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ANALYSIS OF THE GREEN VALUE CHAIN AND ITS ROLE IN REDUCING COSTS AND IMPLEMENTING THE STRATEGY OF CLEANER PRODUCTION PERFORMANCE (APPLIED STUDY IN THE KUFA CEMENT FACTORY)

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Abstract:

The current research aims to address the theoretical framework of the green value chain, and analyze this chain in order to reduce costs and implement the strategy of cleaner production performance, and implementing the strategy of cleaner production performance and improving indicators of both economic and environmental, efficiency, effectiveness and productivity. The research was applied in the Kufa Cement Factory / one of the formations of the General Company for the Iraqi Southern Cement Industry for the fiscal years 2018, 2019, 2020. One of the most important conclusions reached is that the research sample laboratory can analyze the green value chain in order to reduce costs, and its helps implement the strategy of cleaner production performance and improving indicators of both environmental economics, efficiency, effectiveness and productivity.

Keywords: Green value chain (GVC), analysis of green value chain analysis, reduce costs, cleaner production performance strategy.

INTRODUCTION:

The rapid development in the modern manufacturing environment were the main motive for searching for appropriate methods for reducing costs and implement the strategy of cleaner production performance. Analysis of green value chain consists of a group of interrelated add value activities. This series consists of seven activities, starting with green research and development and ending with the recycling of green waste. The main purpose of the analysis of green value chain is to implement the objectives of the company, reduce costs, improving quality. as well as assisting in implementing the strategy of cleaner production performance and improving indicators economic, environmental efficiency, effectiveness and productivity in a way that It is compatible with various environmental changes and developments.

The First Topic: Research Methodology and Previous Studies

1-1 Research Methodology:

1-1-1 The Problem of Research:

The problem of the current research is the high costs and the lack of implementation of the strategy of cleaner production performance by companies, which led to the production of products that are not environmentally friendly, so what requires searching for appropriate methods, One of these methods is the analysis of green value chain. The following question expresses the research problem: (Can companies analyze the green value chain for reducing costs and implementing the strategy of cleaner production performance?).

1-1-2 The Importance of Research:

The importance of the research came from the detailed analysis of all activities of green value chain for determining the activities that add value and that do not add value in order to reduce costs and implement the strategy of cleaner production performance.

1-1-3 The Objectives of Research:

The current research aims to address the theoretical framework of the green value chain, and analyze this chain in order to reduce costs and implement the strategy of cleaner production performance, and

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implementing the strategy of cleaner production performance in companies.

1-1-4 The Hypothesis of Research:

The current research hypothesis can be expressed as follows: (The analysis of green value chain helps in reduce costs and implement the strategy of cleaner production performance).

1-1-5 The Sample of Research:

Kufa Cement Factory / one of the units of general company for the southern cement Industry was selected as a sample for the research, and the search was applied for the fiscal years 2018, 2019, 2020.

1-2 Previous Studies:

There are possible to rely on a set of previous studies that are related to the current research, and they are as follows:

1. A study (Dced,2012), entitled (Green Value Chains to Promote Green Growth): This study aims to analyze of green value chain for promoting green growth, and the study concluded that the analysis of green value chains helps in taking appropriate decisions to promote green growth in the environment of unity. Economic.
2. A study (Elbert,2016), entitled (Using Green Value Chain Analysis for Implementation the Marketing Policies): This study aims to use the analysis green value chain analysis for implementing marketing policies to attract customers and achieve their satisfaction, and the study concluded that there is a possibility to implement strategies Marketing based on the green customer-oriented value chain analysis method.
3. A study (Ong,et.al.,2019), entitled (The Green Value Chain Construct: Instrument Validation and Green Practices among Malaysian Corporation): This study aims to applied green value chain in company for assisting in making strategic decisions. Building green value chain helps the managers to take appropriate decisions for reducing costs and improve quality.
4. A study (Warmest,2020), entitled (The Green Value Chain Analysis in Manufacturing Companies): This study aims to analyze green value chain and identifying activities that do not add value and then excluding them, the study concluded the maintenance activities and failure assessment are considered non value adding activities it effects in costs and value of products.

The current research deals with subject analysis of green value chain and focus on the use of renewable resources and the production of environmentally friendly products in order to reduce costs and implement the strategy of cleaner production performance. The current research puts a logical basis for analyzing (GVC) in the industrial units for reducing costs and implement cleaner production performance strategy.

THE SECOND TOPIC: THE THEORETICAL FRAMEWORK FOR RESEARCH

2-1 The Concept of Green Value Chain:

Green value chain (GVC) is a sets of activities practiced in company to ensure optimal consumption of natural resources and increase the share of renewable resources to maximize resource and energy efficiency in each stage of operations (Ong,et.al.,2019:496).

Green value chain (GVC) is concerned with green activities that seek to preserve the environment and protect it from pollution in all its forms. This series consists of activities that are closely related to each other in order to achieve the strategic goals of the company while achieving various environmental goals (Feller,et.al.,2009:7).

The green value chain aims to optimally consume the resources available to the economic unit and increase the share of renewable and recycled resources, thus helping to produce environmentally friendly products (ElKelety,2006:121-122). This chain consists of the following activities:

1. Activity of Green research & development (R&D): This activity is concerned with collecting the ideas and its testing for developing the products that are within capabilities available in company Taking into account the various environmental aspects (Williams,et.al.,2008:796).
2. Activity of Green Design: It is to carry out engineering and detailed planning of operations, products This activity is concerned with the detailed, physical and conceptual planning processes for the products and operations of the company, taking into account the environmental aspects (Dury,2008:554).
3. Activity of Green Manufacturing: This activity is concerned with the actual production of the product until it becomes its final form so that it can be presented to the customer. Here, manufacturing methods are used that preserve

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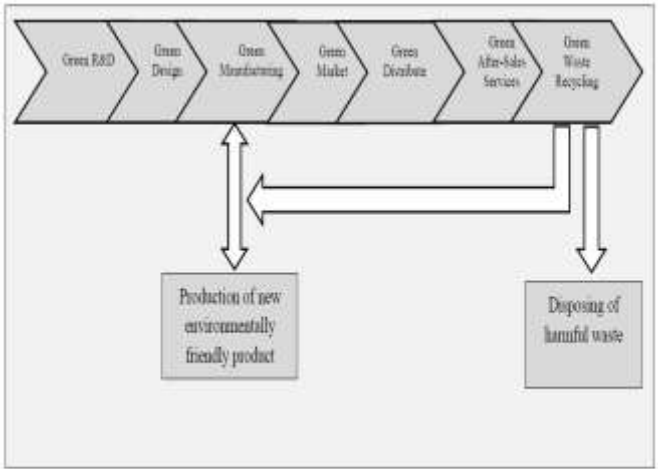
the environment and do not harm it (Horngren,et.al.,2015:6-7).

4. Activity of Green Marketing: This activity is concerned with introducing customers to the products manufactured by the company, with an explanation of how these products are environmentally friendly and preserved, with reference to the features that characterize these products (Elbert,2016:4) .
5. Activity of Green Distribution: This activity is concerned with delivering the products that were manufactured in the previous activities to the customers. Here, marketing methods must be followed that do not harm the environment in any way (El-Kelety,2006:122-123).
6. Activity of Green After-Sales Services: This activity is concerned with providing a range of services to customers after selling products to them. Note that this activity is concerned with preserving the environment when providing these services (Maher,et.al.,2008:117).
7. Activity of Green Waste Recycling: This activity is concerned with waste recycle in company in order to reduce the consumption of natural resources and reduce environmental pollution, as industrial waste is used and benefited from in other work without harming the environment, as waste recycling is linked to green manufacturing processes. During this activity, the waste that cannot be used is either disposed of, or it is recycled to produce new environmentally friendly products that may be primary products or by-products (Hasan,2019:18).

Based on the foregoing, the green value chain consists of seven green activities start with activity of green R&D and end with activity of green waste recycle, All of these activities are green activities that seek to preserve the environment in any way, as well as using materials or carrying out internal or external processes that are environmentally friendly and preserve them.

The main activities of the green value chain (GVC) can be illustrated by the following figure:

figure (1): The main activities of green value chain (GVC)



Source: (Abdul Qadir,2019: 38).

Note that green value chain (GVC) consist of activities directed towards the optimal consumption of available resources and increasing the share of renewable and recycled resources, thus helping to produce environmentally friendly products.

2-2 Analysis of Green Value Chain and its Importance:

The analysis of the green value chain is to test each of its activities in order to distinguish the activities that add value from those that do not add value. The activities that add value are important activities that achieve environmental goals and cannot be dispensed with. Either activities that do not add must be eliminated or Combine it (Kinney,et.al.,2006:666).

Therefore, when analyzing the green value chain, the focus is on activities that add value and help produce environmentally friendly products, and on the other hand in company (Sweeney,2009:320).

Which means that the analysis of the GVC is an important strategic tool in the economic unit use to optimize consumption of available resources, increase the share of renewable and recycled resources and produce environmentally friendly products. Value chain activities can be divided into three types as following: (Blocher,et.al.,2010:38).

1. Activities of Upstream: This activities consist of green R&D activities and green design activities in company.
2. Activities Operational: This activities consist of various green manufacturing processes in company.
3. Activities Downstream: This activities consist of green market activities, green distribution activities, green after-sales services activities, and green waste recycling activities.

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Accordingly, the analysis of the GVC is a set of activities aimed at identifying activities that add value and distinguishing them from those activities to keep the environmentally friendly products optimal in available resources and increasing share of renewable resources.

Regarding the importance of the green value chain, it is explained as follows: (Aniki & Charles,2014:52)

1. Reducing costs associated with activities that do not add value to the economic unit and the customer.
2. Improving the quality of products and production processes.
3. Helping to achieve competitive advantage.
4. Producing environmentally friendly products through optimal use of available resources and increasing the share of renewable resources.

Thus, it can be said that the analysis of GVC is help in achieving the strategic aims and preserve the environment during producing environmentally friendly products through optimal use of available resources and increasing the share of renewable resources.

2-3 The Importance of Analysis GVC in Reducing Costs:

Analysis of green value chain helps reduce costs. This reduction is achieved by determining the costs of the main and subsidiary activities of this chain. Where it is determined what can be excluded from the activities without negatively affecting the performance and quality of the product. As well as maintaining the quality of the industrial process in the company by focusing on the important activities in this company. This will eliminate all costs related to non-circulating activities that can be excluded (Lu,2011:8).

This means that the analysis of the costs of the activities of the chain enables the management to identify the cost of each activity while identifying the unnecessary ones, i.e. focusing on the high costs in the main and subsidiary activities and working to reduce them (Feller, et.al.,2009:9).

Also, the increase in the time of production operations will lead to an increase in the costs of these operations and consequently higher costs due to wastage in company during year (Aniki & Charles,2014:50).

Green value chain analysis helps reduce the time of industrial operations in the company by reducing abnormal downtime and thus the costs associated with this time will decrease (Elbert,2016:8).

Based on the above, it can be said that the analysis green value chain helps reduce cost, improve quality and reduce time. The role of analysis of GVC in reducing costs can be explained as follows:

1. Helping in reduce the costs concerned with storing materials, work in process, and finished products.
2. Helping in reduce the costs concerned with testing, inspection and product evaluation.
3. Helping in reduce the costs concerned with maintenance and sudden stops in production.
4. Helping in reduce the costs concerned with internal and external failure in products and operations.

2-4 The Importance of Analysis GVC in Implementing Cleaner Productive Performance Strategy:

Cleaner production performance strategy is continuous implementation of the environmental strategy and integrated prevention on products, services and production processes to raise economic efficiency and reduce risks to human health and the environment (Nilsson,el.at.,2007:17).

There are four sub-strategies for the cleaner production performance strategy, which are environmental economics, efficiency, effectiveness and productivity (Cabello-Eras,2016:5). The role of Analysis GVC in implementing the cleaner production performance strategy can be explained as follows:

1. Strategy of environmental economic: This strategy concerned with performance and environmental costs, as the analysis of the green value chain seeks to reduce environmental pollution and get rid of environmentally harmful substances (Schaltegger,et.al.,2008:8), and calculates the economic environment through the following equation: ***Environmental economics = sales revenue ÷ costs of environmentally-impact waste***
2. Strategy of efficiency: This strategy seeks to reduce the environmental damages associated with the production of each product during its life cycle, as the analysis of GVC works to reduce the environmental impacts of products (Al-Tami & Al-Zaydi,2012:220), and the efficiency is calculated through the equation the following: ***Efficiency = Output (amount of production) ÷ Environmental impact (amount of production waste)***
3. Strategy of effectiveness: This strategy focuses on the achieved outputs and measuring the effectiveness of the economic unit in achieving its goals. The analysis of the green value chain is related to the outputs or the goals in terms of the degree and level of

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achievement, both quantitatively and qualitatively (Al-Jubouri,2012: 56), and the effectiveness is calculated through the equation the following: ***Effectiveness = Achieved goals ÷ Planned goals***

4. Strategy of productivity: This strategy focuses on the relationship between output and input, and the value chain analysis focuses on the ratio between outputs (products) and inputs (raw materials), meaning the outputs over the inputs (Abdul Sattar,2009:8), and productivity is calculated using the following equation: ***Productivity = Output ÷ Input***

From the above, it can be said that the application of the strategy of cleaner production performance in light of the analysis of the green value chain is of great importance in improving environmental and economic performance and helping to reduce environmental impacts and environmental costs and removing harmful effects on humans and animals and obtaining products with high efficiency and effectiveness and reduced side effects.

THE THIRD TOPIC: THE PRACTICAL ASPECT OF RESEARCH

3-1 An Introduction to the Kufa Cement Factory:

The factory of Kufa cement is one of the most important companies of the Iraqi Ministry of Industry and Minerals specialized in the production of cement of all kinds, such as resistant cement, ordinary cement and refractory cement. It was established in 1977, with an area of (5) km, and is located in Najaf Governorate, with a design capacity of (1781,000) thousand tons annually. The laboratory also obtained two certificates of Iraqi quality, the first on the date of August 19, 2010 according to the administrative order (6001), and the second on the date of November 25, 2013 according to the administrative order (11011), with the laboratory meeting the specifications of ISO (ISO 9001) issued by the Ministry of Planning And Affiliate Cooperation / Central Organization for Standardization and Quality Control, and this indicates the quality of the factory's products.

3-2 Analysis of Green Value Chain (GVC) in Factory of Kufa Cement:

For purpose of analyzing GVC in the factory sample of the research, we should identify main and sub activities of this chain, and the green value chain can be analyzed in the Kufa Cement Factory for the years (2018-2020), as follows:

First: Green research and development activities: The green R&D activity in Kufa Cement Factory consists of a set of sub activities, which are employees' training, employees' qualification, scientific services, training's delegation and study's travel, Activities of green research & development costs in Kufa cement factory for years 2018, 2019, 2020 as follows:

Table (1): Activities of green research & development costs in Kufa cement factory

No.	Details	2018	2019	2020
1	Training and qualification of employees	3797919	4852033	4274860
2	Scientific research services	4557503	4062171	5676666
3	Delegating for training purposes	1085120	902703	1199785
4	Travel for study purposes	1410655	1466892	1814820
	Total Cost	10851197	11283799	12966131

Source: Records and reports of the costs department in the research sample.

It turns out that activities of green research & development costs in Kufa cement factory for the years 2018, 2019, 2020 amounted to (10851197), (11283799), (12966131) dinars respectively. This activities cost aimed at developing the products, processes and services of the laboratory. The research sample by exploiting the available energy as well as not wasting natural resources and harming the surrounding environment, so all these costs are activities related its can add value for research sample factory and customers.

Second: Green design activities: The green design activity in the laboratory, the research sample, consists of a set of sub-activities, namely engineering planning (conceptual), detailed planning (physical), salaries of design engineers and wages of external designers. Activities of green design costs in Kufa cement factory for years 2018, 2019, 2020 as follows

Table (2): Activities of green design costs in Kufa cement factory

No.	Details	2018	2019	2020
1	Engineering planning (conceptual)	825562	303445	1160383
2	Detailed planning (physical)	1109741	472883	1439813

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3	design engineers salaries	3100343	3371517	4141521
4	Outside designer fees	1165039	788817	1037963
	Total Cost	6200685	4936662	7779680

Source: Records and reports of the costs department in the research sample.

It turns out that activities of green design costs in Kufa cement factory for the years 2018, 2019, 2020 amounted to (6200685), (4936662), (7779680) dinars respectively. This indicates refers to interest the research sample in activities of green design during research years. The factory take the environmental dimension in the design process, therefore, these costs are associated with value-adding activities.

Third: Green manufacturing activities: There are a number of stages related to green manufacturing processes, as follows:

1. Crushing and mixing of materials stage: Steel type crushers are used to mix gypsum and lime and mix it with sand that has been carried out in laboratory operations in order to get rid of the salts.
2. Grinding stage: Raw materials are added to the water to which chlorine is added so that it does not evaporate and becomes soft to a certain degree.
3. Burning stage: Calcium carbonate is analyzed in order to obtain clinker by heating this substance at a temperature in 1500 ° C.
4. Drying stage: The clinker is dried and sent to storage silos and finally filled with 50 kg bags.

Activities of green manufacturing costs in Kufa cement factory for years 2018, 2019, 2020, as follows:

Table (3): Activities of green manufacturing costs in Kufa cement factory

No.	Details	2018	2019	2020
	Direct materials (DM):			
1	Limestone	3604147	3183985	5047368
2	Stone of gypsum	2739153	2907116	3244737
3	Sand washed	1874156	1938078	2703948
4	Various oxides	1728948	2076511	1802634
5	Diatomic iron	1296743	969039	1442105
6	Auxiliary materials	3173442	2768683	3785524
	Total	14416589	13843412	18026316
	Direct labor (DL):			
1	Direct labor of production workers	15377696	16571275	18537199
	Total	15377696	16571275	18537199
	Factory overhead (FOH):			
1	Black oil	1460882	734237	1454888
2	Oils and greases	1278271	839127	969925
3	Steel balls (150m)	547831	209782	727443
4	Mill liners	365220	314672	889098
5	Machine backup tools	1643491	629345	242482
6	Supplies and errands	1095662	944018	565789
7	Auxiliary medical materials	639136	157337	969925
8	Salt free water	273915	367118	1454888
9	Public communication	1004356	472009	323308
10	Transfer of workers	821746	576900	484963
11	Depreciation of machinery Maintenance of	547831	209782	525376
12	machines	365220	314672	282895
13	Stock up on raw materials	913051	1048909	969930
14	Store production in progress	1826102	524454	1535714
15	Store full production	1095662	419563	889098
16	Inspecting & testing of materials	730440	629345	565789
17	Inspecting & testing of process	1186966	367118	969925
18	Examination and test finally	639136	681791	727443
19	Maintenance of inspection equipment	1278271	314672	1083082

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20	Product failure analysis	547829	734235	533457
	Total	18261018	10489086	16165418
	Total costs	48055303	40903773	52728933

Source: Records and reports of the costs department in the research sample.

It turns out that activities of green manufacturing costs in Kufa cement factory for years 2018, 2019, 2020 amounted to (48055303), (40903773), (52728933) dinars respectively, and these costs are related to the cost of direct materials, direct wages and industrial costs After analyzing these costs as follows:

1. Costs of factory overhead is higher, specially costs concerned with inspecting & testing of materials, inspecting & testing of process and examination and test finally. Therefore, these activities and the associated costs must be eliminated.
2. The rest of the industrial costs cannot be excluded because they are necessary costs for the research sample.

Fourth: Green market activities: The green market activity in factory concerned with advertising, packaging materials, publication, printing and wages of marketing workers. Activities of green market costs in the Kufa cement factory as follows:

Table (4): Activities of green market costs in the Kufa cement factory

No.	Details	2018	2019	2020
1	Advertising	929499	2627552	590983
2	Packing and warping material	1627680	1420316	1429015
3	Publish and print	813841	661805	715287
4	Marketing workers wages	2054579	2342702	2451169
	Total Cost	5425599	7052375	5186454

Source: Records and reports of the costs department in the research sample.

It turns out that activities of green market costs in the Kufa cement factory for years 2018, 2019, 2020 amounted to (5425599), (7052375), (5186454) dinars respectively, and after analyzing these costs, it became clear that they are related to value-adding activities and cannot be It is important to achieve marketing objectives, so the laboratory must intensify its efforts with regard to advertising and informing customers of its products and their importance, taking into account the environmental dimension when marketing the factory's products to customers.

Fifth: Green Distribution Activities: The green distribution activity in factory means of transportation, maintenance of means of transportation, transportation, extinction of means of transportation, transportation and wages of distribution workers. Activities of green distributed costs in Kufa cement factory as follows:

Table (5): Activities of green distributed costs in Kufa cement factory

No.	Details	2018	2019	2020
1	Transport rental	697577	740499	605087
2	Maintenance of transport cars	837093	888599	734748
3	Disappearance of transport cars	1255638	1332898	1037290
4	Distribution workers wages	1860205	1974666	1944919
	Total Cost	4650513	4936662	4322044

Source: Records and reports of the costs department in the research sample.

It turns out that activities of green distributed costs in Kufa cement factory for years 2018, 2019, 2020 amounted to (4650513), (4936662), (432,2044) dinars respectively. and after analyzing these costs, it became clear that they are related to value-adding activities.

Sixth: Green after sales services activities: Activity of green after sales services activity in the factory consists of a group of sub-activities, which are compensation, fines, free calls with customers, delivery of products to customers. Activities of green after-sales service costs in Kufa cement factory as follows

Table (6): Activities of green after sales service costs in Kufa cement factory

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No.	Details	2018	2019	2020
1	Compensation and fines	930103	493666	1037290
2	Free calls with customers	348789	141048	518645
3	Delivering products to customers	232525	211572	968138
4	Sales returns for poor quality	813841	564190	933562
	Total Cost	2325258	1410476	3457635

Source: Records and reports of the costs department in the research sample.

It turns out that activities of green after sales service costs in Kufa cement factory for years 2018, 2019, 2020 amounted to (2325258), (1410476), (3457635) dinars respectively. This costs relate to all activities carried out. After selling its products to customers, and after analyzing these costs as follows:

1. Costs of poor quality are related to non added value activities, so they should be eliminated or eliminated.
2. The rest of the costs of value added to activities so that they cannot be excluded or dispensed with.

Seventh: Green Waste Recycling Activities: The activity of recycling green waste in the laboratory, the research sample, consists of a set of sub-activities, which are waste examination, disposal of harmful waste, and recycling of useful waste. The research sample factory must get rid of all sub-activities that do not add value to the laboratory and its customers. Activities of green waste recycling costs in Kufa cement factory as follows

Table (7): Activities of green waste recycling costs in Kufa cement factory

No.	Details	2018	2019	2020
1	Waste check	946634	1204177	1372728
2	Disposing of harmful waste	375520	699191	1252693
3	Recycling useful waste	1097181	354163	933959
	Total Cost	2419335	2257531	3559380

Source: Records and reports of the costs department in the research sample.

It turns out that activities of green waste recycling costs in Kufa cement factory for years 2018, 2019, 2020 amounted to (2419335), (2257531), (3559380) dinars respectively, and after analyzing these costs, the following became clear:

1. The costs of both waste inspection and disposal of harmful waste are related to activities that do not add value, so they should be eliminated.
2. The costs of recycling useful waste are concerned with value adding activities that cannot be excluded or dispensed on its.

After defining the main activities and sub-activities of the green value chain in Kufa cement factory for years 2018, 2019, 2020, activities of green value chain costs in Kufa cement factory during this year as follows

Table (8): Activities of green value chain costs in Kufa cement factory

Green Activities	2018		2019		2020	
	Cost	%	Cost	%	Cost	%
R & D	10851197	13.58%	11283799	15.5%	12966131	14.41%
Design	6200685	7.76%	4936662	6.78%	7779680	8.64%
Manufacturing	48055303	60.12%	40903773	56.2%	52728933	58.59%
Marketing	5425599	6.79%	7052375	9.69%	5186454	5.76%
Distribution	4650513	5.82%	4936662	6.78%	4322044	4.8%
After-sales services	2325258	2.91%	1410476	1.94%	3457635	3.84%
Waste recycling	2419335	3.03%	2257531	3.1%	3559380	3.95%
Total Cost	79927890	100%	72781278	100%	90000257	100%

Source: Previous tables from Table No.(1) to table No. (7).

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It turns out that Activities of green value chain costs in Kufa cement factory for years 2018, 2019, 2020 amounted to (79927890), (72781278), (90000257) dinars respectively, and after analyzing these costs as follows:

1. The costs of green manufacturing activities are related to the total cost of all chain activities for the years 2018, 2019, 2020 (60.12%), (56.2%), (58.59%) respectively. Costs of sub-activities of production activities that non add value to both the factory and its customers.
2. Activities green after sales services costs for years 2018, 2019, 2020 (2.91%), (1.94%), (3.84%) respectively, which must be reduced. If these costs are reduced, the total costs of the product will be reduced so that it can be sold at a competitive price in a way that meets the needs of customers and achieves the profit goals for the factory.

3-3 Reducing Costs by Analysis of Green Value Chain (GVC) in Kufa Cement Factory:

Analysis of GVC has assisted management in identifying important and non-critical activities. That is, management will be able to make decisions that exclude unimportant activities. Non added value activities costs in Kufa cement factory for years 2018, 2019, 2020 as follows

Table (9): Non added value activities costs in Kufa cement factory

No.	Details	2018	2019	2020
1	Manufacturing activities:			
	Stock up on raw materials	913051	1048909	969930
	Store production in progress	1826102	524454	1535714
	Store full production	1095662	419563	889098
	Total warehousing activities	3834815	1992926	3394742
	Inspecting & testing of materials	730440	629345	565789
	Inspecting & testing of process	1186966	367118	969925
	Examination and test finally	639136	681791	727443
	Total examination and testing activities	2556542	1678254	2263157
	Inspection equipment maintenance	1278271	314672	1083082
	Failure analysis	547829	734235	533457
	Total maintenance activities and failure analysis	1826100	1048907	1616539
	Total costs of manufacturing activities	8217457	4720087	7274438
2	After-sales service activities:			
	Compensation and fines	930103	493666	1037290
	Sales returns for poor quality	813841	564190	933562
	Total costs of after-sales service activities	1743944	1057856	1970852
3	Waste recycling activities:			
	Waste check	946634	1204177	1372728
	Disposing of harmful waste	375520	699191	1252693
	Total waste recycling activities	1322154	1903368	2625421
	Total costs	11283555	7681311	11870711

Source: Organize and arrange researchers.

It turns out that non added value activities costs in Kufa cement factory for years 2018, 2019, 2020 were (11283555), (7681311), (11870711) dinars respectively, so the management of this plant can make a decision on eliminating these costs Thus, it has been proven that analysis of GVC help factory in reduce costs concerned with unimportance activities during this years.

3-4 Implementation of the Cleaner Production Performance Strategy By Using the Analysis of Green Value Chain (GVC) in Kufa Cement Factory:

Analysis of GVC can help Kufa cement factory in implementing the strategy of cleaner production performance by ensuring the optimal consumption of natural resources, increasing the share of renewable resources and maximizing the efficiency of these resources at each stage of operations as well as assisting in the production of environmentally friendly products. Strategic indicators can be clarified

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Productive performance strategy indicators after analysis GVC in sample factory as follows

Table (10): Productive performance strategy indicators after analysis GVC in Kufa cement factory

Details	2018	2019	2020
Environmental economic index			
Sales revenue	4101183	65309152	4076948
÷ Environmental costs	699223	53415410	1413293
= Environmental economic index	5.865	1.223	2.885
Efficiency index			
Production quantity	63075	874872	59261
÷ Amount of production waste	13855	183757	12739
= Efficiency index	4.553	4.761	4.652
Effectiveness index			
Objectives achieved	11283555	7681311	11870711
÷ Planned goals	7992789	7278128	9000026
= Effectiveness index	1.412	1.055	1.319
Productivity index			
Output (cement, sediment, dust)	76153	1041962	72892
÷ Inputs (stone, dirt, sand, gypsum)	92627	1418627	91742
= productivity index	0.822	0.734	0.795

Source: Organize and arrange researchers.

The above table shows that the environmental economic index for the years 2018, 2019 and 2020 was (5.865), (1.223), (2.885) respectively, and the efficiency index was (4.553), (4.761), (4,652), respectively, and the efficiency index was (1.412).), (1.055), (1.319) respectively, and the productivity index was (0.822), (0.734), (0.795) respectively, which indicates that there is an important role for analyzing GVC in implementing cleaner productive performance strategy.

FOURTH TOPIC: CONCLUSIONS & RECOMMENDATIONS

4-1 CONCLUSIONS:

1. Green value chain (GVC) is a set of activities in company its aims for optimizing the consumption of available resources and increasing the share of renewable and recycled resources, thus assisting in the production of environmentally friendly products.
2. Analysis of green value chain (GVC) helps the company in achieving strategic goals and preserving the environment. The analysis of this chain is one of the things required by business environment.
3. When the company analyzes GVC, costs will decrease as well as quality will improve, in addition to reducing production time, which will positively return to the performance of this company.
4. when applying of the strategy of cleaner production performance in light of the analysis of the green value chain is of great importance in improving environmental and economic performance and helping to reduce environmental impacts and environmental costs and removing harmful effects on the environment.
5. Analysis of GVC in Kufa cement factory helps in reducing costs for years 2018, 2019, 2020 by amount of (11283555), (7681311), (11870711) dinars respectively, and the implementation of the strategy of cleaner production performance and improvement Environmental economic indicators, efficiency, effectiveness and productivity.

4-2 RECOMMENDATIONS:

1. Relying on modern cost systems and trying to develop traditional systems. And follow the methods that help reduce costs and implement the strategy of cleaner production performance
2. The necessity of merging unimportant activities with other activities or excluding these activities so that there is a flow of the production process in a way that helps reduce costs and improve performance in general.
3. Companies must analyze the green value chain in order to reduce costs and improve

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performance while preserving the environment.

4. Using analysis the green value chain (GVC) in implementing strategy of cleaner production performance and working to improve environmental economic indicators, efficiency, effectiveness and productivity.
5. The adoption of the research sample factory and other industrial factories in Iraq on the method used in analyzing the main and subsidiary activities of the green value chain in order to reduce costs and apply strategy of cleaner production performance.

REFERENCES:

1. Abdul Qadir, Mustafa Muhammad Ali (2019), "*Using the green value chain to reduce costs and improve product value*", Master's Thesis in Accounting, College of Administration and Economics, University of Baghdad.
2. Abdul-Sattar, Ragaa Rashid (2009), "*Evaluation of performance efficiency through the return criterion, a case study in the General Company for the Battery Industry*", Journal of Baghdad College of Economic Sciences, Volume, Issue (19).
3. Al-Jubouri, Muhammad Ibrahim Muhammad (2012), "*The Role of Cleaner Production Techniques in Supporting the Development Strategy: A Field Study in the Arab Detergent Chemicals Company in Salah al-Din*", Master's thesis in Industrial Management, College of Administration and Economics, University of Mosul.
4. Al-Tami, Khaled Ghazi Abboud, Al-Zaidi, Muthanna Faleh Badr (2012), "*Activating the role of strategic cost management in supporting cleaner production technology*", Journal of Administration and Economics, Volume (35), Issue (93).
5. Aniki, Abimbola & Charles, Mbohwa (2014), "*Value Chain Management in Nigeria Industry*", Journal of Engineering, Vol.(22), No.(4), pp:(47-58) .
6. Blocher, Edward J. ; David, Stout E. & Gary, Cokins R. (2010), "*Cost Management : A Strategic Emphasis*", 9th ed., McGraw Hill Inc., USA .
7. Cabello-Eras ,Juan José (2016), "*Approaching A Cleaner Production As An Environmental Management Strategy*", In Universidad de la Costa, Vol.(1), No.(1) , p p: (4-7).
8. Dced, D. (2012), "*Green Value Chains to Promote Green Growth*", www.enterprice-development.org. .
9. Drury, Colin (2008), "*Management and Cost Accounting*" 7th ed., South Western Engage Learning, Pearson Education International, London, UK .
10. Elbert, Ramset S. (2016), "*Using Green Value Chain Analysis for Implementation the Marketing Policies*", Journal of Marketing, Vol.(34), No.(6), pp:(1-12) .
11. El-Kelety, Ibrahim A. (2006), "*Towards a Conceptual Framework for Strategic Cost Management*", Journal of Accounting, Vol.(8), No.(7), pp:(115-131) .
12. Feller, A. ; Dan, S. & Tom, C. (2009), "V*alue Chains Versus Supply Chains*", Journal of Business and Management, Vol.(26), No.(12), pp(1-16) .
13. Hasan, M ; Nekmahmud, M. ; Yajuan, L. & Bayat, M. (2019), "*Competitive Advantage and Strategic Information System*", International Journal of Business and Management, Vol.(5), No.(7), pp:(158-169) .
14. Hens, L., Block, C., Cabello-Eras, J. J., Sagastume- Gutierez, A., Garcia-Lorenzo, D., Chamorro, C. & Vandecasteele, C. (2018), "*On the evolution of "Cleaner Production" As a Concept And a Practice*", Journal of cleaner production, Vol.(172), No.(20) , p p: (3323-3333).
15. Horngren, Charles T. ; Dater, Srikant M. & Rajan, M. V. (2015), "*Cost Accounting : A Managerial Emphasis*", 15th ed., Pearson Prentice Hall, USA .
16. Kinney, Michael R. ; Prather, Jenice K. & Raiborn, Cecily A. (2006), "*Cost Accounting : Foundations & Evaluation*", 6th ed., South Western Inc., USA .
17. Lu, Dewy Joy, (2011), "*Fundamental and Application of Value Chain*", Journal of Natural Resources Management, Vol.(4), No.(1), pp:(1-11) .
18. Maher, Michael W. ; Stickney, Clue P. & Weil, Roman L. (2008) "*Managerial Accounting*", 10th ed., South Western Cengage Learning, USA .
19. Nilsson, Lennart , Persson, Per Olof ,Rydén,Lars , Zaliauskiene Siarhei Darozhka and Audrone (2007),"*Cleaner Production Technologies and Tools for Resource Efficient Production*", Book 2 in a series on Environmental Management, The Baltic

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 12, July 2022,
ISSN: 2749-3628

University Press, Printed by Nina Tryckeri, Uppsala.

20. Ong, J. W. ; Goh, G. G. ; Goh, C. Y. & Yong, H. S. (2019), "*The Green Value Chain Construct", World Review Entrepreneurship*", Vol.(15), No.(4), pp:(494-512) .
21. Schaltegger, Stefan, Bennett, Martin, Burritt, Roger L., & Jasch, Christine, (2008), "*Environmental Management Accounting for Cleaner Production*", Springer Science and Business Media B. V.
22. Sweeney, Edward (2009), "*Supply Chain Management and Value Chain*", Journal of Dublin Institute of Technology, Vol.(16), No.(10), pp:(310-328) .
23. Warmest, Lorenzo Silverman (2020), "*The Green Value Chain Analysis in Manufacturing Companies*", Management & Engineering Journal, Vol.(9), No.(2), pp:(1-14) .
24. Williams, Jan R. ; Haka, Susan F. ; Bettner, Mark S. & Cello, Joseph V. (2008), "*Financial & Managerial Accounting*", 14th ed., McGraw Hill, USA .