



## Impact Kaizen Budget to reducing costs and continuous improvement the operations: study in General Company for Light Industries

**Abbas Sabah Talib**  
Assistant teacher, Baghdad, Iraq  
[Abbassabaht@gmail.com](mailto:Abbassabaht@gmail.com)

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### Abstract:

The budget represents a critical accounting tool used for planning and control. It is considered a measure of the results expected to occur.

This study aims to identify the impact of the Kaizen Budget in reducing costs and continuous improvement on the General Company's operations for Light Industries. The research idea is based on the fact that preparing the budget based on constant improvement supports the higher management of people, processes, materials, and production methods, thus enabling them to manage and reduce their costs.

Research results that the prepared budget suffers from many shortages that limit the materials' usefulness for management.

Paper type: Research paper;

**Keywords:** Kaizen Budget ,reducing costs, continuous improvement,

**Introduction:**

Increasing competition, rapid development, and product cost structure changes have motivated managers to search for more efficient cost management because traditional cost management methods could not meet the management needs of cost information. Moreover, diversity of the processes required to perform the work, we need to apply continuous improvement in their operations by preparing budgets; they are comprehensive for all financial and non-financial aspects. And to cover and measure management expectations regarding income, cash flows, and financial position, all of this aims to achieve more profits, reduce costs, and seek to apply the latest technologies in preparing budgets that keep with developments and rapid changes

**Chapter one / Research Methodology and previous studies****The First topic / Research Methodology****1. research problem**

The research problem is that most of the budgets that are prepared have become ineffective in treating and measuring deviation and their incompatibility with the changes taking place in work as a result of the developments taking place and the existence of a discrepancy between the results that cannot be relied upon in planning. Hence, the following question can be posed Does applying the budget based on Kaizen help reduce costs and continuous improvement?.

**2. Importance of the research**

This research is considered one of the modern topics as it highlights the importance of budget preparation and the Kaizen method to help the administration reduce costs, focus on operations, and conduct continuous improvement for all activities .The fact that budgets are a tool for planning and control and its reflection on the appropriateness of its estimates for control and performance evaluation

**3. The research objective**

The research aims to study the effect of budget preparation according to the Kaizen method in reducing costs and continuous improvement on the General Company's operations for Light Industries.

**4. Hypothesis**

The research is based on the assumption that preparing budgets according to the Kaizen method helps the General Company for Light Industries reduce its products' costs and continuous improvement in its operations.

**5. Research field**

The General Company for Light Industries was chosen as a field of study. It is one of the essential companies in terms of product production and production capacity.

### **The Second topic / previous studies**

Some previous studies related to the variables of the current study will be reviewed as follows:

a) (Svetlana MIHAILA 2019) ( Possibilities of continuous improvement of Budgets by the Kaizen Method in the Current Context): stimulating the integration of the Republic of Moldova in the world economy requires the indigenous entities to continue to be efficient. Competitive, very operative, but also sustainable, given that obtaining long-term positive financial results depends on sustainability. To guide their actions, the entities request information on the activity carried out, in which the most critical place is the budget. The author is describing the kaizen method - a Japanese concept which assumes the continuous improvement of the processes and budgets. The importance of the budgeting method consists in the efficiency of application, not just in performance. Once the company has selected a budgeting method, it should make sure that this instrument is applicable and in concordance with its necessities. The investigation methodology includes fundamental approaches regarding the possibility of applying the kaizen method in the local entities. The researcher conclusion it has been found that the current financial performance of an entity indicates its health status . the researcher notify the importance of the principle of continuous improvement of processes.

b) (Zaid Elyan and 2009) (The extent of the importance of planning budgets in planning, monitoring, and performance evaluation) The study dealt with the importance of planning budgets in evaluating the Jordanian industrial companies' financial performance. It aims to show the extent of these companies 'commitment to using budgets and all departments' participation in preparing them. One of the most important findings of the study is using the results of planning budgets in addressing the deviation of financial performance. Moreover, that its preparation in an organized manner helps in its use as a valuable tool in the planning, monitoring, and performance evaluation process. The study recommended the necessity of trying to involve all individuals in the budget preparation process and reducing the internal obstacles facing companies when preparing budgets.

c) (Kinga Olszewska, 2019 ) (Cost management with budgeting and Kaizen Costing) Business units must constantly adapt to changing market conditions and consumer expectations. Introducing changes aimed at increasing the adaptability of an enterprise is often associated with high costs or radical changes in its structure and the way it operates. This article discusses the budgeting and kaizen philosophy and their impact on managing the enterprise's cost area. Based on the case study. It was presented how the budgeting procedure and kaizen costing can affect the unit's cost management process. The article aims to show how the decision to use budgeting and kaizen in the area of costs can translate into the company's financial results. The researcher recommends the constant adherence to the kaizen philosophy the systematic introduction of minor corrections and improvements leads to noticeable results.

d) (Al-Hamid, 2006) (Evaluating the planning budget system as a tool for planning, monitoring, and performance evaluation) The study aimed to determine the level of awareness of food industry establishments in Yemen of the importance of applying the system of planning budgets known in accounting thought. Moreover, determining the outputs required by the authorities responsible for planning and monitoring in those facilities. The researcher relied on the applied analytical approach through the theoretical study of the budget and the questionnaire distributed to selected administrative levels. The study found that the company's management has an awareness of the importance of applying planning budgets and that the obstacles that limit the application of budgets are the failure to use modern statistical models in the estimation.

## **Chapter Two / Theoretical review**

### **1. The First topic / Concepts of Budget**

Several concepts and definitions of the budget have emerged, so Hilton defined it as (a quantitative translation of the objectives described for any organization and as a future action plan and adopted several assumptions that require the approval of the administrative levels and are prepared by specialized committees, each according to his specialization or field. What is covered in the budget (Hilton, 2002, 225). Needless et al.; sees (budget group fully expresses the activity of the project or organization in its immediate or distant goals, that is, plans at the level of a year or less or more, quantitatively translated to the objectives, each according to its type, to enhance the possibility of its implementation or perception. The departments or people who will be responsible for implementing it (Needless. et al., 2002, 273) (Jiambalvo) believes that it is (an important administrative tool that represents a quantitative expression of the business plan for a predetermined period, as it is used in planning the future activities of the facility as well as for monitoring the current operations of the facility) (Jiambalvo, 2001, 326). Folk defined it as (a combination of information flow, procedures and administrative processes, and at the same time part of long and short-term planning and a system for controlling various aspects of the activity in the establishment ,whereby the deviations that are the basis for taking corrective decisions and evaluating performance are determined.(Folk et.al, 2002, 411).

The researcher thinks the budget (a plan of action for future translates objectives of the establishment and leads to the achievement of the goals that the administration seeks to achieve, including reducing the cost of products and seeking to introduce continuous improvements to its operations of machines, supplies, work, production methods, and encouraging ideas and proposals By employees of the facility, all of this to increase its profits in the future).

### **2. Advantages of budgets:**

Budgets are the essential feature of most control systems, and accordingly, a set of advantages must characterize them, including (Upchurch, 2002, 139):

a) Clarify planning, as it will be more accurate and precise, which stimulates management to think ahead and thus improve performance, which helps in long-term strategic planning.

b) The budgets aim to investigate the plan's implementation and evaluate the performance and the resultant feedback from the information that the control is

closely related to the budget, which makes it difficult to put a dividing line between them.

c) Develop communication and coordination between the sub-units within the organization.

d) The programmed assessment of the needs of the establishment's activities is based on the initial information and data to arrive at the size, type, and priorities of these needs.

e) Acceleration of the development process by restricting resources and improving the function of utilizing them efficiently and effectively.

f) Budgets are used to motivate employees within the facility at all administrative levels, which gives a moral and ethical feeling to the task they are undertaking to achieve the numbers they participated in.

g) create self-motivation through a sense of responsibility and the pursuit of the best performance evaluation

### **3. Objectives of the budget**

The budget aims to achieve several goals, namely: (Horngren, 2000, 328):

a) It clarifies the powers of the director responsible for their implementation

b) It is considered a tool for control by comparing actual results with planned, directing efforts, and achieving goals and objectives.

c) It is the basis for preparing economic feasibility studies, which prompts the management to take critical decisions at an early date

d) The goal of preparing budgets is to help discover errors and weaknesses and then address them and produce the best results.

e) It is setting goals and preparing the necessary organizations to achieve them. Goals are set in the form of long and short-term plans for each establishment and its departments. Therefore it becomes essential to organize production factors in an organization that leads to achieving the set goals.

### **4. Types of Budgets:**

Budgets are divided into several types according to the following principles: (Bouquin, 2007, 182):

1) In terms of the area covered by the budget, it is divided into:

A. An operating budget: It is for regular business.

B. A capital budget: It concerns investment planning.

2) In terms of the period covered by the budget, it is divided into:

A. long-term budget.

B. Short-term budget.

3) In terms of the degree of detail included in the budget, it is divided into:

A. a program budget: which defines the main plans that the facility intends to undertake.

B. The balance of responsibility: it determines the plans responsible for their implementation.

4) In terms of flexibility, it is divided into:

A. Fixed Budget: It is prepared based on one level.

B. Flexible budget: It is prepared based on multiple groups of activity levels.

5) In terms of the nature of the budget subject, it is divided into three types:

A. In-kind balance: it expresses samples only.

B. Financial budget: It is a financial expression for in-kind budgets.

C. Cash budget: It expresses the paper providing contracts to and from the company to know the available liquidity.

### **The Second topic / Kaizen concept**

The roots of continuous improvement go back to Japan. It means change for the better as some industrial companies adopted it to achieve a continuous reduction of production costs and make continuous improvement in the facility's activities and processes. Many researchers have gone in the statement of the Kaizen concept where they see (Horngren, 2006, 75).

It is a technique that directs senior management's attention to think about how it can motivate managers and their employees in all its departments to find ways to reduce production costs or the service. (Chase et.al) defines it as searching for continuous improvements in machines, materials, working methods, and production by encouraging suggestions and ideas from the factory's work teams (Chase et al., 2004, 280). As for (Mark Land), he believes that it is a method that enables the facility to subject all activities such as cost, skills scheduling ,and work relationships through a preventive approach rather than a traditional therapeutic approach based on an organizational culture that adopts continuous development (Horngren et al., 2003, 98). Therefore, the researcher believes that the Kaizen method is a set of procedures and steps to improve all activities and operations of the facility and all employees in departments and units to reduce costs for products to increase profits.

### **Reducing costs**

Using the Kaizen method: Reducing costs by adopting a kaizen method is called kaizen cost, and it is an additional improvement made to the current production processes. It is in the form of improving the performance of the machines to reduce losses and spoilage and increase the training of workers and motivate them and pay Daily changes to improve your specific cost. Hence, the focus is mainly on processes rather than products (Kaplan & Atkinson, 1998, 229). According to the Kaizen Tech method, it is achieving the goal of reducing costs by focusing on activities that add value and reduce spoilage and pay attention to workers' opinions in different departments and divisions as the cost reduction is at every production stage by rationalizing costs. The actual costs are tracked and compared with the Kaizen method's goal, as this goal is the responsibility of workers in different departments and divisions (Hilton & et al., 2005, 234). The reduction according to the Kaizen method and approach depends on focusing on the costs of the main economic activities, such as obtaining the raw materials from the beginning until they are converted into finished materials and products. According to the Kaizen method, cost reduction focuses on all variable costs, as the management's attention is focused on reducing variable costs, resulting in a cost reduction targeting direct materials, direct labor, and the rest of the other expenses.

### **Budget according to the Kaizen method**

Horngren defined Kaizen budget (is the process of continuous improvement during the budget preparation period and the introduction of these improvements in the budget numbers through reducing costs, which is the primary goal of it) (Horngren et al., 2006, 195). According to the Kaizen method, preparing the budget represents an input to cost planning according to making continuous improvements in the future to production processes that may be

introduced to them. The Kaizen Budget aims to reduce the controlled costs to achieve them and reduce them within a certain period as many establishments are interested in reducing their costs. A large part of the cost reduction associated with the Kaizen budget creates many minor continuous improvements rather than quantitative leaps, as well as the introduction of the suggestions and opinions of workers who work in the enterprise's various departments, as many economic units are subject to constant pressure to reduce the cost of their products. It is essential to understand the activities that lead to the emergence of cost to calculate and manage the product's cost by knowing the market needs and the prices that customers want to reach the target cost. After that, the target cost is achieved by eliminating activities that do not add value. These work stages are applied by suppliers to all the value chain functions, starting from the design stage until the product reaches the customers' hands. Where (Budugan & Georgescu) confirms that the Kaizen method's application to develop operations comes through controlling machinery and equipment, increasing the efficiency of machine performance, motivating workers, and encouraging them to monitor cost reduction cases (Budugan & Georgescu, 2009, 9). Budgeting in the Kaizen manner targets the entire economic unit, and this requires controlling all stages of the product life cycle, ensuring that the new product will be profitable ,

Establish all supply chain elements to reduce costs and cooperate with the engineers in the facility, discuss ways to reduce costs, and take opinions and suggestions. All employees and encourage them in the establishment by taking their suggestions when preparing the budget, all with consideration without prejudice to the quality and quality of the product. One of the most important goals of using the Kaizen Budget is to reduce the difference between the actual and planned costs by finding solutions and continuous improvement.

#### **Relationship Between Kaizen Budget and Target cost**

**Target costing** It is linked with both Functional Cost Analysis and Value Engineering in order to design products and services which have the attributes that the market requires at the price that it is prepared to pay The initial step is to study the marketplace to identify the attributes that the next generation of products must have and the maximum selling price. (Kinsella, 2002, 49). This does not mean that the company simply provides what the market says it wants. The company may have superior knowledge of what can be provided. Depending on the type of market, there may well need to be considerable interaction between supplier and customer at this stage to decide on the bundle of attributes that will best meet the customer's needs (this may extend to trying to understand the customer's customers needs too). This will usually also involve a marketing analysis to identify market segments and how product attributes fit with each segment. It will also involve understanding the capacities of rival companies to deliver such attributes at the relevant costs. It can, therefore, be concluded that the essence of Kaizen Costing comes down to (Theodosiou M., Leonidou L. C., 2003, 141 )

- determining the target level of costs in consultation with production employees,
- emphasis on cost reduction,
- constant improvement of operational efficiency,
- constant improvement of the production process,
- aiming to achieve the target level of costs,

- analysis of deviations arising after comparing target and realized costs.

Applying the above principles should be constantly accompanied by a systematic assessment of the effectiveness of the activities carried out. The appropriate use of Kaizen Costing is logically linked to the target cost accounting system and may complement the management accounting system that is used in the enterprise

### **Chapter Three / Empirical analysis**

#### **5. The First topic / introducing the company Research sample**

The General Company for Light Industries was established in 1959 (mixed shareholding) with a capital of half a million Iraqi dinars. It increased until it became an amount (1727500000) dinars. The company is located in Baghdad, the industrial zone, and there is a workshop to repair the company's products in Baghdad near Al-Rasheed Camp. It has been developed to become the primary marketing headquarters and opening a shopping center in Karrada. The company aims to encourage private money in industrial development under the national development plan in various light industries and develop them in a manner appropriate for Iraq's industrial renaissance, development, and expansion. The company has several marketing outlets, including cooperative societies, state departments, and direct sales agents. The company produces several products, including:

No.	Product Type	Local manufacturing ratio
1	Refrigerators	41,5%
2	Freezers	44,5%
3	The salon cook	25,5%
4	Tabletop	46%
5	The oil heater	51%

Source / prepared by the researcher, depending on the company's cost data, the research sample.

Therefore, the (refrigerators) product will be taken, and the Kaizen balancing method will be applied to improve its operations and continuously reduce its costs.

1. The Second topic / preparing the budget according to the Kaizen method for the company's refrigerator product. Research sample

As in this topic, Kaizen budget will be prepared on the processes and stages of the refrigerator industry, as shown in figure (1)



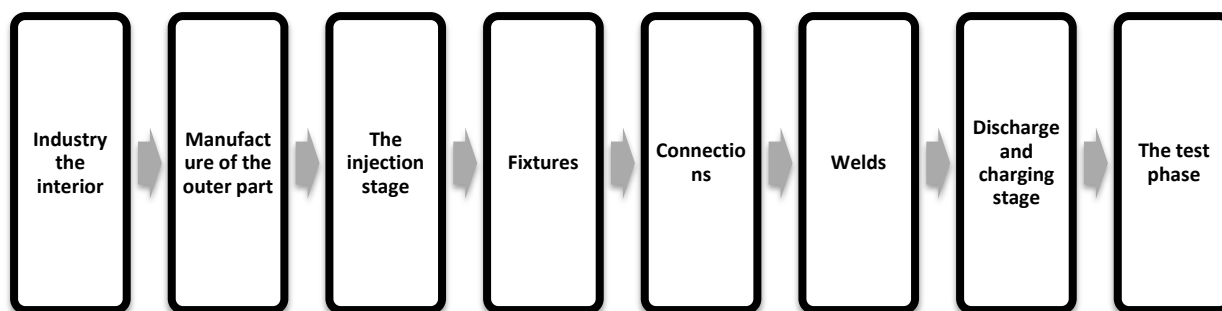


figure. (1)

The stages and production processes of the product (the refrigerator)

Source / prepared by the researcher, depending on the company's cost data, the research sample.

Where the amount and value of damage to these stages were as follows:

Table (1)

Amount and value of spoilage in the production stages of refrigerators as in the year 2019

Stage	Actual production in units	The proportion of damage	The price is in dinars	The number of damaged materials in units	The value of dinar damage
Industry the interior	365124	3%	565	10000	5650000
Manufacture of the outer part	25132	5%	2650	1257	3274500
The injection stage	32000	2%	891	640	570000
Fixtures	65000	2%	1154	1300	1500000
Connections	50000	2%	791	1000	790500
Welds	3500	1%	7143	35	250000
Discharge and charging stage	2000	1%	6250	20	125000
The test phase	Only test	Does not exist	Does not exist	Does not exist	Does not exist

Source / prepared by the researcher, depending on the company's cost data, the research sample. Note / That these data are taken from the cost division of the company, the research sample.

**A. Reducing direct material costs for the stage of manufacturing the refrigerator interior, as in 2019:** It is noticed at this stage that there is damage in the amount of (365124) units, that is, the value of (5650000) dinars. Investigating reasons it was found that there is a possibility to reduce the cost of materials used in the manufacture of the internal parts of the refrigerator by (2.5%) and this reduction Through the introduction of workers to courses related to preparing budgets according to the Kaizen method and how to reduce defective and damaged units.

**B. Reducing direct material costs for the stage of manufacturing the outer part of the refrigerator, as in 2019: The actual production of this is (25,132) units, and the reason is due to misuse by workers, it was found that direct material costs can be reduced (1.5%) by. :**

1) Save the materials and store them in the places designated for them and in the right ways.

2) the introduction of workers to courses related to preparing budgets according to the Kaizen method and how to reduce defective and damaged units

**C.Reducing direct material costs for the injection stages, fittings, connections, welds, and the discharging and shipping stage: was noticed that there is a possibility to reduce the costs of direct materials in it, where improvements can be made in all these stages and as follows:**

1) Control of non-leakage of refrigerant charge gas.

2) Control over the correct connections of electrical wires and not to break or damage the materials.

3) Control the welds' work and the emptying and charging of refrigerators correctly to ensure that their parts are not damaged.

4) The introduction of workers to courses related to preparing budgets according to the Kaizen method and how to reduce defective and damaged units.

Moreover, based on these continuous improvement measures, the improvement percentages are as follows:

<b>Production stages</b>	<b>Reduction ratios</b>
Industry the interior	2%
Manufacture of the outer part	3%
The injection stage	2%
Fixtures	1%
Connections	2,5%

2. Kaizen budget to reduce direct material costs for the carry-over and operations for refrigerator production for the year 2019: As a Kaizen budget will be prepared to reduce direct material costs for the stages and operations of the refrigerator industry, as shown in Table (2):

## 3.

**Table. (2) Kaizen Budget to reduce direct material costs as of 2019**

Production stages	First Quarter				Second Quarter				Third quarter				Fourth quarter			
	%	price	Need	Cost	%	price	Need	Cost	%	price	Need	Cost	%	price	Need	Cost
Industry the interior	2,5%	551	2,75	151	2,5%	537	2,75	1477	2,5%	524	2,75	1441	2,5%	511	2,75	14,5
Manufacture of the outer part	1,5%	2610	2,10	548	1,5%	2571	2,100	5399	1,5%	2532	2,10	5317	1,5%	2494	2,10	5237
The injection stage	%2	873	7,5	654	2%	856	7,5	6420	%2	839	7,5	6293	%2	822	7,5	6165
Fixtures	%3	1119	1,3	145	3%	1085	1,3	1411	%3	1052	1,3	1368	%3	1020	1,3	1326
Connections	%2	775	1,5	116	2%	760	1,5	1140	%2	745	1,5	1118	%2	730	1,5	1095
Welds	%1	7072	3,5	247	1%	7001	3,5	2450	%1	6931	3,5	24259	%1	6862	3,5	24017
Discharge	2,5%	6094	2,0	121	2,5%	5942	2,0	1188	2,5%	5793	2,0	11586	2,5%	5648	2,0	11296

Source / prepared by the researcher, depending on the company's cost data, the research sample.

Note / the Cost of each production stage and for the first, second, third, and fourth quarters was extracted by multiplying the price by the need.

Thus, the cost of a unit of direct materials after reduction for all production stages is:

seasons	cost
First Quarter	53102
Second Quarter	52235
Third quarter	51382
Fourth quarter	50541

Source / prepared by the researcher, depending on the cost data of the company, the research sample

Note / The calculation for each chapter came through a collection Production stages, Industry the interior, Manufacture of the outer part, The injection stage, Fixtures, Connections,

**4. Reducing wage costs and production times for the stages and operations for the production of refrigerators for the year 2019:** In light of the interviews conducted with production managers and workers in the production departments, it became clear that it was possible to control production times in the stages and production processes of refrigerators and that the wage rate was fixed at 5,000 / hour as follows- :

A. As for manufacturing the internal and external parts, improvement can be implemented by calculating a reward for workers to improve production and perform maintenance and repairs for idle machines. A percentage has been set to improve production time by 3%, the time taken for production is (2) minutes for each part, and minutes can be converted into hours by dividing by (60) minutes to become  $2 \div 60 = 0.033$  hours.

**B. The injection stage:** The time required to inject the refrigerator parts to separate the inner and outer islands and fill the spaces between them and isolate (15) minutes. After interviewing with the officials at this stage, this time can be reduced 1% by purchasing an injection machine to perform the process of filling the blanks and transferring the refrigerator upon completion of this stage to the installations stage of leaving it for a period (15) minutes, where the time is converted from minutes to Hours to become  $15 \div 60 = 0.25$  hours.

**C. The stage of installations, connections, welds, unloading, and shipping:** After meeting with the officials at this stage, it was found that it was possible to reduce production times in the following proportions by replacing old machines with new ones and encouraging workers by giving them incentives and rewards and maintaining the devices as required and controlling Voltage fluctuations and cuts, and finding an alternative source of electric current, such as a generator in the event of a power outage.

Stage	Percentage of wage reduction and improvements	The time taken for each stage after converting it into hours
The installations stage	3%	$20 \div 60 = 0,333$
Connections stage	2%	$45 \div 60 = 0,75$
Welds stage	2%	$30 \div 60 = 0,5$
Discharge and charging stage	3%	$10 \div 60 = 0,167$

Source / prepared by the researcher, depending on the company's cost data, the research sample.

**5. Preparing the Kaizen budget to reduce production time as in the year 2019:** Kaizen budget is prepared to reduce production time, as shown in Table (3)

**Table. (3) Kaizen Budget to reduce production time, as in 2019**

Production stages	First Quarter				Second Quarter				Third quarter				Fourth quarter			
	%	time	Wages rate	Cost*	%	time	Wages rate	Cost*	%	time	Wages rate	Cost*	%	time	Wages rate	Cost*
Industry the interior	3%	0,032	5,000	0,16	3%	0,031	5,000	0,155	3%	0,030	5,000	0,150	3%	0,029	5,000	0,145
Manufacture of the outer part	3%	0,032	5,000	0,16	3%	0,031	5,000	0,155	3%	0,030	5,000	0,150	3%	0,029	5,000	0,145
The injection stage	1%	0,248	5,000	1,240	1%	0,246	5,000	1,230	1%	0,244	5,000	1,220	1%	0,242	5,000	1,210
Fixtures	3%	0,323	5,000	1,615	3%	0,313	5,000	1,565	3%	0,304	5,000	1,520	3%	0,295	5,000	1,475
Connections	2%	0,735	5,000	3,675	2%	0,720	5,000	3,600	2%	0,706	5,000	3,530	2%	0,692	5,000	3,460
Welds	2%	0,49	5,000	2,450	2%	0,480	5,000	2,400	2%	0,470	5,000	2,350	2%	0,461	5,000	2,305
Discharge	3%	0,13	5,000	0,83	3%	0,131	5,000	0,783	3%	0,1315	5,000	0,735	3%	0,131	5,000	0,687

	%	62	00	10	%	57	0	85	%	3	00	65	%	48	00	40
and charging stage																
Total production time for the unit before reduction		3,210				3,210				3,210				3,210		
Total production time for the unit after reduction		2,022				1,978				1,937				1,896		
The difference		1,188				1,232				1,273				1,314		

Source / prepared by the researcher, depending on the cost data of the company, the research sample

Q = an hour

\*Note / The wage cost was extracted by multiplying the time by the wage rate. The same applies to all production stages and for each of the first quarters. The second, The third, and the fourth.

Thus, the cost of wages per unit is as follows:

First Quarter	10,11*
Second Quarter	9,89
Third quarter	9,685
Fourth quarter	9,48

Source / prepared by the researcher, depending on the company's cost data, the research sample.

\*Note / The cost of the first quarter which is ( 10.11 ) came through the collection ( 0.16 + 0.16 + 1.240 + 1.615 + 3.675 + 2.450 + 0.810 ) costs for all production phases of the first quarter . The same applies to the second , third and fourth quarters .

6. Kaizen budget for indirect variable industrial costs: The Kaizen budget for wage reduction is closely related to the Kaizen budget to reduce indirect variable industrial costs. Historical data of kaizen budget numbers will reduce the production of kaizen budget numbers to reduce indirect variable industrial costs. Moreover, after taking data from the company's financial accountant, the research sample found indirect variable industrial costs of (32,000,000) million dinars and that direct work hours are at the rate of (21,500) working hours. The download rate per hour of work can be determined based on the following equation:

$$\text{Variable Overhead costs direct labor hours} = \text{loading rate per hour} \\ 21,500 \div 32000000x = 1489 \text{ dinars per hour}$$

Since the actual production time is 3,210 hours, the share of the produced unit can be determined from the Overhead costs as follows:

$$3,210\text{hours} \times 1489 \text{ dinars} = 4,780 \text{ dinars}$$

The Kaizen budget can be prepared to reduce indirect variable industrial costs after making improvements and reduction percentages at the time of production, as in Table. (4) as follows:

**Table. (4) Kaizen budget to reduce the indirect variable industrial costs as of 2019**

seasons	Direct working hours	Loading rate	Overhead of unit *
First Quarter	2,022	1489	3011
Second Quarter	1,978	1489	2945
Third quarter	1,937	1489	2884
Fourth quarter	1,896	1489	2823

Source / prepared by the researcher, depending on the company's cost data, the research sample.

\*NOTE / The overhead of units was extracted by multiplying the Direct working hours by the Loading rate for each of the first, second, third, and fourth quarters of the year's seasons.

After completing Kaizen budgets for reducing material costs, direct wages, and Overhead variable costs. It is now possible to prepare a Kaizen budget for each unit produced from refrigerators by gradually reducing the cost of the produced unit for each quarter, as follows in the table (5):

**Table (5) Kaizen budgets for direct materials, direct wages, and variable Overhead costs**

seasons	Direct materials	Direct wages	Variable overhead costs	The cost of unit *
First Quarter	53102	10,11	3011	56123,11
Second Quarter	52235	9,89	2945	55189,89
Third quarter	51382	9,685	2884	54275,685
Fourth quarter	50541	9,48	2823	53373,48

Source / prepared by the researcher, depending on the company's cost data, the research sample.

\*Note / The cost of one unit was extracted for each of the first, second, third, and fourth quarters for the seasons of the year through the sum of direct materials and direct wages and variable overhead costs.

After reviewing budgets have been prepared according to the Kaizen method for direct materials, direct wages, and Overhead variable costs, a comparison is made between the costs of the unit for the manufacture of the refrigerator before and after preparing the budget in Table (6)

**Table (6) Comparison of unit costs for the General Company for Light Industries before and after preparing the Kaizen Budget for the year 2019**

seasons	Before the unit cost reduction	After the unit cost reduction	The amount of reduction *
First Quarter	60156,12	56123,11	4033,01
Second Quarter	60156,12	55189,89	4966,23
Third quarter	60156,12	54275,685	5880,435
Fourth quarter	60156,12	53373,48	6782,64
Total reduced cost	60156,12	53373,48	6782,64

\* The amount of reduction = Before the unit cost reduction - After the unit cost reduction

Source / prepared by the researcher, depending on the company's cost data, the research sample.

Table. (6) show a gradual decrease in the cost, at the same time, not to affect the quality of the product (refrigerator) a comparison procedure before and preparing the Kaizen budget of up to (6782.64) dinars.

#### **Chapter Four / Conclusions and recommendations**

##### **The First topic / Conclusions:**

1. When applying the kaizen budget to the company operations, the research sample found reductions in unit costs for the first, second, third, and fourth quarters. whereas the total cost of reduction after implementing the budget amounted to ( 6782.64 ) and as shown in table No. ( 6 )
2. The General Company's for Light Industries does not prepare its budgets based on reducing costs and improving its operations. It does not have an awareness of cost information to prepare those budgets for auditing control.
3. Most of the company departments do not use the departments' output results in improving their performance.
4. Budgets prepared according to the Kaizen method help predict deviations and achieve control by comparing actual performance with the planed.
5. Budgets prepared based on Kaizen focus on improving production processes to reduce costs gradually.
6. The Kaizen budget provides high-quality accounting information that helps management plan, control, and makes decisions.
7. The Kaizen budget aims to reduce direct materials, direct wages, and variable overhead costs.
8. Lack in competencies and take their opinions into preparing budgets and making continuous improvements to reduce costs in the company

##### **The Second topic / Recommendations:**

1. In order to achieve the continuous cost reduction objectives. Kaizen budgeting must target the Research sample Company, and this involves adequate management, which must focus on the control of the following aspect of all the phases of the lifecycle of a product.
2. A significant part of the cost reduction associated with budgeting via the kaizen method results from “minor” improvements and not “significant leaps.

3. Participation of workers in the different departments and divisions of the company. The research sample is in the number of plans and budgets to increase financial performance efficiency.
4. Need for the General Company's senior management for Light Industries to realize the advantages that the budgets are prepared according to the Kaizen method, by holding courses and workshops for account employees on preparing such budgets to help them provide better cost information and make decisions.
5. It reduces the company's challenge, the research sample when preparing the budget based on Kaizen, including cooperation between departments for the budget function's success and others related to training.
6. Budget preparation based on Kaizen is a tool to increase revenues over expenses and reduce product costs.

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## اثر تطبيق موازنة كايزن في خفض التكاليف و اجراء التحسين المستمر على عمليات الشركة العامة للصناعات الخفيفة

م.م. عباس صباح طالب  
معهد تقني صويرة ، بغداد ، العراق  
[Abbassabaht@gmail.com](mailto:Abbassabaht@gmail.com)

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### المستخلص:

تمثل الموازنة أداة محاسبية مهمة تستخدم للتخطيط والرقابة و تعتبر مقياسًا للنتائج المتوقع حدوثها تهدف هذه الدراسة إلى التعرف على أثر موازنة كايزن في خفض التكاليف والتحسين المستمر على عمليات الشركة العامة للصناعات الخفيفة. تستند فكرة البحث إلى حقيقة أن إعداد الموازنة على أساس التحسين المستمر يدعم الإدارة العليا للأفراد والعمليات والمواد وطرق الإنتاج ، مما يمكنهم من إدارة وتقليل تكاليفهم أظهرت نتائج البحث أن الميزانية المعدة تعاني من نقص كبير يحد من فائدة المواد للإدارة .

نوع البحث : ورقة بحثية

المصطلحات الرئيسية للبحث: موازنة كايزن , خفض التكاليف , التحسين المستمر