competitive.

5.3. General Information About the Business

Operating in the woodworking industry, this business is in an industry with intense competition. As a result of the interviews with the business managers and the factory visits, it was decided to implement the kaizen costing study in this business, as it was seen that it was appropriate. The study was carried out in a company that produces plywood in the manufacturing industry in Ordu. The enterprise has a total of 30,000 m2 of central production area and two branches of 20,000 m2 and 15,000 m2 closed areas. There are 323 personnel and 46 machines in total in the enterprise. There are four main production areas in the enterprise where the application is made. These; peeling, drying, pressing, and storage. The production stages of the plywood product are as follows:

First, the logs are peeled from the peeling machine and dried in the dryer. Then it is passed to the glueing section and glued in layers. Afterward, the product goes to the pressing area and is compressed at specific rates, and becomes plywood. Finally, it is transported and stored.

6. Findings

The sales and production costs of the plywood producing enterprise for the year 2020 are as in Table 2.

Table 2: Sales and Costs (2020)

Actual Selling Price per m^3	**2.800 TL**
Actual Cost per m^3	2.565 TL
Amount of Product Produced	43.826 m^3
Sales Revenues	122.712.800 TL
Cost of Produced Goods	112.413.690 TL
Peeling Cost	56.206.845 TL
Drying Cost	33.724.107 TL
Pressing Cost	16.862.053,50 TL
Storage Cost	5.620.684,50 TL

The estimated budget expectation of the enterprise for 2021 is as in Table 3. Due to the extreme fluctuations in the general level of prices, the effect of inflation on costs has not been considered.

Table 3. Estimated Budget Data for 2021

Target Sales Price per m^3	**2.900 TL**
Estimated Product Quantity	50.000 m^3
Target Profit Margin	%13

According to Table 2 and Table 3, the actual sales price of one m^3 of plywood produced in 2020 is 2.800.00 TL, and the cost of one m^3 is 2.565.00 TL. A total of 43,826 m^3 of plywood was produced in 2020, resulting in a total sales revenue of 122,712,800,00 TL. The total cost of the manufactured product in 2020 is 112,413,690,00 TL. In the same year, the total costs in the production units were as follows. The total cost of the peeling unit is 56,206,845.00 TL, the total cost of the drying unit is 33,724,107.00 TL, and the total cost of the pressing unit is 16,862,053.50 TL, and the total cost of the storage unit is 5,620,684.50 TL. In the estimated budget data for 2021, the target sales price of one m^3 of plywood is estimated as 2,900.00 TL, and it is planned to produce a total of 50.000 m^3 of plywood. The target profit rate for 2021 is estimated at 13%.

6.1. Kaizen Costing Stages

Kaizen costing process for the enterprise takes place in six plans (Monden & Lee, 1993, p. 22-23).

Production Distribution and Sales Plan (Which includes projections of contribution margins from sales)

At this stage, calculations of the profit contribution margin are made according to the sales of the enterprise. Accordingly, the profit of the manufacturing enterprise, which was first applied, for 2020 is calculated as follows.

Previous Period Profit (2020) = Actual Amount of Produced Goods x (Actual Selling Price – Actual Cost)

Previous Period Profit = 43.826 m^3 x (2.800 TL/m^3 – 2.565 TL/m^3)

Previous Period Profit= 10.299.110 TL

After calculating the profit for 2020, the profit forecast calculations for the next year (2021) are as follows:

Following Period Profit (2021) = Estimated Amount of Goods Produced x (Target Sales Price x Target Profit Margin)

Estimated Profit of Following Period (2021) = 50.000 m^3 x (2.900 TL/m^3 x 0,13)

Estimated Profit of Following Period = 18.850.000 TL

At this stage, to reach the estimated profit in the following period, the amount of profit that needs to be obtained with the kaizen costing method is as follows:

Additional Profit = Profit of Following Period (2021) – Profit of Previous Period (2020)

Additional Profit = 18.850.000 TL – 10.299.110 TL = 8.550.890 TL

Projected parts and Material Costs

The main raw material of the manufacturing enterprise producing plywood is poplar-beech logs. It is estimated that the price of logs will be 2.000 TL per unit for 2021. According to the 50,000 m^3 sales estimation of the enterprise, the total cost of the main products in 2021 is estimated to be = 50,000 m^3 x 2,000 TL/m^3= 100,000,000 TL.

Plant Rationalization Plan

At this stage, variable costs in production will be calculated and cost reductions will be planned. In this context, the first calculation of the total cost for 2021 is as follows:

Total Estimated Cost (2021) = Actual Unit Cost (2020) x Estimated Amount of Goods Produced (2021)

Total Estimated Cost = 2.565 TL/m^3 x 50.000 m^3

Total Estimated Cost = 128.250.000 TL

In addition, the unit target cost for 2021 is calculated as follows.

Target Cost per Unit (2021) = Target Sales Price (2021) – (Target Sales Price x Target Profit Margin)

Unit Target Cost = 2.900.00 TL/m^3 – (2.900.00 TL/m3 x 0.13)

Unit Target Cost = 2.523.00 TL/m^3

Thus, the total target cost for 2021 was calculated as follows.

Total Target Cost (2021) = Unit Target Cost (2021) x Estimated Amount of Goods Produced (2021)

Total Target Cost =2.523 TL/m3 x 50.000 m^3

Total Target Cost = 126,150,000 TL

To reach the targeted profit, it is necessary to reach the targeted cost. The difference between the total estimated cost for 2021 and the total target cost for 2021 shows the amount required for the amount of reduction in variable costs in production. According to this:

Amount of Reduction in Variable Costs in Production = Total Estimated Cost – Total Target Cost

Variable Cost Reduction Amount in Production = 128.250.000 TL – 126.150.000 TL

Variable Cost Reduction Amount in Production = 2,100,000 TL

Accordingly, if the business wants to reach the targeted profit rate, it should reduce the variable costs by TL 2,100,000. Thus, it will be able to reach its targeted 13% profitability by selling 50,000 m3 of product at a unit price of 2,900 TL/m3, which is the target sales price for 2021.

Personnel Plan

The enterprise is planned to work with 350 workers in 2021. The distribution of the employees according to the production expense centres is as in Table 4:

Table 4: Personnel Planning for 2021

Production Units	Planned number of employees
Peeling	175
Drying	105
Pressing	53
Storage	17
Total	**350**

In 2021, it is planned to employ 175 employees in the peeling unit, 105 employees in the drying unit, 53employees in the pressing unit, and 17 employees in the storage unit. The average wages that the business will pay to these employees for 2021 are shown in Table 5.

Table 5. Distribution of Average Direct workforce Wages in 2021

Main Production Cost Centres	Number of Employees	Annual Total Average Wage
Peeling	175	7.560.000
Drying	105	4.536.000
Pressing	53	2.289.600
Storage	17	734.400
Total	**350**	**15.120.000**

The workers working in the main production cost centres in Table 5 are direct workers, and the cost to the employer for each worker has been determined as approximately 3,600 TL with government incentives. Accordingly, the annual total average wage was calculated as (number of workers x 3.600 TL x 12 months). The annual average wage was calculated as 15.120.000 TL, with a total of 7.560.000 TL in the peeling, 4.536.000 TL in the drying, 2.289.600 TL in the pressing, and 734.400 TL in the storage unit.

Facility Investment Plan (Capital budget and Depreciation)

At this planning stage, capital budgeting and depreciation calculations for the facility investment are made. The number of currently 46 machines in the plywood mill is planned to be increased to 53 by 2021. Accordingly, the total value of fixed assets is approximately 3,000,000 TL, with an estimated annual depreciation of 600,000 TL. The time value of money has not been considered and amounts of depreciation have been received directly from management.

Fixed Expense Plan

At this planning stage, fixed expenditure costs such as project costs, maintenance-repair costs, advertising-promotion costs, and general administrative expenses are determined. For the year 2021, estimated annual

maintenance-repair expenses of 400.000 TL for the machines and approximately 4.000.000 TL as general administrative expenses are planned.

6.2. Setting Kaizen Cost Targets

In this section, necessary calculations are made to determine kaizen cost targets.

1. Actual Cost Per Unit in Previous Year= total actual cost previous year/the amount of production realized the previous year

Actual Cost Per Unit in Previous Year = 112,413,690 TL / 43.826 m^3 = 2,565 TL/m^3

2. Current Year Total Estimated Cost = Actual Cost Per Unit in Previous Year (1) x Current Year Estimated Production Amount

Total Estimated Cost (2021) = 2,565 TL/m^3 x 50,000 m^3 = 128,250,000 TL

3. Current Year Kaizen Cost Target = Current Year Total Estimated Cost (2) x Cost Reduction Target Rate

According to the calculations specified in the Stage 3 facility rationalization plan;

Variable Cost Reduction in Production = Total Estimated Cost – Total Target Cost

Variable Cost Reduction Amount in Production = 128.250.000 TL – 126.150.000 TL

Variable Cost Reduction Amount in Production= 2.100.000 TL

4. Allocation ratio = Costs directly controlled by one unit/costs directly controlled by all units

There are 4 main production cost centers in the plywood business, namely Peeling, Drying, Pressing and Storage. Activity centers also consist of activities carried out in these cost centers. The production cost of these activities in 2020 is shown in Table 6 below.

Table 6: Cost of Produced Goods by Activity in 2020

Main Production Cost Centers	Total Cost (TL)
Peeling	56.206.845,00
Drying	33.724.107,00
Pressing	16.862.053,50
Storage	5.620.684,50
Cost of Goods Produced	**112.413.690,00**

By using the allocation rate formula, allocation rates based on departments are summarized in Table 7 below.

Table 7. Allocation Rates

Units	Allocation ratio (%)
Peeling	0,50
Drying	0,30
Pressing	0,15
Storage	0,05
Total	**1,00**

As can be seen in Table 7;

Peeling section allocation rate = 56,206,845.00 TL / 112,413,690.00 TL = 0.50,

Drying section allocation rate= 33.724.107.00 TL / 112.413.690.00 TL= 0.30,

Pressing section allocation rate= 16,862,053.50 TL / 112,413,690.00 TL= 0.15, and

Storage section allocation rate= 5.620.684.50 TL / 112.413.690.00 TL= 0.05.

5. Kaizen Cost Target for Each Unit = Current Year Kaizen Cost Target (3) x Allocation Ratio (4)

After the allocation rates are determined, the kaizen cost target for each department is reached when the current year is multiplied by the kaizen cost target. In other words, each department has kaizen cost reduction targets. The cost reduction targets calculated by multiplying the 2021 kaizen cost target of 2,100,000 TL calculated in the 3rd step with the allocation rate of each division are shown below based on units.

Table 8. Kaizen Cost Reduction Targets Allocation Rate by Units Kaizen Cost Reduction Target (TL)

Units	Allocation ratio (%)	Cost Reduction Target
Peeling	0,50	1.050.000,00
Drying	0,30	630.000,00
Pressing	0,15	315.000,00
Storage	0,05	105.000,00
Total	**1,00**	**2.100.000,00**

As can be seen from Table 8, in order for the plywood business to reach 13% profitability in 2021 with a unit sales price target of 2,900 TL and to produce with a total target cost of 126,150,000 TL, It has been distributed to the units through allocation rates, which should reduce its costs by 2,100,000 TL in total, including 1,050,000 TL in the peeling, 630,000 TL in the drying, 315,000 TL in the pressing, and 105,000 TL in the storage section.

7. Suggestions

In this study, the Kaizen Costing system has been used, and a cost minimization has been realized at a level that can be seen as sufficient in the enterprise. For the business to reach the figures mentioned above, it is necessary to increase its efficiency. For this reason, it is necessary to give more importance to the workforce's training, prevent problems that may occur among employees, and establish a teamwork environment for employees to work in harmony with each other. All kinds of activities that we would consider unnecessary should be removed from the production processes.

The business should give more importance to audits and improve the deficiencies. For example, in the Stripping section, billets must be appropriately placed in the machine. For this, it is necessary to cut and straighten the tree knots. When the logs are not corrected in accordance with the machine, the machine breaks down, and the costs for the operation increase. While the blade section of the old machines is wider, it produces more waste, while the blade section of the machines with new technology is thinner and produces less waste. Therefore, this issue should be considered in new machinery investments. For the drying section, it is necessary to clean and maintain the dryers periodically. Otherwise, considering the cost of the machines used, the repair maintenance fee increases the cost. For this, cleaning follow-up forms should be created, and training should be given to the employees. It has been seen that compression processes are carried out without loading the appropriate number of plates to the press machines that compress the plywood in the press section. As a result of the pressings made without filling the machine capacity, it has been observed that the machines work more, leading to more labour time and electricity consumption. Compaction should not be started before the machine's capacity is full. Thus, it will increase the efficiency of the machine. In the storage section, it has been observed that the plywood is placed carelessly, and therefore there are excessive forklift movements. Also, it has been observed that the employees in the storage department move the products too much and waste time while determining the customer orders. A warehouse layout plan should be prepared, and products should not be taken out of certain areas according to their types to avoid wasting time.

8. Conclusion

Kaizen costing is an essential branch of the philosophy of kaizen, which is not content with the current situation and aims at continuous improvement. Based on Japanese manufacturing practice, kaizen costing focuses on continuous improvement during the production phase of a product's life cycle to reduce costs (Vann, 2016, p. 24). In Kaizen costing, the aim is not to stabilize a production process according to predetermined working standards. The aim is to improve critical processes continuously so that costs can be continuously reduced in product lines that are mature, highly price-sensitive, and not prone to product innovation (Kaplan & Cooper, 1998, p. 61). Kaizen strategy requires never-ending efforts for improvement

that includes everyone in the organization, managers, and employees alike (Joshi, Bremser, Deshmukh, & Kumar, 2011, p. 49). Kaizen costing is aimed at ensuring the continuous improvement of production costs during the production phase. The target costing process, which starts at the development stage of the product, continues with kaizen costing in the production stage, thus ensuring a continuous improvement of costs (Türk, 1999, p. 211).

With the increase in production within the country, competition has also increased. In the face of increasing competition, manufacturers are experiencing price pressure in the market. At this point, it is not possible to increase product prices to increase profitability. Therefore, it is necessary to keep costs under control. Understanding the importance of kaizen costing is necessary at this point to control costs in production processes and to avoid all kinds of unnecessary activities and waste. It should be expected that more kaizen costing studies for businesses operating in other sectors will make businesses stronger over time, increasing the country's competitiveness.

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