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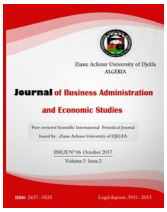

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The role of standard costs in controlling cost components Case study of the Algerian plumbing company ALFET unit Tiaret

دور التكاليف المعيارية في الرقابة على عناصر التكاليف دراسة حالة المؤسسة الجزائرية للسباكة ALFET وحدة تيارت

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Abstract

We aim through this study to know the role of standard costs in controlling the elements of costs, as they are among the methods that the institution cannot dispense with in controlling, identifying and analyzing deviations, good in advance through forecasting and future estimation.

Based on the applied study of this topic, it can be said that the National Plumbing Corporation in Tiaret is facing the problem of determining costs due to high prices and the difficulty of communication due to the Corona virus

Keywords

costs ; standard costs ; deviation analysis ; cost control ; Algerian plumbing establishment ;

JEL Classification Codes : M40; M41; M49 ; J30; J32

الملخص

نهدف من خلال هذه الدراسة إلى معرفة دور التكاليف المعيارية في الرقابة على عناصر التكاليف لكونها أسلوب من بين الأساليب التي لا يمكن للمؤسسة الاستغناء عنها في الرقابة وتحديد الانحرافات وتحليلها.ولهذا قمنا بتحديد عدة جوانب يمكن من خلالها استخدام التكاليف المعيارية في المؤسسة بكونها أداة من أدوات التخطيط الجيد مسبقا من خلال التنبؤ والتقدير المستقبلي.

وانطلاقا من الدراسة التطبيقية لهذا الموضوع يمكن القول بان المؤسسة الوطنية للسباكة بولاية تيارت تواجه مشكلة تحديد التكاليف بسبب ارتفاع الأسعار وصعوبة التواصل بسبب فيروس كورونا .

الكلمات المفتاحية

التكاليف ؛ التكاليف المعيارية ؛ تحليل الإنحرافات ؛ الرقابة على التكاليف؛ المؤسسة الجزائرية للسباكة.

تصنيف JEL: M40 ؛ M41 ؛ M49 ؛ J30 ؛ J36

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I.INTRODUCTION:

Standard costs are very important in an organization as they provide management with information and data and help it perform its basic functions. And that as one of the means of controlling the actual costs by identifying the differences between them and analyzing them in the institution to determine who is responsible for them.

The application of the standard costing system aims to reduce the cost of the product in the production institution, and this is done by controlling the cost elements of material cost, labor cost and indirect industrial costs. Control over these elements helps reduce the cost of products, which leads to achieving the goals of the institution in increasing its profitability and compete its products in the market efficiently and effectively.

Based on the foregoing, it can be said that the standard costing method enables the organization to know its future status by estimating its costs in advance and trying to accurately estimate potential results and achieve pre-planned goals.

1-1 The problem of the study: In light of the foregoing, the problem of our study crystallizes as follows:

- How does the standard costing system contribute to cost control in the National Plumbing Corporation - Tiaret Unit -?

1.2 The importance of the study: The standard costing system is of great importance because of the direct control it provides in the production process through:

- The role of the standard costing system in determining deviations.
- The importance of using the standard costing system as a tool for controlling costs in the organization.

The integration of control and performance evaluation in light of the application of the standard costing system affects the activation of product quality in the institution.

II. THEORETICAL FRAMEWORK AND PREVIOUS STUDIES:

For the purpose of answering the problem of the study, we divided the research into the following main axes:

What are the standard costs?

The relationship between cost control and standard costs

• The role of the standard cost system in cost control in the National Plumbing Corporation - Tiaret Unit.

1.What are the standard costs?

A.The concept of standard costs: it is defined as the cost determined in advance according to scientific and auditing foundations, by setting standard standards in quantity and value for the elements of costs. The cost component is based on which the actual cost is evaluated and compared with the standard to find the differences between them as a culmination of the target program.

- It is measured on the basis of standards for a specific volume of production and achievement, which may be a single unit. The standard cost of a unit of product is equal to the standard cost of

each of the resources, wages, and industrial services expended in its production on the basis of the cost standards specified in advance for the relationship of the unit of the product to all these elements. The standard cost consists of a technical standard representing quantity or time and a financial standard representing price. In another concept, they are the costs that are planned for one unit of the product or several units that are produced during a certain period in the near future in the light of the current and future operating conditions. They are called estimated costs because they are based on the use of historical data as a sense to present costs per unit produced for the period. Standard costs represent what the unit cost should be.

From the above, standard costs are defined as the cost that is predetermined based on scientific foundations and importance by specialists in order to be used by management, senior centers and other administrative levels and to achieve control over costs, products and services.

B. The importance of Standard Costs:

In order for the standard costs to achieve the actual control and the objectives of the management, it conducts a careful study of the reasons for these deviations, which come on two main reasons (berger, 2011):

- An error in estimation, and this requires amending the standard, and the deviation will not appear in the future if it is the cause.
- If the deviation is inappropriate, meaning that the cost of the standard is less than the actual cost, and the reason is due to the negligence or neglect of the management or workers in using the cost elements. In this case, the higher authority must be aware of what happened in order to take appropriate decisions.

The costing information system has three main uses:

- Assisting management in planning the operations of the economic unit and making important decisions such as product pricing decisions, decisions to provide production capacity, decisions to choose manufacturing methods, decisions to expand the volume of activity, and decisions about sales methods and methods of control.

Achieving control over the uses of cost elements.

Measuring the actual costs of products and services.

The importance of using standard costs can be defined as follows:

* Determining the production cost presented on a scientific basis.
* Determining the selling price of the products.
* Study the minutes, conditions and needs of work.
* Simplify the costing procedure as a result of standard profiling and characterization as performance.
* Basis for preparing planning budgets.
* A measure of the efficiency of the basic work.

2. Standard cost setting criteria:

In the standard costing system, cost estimating methods are developed, where they are displayed and an indication of how each of the direct materials that go into the formation or installation of the product are used, which are limited according to documents for each product or production order separately, and direct wages are a quantity multiplied by the price and the quantity is the number

Hours and price is the average wage of a good, and indirect industrial costs are in turn made up of items such as indirect materials, indirect labour, and miscellaneous industrial services in multi-divisional industrial enterprises.

A. Standards for direct materials:

This standard clarifies the quantitative standards for materials of each class that are required to produce a unit of a specific product. The price standards for these items are also set as follows:

- **Quantity criterion:** After the specifications of the product and its design are determined, the amount of raw materials needed to produce a unit of the product is determined. The necessary raw materials, taking into account the expected loss and damage during the production process, and prepares for this the so-called standard raw materials list.
- **Price criterion:** The cost of direct materials is determined by weighting the prices obtained from the accounting departments, the departments in charge of purchasing, as well as stores. warehouses to production.

After determining the quantities of materials and their prices, the analytical accounting department prepares the standard costs on the basis of a single unit and then on the basis of the quantity that will be produced. Hence

It becomes clear that there are two factors in determining the standard cost of the raw materials used, which are the quantity and prices of the raw materials. Therefore, the cost equation for the materials takes the following form (bragg, 2019):

Standard cost of materials = Standard quantity x Standard price

- Direct material cost variance analysis

* **Material quantity deviations**: It is a deviation resulting from the difference in the actually used quantity from the standard quantities specified for production during the period, and it occurs for the following reasons:

- Negligence on the part of the workers in the handling process.
- Not to return unused materials to the stores or not to inventory them in the production department.
- Occurrence of changes that were not taken into account the status of the standard quantity:

Change in machines, tools and methods of operation.

Substitution of raw materials.

A change in the valuation of the item.

- Change in machines, tools and methods of operation.
- The inability to maintain machinery and equipment in good condition, which leads to an increase in the use of raw materials.

Quantitative deviations are calculated as follows:

Quantitative deviations = (standard quantity of materials of production for the period - actual quantity used to produce the period) x standard price of the raw material

Standard quantity of materials for the production period = number of units produced x standard quantity of materials per unit of product

• **Material price deviation**: This deviation occurs as a result of the difference in the actual price from the standard price per unit of the raw material. The most important reasons are:
Fluctuations in purchase prices from the market for raw materials.
Purchasing from distant markets leads to an increase in transportation costs.
- The decrease in the quantity purchased during transportation, which increases the unit cost.
- Pay additional handling costs or costs for express transportation.
Buying in atypical quantities.
The task of the cost accountant is to conduct this analysis with an explanation of the reasons for the occurrence of each type of component relative to each, and each type of price deviation must be expressed as a percentage of the standard price.
But how is the deviation of the price of raw materials calculated: does it calculate the purchased raw materials or does it calculate the raw materials used:

Deviation of the purchase price = (standard price - actual price) x quantity purchased

Price deviation of materials used = (standard price - actual price) x quantity actually used for the production period

(-) Inappropriate (+) Appropriate

- Direct Wages Standards:
Direct wages are the number of direct labor hours multiplied by the hourly wage rate. The direct wages component is calibrated according to the same bases followed when calibrating the direct materials component, which are the bases that constitute the actual calibration, which are as follows:
*** Wage rate criterion:** The wage rate criterion is calculated by dividing the total wages consisting of cash wages plus in-kind and the institution's contribution to the total insurances on the working hours during the period for which it is paid. For historical data on the past periods directly or corresponding to the period of validity of the standard and arriving at the wage rate that prevailed during the past periods, and it can be considered as a basis for the wage rate standard, then this rate is adjusted in addition to it or deducted from it in the light of the type of labor currently available to the institution and in light of the current conditions of the institution, from Where the salaries and wages it bears, but if there are changes that have occurred that may affect the wage rate, the product may require a specific skill or quality that is not provided to the institution, which may resort to hiring workers with the skill required to fulfill the technical assets and this may lead to an adjustment of the wage rate by increase or decreases.
*** Standard working hours:**
By following the realistic calibration method, the direct working hours criterion is reached as follows (costs, 1939):

- According to the technical specifications of the product and according to the skill of the labor needed to operate it, the direct working hours necessary for the product are determined and are related to the same product regardless of other variables.
- Based on historical data and past experience, the standard number specified in the previous step is modified.

With regard to employment, the inevitable allowances are related to the time of compulsory rest and the time of prayer and food.

For machinery, the operation of the product or process may require equipment and maintenance of machinery during operation.

- Permissions for machines are also determined from previous experience, and the use of raw materials of a certain quality or quality may lead to an increase or decrease in the hours of operation of the product on the machines.

*** Direct Wage Deviation:**

Standard labor costs and wages are determined on the basis of two main factors: time and labor.

If the deviation lies in:

Deviation in the time spent: It is also called the efficiency deviation, which is the time spent to produce one unit or complete a certain process that does not match the specified standard time.

Deviation in the paid wage: It is the wage actually paid for the hour of work that does not match the pre-determined standard wage rate, and this deviation is caused by several external factors and is calculated as follows:

Standard Quantity Production Time = Unit Standard Time x Quantity Produced

- Standards of Indirect Industrial Costs:

The multiplicity of items of indirect industrial costs and the inability to link them to a specific production process as general costs that all production processes benefit from make calibrating these costs subject to some difficulties (2017):

The nature of the indirect industrial costs associated with the production process as a whole and not with a specific product.

Indirect industrial costs include many heterogeneous cost elements, there are items affected by the volume of activity, increase and decrease, and there are general items related to the factory as a whole, such as rent and others.

Indirect industrial costs are relatively small compared to direct industrial costs, which makes them less important.

*** Detection and analysis of indirect industrial cost deviations**

After determining the share of each product or each production order of the estimated industrial indirect costs, and after the actual expenditure of the items of indirect industrial costs of indirect materials, indirect wages and other industrial expenses, then a comparison is made between the estimated industrial indirect costs with The actual standard and often the numbers do not match, i.e. the deviations appear between them, then the estimated indirect industrial costs are more than the

actual indirect industrial costs, so the deviation is always appropriate, but if the estimated costs are less than the actual indirect industrial costs, the deviation is inappropriate and is debited.
After studying the reasons for the deviation, whether it is appropriate or inappropriate, it is due to an error in estimating the indirect industrial costs

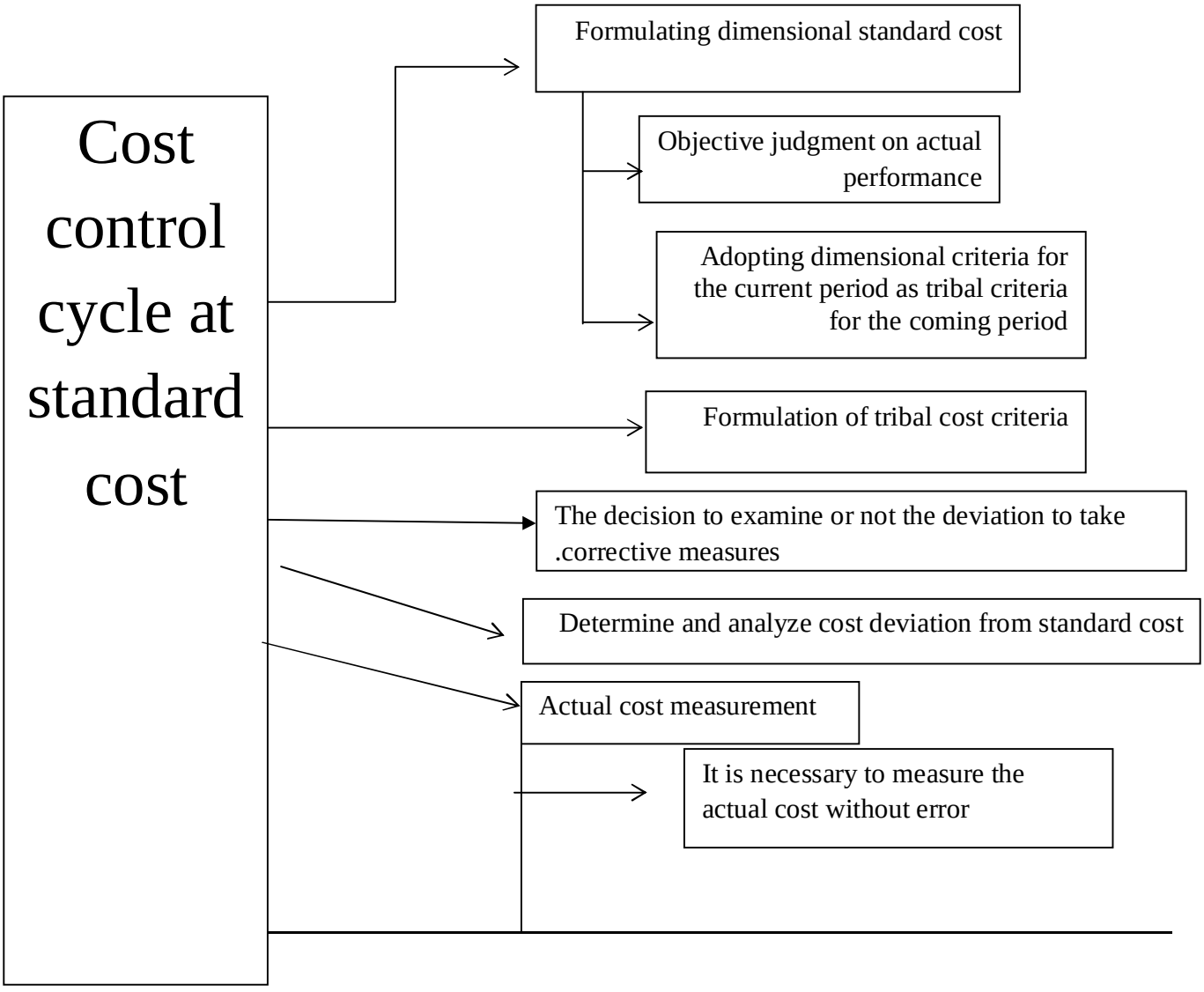
Standard manufacturing overheads = Standard hours of actual production x Standard chargeback rate.

*** Deviation in Industrial Indirect Costs:**
The total deviation of indirect industrial costs may be a positive deviation in favor of the institution, and it may be a negative deviation that is not in the interest of the institution.

3. The relationship between cost control and standard costs:

A. Standard cost control cycle: For the actual cost control cycle, its various stages must be completed in order for this cycle to achieve its objectives, bearing in mind that any failure to perform a certain stage of the actual cost control cycle would spoil the results that It could have been achieved if these stages were done with a high degree of accuracy and this can be illustrated by the following figure.

Figure (01): Cost control cycle at standard cost



The actual cost is measured in the manner of the standard cost measurement

Source : (baden, 2013)

B. The nature of the relationship between cost control and standard costs: The cost model is considered one of the important reasons for control in the industrial establishment, because this model can be a reflection and expression of rational economic behavior in those units if it is designed and applied on the basis of responsible accounting and sound scientific and practical foundations that represent The quality of the standard cost model in its ability to generate standard information appropriate for the purpose of using it under realistic conditions and since the goal is to achieve effective control over performance efficiency.

Cost control is also one of the most important objectives of cost accounting, and that is why control contributes to reducing costs by studying operations

And the development of its implementation method to increase the outputs of the activity with the stability of the inputs or the stability of the outputs of the activity while reducing the inputs, which leads to higher efficiency.

Since the relationship between standard costs and cost control is a direct relationship through the need for each other, control includes performance review to verify its compatibility with objective plans and its conformity with specific performance standards. Thus, there is no control without prior planning.

In order for the oversight to be effective and reliable, it must include:

Achieving the required goals and setting optimal ways to implement them.

- Setting control standards that include determining the effort and the relationship with results and performance.
- Directing, supervising and ensuring that plans are developed and implemented.
- Study and analysis of deviations and access to the facts.
- Addressing the existing conditions for negative deviation.

The standard costing system aims to identify and analyze deviations in the various elements of costs in order to provide the necessary information to measure efficiency and improve actual performance. It is achieved according to:

- Setting target performance standards.
- Directing the actual activity during implementation on the basis of the actual results.
- Comparing actual results with standards and identifying deviations.
- Examining and analyzing fundamental deviations to find out their causes.
- Creating reports.
- Take appropriate corrective action.

III.The role of the standard costing system in cost control in the National Plumbing Corporation - Tiaret Unit:

Algerian Plumbing Company - Tiaret is a company with a capital of 1200000000, a branch of the Vondal industrial complex, located in the southwest of Algeria, with its headquarters in the industrial zone of Zaaroura.

It is in charge of producing, developing and marketing iron plumbing products (iron and steel moulded pieces). The weight of the molded pieces ranges from 50 kg to 500 kg.

The institution provides products and services that specify the conditions for their implementation in a contractual manner with customers, and there are other activities for it to know mechanical manufacturing centered on the cement sector, the plumbing sector, the public works machinery sector, the agricultural machinery sector.

One of its most important tasks is the production and marketing of wrought and smelted iron materials or steel, in addition to some secondary activities.

A. Determine the differences between the actual cost and the standard cost of the product:

These variances are represented by determining the deviations between the estimated costs determined in advance and the true costs during a monthly period.

The National Foundation for Plumbing in the state of Tiaret produces the steel product, as the production of 6 tons of steel requires the following elements:

At the end of January, the elements of actual activity were recorded in the accounting as follows:

Boucages require 900 tons with: 25.5 milliliters per ton to produce 6 tons of steel

Ferrochrome requires 180 tons: 269 chicken per ton to produce 6 tons of steel

Direct labor: 8 hours, at a value of 219.58 dinars per hour. To produce 6 tons of steel

Indirect burdens: they collect electricity with water.

The elements estimated to produce 20 tons of steel were as follows:

For boucages, there are 700 tons of 20 chicken per ton.

It requires 200 tons of ferrochrome at 221.85 per ton.

As for direct labor, 7.6 hours at 218 per hour.

The indirect burdens are electricity and water.

- Calculate the difference between real costs and standard costs:

The difference between them can be determined as follows:

- Calculation of boucages material as follows:

700t → 20 t

x ⟶ 6t

x=700 ✕ 6/20

x=210t

Calculation of ferrochrome material as follows:

200t → 20t

x ⟶ 6t

x=200 ✕ 6/20

x=60t

Direct labour:

7.6h ⟶ 20t

x ⟶ 6t

x=8✕ 6/20

x=2.28h

Table(01): Comparison between standard and real costs

Standard Costs - Real Costs

The Difference		Real costs			Standard costs			Statement
-	+	M	p.v	Q	M	p.v	Q	
18750		22950	25.5	900	4200	20	210	Boucages
35109		48420	269	180	13311	221.85	60	Ferrochrome
1259.6		1756.64	219.58	8	497.04	218	2.28	Direct labour
55118.6		73126.64			18008.04			Total

Source : Documents provided by the accounting and finance department.

- Analyze the difference of the material bocages.:

The boucages difference analysis is represented in the following table:

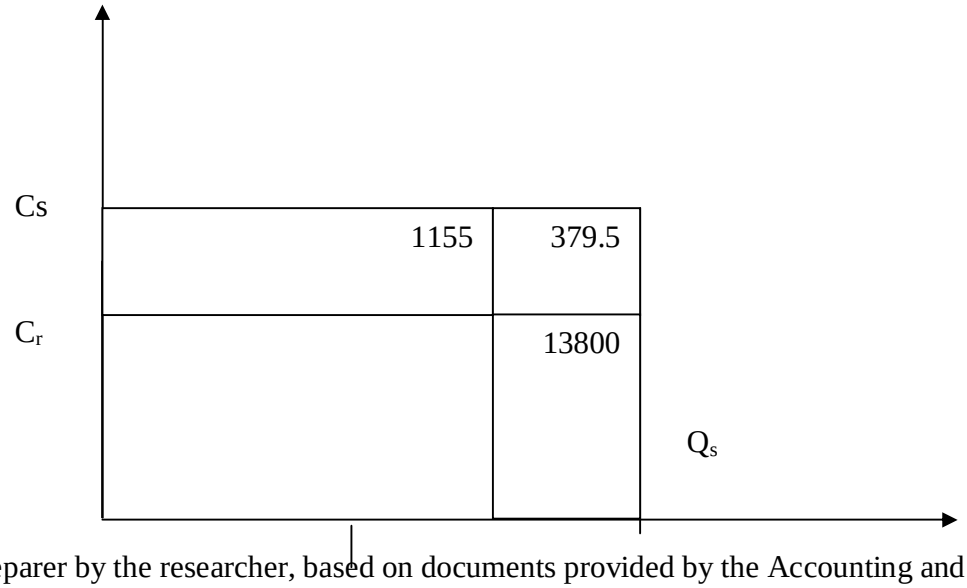
Table (02): Boucages difference analysis

Statement	+	-
joint teams Cs		138000
(210-900)✕ 20		
Cost difference		1155
(20-25.5)✕ 210		
Quantity difference		3795
(20-25.5)(210-900)		
Total		18750

Source : Documents provided by the Accounting and Finance Department.

It is clear from the table that the difference in quantity, cost difference and subscriber difference is negative due to the purchase of raw materials at a high price.
Hence, the table will be shown in the following figure:

Figure (01): Boucages material difference curve



Source : Preparer by the researcher, based on documents provided by the Accounting and Finance Department.

- The analysis of ferrochrome is a substance as follows:
This is analyzed as follows:

Table (03): The difference of ferrochrome material.

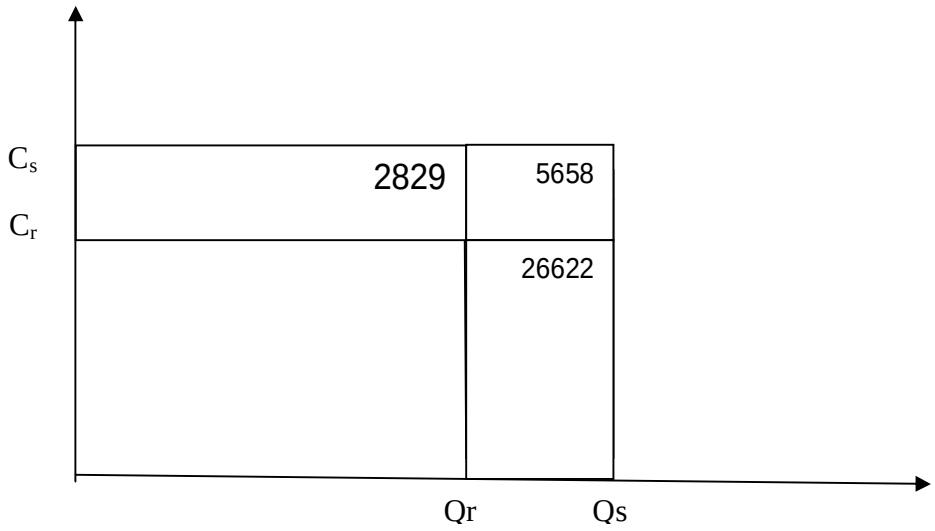
Statement	+	-
Quantity difference Cs ΔQ (60-180) 221.85		26622
Cost difference Qs Δc (221.85-269) 60		2829
Subscriber differenceΔc ΔQ (221.85-269)(60-180)		5658

Total		35109

Source : Preparer by the researcher, based on documents provided by the Accounting and Finance Department.

By analyzing the table, we find that the quantity difference, the price difference and the subscriber difference is negative, because the real costs are higher than the standard costs, and the one responsible for this is the purchasing department.
The graphic representation of the table is as follows:

Figure (02): The difference curve of ferrochrome



Source : Preparer by the researcher, based on documents provided by the Accounting and Finance Department.

- Direct Labor Teams Analysis:
The direct labor force teams can be shown through the following table:

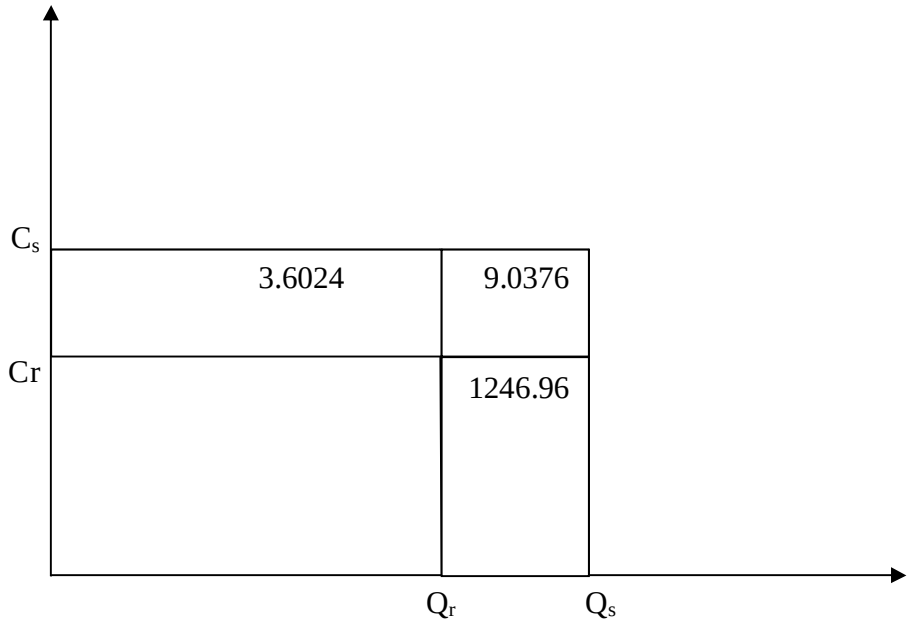
Table (04): Direct Labor Teams:

Statement	+	-
Quantity difference CsΔQ (2.28-8) 218		1246.96
Cost difference QsΔC (218-219.58) 2.28		3.6024
Joint TeamsΔQΔC (2.28-8)(218-219.58)		9.0376
Total		35109

Source : Preparer by the researcher, based on documents provided by the Accounting and Finance Department.

We conclude from the table that the wage difference and the time difference are negative, due to the large time spent in the production process.
The table is represented in the following figure:

Figure (03): Labor difference curve



Source : Preparer by the researcher, based on documents provided by the Accounting and Finance Department.

- Determining responsibilities:

The method of defining responsibilities is based on the standard cost in order to assess the ability of the institution. As well as by calculating the differences between the real cost and the standard cost and for the various costs, and responsibilities are determined on the reasons that led to the occurrence of these differences.

- Defining Responsibilities:

- Determining responsibilities for the boucages:

Based on the analysis of the boucages material difference for the National Plumbing Corporation, we find the following differences: (quantity difference - cost difference - subscriber difference). It turns out that the difference in quantity and cost difference is negative. The responsible for the negative difference is the purchasing department because of the purchase of a material at a high price, which It was planned in advance. The joint team, which was also negative, was responsible for the production department, which used these materials unreasonably.

- Defining responsibilities for ferrochromes:

By analyzing the differences from this raw material, we conclude that the price difference and the cost difference are negative, i.e. the standard costs are less than the real costs. The responsible for this negative difference is the purchasing department, in order to purchase the material at a high price. This means that the institution has incurred real costs greater than the pre-programmed or estimated costs And planned in advance, so the institution is in poor condition.

-Determining responsibilities for direct labor:

We conclude by analyzing the difference on direct labor that the wage difference and the time difference are negative, i.e. undesirable. This means that the estimates by the officials or managers were incorrect and the responsibility falls on the production department in the time that took place in the production process and the interest of the users, which led to raising wages and increase in profitability.

III.STUDY RESULTS (ANALYSIS AND DISCUSSION) :

After making all the differences, the institution evaluates for deviations and the various procedures to treat them or not to repeat them in the future, and they are represented in the most important decisions taken in the various departments of the unit.

- The most important decisions taken in the procurement department:

These decisions were:

Reducing the purchase costs of raw materials as much as possible to achieve the greatest goal.

Choosing the best quality and raw materials when purchasing.

- The most important decisions taken in the production department:

- It causes major market changes that occurred recently due to the Corona virus, which led to the intensity of competition between companies, which made the method of standard costs and discretionary budgets an old method that changes an advanced one.

- The most important decisions taken by the Human Resources Department:

- Due to the Corona virus crisis, the Foundation confirmed the restructuring of human resources by reducing the number of workers.

- Motivating workers in the vocational sector by promoting them after three years of experience.
- Increase in wages and grants to workers.

IV.CONCLUSION:

The standard costing system has a role in tightening control over costs in industrial establishments and providing information that helps in controlling costs elements by comparing actual costs with standard costs, analyzing deviations, and taking the necessary measures to avoid extravagance and assisting management in carrying out its functions and taking appropriate decisions.

The National Foundation for Plumbing Battiaret tried to control the cost of the product in light of modern environmental and economic changes. This led to the achievement of the first goal of the institution of controlling the cost of the product and trying to reduce it in order to achieve competition in the market and the institution's resistance to survival.

A. The Results:

- The application of the standard costing system helped in controlling the cost of work and then reducing it.
- Adoption of the standard costing system contributed to the process of monitoring workers' wages and determining the deviations of the wage rate and the deviation of work efficiency, thus reducing the cost of work.

The application of the standard costing system helped the industrial establishments to make optimal use of the available energies and thus reduce costs.

The adoption of the standard costing system in industrial establishments helped in controlling the elements of costs, especially indirect costs, and then reducing them

B. Recommendations:

- Organizations should adopt a standard costing system that allows optimal use of available resources, which leads to maxim zing profitability and reducing costs to a minimum.
- Work on the participation of all departments and all departments and employees in the institutions in the application of the standard cost system and take advantage of its advantages.
- Institutions must adopt modern control methods in addition to the standard costing system to provide products that are compatible with customer requirements and at a competitive cost

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