

The role of budget sustainable continuous improvement in cost management and tools

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Abstract :The world is witnessing great technological progress, which in turn led to the emergence of intense competition between economic units in several areas, the most important of which is the preparation of budgets for continuous improvement and preservation of the environment and its reflection on cost management to keep pace with developments in the business environment. Many techniques and administrative methods have emerged in cost management and reduction in a way that achieves customer satisfaction, and one of these methods is Budgetingsustainable continuous improvement, as its attention is focused on the philosophy of continuous improvements that preserve the environment, even if these improvements are simple. They are large in their entirety, as they have a large net impact and without the economic unit incurring any large costs, and the process of budgeting for continuous sustainable improvement is carried out by the staff of the economic unit and with the support of senior management.

Keywords: Budget Sustainable Continuous Improvement, Cost Management.

I.Introduction

The technological development that has occurred in recent times has been reflected in the intensity of competition between economic units, which led to interest in providing a product of high quality and lower cost than competitors, and this competition led to pushing economic units to search for advanced administrative methods to reduce costs, and one of these methods is to budget sustainable continuous improvement, so the research problem can be posed through the following question (Is when using sustainable continuous improvement budget and cost management leads to cost reduction in the production process). The research aims to employ the budget of sustainable continuous improvement in the Kufa cement plant to manage costs and their tools. The research topic is one of the important topics in the world of commercial and industrial business, especially at the present time due to the emergence of free trade and rapid changes in the business world and technological development, which made the search for new concepts and methods to achieve competition between economic units by reducing costs. The research is based on the following basic

premise: that employing the budget for sustainable continuous improvement contributes to cost management and its tools.

II. Literature review

The first topic/knowledge foundations on budgeting sustainable continuous improvement.

First: The concept of sustainability

Sustainability is one of the new concepts through which the treatment related to environmental, social, and economic impacts, and interest in the subject of sustainability has increased significantly at the international level, especially in recent times following what the world faces from various environmental disasters, which made the overview change towards the recognition and interdependence between environmental problems and problems of human welfare, hence the term sustainability gained attention. Perhaps the most prominent aspects of this interest is what was stated in the report (Brundtland 1987), the famous issued by the "World Commission on Development and the Environment" under this report the process of integrating economic needs and environmental and social needs, as the first definition was formulated defined sustainable development as development that tries to meet the needs of the present society and not to take risks and try to prejudice the ability of future generations to meet their needs (Ismail, 2011: 35), Gary ((2011:97-111) showed that sustainability goes beyond environmental and social issues in that it includes the sustainability of economic units to include production, marketing and sales, as well as financial and legal sustainability.

From the above, the researchers believe that sustainability means the use and protection of resources in a way that enables people to meet their current desires and needs, and that future generations are able to achieve their needs and meet all economic and social needs.

Second: Dimensions of Sustainability

The concept of sustainability dimensions aims at the interaction between the economy, the environment and society, and this is part of the new business map, which began to move away from the prevailing industrial mental, which looked at natural resources, people, and capital, available and unlimited resources to turn into a sustainable mentality, which made it clear that these resources are limited and must be taken care of and maintained (Quesada et al, 2010:2).

1. The economic dimension: includes all levels of consumption that waste energy and resources used, with the need to manage these resources effectively, ensure their continuous flow, maintain the appropriate use of capital, as well as use available resources and not harm the rights of future generations (Al-Ghamdi, 2013: 21). He points out (Al-Sawi,(2012: 105). The economic dimension aims to work to improve the level of human welfare by increasing the per capita share of goods and services and seeking to achieve economic efficiency, by following the optimal ways to use the available scarce resources, and this dimension covers indirect economic effects, economic performance, and market presence

2. The environmental dimension: Abubakar (2014:36) (pointed out that sustainability aims to preserve the natural

resources necessary to meet human needs, that the economic unit that focuses its attention on how to protect the environment from damage and damage does not only apply sustainability, but also obtains the acceptance of public opinion and society, which is a business strategy aimed at achieving great profits. Winkler, 2006:13-14) The environmental dimension is built on the basis that each ecosystem has certain limits that cannot be exceeded through the consumption and depletion of materials, and therefore if those limits are exceeded, it will lead to the degradation of the ecosystem.

3. The social dimension: It is the means to achieve the goals of environmental and economic sustainability, as it requires improving the lives and quality of individuals, preserving the environment from overexploitation and preserving natural resources (Abubakar, 2014: 38).

Third: Sustainability goals. Sustainability seeks to achieve a number of goals as follows (Mahmoud et al., 2012: 231), (Shaheen, 2013: 44), (Omar, 2013: 3):

1- Exerting efforts to achieve a better life: This is done by following up the relationship between population and environmental activities through the process of planning and implementing development policies for a better life in society economically, socially and environmentally.

2- Raising awareness of the community towards existing environmental problems: This is achieved by increasing the population's sense of responsibility towards these environmental problems and active participation to find appropriate solutions to them through the preservation of natural

resources and the optimal use of them without prejudice to the right of future generations.

3- Cooperation between countries in order to meet environmental, economic and social requirements: by dedicating efforts to identify the problems faced by the environment, working on planning and strengthening international capacities in order to apply the principles and practices of sustainability and shape policies with a budget and fair future vision.

4- Linking technological development to serve the goals of society: This is achieved through educating the population and their knowledge of the importance of various modern technologies related to the development field, which aim to improve economic life by knowing the importance of analyzing the political, economic and social conditions with a comprehensive and integrated vision that achieves the process of preserving available energy resources.

Fourthly: Budget concept

Reference (Lucy, 1996: 37-69) The budget provides for the specific activities of the costs to be undertaken to achieve the goals and objectives set out in the organizational plans. The budget consists of two components; the revenue side, which shows where the money is coming from, and the spending side, which shows how the money raised is spent.

There are two types of budgeting:

1. Periodic budget focused on public spending policies.
2. Capital budgeting focused on projects or long-term investments.

Conceptually, the budget is the main mechanism through which the policy intentions of any economic unit are translated into concrete actions and results on the ground. In all countries developed and The budget is an important political document through which governments and economic units determine their economic and social priorities and determine the direction of the economy. In the public and private sectors, budgets are legal instruments that allow taxation and incurring public spending. Therefore, any budgeting process adopted by a public or private sector organization must be evaluated on the basis of its effectiveness as a central policy instrument to achieve set goals and objectives. and his sign (Lucy, 1996:191).

Fifth: How to prepare a continuous improvement budget

Economic units nowadays and in light of the technological developments of production methods face intense competition, which has made economic units need advanced technologies in the preparation of their budgets and the process of estimating costs to achieve profits and accommodate rapid changes in the business environment (Pazarceviren et al, 2015: 218) Kaizen is a practice of continuous improvement of operations and cost reduction. The concept tends to achieve gradual improvements over a long period of time. This concept can be applied to budgeting by incorporating expected cost reductions into the planned results of the work. This approach can be used to reduce costs below their current levels on an ongoing basis. Kaizen budget requires a great deal of

planning by management, as they must allocate sufficient time and resources to examine all aspects of the business, identify possible improvement projects, and ensure that these projects are successfully completed. also

The costs of these improvement projects should be taken into account in the budget.

Sixth: The concept of budgeting continuous improvement

argues that the preparation of continuous improvement budgeting is part of a management system based on kaizen activity and total quality control. This system is similar to a type of contribution analysis based on direct costs. In this system, the distribution of indirect costs is not a concern, and he stressed that the cost associated with direct materials is difficult to reduce because they need negotiations to accompany purchase contracts, while variable costs can be monitored from the continuous improvement budget (Bhimani et al,2015:447) believes that the continuous improvement budget emerges from the womb of continuous improvement, which is a concern for management and that it represents future improvements.that have not been implemented instead of current practices. Horngren et al. (2018:222) refers to the importance of budgeting continuous improvement as the continuous improvement expected during the budget period in the budget figures (Al-Aboudi.2018:74) defined it as a budget that highlights continuous improvement through the product and aims to reduce the actual product costs to a certain level, and this is done through gradual

reduction over time, unlike the traditional budget.

Seventh: The Philosophy of Budgeting Continuous Improvement

This budgeting technique is attributed to Deming who is an American statistician derived from his experience in Japan after World War II. "The concept of kaizen comes from two Japanese words: 'kai' means change and 'zen', meaning 'good'. Thus, kaizen means continuous improvement. (Bhimani, et al, 2015:447). The continuous improvement budget consists of four phases (Cane, 1996:8).

1. At this stage each part of the process is analyzed to reach the small details of the process
2. How to optimize each part of the process
3. How to improve the performance of workers and improve equipment and materials
4. In the last stage, consider how to save time and reduce waste.

The continuous improvement budget design process integrates the improvements expected at the beginning of the year. It also encourages the analysis of performance improvements and cost savings and views employees as key to solving organizational problems. The comparison of benefits and costs of any improvement in terms of cost reduction under dynamic conditions best suited to the economic unit. The budget is assessed under the continuous improvement budget approach based on both the figures achieved, as well as the achievement of the expected improvements: "Budget figures are based on the changes to be implemented, not

on current practices or methods (Horngren, 2006:185).

Eighth: Objectives of the Continuous Improvement Budget

The Continuous Improvement Budget seeks to achieve the following objectives:

1. The continuous improvement budget aims to encourage economic units to take steps to make small incremental adjustments rather than large improvements that require a lot of money, that is, it requires a gradual and continuous cost reduction process (Horngren et al, 2015:220).
2. Highlight and focus on variable costs that can be controlled through continuous improvement and the possibility of reducing them, and among these variable costs are indirect industrial costs, direct work costs and other costs that can be controlled when implementing the budget
3. The continuous improvement budget seeks to provide adjusted estimates of continuous improvements that were created during the period in which the budget was prepared, and works to help economic units to monitor and evaluate performance in order to compare the real results of performance and deviations in the set goals (Al-Moussawi, 2010:17).
4. Striving for efficient and quick solutions to economic units
5. Work to monitor the reductions achieved in the production stages and reduce the gap between the target profit included in the budget and the estimated profit (Pazarceviran et al, 2015:219-221).

Ninth: Advantages of Applying Continuous Improvement Budget

Budgeting continuous improvement has many advantages that the economic unit is looking for in order to increase its profits and distinguish it from other competing economic units:

1. The budget of continuous improvement imparts performance and achieves cost savings unlike the traditional budget, which is based on budget commitment.
2. The continuous improvement budget measures the process of success by reducing costs and improving performance, which makes economic units integrate the budget with the overall performance and make improvements and adjustments continuously by the management of the economic unit. (Wright,2020:1)
3. The continuous improvement budget seeks to achieve the plans and objectives of senior management in reducing costs and eliminating defects in production.
4. Seeking to identify the possibilities of improvement that the administration can introduce in the production stages and is considered a control tool at all levels of management and control the completion of production processes within the economic unit (Gain, 2004: 11).

The second topic / the concept of cost management and its tools

First: The concept of cost management

Most economic units suffer from economic difficulties and financial pressures, due to fundamental issues such as cost management, preparation of financial budgets, development of future plans and budgets for the purpose of making decisions that are in the interest of the economic unit, that cost is the main focus of administrative decisions because of its impact

on many aspects of planning and control and can be defined as the process of sacrificing the resources of the economic unit to obtain a specific purpose, The cost management is the systems followed by managers for short-term and long-term planning, and the process of controlling the costs of materials to control the planning budgets set by the economic unit, and the management of the economic unit uses several methods and tools to manage the cost of its projects and production lines, and these tools that can be used are:

1. Target cost

(Briciu & Capusneanu2013:457) indicates that the targeted cost technology is not a new concept, although a number of companies in North America have fully adopted its elements, and that the beginnings of this technology dates back to the last century, specifically in the thirties of it, when the company (Volkswagen) targeted the company German and American company (Ford) Reducing the cost of their products. As for (Mansour, 2008: 5), it indicates that the beginning of the emergence of the targeted cost technology dates back to the year 1960 by Japanese companies with the aim of reducing the cost of their products and in a manner that achieves these companies the competitive advantage, noting that the term naming this technology in Japanese is (Genka Kikaku While it was translated into the English language with (Target Costing, but in the United States of America, the targeted cost technology was used as a comprehensive entrance to determine the price and cost management in the late eighties of the last century due to the loss of many American companies to a large part of its market share

(Drury, 2018: 245-247) It defines the targeted cost as one of the technologies that focus on cost management during the planning and design phase of the product by determining the target cost by offering the target profit margin from the target selling price. (Blocher, et. AL., 2019: 14) is the target cost. It is one of the technologies that can be applied in environmental conditions that witness intense competition, as the target cost is determined on the basis of the competitive market price, which ensures the achievement of the target profit with its ability to cover the bitter costs The product duck.

Hilton & Platt, 2020:681-682 define target cost as the long-term expected cost that is proactively identified in the early stages of the product life cycle and thus helps the economic unit to enter and survive in the market to compete successfully with its competitors.

The researcher believes from the above concepts that the target cost is the expected cost in the long term, which is proactively determined in the early stages of the product life cycle, and thus helps the economic unit to enter and stay in the market to compete successfully with its competitors.

2. Basic principles of target cost. The target cost technique is based on a set of principles as follows:

A. Price determines the cost: - (Price– led costing)

The target cost is usually market-oriented and determined by subtracting the target profit margin from the target selling price (Zaghloul, 2003: 13).

B. Focus on customer: (Focus on customer)

For the purpose of applying the target cost technique, it requires the management of economic units to listen to their customers,

and what products they require, and what specifications they are interested in, and what is the amount to be paid for the quality of the product, and as a result, the administration is in urgent need of this information to be adopted in the design of the product, and therefore it can be said that the target cost technique is moved by market forces (Abu Ragheef, 2013: 29) .

C. Focus on design: Focus on design)

Hilton (2002: 670-671) indicates that the engineering design of products is one of the basic elements of the target cost, as it requires engineers to design the product from start to finish so that it can be produced within the target cost limits with the identification of raw materials to be used, which are among the design activities.

D. Coordination between functions: - (Cross-functional involvement)

In order for the economic unit to achieve success by applying the target cost, it is necessary to coordinate all the functions performed by the different sub-units and divisions within the economic unit such as design, production, marketing, financing, suppliers, and others (CPA Canada, 2015:7).).

E. Value chain adaptation: - Value chain involvement)

In some circumstances, the current cost of the product may be higher than its target cost, and as a result, the maximum effort must be made to reduce the current cost by eliminating the cost that does not add value, and this is done by examining the value chain of the entire economic unit in order to help managers identify opportunities through which the cost is reduced (Taima, 2010: 244-245).

F. Product Lifecycle Guidance:-(Product Life-Cycle Reducing Costs)

The overall product life cycle should be adapted to both the producer and the customer by applying a target cost technique that includes purchase price, production costs, maintenance, and distribution costs. The focus on the life cycle of the product paves the way for the achievement of the goal of cost reduction throughout this cycle and up to the elimination phase (Hilton, 2008:649).

3. Target cost technology characteristics:

(Ghafeer, et al. 2014: 250, Al-Musawi, 2007: 68, Al-Haddad, 2011: 17, and (Al-Da'our, 2002: 30) indicate that there are several main characteristics of the target cost, the most important of which are the following:

- a) It is a customer-oriented technology to suit their desires and preferences during the planning stage of the product and during the design phase.
 - b) It is a structured work in order to reduce costs associated with the product and throughout the value chain.
 - c) The economic unit's focus on strategic objectives, such as maximizing revenues, reducing costs and striving to stay in a competitive market.
 - d) The target cost is suitable when applied in small industries and multiple products more than large and few products at the same time.
- And. Achieving harmony and cooperation between sub-units within the economic unit.

4. Benchmarking

Benchmarking is defined as the continuous process by which performance levels related to the production of products and services and the implementation of activities are compared against the best levels of performance in competing economic units or with those

economic units that have similar processes (Horngren, et. al., 2015: 917). It is also defined as the process of comparing the applications of a particular method on the product of an economic unit with the best applications of the methods applied in prominent economic units. As a result, information can be collected about the best applications that lead to improving product quality and value in a way that saves cost and time by avoiding mistakes made by others because they adopt a particular method (Slater, 2010: 70).

5. Value engineering

Value engineering is defined as a systematic process of designing a product according to the form in which its functional performance matches customer requirements and at the lowest possible cost, and it is also known as an organizational process to study the factors that affect product costs in order to find tools that work to achieve the standards required to be performed by the different functions of the product and at the target cost level (Anderson, 2005; 12-13).

6. Reverse-Engineering

Reverse engineering (also called disjointed analysis) is defined as the process of evaluating a competitor's product for the purpose of identifying areas of development of an economic unit's product, which as a result aims to improve its value by reducing its cost associated with its life cycle and along the value chain through which it passes (Drury, 2018: 593).

Datar & Rajan (2018: 488) point out that under reverse engineering, a competing product is analyzed with the aim of determining its functional performance with a clear view of the activities and processes that

contribute to its production as well as the associated cost.

7. Continuous Improvement

Drury (2012:14) states that continuous improvement is the continuous search to reduce costs and waste of resources in order to raise quality rates and perform activities that increase customer value.

From the foregoing, continuous improvement can be defined as the efforts made by the employees of the economic unit in order to improve the performance of operations to produce products at low cost and high quality to achieve the different desires of customers and enhance the competitive position of those economic units. Continuous improvement is important through the benefits that economic units can obtain due to continuous improvements or gradual improvements, eliminating waste and loss, controlling returns and reducing defective through working properly and from the first time in order to support the competitive position of the economic unit. The importance of continuous improvement is summarized as follows:(Saleh,2017:153)

- a. Continuous improvement technology focuses on improving processes from within the unit and thus has improved outputs.
- b. Units that seek to achieve outstanding performance in production or marketing and in human resources should pay attention to the application of continuous improvement technology.
- c. The continuous improvement technique focuses on identifying the human resources through which the quality and excellence of the unit are launched.
- d. The continuous improvement technique is concerned with the process of satisfying the

desires of customers through rapid response in order to achieve excellence.

The main objective of applying continuous improvement technology is to reduce costs and achieve the required quality of the product and strive to double profits in the unit and the goals of continuous improvement are referred to (Hilton,1999: 20).

A. Seeking to reduce the cost through the continuous reduction of costs related to the activities of the economic unit that do not add value and reduce loss and work on improvement during the industrial cycle, in addition to the proposals submitted by the employees, which are taken into account and the application of what is appropriate from these proposals as much as possible and as a result obtaining a production process with high efficiency, effectiveness and less cost

B. Quality improvement provides the economic unit with a road map that makes it persistent in the production of goods and services of high quality, and that this process is the starting point in order to maintain the right direction, and that the economic units have devoted their efforts to improving the quality of their products continuously and for a range of reasons, including competition in the markets and the desire to increase sales and grumbling by customers.

C. Customer satisfaction, the philosophy of continuous improvement depends on recognizing the importance of the customer and strives to satisfy him and try to satisfy his desires and maintain existing customers and get new customers, and that customer satisfaction and gain satisfaction is an important factor in strengthening the relationship with him, and that the time that is

important for the customer is the period between the delivery of the order to the arrival of products or services to the customer. (McNair, at el ,1992:101-106)

For continuous improvement, two entrances: the Japanese entrance and the American entrance

1. The Japanese Entrance: The "Kaizen" approach is used in this entrance, where the improvements in businesses are viewed through gradual improvement and continuously, contrary to the major and radical improvements that depend on improvements in the form of innovation and investment, where improvement is done with thoughtful and successive steps. (Abu Al -Nasser,2015:69).

The Japanese entrance depends on the collective effort and devotes it to improving all functions to make the process more efficient and effective. These improvements are carried out without complex technologies and a few costs. The input of continuous improvement focuses on simplicity in all operations by carrying out the division of these complex operations into its branches and then improving them, meaning that continuous improvement focuses on how to produce with limited efficiency and Limited resources (Abdulmouti 2018: 1-2) The Japanese entrance will be followed in our research.

2. The American Entrance: In the American entrance for continuous improvement, it is done through the conduct of radical, large and accelerating changes and improvements, and the form of one go to improve operations (Abu Al -Nasr, 2015: 69) in this entrance depends on the radical improvements to operations in economic units due to large investments in Technological development or through product engineering. (Al -Aboudi, 2018: 44). We note that the two approaches aim to work with a continuous improvement approach, but each approach has its own thinking, where from the Japanese view the gradual improvement of operations and focuses on how to eliminate waste in all operations of economic units, with simple efforts and low costs.

From the American point of view, continuous improvement is based on radical changes in processes as a result of a modern innovative idea or new technology, and the difference will be explained in Table(1).

Table (1) The difference between the Japanese entrance and the American entrance

Paragraph	Japanese entrance	The American entrance
Impact	Long -term and unclear effect	Short -term and a clear effect
Domain and progress	Small steps and in stages	Big steps and one batch
Time	Continuing and cumulating	Not continuous and non -cumulative
Change or modification	Graduated, fixed and continuous	Radical and surprising changes
Participated individuals	All individuals in economic unity	It is carried out by supporters of improvement and experienced people
Entrance	The effort for all workers (collective effort)	Individual efforts and ideas
Motivation and style	Maintenance and improvement	Consumption and renewal of equipment
Discrimination	Using skills	Technology changes and inventions
Scientific requirements	A few investments, but great efforts	It requires large investments and simple efforts
Rating standard	Operations and efforts to achieve the best results	Profit size
Feature or benefits	Good business and slow growth economy	Fast economic growth

For continuous improvement, four steps are: (Najm, 2015: 292)

- Setting plans:** What is the field in which improvement will be improved, planning to what we should do, determining the problem and analyzing it and how to improve, and in other words how to develop an action plan to do the improvement of the process.
- Implement or work:** At this stage, what has been planned is implemented.
- Study, evaluation and examination:** Upon completion of the implementation phase, the study, evaluation and examination done through the study and evaluation data obtained from the implementation comparing these data and results with goals and specifications and verifying improvement has achieved the results.
- Improvement:** In the implementation improvements are introduced to the completed process, and after completion of the completion of this stage, refer to the starting point, and the process continues at this pace.

The fourth topic / the role of sustainable continuous improvement budget in cost management and its tools

Budget for sustainable continuous improvement to reduce costs for production stages: This budget is the goal in order to reduce the cost that has been used in the production stages without compromising the quality of the product due to the development of improvements such as replacing a machine with another newer, or the rational and correct use of the raw material that will enter the production stage, or by importing the raw material from abroad, at a competitive price,

And carry out the process of examination and audit of the raw materials involved in the production process, and the extraction and exclusion of non-conforming materials, and to achieve this goal is done by working on those improvements, and in order to prepare the budget for the continuous sustainable improvement of the direct materials involved in the production process

Table (2) Budgeting Sustainable Continuous Improvement to Reduce the Cost of Quarantine in the Quarry Phase as in 2021

Monthly period	Suggested reduction rate	The basis for reducing the cost of the stone for the subsequent period	cost of the stone after the reduction	Unit production of cement	
		Dinar/ton		Dinar/ton	Kg
January	1.25%	6.829[1]	6.743[2]	1.495	10.0
February	1.25%	6.743	6.658	1.495	9.95
March	1.25%	6.658	6.572	1.495	9.85
April	1.25%	6.572	6.487	1.495	9.65
May	1.25%	6.487	6.402	1.495	9.55
June	1.25%	6.402	6.316	1.495	9.45
July	1.25%	6.316	6.231	1.495	9.35
August	1.25%	6.231	6.146	1.495	9.15
September	1.25%	6.146	6.06	1.495	9.05
October	1.25%	6.06	5.975	1.495	8.95
November	1.25%	5.975	5.89	1.495	8.85
December	1.25%	5.89	5.804	1.495	8.67

Source: Prepared by the researchers based on laboratory data.

From the foregoing, we note that the cost of one ton of stone has gradually decreased over a full year, reaching in December (5.804) dinars and for the unit at a cost of (8677) dinars, where the reduction rate at the end of the year reached(%15)

When the economic unit uses the approach of preparing a budget in the light of the sustainable continuous improvement technique, it helps reduce costs and improve quality, which enhances the competitiveness of the economic unit

June	1 %	2101	2079	1.495	3
July	1 %	2079	2057	1.495	3
August	1 %	2057	2035	1.495	3
September	1 %	2035	2012	1.495	3
October	1 %	2012	1990	1.495	
November	1 %	1990	1968	1.495	2
December	1 %	1968	1946	1.495	2

Rubber conveyor: After inspection and coexistence in the Kufa cement factory and interviews with the production manager, it was found that the rubber carrier does not have damage to the raw materials, but there is a rise in costs in order to increase the number of workers at this stage, and when interviewing with engineers and production manager, it was noted that there is a possibility to reduce costs after making adjustments, and in light of these improvements proposed by the production manager and engineers, a percentage of monthly cost reduction was set, which was estimated at (1%) per month.

The following is the budget of sustainable continuous improvement to reduce the cost of the rubber carrier.

Table (3) Budgeting Sustainable Continuous Improvement to Reduce the Cost of Rubber Conveyor as in 2021

Monthly Method	Suggested reduction rate	basis for reducing the cost of the rubber carrier for the subsequent period	cost of the rubber carrier after the reduction	Unit production of cement	
		Dinar/ton	Dinar/ton	Kg	Dinar
Primary	1 %	2212	2189	1.495	3272.5
Secondary	1 %	2189	2168	1.495	3241.1
	1 %	2168	2145	1.495	3206.7
	1 %	2145	2123	1.495	3173.8
	1 %	2123	2101	1.495	3140.9

Source (Preparation of the two researchers based on data in the Kufa Cement Factory)

We note from the above that the use of the sustainable continuous improvement budget in the rubber conveyor stage will enable us to reduce the cost from (2212) to (1946) at the end of the year by a reduction of (12%) and by a monthly rate of (1%)

Material mills:

The raw materials of stone, clay and sand are mixed in the material stage to produce putty, and the cost per ton in the mills stage (10170) dinars / per ton, and after a meeting with the production manager and workers in this stage, the possibility of reducing costs for the stage (8%) throughout the year was determined through the implementation of several improvements, including:

- a) Exploring quarries near the plant to reduce transportation expenses from the mud quarry to the plant.
- b) Carrying out geological surveys of nearby areas to obtain sand through quarries near the plant.
- c) Accuracy in the mixing procedure in order to produce good raw materials involved in the production process and the production of cement with high quality specifications

Table (4) Budgeting Sustainable Continuous Improvement to Reduce the Cost of Material Mills as in 2021

Suggested reduction rate	Basis for reducing the cost of materials for the subsequent period	Material mills after the reduction	Increasing training for workers on ovens and from this stage after repairing faults and	Unit production of a ton of cement
	Dinar/ton	Dinar/ton	operating	Kg Dinar
0.8 %	10.17	10.089	Reduce the cost of furnace evaporation	1.628 16.424
0.8 %	10.089	10.007	process by recycling materials to benefit from	1.628 16.291
0.8 %	10.007	9.925	them	1.628 16.157
0.8 %	9.925	9.845		1.628 16.027
0.8 %	9.845	9.763		1.628 15.894
0.8 %	9.763	9.682		1.628 15.762
0.8 %	9.682	9.6		1.628 15.628
0.8 %	9.6	9.519		1.628 15.495
0.8 %	9.519	9.438		
0.8 %	9.438	9.356		
0.8 %	9.356	9.275		
0.8 %	9.275	9.193		

Table (5) Budgeting Sustainable Continuous Improvement to Reduce Costs in the Furnace Phase as in 2021

Monthly period	Suggested reduction rate	Basis for reducing the cost of ovens materials for the subsequent period	ov t
		Dinar/ton	
January	10 %	36418	
February	10 %	36381	
March	10 %	36345	
April	10 %	36309	
May	10 %	36272	
June	10 %	36235	
July	10 %	36199	
August	10 %	36163	
September	10 %	36126	
October	10 %	36090	
November	10 %	36017	
December	10 %	35980	

Source (Preparation of the two researchers based on data in the Kufa Cement Factory)
 Through the above, we note that preparing a sustainable continuous improvement budget will reduce costs by (0.8%) so that the cost is (14.966) instead of the cost at the beginning of the year (16.424).

The oven stage:

At this stage, the clinker is introduced to the furnaces, so they are heated to high degrees, resulting from this heating in the process of combustion and evaporation of materials, and after contacting the production official, engineers and workers, it was found that it is possible to reduce costs by (10%), as officials indicated that the reduction of costs at this stage as determined by the sustainable continuous improvement budget is in the light of several improvements, including:

- A. Reducing the number of employees at this stage because the number of employees is redundant.
- B. Using gas instead of black oil at this stage because its prices are less expensive than black oil.

Source (Preparation of the two researchers based on data in the Kufa Cement Factory).

From the above table, we note that the cost of one ton of cement has decreased at this stage by (10%) during the year, to reach the cost per ton after the reduction (35944) dinars

Cement mills stage:

At this stage, the clinker is mixed with gypsum stone and ground to produce fattening, and after contacting officials and workers, it was found that it is possible to reduce costs by (5%), as officials indicated

that the reduction of costs at this stage as determined by the budget of continuous sustainable improvement is in the light of several improvements, including.

- A. Reducing the number of employees because the work needs experienced workers at this stage.
- B. Training employees and introducing them to training courses to qualify them at work at this stage.
- C. Maintenance of mills continuously to be able to give good grinding results

Table (6) Budgeting Sustainable Continuous Improvement to Reduce Costs in the Cement Mills Stage as in 2021

Monthly period	Suggested reduction rate	Basis for reducing the cost of cement mills materials for the subsequent period	Cement mills stage after the reduction	Unit production of a ton of cement	
		Dinar/ton	Dinar/ton	Kg	Dinar
January	5 %	11,197	11,141	1.628	18138
February	5 %	11,141	11,085	1.628	18046
March	5 %	11,085	11,029	1.628	17955
April	5 %	11,029	10,973	1.628	17864
May	5 %	10,973	10,917	1.628	17773
June	5 %	10,917	10,861	1.628	17682
July	5 %	10,861	10,805	1.628	17591
August	5 %	10,805	10,749	1.628	17500
September	5 %	10,749	10,693	1.628	17409
October	5 %	10,693	10,637	1.628	17318
November	5 %	10,637	10,581	1.628	17227
December	5 %	10581	10525	1.628	17136

Source (Preparation of the two researchers based on data in the Kufa Cement Factory)
 From the above table, we can see that the cost of one ton of cement has decreased at this stage by (5%) during the year, to reach the cost per ton after the reduction (10581)

instead of the cost at the beginning of the year (11197)

Packing stage:

After following up on this stage and inquiring from the production manager and employees, it became clear that it is possible to reduce the cost of this stage by operating the paper factory located in the factory, which will reduce costs by (75%), as the officials indicated when interviewing them that the reduction of costs at this stage is according to what is specified in the budget of sustainable continuous improvement is through several improvements, including:

- A. Benefiting from the unemployed workforce by operating the paper factory located inside the factory.
- B. Not to import and buy bags from the markets and rely on their manufacture inside the factory.

Table (7) Budgeting Sustainable Continuous Improvement to Reduce Costs in Mobilization as in 2021

Monthly period	Suggested reduction rate	Basis for reducing the cost of packing materials for the subsequent period	Packing stage after the reduction	Unit production of cement	
		Dinar/ton	Dinar/ton	Kg	Dinar
January	75 %	4,853	4,816	20	96.8
February	75 %	4,816	4,744	20	95.2
March	75 %	4,744	4,707	20	94.3
April	75 %	4,707	4,671	20	93.4
May	75 %	4,671	4,635	20	92.7
June	75 %	4,635	4,598	20	91.9
July	75 %	4,598	4,562	20	91.2
August	75 %	4,562	4,525	20	90.5
September	75 %	4,525	4,489	20	89.7
October	75 %	4,489	4,453	20	89.0
November	75 %	4,453	4,416	20	88.3

December | 75 % | 4,416 | 4,380 | 2021 | 87.6

Source (Preparation of the two researchers based on data in the Kufa Cement Factory)
 From the above, we note that the cost of one ton of cement has decreased at this stage by (75%) during the year, to reach the cost per ton after the reduction (4.380) dinars instead of the cost at the beginning of the year(4.853)

Table (8) Budgeting Sustainable Continuous Improvement after Reduction as in 2021

Monthly period	The quarry stage	Rubber carrier stage	Material mills stage	Ovens	Cement mills	Packing	Cost
January	6,743	2189	10.089	36,381	11,141	4,816	71,359
February	6,658	2168	10.007	36,345	11,085	4,744	71,007
March	6,572	2145	9.925	36,309	11,029	4,707	70,687
April	6,487	2123	9.845	36,272	10,973	4,671	70,371
May	6,402	2101	9.763	36,235	10,917	4,635	70,053
June	6,316	2079	9.682	36,199	10,861	4,598	69,735
July	6,231	2057	9.6	36,163	10,805	4,562	69,418
August	6,146	2035	9.519	36,126	10,749	4,525	69,100
September	6.06	2012	9.438	36,090	10,693	4,489	68,782
October	5.975	1990	9.356	36,054	10,637	4,453	68,464
November	5.89	1968	9.275	36,018	10,581	4,416	68,146
December	5.854	1.956	9.263	35,974	10,570	4,400	68,017

Source (Preparation of the researchers based on budgets from previous tables)

We note in the above table that the cost per ton after many improvement proposals that can be implemented during the production stages has decreased from the beginning of the year, where it was in January (71359) and the start of the gradual reduction until the end of December to be (68017) dinars per ton.

Conclusions:

1. Budgeting sustainable continuous improvement prepares for the stages of production for which improvements can be made.

The economic unit that applies the technique of sustainable continuous improvement is not compatible with the traditional operational budgets because the technique of sustainable continuous improvement seeks to make improvements in the production process and the traditional budgeting system is fixed, it does not take into account those improvements.

3. When implementing the sustainable continuous improvement budget, the economic unit faces many difficulties and challenges, including the difficulty of convincing employees to change and the importance of budgeting sustainable continuous improvement by achieving the unit's objectives of increasing production and reducing costs.

Recommendations

1. Work to support workers through material and moral incentives and link the worker's wage to the productivity of each worker.
2. The economic unit is based on continuous improvement in order to reduce the cost of production and marketing of the product.
3. When applying the sustainable continuous improvement budget, the economic unit must adjust the traditional operating budgets to suit the changes that result from improvements in the corridors of work that push the unit to apply the sustainable continuous improvement budget.

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