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Continuous improvement technique and its role in costs reduction

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Abstract

The research aims to study continuous improvement technique and its role in reducing unnecessary and unjustified costs. In addition to this, this study investigated the ways to improve the value of products for customers as well as for company. Furthermore, customer requirements with the product and business have given adequate importance accompanying changes in production techniques for cost management. The research has addressed the knowledge-based technique of continuous improvement in terms of its concept, importance, tools, elements and steps to be applied in production units.

Keywords: continuous improvement technique, unnecessary and unjustified costs, customer requirements.

La técnica de mejora continua y su papel en la reducción de costos

Resumen

La investigación tiene como objetivo estudiar la técnica de mejora continua y su papel en la reducción de costos innecesarios e injustificados.

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Además de esto, este estudio investigó las formas de mejorar el valor de los productos tanto para los clientes como para la compañía. Además, los requisitos del cliente con el producto y el negocio han dado la importancia adecuada a los cambios en las técnicas de producción para la gestión de costos. La investigación ha abordado la técnica basada en el conocimiento de la mejora continua en términos de su concepto, importancia, herramientas, elementos y pasos que deben aplicarse en las unidades de producción.

Palabras clave: técnica de mejora continua, costos innecesarios e injustificados, requerimientos del cliente.

1. INTRODUCTION

The continuous improvement technique is one of the strategic cost management techniques which have occupied a privileged position in the modern business environment. Due to the rapid change and developments in business environment, the need for continually improve operations and products is inevitable. Therefore, production departments require techniques which help in continuous improvement. Hence, a set of continuous processes is required for tools and methods appropriate to reduce costs, improve quality, reduce wastage and waste in both time and resources (Drury, 2006:24), Blocher and others asserted that continuous improvement is a technical and managerial approach through which both managers and employees of the production unit are committed to continuous improvement programs for both processes and products from the research and development to customer service respectively (Blocher, et.al., 2002:35). Therefore, it is an ongoing process that seeks to promote critical success factors for cost, quality and time to improve processes and products consistent with the needs and desires of customers (Edmonds, et.al., 2012:29). Conclusively, continuous improvement is a set of tools

and methods that are interested in carrying out a range of ongoing activities and efforts.

To simplify operations in order to reduce unjustified costs, quality improvement and reduced time-ups are essential. Improvements are made according to ongoing programs that are along the value chain from R&D to customer service (Lizarelli & Toledo, 2016:4). Strategic cost management techniques are one of the continuous improvement technique that seek to conduct a range of activities and efforts to simplify the procedures and processes for both design and production in order to fulfill critical success factors in reducing product costs. This improves process quality and reduces design and production time in order to produce low cost products according to the needs of customers. As for the importance of continuous improvement, it can be illustrated by the following:

1) To help reduce unnecessary and unjustified costs associated with actions, activities, resources, components or functions that do not add value to the production unit and the customer (Kucinska, 2015:18).

2) Improve the quality of the operations and products to reduce the areas of waste and losses in both time and resources during production processes (Drury, 2006:25).

3) To help increase the effectiveness and efficiency of the production processes by simplifying procedures and standardizing

processes by making the production department a single production unit (Hilton, 1999:17).

4) To achieve the satisfaction and loyalty of the current customers to help attracting new customers by satisfying needs and desires of customers (Edmonds, et.al, 2012:31).

Therefore, the continuous improvement approach is a technical and managerial technique matched the requirements of the modern business environment. Cost reduction and improvement in quality of operations and products help to reduce the time of design and production. This helps to achieve customer satisfaction and thus help to achieve competitive advantage.

Tools of Continuous Improvement Technique

Continuous improvement tools are the important pillars and foundations on which the management of company is based in dealing with the problems (Barawe, 2001:62). In order to develop appropriate solutions and conduct operations optimization, the tools of continuous improvement can be illustrated as:

Pareto Analysis: This analysis aims to analyze the problems related to high costs and low quality. The concept (low-impact number), where all views beyond the control limits are used as input to the analysis process, and the problems are grouped by their impact on both costs and quality (Horngren, et.al., 2006:665).

Diagram of Cause and Effect: This chart is an extension of the Pareto analysis. After the identification and tabulation of issues, the most significant cost and quality issues are identified. According to this chart, the issues are categorized according to their causes, which are on four factors Design factors, human factors, technological factors and factors related to the components and functions of the product (Ross, 1995:153).

Quality Loops: Quality loops are seen as the division of the Economic unit into small groups of 4 to 6 members who hold regular meetings to discuss business problems with the proposal of appropriate solutions. These proposals are in the form of a Circles Reports and submitted to the Department for approval to instruct responsible for its implementation (Hussein, 2000:183).

Method of Five Steps: The continuous improvement technique seeks to gradually improve, as problems are solved and improvements are made step by step in order to move for the better position the method of the five steps of liquidation, arrangement, inspection, standardization (calibration), Training and discipline (Quality, 2006:192).

Checklists: These lists are used for the collection and compilation of data on the problems faced by the production unit. Where each problem is presented separately with the data on its main and supplementary causes, and work is done to propose appropriate solutions for each, and to remove Proposals in the form of management reports to be studied and instructed to be implemented by officials (Kaplan & Atkinson, 2008:422).

Benchmarking: Benchmarking is defined as an ongoing process to measure products and services performance. The standard performance levels could be either past performance or competitors. Thus preparing Benchmarking is a scientific process aimed at reaching lower cost and higher quality (Blocher et.al., 2002:13-14).

Based on the abovementioned processes the continuous improvement relies on six tools, namely, Pareto analysis, cause and effect diagram, quality loops, five-step method and checklists and benchmarking. Where these tools help to achieve continuous improvement technical objectives efficiently and effectively.

Applied Steps of Continuous Improvement Technique:

The continuous improvement technique seeks to improve the operations and products in order to provide consistent products and services with the needs and desires of the customers. So it is necessary to monitor these needs and desires continuously and evaluate all information regarding the feedback provided by customers (Jackson & Sawyer, 2001:366). Therefore, PDCA method (plans, work, check and correct) can be used as the main steps to apply the continuous improvement technique. Illustration of the steps for continuous improvement technique application through the following: (Michaels, 2008:105), (Lizarelli & Toledo, 2016:4)

Step 1: Plan: This step is the starting point to identify the problem while collecting the necessary data on the process to be improved. In the light of the data collected, the main causes of the problem are

determined with the appropriate plan to avoid these causes and determine the course of action.

Step 2: Work (DO): After developing the appropriate plan for the improvement process, the team will implement the plan and monitor the progress. The monitoring of implementation is on contineous basis in order to measure and evaluate all the additional improvements as a result of applying the plan.

Step 3: Check: During this step, the results of the improvements that have been made are checked to evaluate the required objectives are achieved effectively and efficiently. During this step the results are documented in the form of reports in order to review and evaluate the plan in the case of any problem.

Step 4: Correct (ACT): If the results of the improvement are positive (the objectives set through them have been achieved), the plan is adopted and approved for other similar processes. If the results are negative (failure to achieve the objectives set through them) the plan is corrected and appropriate adjustments are made.

Role of Continuous Improvement Technique in Costs Reduction and Product Improvement:

There are two complementary options that can be used to demonstrate the role of continuous improvement in reducing costs and Improving the value of products. These two methods are the target cost

and the Kaizen cost approach. Both methods will help reduce costs along the life cycle of the product, especially during the design and production phase. In addition to helping to produce a distinctive product of higher quality these methods can be illustrated by the following:

2. METHODOLOGY

The target cost method is one of the important market-oriented methods that are used in the early stages of the product lifecycle. Usually, this method is used during design phase to reduce unjustified costs associated with activities, components, resources or functions that do not add value to both the business and the customers (combs et al., 2015:248). Several studies have indicated that it is possible to identify approximately 80% of the cost of the product during the design and development phase (Moges, 2017:49). Thus the targeted cost method is an important tool to determine the cost of the desired product to achieve competitive price in order to reach the targeted profit (Alnawaiseh, 2013:35). This method requires, setting the target price, target profit margin to determine target cost (the difference between the target price and the target profit margin) (McWatter,et.al.,2001:113).

Method 2: Kaizen Cost method (Kaizen Costing):

The Kaizen Cost method is a complementary approach to reduce costs during the production phase by focusing on making small, incremental and continuous improvements to the productive process (Hilton et al., 2003:679). Therefore, desirable targets or ratios are set for

improvement in order to reach the cost of kaizen over a certain period of time (Martin, 2016:5). The cost of Kaizen is the cost of the product after making continuous improvements as well as making additional improvements to the product in small proportions (Barraza & Lingham, 2016:38). The complementarities between the target cost and the cost of Kaizen is illustrated in figure (1).

Figure 1: Integration target cost and kaizen cost methods

It is clear from the above figure that the cost targets and the cost of Kaizen are two complementary methods that can be used when applying continuous improvement technique, as the target cost method is used in the design phase, as costs are estimated and compared to the target cost, if the cost Less than the target cost is transferred to the production process, but if the reverse is considered, the product specifications are reviewed, and when the production process is started, the cost of Kaizen is calculated after the continuous alterations and improvements to the product.

On the basis of the foregoing, it can be said that the use of continuous improvement technique can help the economic unit reduce costs by using two complementary methods, namely, the target cost and the cost of Kaizen, the targeted cost method helps reduce costs during the design phase, and the

The cost of Kaizen helps to reduce costs during the production phase on the other hand application of continuous improvement techniques can help to improve the value of products. Therefore, improve product performance by focusing on improving and developing operational processes. Improve product features by focusing on the complementary characteristics of the operational characteristics of the product. To improve the product's conformity to established standards and metrics that are preferred and desired by the customer. Increase the perceived value by reducing the gap between the customer's expectations and the actual product.

3. RESULT AND DISCUSSION

This study has focused on the Electronic Industries Company which is one of the developed by Ministry of Industry and Minerals of Iraq. The company established in 1973 and specialized in producing many products such as television, radio, smartphone, laptops, automatic power drives automatic voltage regulators and electric invertersunder the brand umbrella of Qethara. The company has two production units, Uqba bin Nafea and Za'faraniyah. Aqaba Ben Nafea has the production unit of audio and video devices such as television, radio, smart phones and laptop. Whereas, Za'faraniyah produce automatic power motor, automatic voltage regulator and inverter. The company follows the actual cost system in the light of the common accounting system. The cost accounting in the company prepares the lists of costs and is sent to the department which in turn examines them and transfers them to the pricing committees for price determination.

The current research aimed to apply proposed costing approaches for continuous improvement in Za'faraniyah factory which is specializes in producing automatic power motor, automatic voltage regulator and electric inverter. These products suffer from the problem of high costs when comparing to the competitive foreign products offered in the domestic market.

4. METHODS AND MATERIALS

Before applying Continuous improvement techniques the actual cost per unit of the company's products is determined and shown in the following table 1:

Table (1): Actual cost of the unit produced by the products of the electronic Industries Company

Sr. No	Detail / Products	Direct Material Cost	Direct Labor cost Cost	Indirect Cost	Total Cost
1	Automatic Motor Power	20324	10540	5916	36780
2	Automatic Voltage Regulator	47828	29894	15590	93312
3	Electro Reflective	89143	47086	24057	160286

Source: Preparation based on the data available in the cost division.

It is noted from the above table, the actual cost per unit of the automatic Power engine product was 36780 dinars, as the cost of direct materials, direct labor costs and indirect costs was 20324, 10540, 5916 dinars, respectively. The actual cost per unit of automatic voltage regulator was 93312 dinars where the cost of direct materials, direct labor costs and indirect costs was in the amount of 47828, 29894, 15590 dinars respectively. Similarly, the actual cost per unit of the electrical inverter

was 160286 dinar, where the cost of direct materials, direct labor costs and indirect costs amounting 89143, 47086, 24057 dinars respectively.

In order to reduce costs using continuous improvement technique, two complementary methods are to be applied, namely the target cost method and the cost method of Kaizen, as illustrated by the following:

First: Application of Target Costing):

For the purpose of applying this method, the target selling price and the target profit margin are calculated and then target cost is determined. Setting the target selling price requires a field survey of the sale prices of products competing for the products of the electronic Industries Company, as shown in the following table:

Table (2): Average selling prices of competitive products for electronic industries company products

Sr. No	Detail / Products	Competitor Product Name	Sale price of competitor product	Average selling prices of competing products
1	Automatic Motor Power	Kodama Delta Atlas Total	40000 35000 30000 105000	)105000 ÷ 3(35000
2	Automatic Voltage Regulator	Mega Sac Mill Bright Star Total	92000 83000 80000 255000	)255000 ÷ 3(85000
3	Electro Reflective	Super Mien Lorient Total	155000 140000 125000 420000	)420000 ÷ 3(140000

Source: Preparation of the researcher based on the company's marketing department and the field survey of market prices.

The table above shows the competitor's products. The search prices and the average selling prices of these products are calculated and presented in table 2. The target selling price is the average selling prices of competitor products in the local market. The target selling prices for automatic power engine automatic voltage regulator and electric inverter are 35,000, 85000, 140000 dinars respectively. Further, target profit margin is determined as 10% of the target cost as per company policy. The target cost is calculated by the difference between the target selling price and the target profit margin. The target cost of the company's products can be calculated as follows:

Target cost = target selling price – target profit margin

Q = Target selling price – 10% O

X + 10% x = Target selling price

1.1 x = target selling price

Q = target selling Price ÷ 1.1

Thus:

Target cost of automatic power drive product = 35000 ÷ 1.1 = 31818 JD

Target cost of automatic voltage regulator = 85000 ÷ 1.1 = 77273 JD

Target cost of electric inverter product = 140000 ÷ 1.1 = 127273 JD

Thus, the target selling price, the target profit margin and the targeted cost for automatic power motor, automatic voltage regulator and electric inverter can be explained through table (3).

Table (3): Target selling price, target profit margin and target cost

Sr. No	Detail / Products	Target Selling price	Target profit margin (10% of target cost)	Target Cost
1	Automatic Motor Power	35000	3182	31818
2	Automatic Voltage Regulator	85000	7727	77273
3	Electro Reflective	140000	12727	127273

Source: Researcher Calculations.

The target cost for automatic power engine, automatic voltage regulator and inverter was 31818, 77273, 127273 dinars respectively, Hence, the targeted reduction in the cost of these products can be determined by the following table 4.

Table 4: Targeted reduction in the cost of electronic industries company products

Sr. No	Detail / Products	Actual Cost (1)	Target Cost (2)	Target reduction (1) – (2) = (3)
1	Automatic Motor Power	36780	31818	4962
2	Automatic Voltage Regulator	93312	77273	16039
3	Electro Reflective	160286	127273	33013

Source: Preparation of the researcher based on tables (1) and (3).

The above table shows that the targeted reduction in the cost of automatic power engine, automatic voltage regulator and electric inverter was 4962, 16039, 33013 dinars respectively. In the next phase Kaizen cost method is applied to reduce cost.

Second: Application of Kaizen Cost method:

During this method the cost of direct materials, direct labor costs and indirect costs will be reduced, as follows:

Reducing the cost of direct materials: Through the field study of the company's accounting reports, researcher found that raw materials being purchased from local agents who import these materials from the main Suppliers. After discussion with the Chairman and members of the

Procurement Committee in the company found that it is possible to import some raw materials directly from the main supplier (for Instance, thermostats, mono and tri-phase heat exchanger, inverter curve, diode, transistor and switches). By doing this procedure , the cost of raw materials per unit for automatic power engine products, automatic voltage regulator and inverter electric will be decrease by 17275, 40654, 75772 dinars respectively. The reduction of the cost of direct materials of per unit produced is explained through the table 5.

Table (5): Reduce the cost of direct materials for the unit produced by the products of electronic Industries Company

Sr. No	Detail / Products	Cost of direct materials per unit before reduction (1)	Cost of direct materials per unit after reduction (2)	Per Unit cost reduction (1) – (2) = (3)
1	Automatic Motor Power	20324	17275	3049
2	Automatic Voltage Regulator	47828	40654	7174
3	Electro Reflective	89143	75772	13371

Source: Researcher Calculation.

Illustrated by Table (5), the cost of direct materials per unit before the reduction of both automatic power engine products, automatic voltage regulator and electric inverter was 20324, 47828, 89143 dinars respectively. The cost of direct materials per unit of these products after

the reduction is 17275, 40654, 75772 dinars respectively. Thus the amount of the reduction in the cost of direct materials per unit of these products will be 3049, 7174, 13371 dinars respectively.

Reduction of direct labor costs: The Company suffers from the problem of the high cost of the direct labor cost due to the presence of a large number of redundant workers which increases the cost of these products. After researching and deliberating with the officials in the planning and follow-up department it is fund possible of expanding the company's production plan and benefiting from the capacity of redundant workers. So that, cost can be distributed to the additional products and per unit cost will be decrease. It is worth mentioning that the company is marketing its products in Baghdad province only, which indicates that nationwide marketing of products will make the full utilization of production capacity. The automatic power engine, automatic voltage regulator and inverter plants are utilizing only 60%, 60%, 40% of production capacity respectively. The productivity of these products is supposed to 80%, 80% and 70% of total production capacity respectively. The direct labor costs are calculated after increasing the production capacity (in terms of ratio and proportionality) and presented in table 6.

Direct labor costs after increased production capacity = (actual cost per unit of direct labor costs × current production capacity utilization ratio) ÷ utilization of the proposed production capacity

Direct labor costs after increasing the production capacity of the automatic power engine Product = (10540 × 60%) ÷ 80% = 7905 JD

Direct Labor costs after increasing the production capacity of automatic voltage regulator = (29894 x 60%) ÷ 80% = 22421 JD

Direct Labor costs after increasing the production capacity of the product Electro Reflective = (47086 × 40%) ÷ 70% = 26906 JD

Accordingly, the cost of the unit produced from direct labor costs can be explained under the current situation, the proposed status of increased production capacity and the amount of cost reduction for the company's products through the table 6.

Table (6): Reduce the cost of direct labor costs of the unit produced by the products of the electronic Industries Company

Sr. No	Detail / Products	Current status		Proposed status		Per Unit cost reduction (1) – (2) = (3)
		Unit Cost (1)	Capacity utilization Ratio	Unit Cost (2)	Capacity utilization Ratio	
1	Automatic Motor Power	10540	60%	7905	80%	2635
2	Automatic Voltage Regulator	29894	60%	22421	80%	7473
3	Electro Reflective	47086	40%	26906	70%	20180

Source: Researcher Calculation.

The table above shows that the direct labor costs per unit prior to the reduction of both automatic power engine products and automatic voltage regulator and inverter were amounting 10540, 29894, 47086 dinars respectively. The direct labor costs of one unit of these products after the reduction will be 7905, 22421, 26906 dinars respectively. The amount of the reduction in the cost of direct labor cost per unit of the company's products will be of 2635, 7473 and 20180 dinars respectively (Ismail et al., 2017).

Reduction of indirect costs: After proposing to increase the production capacity of automatic power engine, automatic voltage regulator and inverter to 80%, 80%, 70% respectively. Indirect cost can be calculated after increasing the production capacity as follows:

Indirect costs after increased production capacity = (actual cost per unit of indirect costs × current production capacity utilization ratio) ÷ utilization of the proposed production capacity.

Indirect costs after increasing the production capacity of the automatic power engine Product = (5916 × 60%) ÷ 80% = 4437 JD

After increasing the production capacity of automatic voltage regulator = (15590 × 60%) ÷ 80% = 11693 JD

After increasing the production capacity of the electric reflective product = (24057 × 40% (÷ 70% = 13747 JD

Accordingly, the cost of the unit produced explained by the indirect costs under the current situation, the proposed status of increased production capacity and the amount of cost reduction for the company's products are illustrated in table 7.

Table (7): Reduction of indirect costs of the unit produced by the products of the electronic Industries Company

Sr. No	Detail / Products	Current status		Proposed status		Per Unit cost reduction (1) – (2) = (3)
		Unit Cost (1)	Capacity utilization Ratio	Unit Cost (2)	Capacity utilization Ratio	
1	Automatic Motor Power	5916	60%	4437	80%	1479
2	Automatic Voltage Regulator	15590	60%	11693	80%	3897
3	Electro Reflective	24057	40%	13747	70%	10310

Source: Researcher Calculation.

The table 7 shows that the indirect costs per unit prior to the reduction of cost for automatic power engine, automatic voltage regulator and inverter were 5916, 15590, 24057 dinars respectively. Indirect costs per unit of these products reduced by the amount of 4437, 11693, 13747 dinars respectively. Thus the amount of the reduction in the indirect costs per unit after proposed increased production capacity will be 1479, 3897 and 10310 dinars respectively.

As a result of previous reductions in the cost of automatic power motor, automatic voltage regulator and inverter with respect to direct-pay and indirect charges, the cost of Kaizen for per uit produced after the application of the optimization technique is calculated and illustrated in the table 8.

Table (8): The cost of Kaizen for the unit produced by the products of electronic industries company after the application of continuous improvement technique

Sr. No	Detail / Products	Direct materials	Direct labor cost	Indirect costs	Total
1	Automatic Motor Power	17275	7905	4437	29617
2	Automatic Voltage Regulator	40654	22421	11693	74768
3	Electro Reflective	75772	26906	13747	116425

Source: Preparation based on tables (5), (6) and (7).

It is noted tht, the cost of Kaizen per unit of the automatic power engine was 29617 dinars, where the cost of direct materials, direct labor cost and indirect cost was 17275, 7905, 4437 dinars respectively. The cost of Kaizen per unit of automatic voltage regulator is 74768 dinar where the cost of direct materials, direct labor cost and indirect costs was 40654, 22421, 11693 dinars respectively. The cost of Kaizen per unit of the electrical inverter amounted to 116425 dinars whereas, the cost of each

direct materials, direct labor cost and indirect cost are 75772, 26906, 13747 dinars respectively.

After calculating the actual cost and the cost of Kaizen for the electronic industry company's products, the amount of the reduction in the cost of per unit produced can be calculated as shown in the following table 9.

Table (9): The amount of the reduction in the cost per unit of electronic Industries company products after the application of continuous improvement technique

Sr. No	Detail / Products	Actual Cost (1)	Cost of Kizen (2)	Per Unit cost reduction (1) – (2) = (3)
1	Automatic Motor Power	36780	29617	7163
2	Automatic Voltage Regulator	93312	74768	18544
3	Electro Reflective	160286	116425	43861

Source: Preparation based on tables (1) and (8).

As illustrated by the above table, the amount of reduced cost for automatic power engine, automatic voltage regulator and electric inverter was 7163, 18544, 43861 dinars respectively. This indicates the importance of continuous improvement technique in reducing the costs in sampled company's products. The profitability of a single unit of automatic power

motor, automatic voltage regulator and inverter can be calculated before and after the application of continuous improvement technique, as presented in the table 10 (Harun & Yuspin, 2019).

Table (10): Profitability of the products of the electronic Industries Company before and after the application of continuous improvement technique

Detail / Products	Automatic Motor Power	Automatic Motor Power	Automatic Motor Power
Before applying continuous improvement technique:			
Sales revenue-costs (actual cost)	40000)36780(	90000)93312(	150000)160286(
= Net profit (loss)	3220	)3312(	)10286(
After the application of continuous improvement technique:			
Sales revenue-costs (kaizen cost)	35000)29617(	85000)74768(	140000)116425(
= Net profit (loss)	5383	10232	23575

Source: Preparation based on tables (1), (3) and (8).

It is evident that the automatic power engine product has achieved a net profit of 3220 dinar before the application of continuous improvement technique and the net profit increased to 5383 dinars after the application of this technique. The product of automatic voltage regulator was bearing net loss of 3312 dinars before the application of continuous Improvement techniques. The net profit has become 10232

dinar after the application of these techniques. While the electric inverter product was suffering with net loss of 10286 dinars before the application of continuous improvement technique and achieved net profit 23575 dinar after the application of this approach. Therefore, the application of continuous improvement technique in the company has helped to reduce the cost of automatic power engine, automatic voltage regulator and electric inverter from 36780, 93312, 160286 dinars respectively to 29617, 74768, 116425 dinars respectively. Furthermore, reduction in the cost of these products did not negatively affect their quality and has been Improve the value of these products by improving their quality and lowering the selling price to 35,000, 85000, 140000 dinars respectively.

5. CONCLUSION

Continuous improvement technique is one of the strategic cost management techniques that seek to carry out a range of activities and efforts aimed at simplifying the procedures and processes for product design and production for costs reduction, improve quality and reduce both design and production time. There are six tools for the application of continuous improvement technique which is the analysis of Pareto, cause and effect diagram, quality loops and the method of five steps and benchmarking. It consists of six elements namely customer focus, staff attention, staff training, integrated planning and decision making on Research basis. So that continuous improvement technique can be applied effectively and achieve the desired objectives. The application of continuous improvement technique requires four consecutive steps:

planning to address the problem posed after collecting data. Then Implement the plan to perform the required improvements, record the results of the improvement and record the reports and finally correct any deviations from the plan set. Continuous improvements techniques help reduce costs through the use of two complementary methods, the target cost and the cost of Kaizen. The target cost method helps reduce costs during the design phase, and the method of Kaizen cost helps to reduce costs during the production phase. These techniques improve the value of products for both company and customer (R & M, 2017). The application of continuous improvement technique in the electronic Industries Company help in reducing costs and improving the value of products, so the following results are achieved:

1. The actual cost per unit of the automatic power engine, automatic voltage regulator and inverter was 36780, 93312, 160286 dinars respectively. The target cost of these products amounted to 31818, 77273, 127273 dinars respectively.

2. The cost of kaizen after continuous improvement of the automatic power engine, automatic voltages regulator and electric inverter was 29617, 74768, 116425 dinars respectively. Thus the unit cost will be reduced by the amount of 7163, 18544 and 43861 dinars respectively.

3. The application of continuous improvement technique will help to reduce the prices of the company's products and improve their profitability. Thus improve the value of products for both the company and the customer.

Recommendations

In the light of the findings of the research, this study concludes the following recommendations:

1) Develop cost systems in a manner that is compatible with the requirements of the business environment to take advantage of the technical and managerial capabilities. The most important approach is continuous improvement technique which helps to reduce unnecessary costs. In addition to this, it helps in improving the value of products for customer and company as well.

2) The proper understanding of tools and elements of continuous improvement technique in required in applying this technique in order to achieve the desired objectives. The costs reduction, improved quality and efficient production processes thus leads to advantage competitiveness over competitors.

4) Integrated approach of using target cost and the Kaizen cost in the application of continuous improvement technique, reduce unnecessary costs (especially during the design and production stages) that do not add value to the economic unit and the customer.

5) The electronic Industries Company can follow the specific methodology to initiate the continuous improvement technique in reducing costs and improving the value of products by using integrated framework of target cost and cost of kaizen.

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