

Using The Green Supply Chain To Achieve A Competitive Advantage - An Applied Study In The General Company For Electrical And Electronic Industries - Generator Assembly Plant

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Abstract

The aim of the research is to identify the nature and activities of the green supply chain and its role in providing environmentally friendly green products of high quality. The research has reached a number of conclusions, the most important of which is that the use of green supply chain technology makes economic units able to achieve competitive advantage because it achieves the most important factors affecting in The success of the product differentiation strategy represented by technology leadership, logistical differentiation, customer service and product differentiation, as well as the green supply chain and through the green purchasing activity helps to equip the plant with environmentally friendly raw materials, as we note through Table No. (1) that electric motors that are environmentally friendly were used instead of motors Mechanical that causes pollution as a result of the combustion process inside the engine.

Keywords :Green supply chain, eco-friendly product, self-generated resource utilization, differentiation strategy.

INTRODUCTION

Iraqi industrial units are exposed to many problems that limit their competitiveness, and these problems are represented in the waste of available resources, the inability to exploit idle energies and the low quality of products compared to Arab and foreign competing products, in addition to the high pollution rates resulting from production processes and the emergence of controls and laws that provide for The need to preserve the environment, all these challenges made the Iraqi economic units seek to adopt modern production techniques and methods in line with the modern business environment that is characterized by acceleration, competition, technological progress, preserving the environment and not wasting natural resources, so that they can keep pace with this progress in the field of industry and business and face challenges To ensure its survival and continuity, as well as to meet the community's needs of goods and services that take into account the environmental aspects and the consumer's ability to spend, and among these technologies is the Green Supply Chain, which contributes to assisting the management of the economic unit in the manufacture of green, environmentally friendly products by correcting the main necessary activities To manufacture the product towards requirements and controls Environmental standards, optimum utilization of energy, natural

resources, raw materials, recycling of production waste, and the transition from traditional production to green production, which allows the economic unit to achieve a competitive advantage.

Based on the foregoing and to achieve the objectives of the research, it has been divided into four sections, the first topic included the research methodology and the second topic focused on the theoretical aspect of green supply chain technology and its role in achieving competitive advantage, while the third topic included the practical side, while the fourth topic presented the most important conclusions and recommendations obtained by the research.

The first topic

Research Methodology

1-1- Research problem

Industrial units in Iraq are exposed to many challenges, the most important of which is the intense competition in various fields, as well as the controls and laws imposed on the units, which stipulate the need to take into account the environmental aspects and preserve natural resources. Therefore, the units should have moved towards modern systems and technologies that are in line with these challenges. Because the traditional cost systems have been subjected to many criticisms due to their shortcomings in providing management with the

necessary information to rationalize the decisions that support the competitive position.

Based on the foregoing, the problem of the study lies in answering the following question:

((Is there a role for the green supply chain in achieving a competitive advantage in Iraqi industries?))

1-2- Research objectives

The main objective of the research is to show the effect of using the green supply chain in achieving a competitive advantage in industrial economic units through:

1- Identifying the nature and activities of the green supply chain and its role in providing high quality, environmentally friendly green products.

2- Presenting a set of recommendations that can benefit the administrative leaders in the Iraqi economic units, the concerned ministries, the relevant authorities and those interested in this field in how to optimally utilize the resources and achieve the environmental dimension.

1-3- The importance of research

The use of the green supply chain in the Iraqi industrial units achieves the optimal utilization of resources, reduce costs, reduce pollution and provide high quality products, and thus have got rid of the most important challenges faced by the Iraqi industrial units.

1-4- Research hypothesis

Do green supply chain activities contribute to providing environmentally-friendly and quality products, which contribute to achieving a competitive product differentiation strategy? .

1-5- Spatial and temporal limits of research

1- Spatial boundaries: Baghdad Governorate, Al-Waziriyah, the General Company for Electrical Industries.

2- Time limits for research: The data and information contained in the statements, records and lists approved by the General Company for Electrical Industries for the year 2021 have been relied upon.

The second topic

green supply chain

2-1- The emergence and concept of the green supply chain: The idea of the green supply chain dates back to 1970, when economic units began to be concerned with protecting the environment, at the beginning of 1980, sustainability, environmental thinking and competitive advantage became the most important goals for the survival and growth of economic units, which is a new trend in which economic units are encouraged to think and care about the environment by changing the procedures they operate in according to environmental requirements (Esinah, 2014:10), and the supply chain works To provide green products and services, maintain a good level of performance and achieve a competitive advantage, as the economic units become

environmentally conscious to meet the demands of customers without harming the environment (Saadi and Manasiriya, 2017: 866). It is defined as a set of regulatory and environmental measures that are used to reduce waste and unnecessary practices and improve the efficiency of the traditional supply chain (Niemann, et al, 2016:981).

2-2- Objectives of the green supply chain

The green supply chain aims to reduce waste, improve ecosystem quality, eco-efficiency and material recycling process, as well as provide measures in terms of technology, installation of new equipment and staff development so that they can earn big profits by paying attention to environmental efficiency that will enable them to achieve a competitive advantage (Novitasari et al. al, 2021:393, as the green supply chain seeks to achieve a number of goals, which have an important role in motivating organizations to implement them, and the following are a number of these goals (Kadam et al, 2017: 39).

1 - The main focus of Green Supply Chain is to make business environmentally friendly.

2- Cost management and energy savings by reducing fuel consumption and CO 2 emissions, which leads to the efficiency and sustainability of the supply chain infrastructure, which creates an opportunity to gain credibility in implementing policies aimed at reducing carbon emissions.

2-3- The importance of the green supply chain

In view of the intensity of competition in the markets and to ensure the success of economic units, they should adopt strategies to adapt to the changing market issues that are very important, and the importance of the green supply chain in increasing demands for environmental protection and green manufacturing as major issues, and the accelerating depletion of natural resources and growing concerns about the distribution of wealth and responsibility The social organization of organizations is one of the important matters that increases the importance of the green supply chain and thus the adoption of its practices in the industry (Al-Sayegh and Ismail, 2019: 204). (Niemann et al, 2016: 981) pointed out that the green supply chain has great importance represented in maintaining more Resources for future generations and at the same time protecting the environment, which leads to a better and safer world as well as the application of green supply chains increases the competitive advantage and economic performance of units as well as enables economic units to partner with their suppliers and customers to develop organizational capabilities that will be reflected not only in environmental performance but also In dimensions of performance such as cost and quality.

2-4- Using the green supply chain to achieve the product differentiation strategy

According to this strategy, the economic unit provides products distinct from other competing products, through which value is created for the customer, and this distinction is either in product quality or technology, and the summary of this strategy is that the customer is willing to pay a higher price for products with high distinction being able to achieve The value he wants to obtain (Abdel-Dayem, 2019: 858). Excellence or exclusivity should be seen as going beyond physical characteristics and service qualities to include everything related to the product or service and affects the potential value that the customer derives from the product, for example, services related to the product that may appear through the ease of access and obtaining the product that It is provided by the location of the distribution centers or the organization's stores, or training, or the delivery and installation of the product, or maintenance and repair services, and recycling (Mohsen and Al-Najjar, 2012: 56). The most important factors that affect the economic units that adopt this strategy can be summarized thus Islami et al , 2020: 159 (:

- Technology Pioneering
- Logistic differentiation
- customers service
- Product differentiation

A differentiation strategy can only be achieved if the economic unit can create something that customers consider unique, and creating a unique product or providing a unique service by the unit requires the work of distinct competencies in supply chain activities. That is, the economic unit should develop the supply chain and this is consistent with the activities of the green supply chain (green design, green manufacturing, reverse logistics, relationship with customers), where we note that technology leadership is one of the factors affecting the achievement of this strategy, this factor can be achieved through design activity Green because this activity imposes the use of modern machines, equipment and techniques that take into account the environmental aspects as well as reduce the damage resulting from the design process, and the second factor that can be achieved through the activities of GSC is logistical differentiation, because the green supply chain includes the activity of reverse logistics that focuses on reuse and recycling For materials and waste, the use of reverse logistics not only provides an opportunity to create an environmentally oriented image of the economic unit but

also brings many competitive advantages to the economic units, such as increased customer satisfaction, lower costs and increased revenue, but in terms of customer service can be achieved as a result of the availability of customer relationship activity Which includes after-sales services, the output of the green supply chain is to provide green friendly products For the environment, any products with an advantage that differ from competitors' products and thus the fourth factor of the product excellence strategy is achieved, and thus the green supply chain contributes to increasing the volume of environmentally friendly products and improving the competitive position of the units by improving their position in the market.

The third topic

Green Supply Chain Application

This topic deals with two axes. The first axis deals with an overview of the company in question. The second axis deals with the way the electric generator works to help put forward proposals, as well as the steps to transform the traditional supply chain activities used in the generator assembly plant into green activities. The following aspects will be reviewed:

The first axis: an introduction to the General Company for Electrical and Electronic Industries

The company was established in the year 8/17/1965 and was published in the Iraqi Gazette No. 367 on 2/2/1967. The project was started in 1963 on a land area of (108000) square meters, and the company was officially opened on 4/18/1967 in Brass. Money amounted to (4249337252) dinars, and the number of its employees reached (2637) employees and (1080) employees in the form of a contract

The company's sites are distributed between Al-Waziriyah and Al-Tajiyat, where good quality and documented infrastructures are available.

The second axis: the application of the green supply chain and the proposed framework

The second axis deals with the following aspects:

3-3-1- How electric generators work.

3-3-2- The proposal (a self-powered electric generator with a starter).

3-3-3- Analysis of the activities of the supply chain in the laboratory based on the results of the proposal.

3-1- How electric generators work



Figure No. (1) The generator (the obstetric head)

An electric generator is defined as a machine that converts the kinetic energy from any external source into electrical energy emanating from the generation head as a result of the repulsion of the magnetic poles inside the coil, and

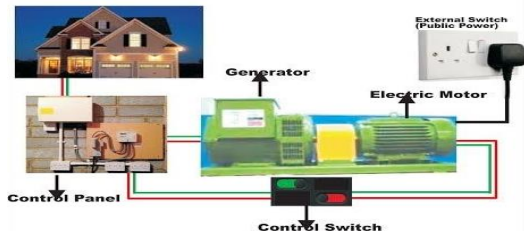


Figure No. (1) illustrates how the electric generator works:

Source / <https://www.gostten.com/>

From the above it is clear that the electric generator needs only kinetic energy resulting from any external source, whether it is a mechanical or electrical engine or other, and therefore proposals can be developed to replace the external engine with another environmentally friendly engine.

3-2- A self-powered electric generator with a starter (proposed).

Figure No. (2) A self-powered electric generator with a starter

Source/ <https://islamkids.net>

The researcher will pass the stages of manufacturing a self-powered electric generator with a starter on the practices or activities of the green supply chain, as follows:

3-3- Analysis of the activities of the supply chain in the laboratory, based on the proposal

3-3-1- Green buying activity

There is a very large discrepancy between the prices of electric motors and mechanical motors, as the prices of electric motors are considered low compared to the prices of mechanical motors, and the method adopted for determining the appropriate electric motor for each category of generator is as follows:

The categories that were equipped during the year (2021) are (250 - 500 - 1000) KVA and therefore we need electric motors with horsepower that fit these categories and the number of their cycles is (1500 cycles) because the number of cycles needed by the generator is (1500 cycles) and it can be specified These motors are based on the following law:

Recently, the large number of studies and research concerned with obtaining electrical energy as a result of its daily use in all fields, which made researchers focus on other sources of energy and here a new idea emerged, namely, a self-powered electric generator, that is, without relying on an external energy source. Figure No. (2)) shows a self powered electric generator with a starter.

$$\text{Horsepower per class (HP)} = \text{Kilowatts (KW)} \div 746 \text{ Watts (W)}$$

where each (1) horsepower = 746 watts (W)

According to the above law, the unit of measurement for electric generators (KVA) must be converted to the unit of measurement of watts (W), and this is done by the following law:

$$\text{Actual power (KW)} = \text{Apparent power (KVA)} \times \text{Power factor (PF)}$$

As the power factor of new (unused) electric motors is (0.8), i.e. a constant ratio

$$\text{Actual capacity of 250 KVA class} = 250 \text{ KVA} \times 0.8 = 200 \text{ KW (1 KW = 1000 W)}$$

$$\begin{aligned} \text{ELECTRIC MOTOR REQUIRED FOR 250 KVA} \\ \text{CLASS GENERATOR} &= 200,000 \text{ W} \div 746 \text{ W} \\ &= 268 \text{ HP} \end{aligned}$$

By following the same previous steps to determine electric motors for classes (500-1000 KVA), the results were

$$\text{ELECTRIC MOTOR REQUIRED FOR 500 KVA CLASS GENERATOR} = 536 \text{ HP}$$

The electric motor required for a 1000 KVA = 1072 HP generator.

And after determining the horsepower of the electric motors required for each category of generators, whose

prices were according to the competent Iraqi centers as follows:

	Category	number of courses	horse power	price
1	Electric motor for 250 category	1500 cycles	300HP	11350000
2	Electric motor for 500 category	1500 cycles	600 HP	18600000
3	Electric motor for 1000 category	1500 cycles	1100HP	27500000
4	the total			57450000

Source / prepared by the researchers

From the above, it can be said that the green purchasing activity has achieved one of the factors affecting the achievement of the product differentiation strategy represented by distinguished logistics through the purchase of major parts of the electric generator that differ from what is approved by the manufacturers of the same product.

3-3-2 Green Design Activity

The electric self-generator does not cause noise pollution as a result of the use of electric motors, and therefore there is no need for a silencer, which is considered a high cost, as the cost of the generator silencer is as follows:

Table No. (2) The cost of the silencer

	the details	silencer price	Number of units	Total
1	1000 KVA class silencer	19950000	7	7×19950000 139650000=
2	500 KVA class silencer	7700000	15	15×7700000 115500000=
3	250 KVA class silencer	4700000	22	22 × 4700000 103400000 =
4	the total	32350000	44	3585500000

Source: Prepared by the researchers based on lab data

We note from Table No. (2) that the total amounts that were saved as a result of excluding The silencer amounted to (358,55000 dinars)

2- The self-generator does not need fuel, thus we get rid of the problem of supplying fuel to the product. The following table shows the amounts that can be saved, assuming that the user will use the product at a rate (8 hours per day):

Table No. (3) The cost of fuel consumed by the electric generator

	generator type	L/h	Operating hours	Price per liter (Kaz)	Total
1	1000 KVA	54.5 /h	H8	400 dinar	174400 per day
2	500KVA	40 / h	H8	400 dinar	128000 per day
3	250KVA	33 / h	H8	400 dinar	105600 per day
4	Th total				408000

Source / prepared by the researchers based on the identification plates for each category

3-3-3- Green Manufacturing Activity

The stage of manufacturing the base (chassis): In this stage, the base is manufactured based on the type of

generator and its production capacity, where the measurements differ from one base to another as follows:

Table No. (4) Measurements and dimensions of the base of electric generators and the main parts

	the details	base measurements	Engine measurements	generator measurements	Cost
1	1000 KVA class silencer	Length / 3.2 m	Length/ 1.6 m	Length / 1.3 m	1800000
		Width / 1.5 m			
		Height / 60 cm			
2	500 KVA class silencer	Length / 4.5 m	Length/ 2.2 m	Length / 1.7 m	2550000
		Width / 1.8 m			
		Height / 60 cm			
3	250 KVA class silencer	Length / 6 m	Length / 3.1 m	Length/ 2.25 m	4500000
		Width / 2.4 m			
		Height / 60 cm			
4	Th total				8850000

Source / prepared by the researchers based on the data of the Technical Affairs Department
 cubic meter = length x width x height
 Cost per cubic meter = base cost ÷ cubic metre
 □ 250 KVA generator base = 1,800,000 ÷ 2.88 cubic meters = 625,000 dinars / cubic meter
 □ 500 KVA generator base = 2550000 ÷ 4.86 cubic meters = 525,000 dinars / cubic meter

□ 1000 KVA generator base = 4500000 ÷ 8.64 cubic meters = 521000 dinars / cubic meter
 We will adopt these rates in determining the cost of the base after changing the engine and determining the measurements and dimensions of the base and Table No. (5) shows this

Table No. (5) Measurements and dimensions of the base of the electric generators and the main parts after changing the engine

	the details	Engine measurements	generator measurements	base measurements	Cost
1	250 KVA	Length/ 1.5 m	Length / 1.3 m	Length / 3 m	1462500
		Width / 1 m			
		Height / 60 cm			
2	500KVA	Length / 2.25 m	Length / 1.7 m	Length / 4.4 m	2205000
		Width / 1.3 m			
		Height / 60 cm			
3	1000 KVA	Length / 3.5 m	Length/ 2.25 m	Length / 6 m	4500000
		Width / 1.8 m			
		Height / 60 cm			
4	Th total				8167500

Source / prepared by the researchers

We note from the above table that there is a slight change in the measurements of the base, and this leads to a reduction in the cost of the base for some categories, as follows:
 cubic meter = length x width x height
 Base cost = cubic meter x average cubic meter
 □ 250 KVA generator base = 2.34 cubic meters x 625,000 dinars = 1462500 dinars
 □ 500 KVA generator base = 4.2 cubic meters x 525,000 dinars = 2205,000 dinars

□ 1000 KVA generator base = 8.64 cubic meters x 521,000 dinars = 4500000 dinars
 2- The stage of assembling the engine and generator (generating head)
 At this stage, the engine and generator are placed on the base and fixed by a set of screws to prevent vibration or movement during operation, and then linked together by the rotating shaft emerging from the electric motor, and Figure No. (3) illustrates this
 Figure No. (3) Connecting the electric motor and generator to the base



Source / prepared by researchers

The cost of the transmission shaft is (125,000 dinars), according to the prices circulated in the specialized Iraqi markets.

3- The stage of massage and installation of the board

At this stage, the electrical parts of the generator are connected, here the engineers connect the electrical wires between the generation head and the board, as well as the

battery. Electrical wires of different categories and sizes are used (4 mm 15 meters wire, 1 mm 24 meters wire with the electrical transformer device (contactor) that performs By separating the electrical energy from the starter and relying on the electricity issued by the generator itself, the cost of this device is (175000), and the following figure shows the converted device

Figure No. (4) Automatic converter (contactor)



Source/ <https://www.i-electrician.com/>

Inspection and quality control stage

The product inspection stage goes through three steps:

- Inspect the generator before operating and make sure that all parts have been connected.
- Checking the generator during operation, but without an electrical load.
- Examination of the generator during operation with the electrical load with the use of a voltmeter.

5- The stage of manufacturing the silencer and placing it on the generator

The cost of the silencer according to the company's records for each category is as follows:

- 250 KVA generator muffler = 4700000 dinars
- 500 KVA generator muffler = 7,700,000 dinars

1000 KVA generator muffler = 19950000 dinars

The number of workers involved in the silencer industry reached 6 workers. Their annual wages amounted to (56.680000 dinars), which will be distributed on the basis of the number of produced units (44 units) to extract the share of each category of this wage in order to exclude it from the total direct wages of the modified generator, as follows:

The share of each category of the direct wages of the silencer = the direct wages of the silencer x the number of class units ÷ the number of total units

Based on the foregoing, a table can be prepared showing the difference between the cost of the modified electric generator and the cost of the electric generator produced in the factory, as follows:

Table No. (6) the difference between the cost of the modified electric generator and the cost of the produced electric generator, category 250 KVA

	Alternator before modification		alternator after modification		The difference
	the details	Cost	the details	Cost	
1					
2	mechanical actuator	26795000	Electrical engine	12555000	14240000

3	obstetric head	11750000	obstetric head	11750000	-----
4	The base	1800000	The base	1462500	337500
5	The silencer	4700000	The silencer	-----	4700000
6	Wiring and control panel	2900000	Wiring and control panel	3097500	زيادة 197500
7	direct wages	5499000	direct wages	4274300	1224700
8	direct initial cost	53444000	direct initial cost	33139300	20304700

Source / prepared by researchers based on company records

The costs of the automatic transformer device (contactor) and the electric wire for feeding the electric motor were included in the wiring and control panel costs (4 mm wire, 5 meters x 4500 dinars = 22500 dinars + a 250 A transformer device at a price of 175,000 dinars), and the

special costs were also included With the transmission shaft (cardin) within the costs of the electric motor amounting to (125,000 dinars), and by following the same steps, tables will be prepared for the remaining categories.

	alternator before modification		alternator after modification		The difference
	the details	Cost	the details	Cost	
1	mechanical actuator	111225000	Electrical engine	31945000	79280000
3	obstetric head	49875000	obstetric head	49875000	-----
4	The base	4500000	The base	4500000	-----
5	The silencer	19950000	The silencer	-----	19950000
6	Wiring and control panel	15450000	Wiring and control panel	15670000	220000 Increase
7	direct wages	11495000	direct wages	10523500	971500
8	direct initial cost	212495000	direct initial cost	112513500	99981500

Table No. (7) the difference between the cost of the modified electric generator and the cost of the produced electric generator, class 500 KVA

Source / Prepared by the researchers based on the company records (electrical wires 7 meters at a cost of 4500 per meter)

Table No. (8) is the difference between the cost of the modified electric generator and the cost of the electric generator produced, class 1000 KVA

	Alternator before modification		alternator after modification		The difference
	the details	Cost	the details	Cost	
1	mechanical actuator	43475000	Electrical engine	20645000	22830000
3	obstetric head	19250000	obstetric head	19250000	-----
4	The base	2550000	The base	2205000	345000
5	The silencer	7700000	The silencer	-----	7700000
6	Wiring and control panel	5150000	Wiring and control panel	5356500	206500 Increase
7	direct wages	5760000	direct wages	4619700	1140300
8	direct initial cost	83885000	direct initial cost	52067200	31808800

99981500 112513500 212495000 Initial direct cost 8

Source / Prepared by the researchers based on company records (electrical wires 10 meters at a cost of 4500 per meter)

We note from the above that the green manufacturing activity and through all the stages the product goes through has achieved one of the factors affecting the achievement of the product differentiation strategy represented by technology leadership.

3-3-4- Green Marketing Activity

The marketing activity in the General Company for Electrical and Electronic Industries is represented by the work carried out by the Sales and Advertising Division.

Suggested treatments to transform traditional marketing activity into green activity

After reviewing the marketing activity and identifying the weaknesses, a set of suggestions can be put forward to address the weaknesses:

Marketing activity is criticized for two reasons: the first focuses on the investment policy that stipulates dealing with the public sector. This problem can be faced by amending the investment contract and making it

stipulate the company’s ability to exploit its internal resources, given that most of the parts of the proposed generator (electric motor, base, wiring) Available in the company, where the electric motors can be provided through coordination with the electric motors lab in the company. As for the second reason that focuses on the high prices, it can be faced by reducing prices based on the savings made available by the proposed generator, as the cost savings amounted to each category as well. Tables (6), (7) and (8) show that the amount of this cost reduction can be adopted to reduce prices by more than 25% of the old price, and this can be clarified by relying on the following equations:

Amount of reduction in the price of each category = old price x 25%

The new price for each category = the old price - the amount of price reduction

□ 250 KVA generator = 67300,000 dinars x 25% = 16,825,000 dinars

The new price = 67,300,000 dinars - 1,685,000 dinars = 50,475,000 dinars

□ 500 KVA generator = 97.5 million dinars x 25% = 24375000 dinars

The new price = 97,500,000 dinars - 2,4375,000 dinars = 73,125,000 dinars

□ 1000 KVA generator = 246.8 million dinars x 25% = 61.7 million dinars

The new price = 246.8 million dinars - 61.7 million dinars = 185.1 million dinars

After determining the cost of the proposed generator and selling prices, it is possible to determine the amount of profits that can accrue to the plant, and Table No. (9) shows this

Generator 1000KVA	Generator 500KVA	Generator 250KVA	the details
185100000	73125000	50475000	selling price
(112513500)	(52067200)	(33139300)	Initial cost
(17104000)	(8552000)	(4276000)	T . s . g. M
(129617500)) (60619200	(37415300)	total cost
55482500	12505800	13059700	profit (loss)
55482500	12505800	13059700	profit (loss)

Table No. (9) Profits from selling the modified generator

Source/ Prepared by the researchers

It is clear from the above table that the amount of profits is considered very high, meaning that the company can reduce prices until they reach 40% of the old prices.

3-3-5- Reverse Logistics Activity: After experiencing and reviewing the reality of the General Company for Electrical and Electronic Industries, the researcher found that there are no indicators for this activity. A set of suggestions can be presented:

1- Recycling of waste: With the current capabilities of the plant, it cannot open a project to recycle the waste represented by the iron material left by the process of making the base and some wires resulting from the wiring process, which is estimated at (1.5 tons annually), the factory can sell this waste for (250,000 dinars / ton). Thus, the plant has disposed of the waste and obtained revenues and at the same time preserved the environment from pollution and this is at the level of the factory. As for the company level, the accumulated waste of iron

material amounted to about (150 tons), and therefore the revenues from the sale of waste can be calculated as follows:

Revenues from the sale of factory waste = 1.5 tons x 250000 dinars = 375,000 dinars

Revenues from the sale of the company’s waste = 150 tons x 250000 dinars = 37500000 dinars

Total revenue = 37875000 dinars

2- Reuse

The researcher suggests opening centers or relying on sales centers and agencies to buy damaged electric generators for the purpose of reusing them again at prices that can attract the owners of damaged generators, and after presenting the idea to the workers in the factory (engineers and workers) as well as the marketing department, they set the prices as follows:

250 KVA Generator: From 3 Million - 5 Million

500 KVA Generator: From 5 Million - 7 Million

1000 KVA generator class: 7-10 million

After setting the prices and purchasing the damaged generators, here comes the role of the electric motor assembly plant of the same company in receiving the generators and reusing them again.

Based on the results shown by the practices of the green supply chain, as well as its role in the manufacture of the self-powered electric generator with the starter, it can be said that the second hypothesis is accepted, which states (the contribution of green supply chain activities to providing environmentally-friendly and quality products, which contributes to achieving a differentiation strategy competitive product), where we note that all the factors that lead to achieving the product differentiation strategy (technology leadership, distinguished logistics, customer service, product differentiation) have been achieved. The green manufacturing activity The factory relied on modern technologies represented by the use of industrial magnets as well as the idea of the self-generator and this achieves technology leadership. In the reverse logistics activity, we note that the factory has proposed providing services to customers free of charge if they are within the warranty period and this achieves the customer service factor, while the last factor is differentiation The product has been verified through the product itself, with the features mentioned above.

The fourth topic

CONCLUSIONS AND RECOMMENDATIONS

4-1- Conclusions

1- The use of green supply chain technology makes economic units able to achieve competitive advantage because it achieves the most important factors affecting the success of the product differentiation strategy represented by technology leadership, logistical differentiation, customer service and product differentiation.

2- The green supply chain is considered one of the modern and contemporary technologies, in addition to its importance for economic units in facing environmental challenges and legal controls that stipulate the necessity of eliminating environmental pollution.

3- The green supply chain, through the green purchasing activity, helps to equip the plant with environmentally friendly raw materials. We note through Table No. (1) that electric motors that are environmentally friendly were used instead of mechanical ones that cause pollution as a result of the combustion process inside the engine.

4-2- Recommendations

1- Working on adopting the green supply chain in the General Company for Electrical and Electronic Industries in order to preserve the environment and the resources of future generations.

2- Working on promoting products by granting agencies to the private sector with a percentage of profits ranging between 5-10%, provided that the price set by the company is maintained, with the aim of making the company's products known in the private sector, which leads to an increase in its sales.

3- The General Company for Electrical Industries should coordinate with academic institutions represented by universities and technical bodies in order to identify modern technologies and find solutions to the problems they suffer from.

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